Señor
SUPERINTENDENTE DE INDUSTRIA Y COM
DIVISION DE NUEVAS CREACIONES
E. S D.

Re: P1.- **THE GILLETTE COMPANY**.- Solicitud de Patente de Invención para **"SURTIDOR PARA APLICAR UN MATERIAL A UNA SUPERFICIE".-** Clase B21 .-Expediente número 00-066.768 .-

1. Me refiero a solicitud arriba nombrada de 5 de Septiembre de 2000.

2. Anexos me permito presentar a usted:

(1) Copias autenticas (3) de las primeras solicitudes de patente presentadas para el invento arriba nombrado **respecto de la cual reclamo prioridad,** a saber:

(a) Copia autentica debidamente certificada de la solicitud estadinense número 09/390.965 de 7 de Septiembre de 1999, junto con la traducción Oficial No. LLC-099-2000, correspondiente a las legalizaciones y reivindicaciones de dicho documento;

(b) Copia autentica debidamente certificada de la solicitud estadinense número 09/556.598 de 21 de Abril de 2000, junto con la traducción Oficial No. LLC-100-2000, correspondiente a las legalizaciones y reivindicaciones de dicho documento;

(c) Copia autentica debidamente certificada de la solicitud estadinense número 09/635.972 de 10 de Agosto de 2000, junto con la traducción Oficial No. LLC-115-2000, correspondiente a las legalizaciones y reivindicaciones de dicho documento;

(2) Copia debidamente autenticada por el Notario Sexto del Circulo de Bogotá, de los documentos que acreditan la calidad de Traductor Oficial del señor Gabriel Rueda Chadid quien elaboró la traducción de las solicitudes estadinenses número 09/390.965, 09/556.598 y 09/635.972, respecto de las cuales se reivindica prioridad en el presente caso;

3. Ruego a usted tomar atenta nota de lo anterior y proceder de conformidad.

Señor Superintendente,

JOSE ANTONIO LLOREDA
T.P. 10.784
Código 231

REPUBLICA DE COLOMBIA
MINISTERIO DE RELACIONES EXTERIORES

196
134

EL SUSCRITO JEFE DEL AREA DE LEGALIZACIONES DE MINSTERIO DE RELACIONES EXTERIORES.

COMO NOTARIO SEXTO DE SANTAFE DE BOGOTA
HAGO CONSTAR
QUE LA FOTOCOPIA COINCIDE CON LA FOTOCOPIA AUTENTICA QUE HE TENIDO A LA VISTA.
SANTAFE DE BOGOTA 7 NOV 2000
JUAN MANUEL BOTERO MEDINA
NOTARIO

HACE CONSTAR

Que el señor Gabriel Rueda, se encuentra debidamente registrado ante este Ministerio, como traductor e intérprete oficial para los idiomas INGLES -ESPAÑOL, ESPAÑOL - INGLES.

Para efectos de ésta certificación el interesado presenta copia autenticada de la certificación del Ministerio de Justicia acerca de la vigencia de la resolución 5096 1982.

COMO NOTARIO SEXTO ENCARGADO DE SANTAFE DE BOGOTA
HAGO CONSTAR
QUE LA FOTOCOPIA COINCIDE CON LA FOTOCOPIA AUTENTICA QUE HE TENIDO A LA VISTA.
SANTAFE DE BOGOTA 21 AGO. 1998

Dada en Santafé de Bogotá, D.C., a los diez y nueve días (19) del mes de diciembre de 1994.

Nelson Sanchez Torres
Jefe Area de Legalizaciones

COMO NOTARIO SEXTO ENCARGADO DEL CIRCULO DE SANTAFE DE BOGOTA, HAGO CONSTAR QUE ESTA COPIA FOTOSTATICA COINCIDE CON EL ORIGINAL QUE HE TENIDO A LA VISTA
01 JUL 1998
PABLO MENDEZ BARAJAS
NOTARIO (E)

COMO NOTARIO SEXTO ENCARGADO DE SANTAFE DE BOGOTA
HAGO CONSTAR
QUE LA FOTOCOPIA COINCIDE CON LA FOTOCOPIA AUTENTICA QUE HE TENIDO A LA VISTA.
SANTAFE DE BOGOTA 01 SEP 2000
MENDEZ BARAJAS

NST/gtm.

República de Colombia

Ministerio de Justicia y del Derecho

COMO NOTARIO SEXTO DE SANTAFE DE BOGOTA
HAGO CONSTAR
QUE LA FOTOCOPIA COINCIDE CON LA FOTOCOPIA AUTENTICA QUE HE TENIDO A LA VISTA
SANTAFE DE BOGOTA 27 NOV 2000
JUAN MANUEL BOTERO MEDINA
NOTARIO

EL SECRETARIO GENERAL DEL MINISTERIO DE JUSTICIA Y DEL DERECHO

CERTIFICA:

Que por Resolución 5996 del 29 de noviembre de 1982, le fue expedida licencia para ejercer funciones de Traductor e Intérprete Oficial en los idiomas INGLES-ESPAÑOL, ESPAÑOL-INGLES a GABRIEL RUEDA CHADID, identificado con la cédula de ciudadanía No. 17.124.145 expedida en Bogotá. Que dicha resolución se encuentra vigente en la fecha.

A solicitud del interesado, en Santafé de Bogotá D.C., a los 17 días del mes de noviembre de 1994.

COMO NOTARIO SEXTO ENCARGADO DE SANTAFE DE BOGOTA
HAGO CONSTAR
QUE LA FOTOCOPIA COINCIDE CON LA FOTOCOPIA AUTENTICA QUE HE TENIDO A LA VISTA
SANTAFE DE BOGOTA 21 AGO. 1998
PABLO MENDEZ BARAJAS

REPUBLICA DE COLOMBIA
Ministerio de Justicia y del Derecho
SECRETARIO GENERAL

JORGE LUIS SABOGAL SABOGAL

COMO NOTARIO SEXTO ENCARGADO DE SANTAFE DE BOGOTA
HAGO CONSTAR
QUE LA FOTOCOPIA COINCIDE CON LA FOTOCOPIA AUTENTICA QUE HE TENIDO A LA VISTA
SANTAFE DE BOGOTA 01 SET 2000
PABLO MENDEZ BARAJAS

EL NOTARIO SEXTO ENCARGADO DEL CIRCULO DE SANTAFE DE BOGOTA, HAGO CONSTAR QUE ESTA COPIA FOTOSTATICA COINCIDE CON EL ORIGINAL QUE HE TENIDO A LA VISTA
01 JUL 1998
PABLO MENDEZ BARAJAS
NOTARIO (E)

JAR/mmc

TRIBUNAL SUPERIOR DEL DISTRITO JUDICIAL DE SANTAFE DE BOGOTA
SECRETARIA GENERAL

LA SUSCRITA SECRETARIA DEL H. TRIBUNAL SUPERIOR DEL DISTRITO JUDICIAL DE SANTAFE DE BOGOTA,

COMO NOTARIO SEXTO DE SANTAFE DE BOGOTA
HAGO CONSTAR
QUE LA FOTOCOPIA COINCIDE CON LA FOTOCOPIA AUTENTICA QUE HE TENIDO A LA VISTA
SANTAFE DE BOGOTA 27 NOV 2000
JUAN MANUEL BOTERO MEDINA
NOTARIO

C E R T I F I C A :

Que el Acuerdo No. 183 de diciembre 3 de 1982 emanado de esta Corporación, por medio del cual dió posesión al señor GABRIEL RUEDA CHADID identificado con Cédula de Ciudadanía número 17.124.145 de Bogotá como TRADUCTOR E INTERPRETE OFICIAL de los idiomas INGLES-ESPAÑOL ESPAÑOL-INGLES, en virtud de la Resolución No. 5996, se encuentra VIGENTE.

COMO NOTARIO SEXTO ENCARGADO DE SANTAFE DE BOGOTA
HAGO CONSTAR
QUE LA FOTOCOPIA COINCIDE CON LA FOTOCOPIA AUTENTICA QUE HE TENIDO A LA VISTA
SANTAFE DE BOGOTA 01 SET 2000

21 AGO. 1998

Se expide en Santafé de Bogotá D.C., a dieciseis (16) de noviembre de mil novecientos noventa y cuatro (1994).

MARIA INES RODRIGUEZ TORRES
SECRETARIA

COMO NOTARIO SEXTO DE SANTAFE DE BOGOTA
HAGO CONSTAR
QUE LA FOTOCOPIA COINCIDE CON LA FOTOCOPIA AUTENTICA QUE HE TENIDO A LA VISTA
SANTAFE DE BOGOTA 08 ENE. 1999
01 JUL 1998
JUAN MANUEL BOTERO MEDINA
NOTARIO

COMO NOTARIO SEXTO ENCARGADO DE SANTAFE DE BOGOTA
HAGO CONSTAR
QUE LA FOTOCOPIA COINCIDE CON LA FOTOCOPIA AUTENTICA QUE HE TENIDO A LA VISTA
SANTAFE DE BOGOTA 08 SET 1998

COMO NOTARIO SEXTO DE SANTAFE DE BOGOTA
HAGO CONSTAR
QUE LA FOTOCOPIA COINCIDE CON LA FOTOCOPIA AUTENTICA QUE HE TENIDO A LA VISTA
SANTAFE DE BOGOTA 23 NOV. 1998
JUAN MANUEL BOTERO MEDINA
NOTARIO

crm./

The Gillette C. 00.066.678

REF: LLC-099-2000. La presente es Traducción Oficial de un documento presentado originalmente en inglés. Esta traducción es elaborada por Gabriel Rueda Chadid (Traductor Oficial).

ESTADOS UNIDOS DE AMERICA

A TODOS AQUELLOS QUE LLEGAREN A LEER EL CONTENIDO DEL PRESENTE DOCUMENTO LES CERTIFICAMOS:

DEPARTAMENTO DE COMERCIO DE LOS ESTADOS UNIDOS

Oficina de Marcas y Patentes de los Estados Unidos

Septiembre 29, 2000

Se certifica que anexo se encuentra fiel copia de los Registros de la Oficina de Marcas y Patentes de los Estados Unidos correspondientes a los documentos de la patente solicitada y cuya identificación aparece más adelante, la cual cumplió con los reguerimientos exigidos para que se otorgue una fecha de presentación de acuerdo con los dispuesto en la Sección 35 USC 111.

Número de Solicitud: 09/390.965

Fecha de presentación: Septiembre 7, 1999

Por autorización del

COMISIONADO DE MARCAS REGISTRADAS Y PATENTES

H. L. JACKSON

Funcionario Encargado de Certificaciones (Hay firma y sello)

GABRIEL RUEDA CHADID
TRADUCTOR OFICIAL
RESOLUCION 5996 DE NOV. 29-82
MINISTERIO DE JUSTICIA

106
138

Expediente No: PM-245

Oficina de Marcas y Patentes:

Comisionado Asistente de Marcas y Patentes

Washington, DC 20231

TRASLADO DE NUEVA SOLICITUD

Honorable Señor:

1. Con el presente se traslada para radicación la solicitud de patente de los Inventores: Crispin Miller, Jean Spencer. John Fritz, William Shambley y Vitaly Pasikov.

Para: Dispensador para Aplicar un material a una Superficie.
Incluyendo:

- 9 Páginas de **Especificaciones**
- 1 Página de Resumen
- 11 Páginas de Reivindicaciones
- 5 **Hojas de diagramas (Informal)**

2. Con el presente anexa una declaración sin ejecutar.
3. Una Asignación del invento a **The Gillette Company** se presentaran mas tarde.

CERTIFICADO DE CORREO EXPRESO (37 CFR 1.10)

Por el presente certifico que este Traslado de Nueva Solicitud y los documentos a que se refiere el anexo del mismo están siendo depositados en el Servicio Postal de los Estados Unidos como "Oficina Postal de Correo Expreso al Destinatario" el 7 de Septiembre de 1999 en un sobre dirigido

GABRIEL RUEDA CHAVID
TRADUCTOR OFICIAL
RESOLUCION 5996 DE NOV. 29-82
MINISTERIO DE JUSTICIA

al Comisionado de Patentes y Marcas Registradas. Washington, D.C., 20231.

(Firmado) EL246443005US 9/7/99

Paula Guerard No. de Correo Fecha de Envío

4. Calculo de honorarios:

(a) Honorario por radicación básica ($760) $760

(b) Reivindicaciones por encima de 20 ($18 cada una)

$2034 por 113 reivindicaciones por encima de 20

(c) Reivindicaciones independientes por encima de 3 ($78 cada una) $390 por 5 reivindicaciones independientes extra

(d) Reivindicaciones dependientes múltiples ($250) $250

Honorario Total $3434

5. El Comisionado por el presente queda autorizado para cargar el honorario de radicación de $3434, mas cualquier honorario de acuerdo a 37 CFR 1.16 y 1.17, a la Cuenta de Depósito No. 07-1350. Se anexa una copia autenticada de esta autorización.

Respetuosamente suyo,

(firmado) **David Howley**

Reg. No. 34.624

Apoderado del Solicitante

The Gillette Company
Prudential Tower Building
Boston, MA 02199
(617) 421-7093

GABRIEL RUEDA CHADID
TRADUCTOR OFICIAL
RESOLUCION 5996 DE NOV. 29-82
MINISTERIO DE JUSTICIA

REIVINDICACIONES

1. Un dispensador para la aplicación de un material a una superficie que comprende:

un carrete de suministro giratorio alrededor de un eje;

una cantidad de material depositado en el carrete de suministro en una variedad de magnitud de ancho o de dimensiones de ancho; y

una cabeza aplicadora alrededor de la cual se pasa el material, la cabeza oprime el material contra la superficie.

2. El dispensador de la reivindicación 1, en el que cada capa de material sobre el carrete de suministro va en la forma de un ovillo helicoidal que atraviesa sustancialmente toda la longitud de una región de ovillo en carrete.

3. El dispensador de la reivindicación 1, en el que el diámetro máximo de la región del ovillo del carrete de suministro se encuentra en la región central del carrete.

4. El dispensador de la reivindicación 1, que además incluye una guía, en el que el material desde el carrete de suministro pasa a través de la guía antes de llegar a la cabeza aplicadora, estando la guía móvil a lo largo de un eje paralelo al eje del carrete.

5. El dispensador de la reivindicación 1, en el que la cabeza aplicadora está libre para girar alrededor del eje.

6. El dispensador de la reivindicación 5, en el que el carrete de suministro y la cabeza aplicadora giran alrededor del mismo eje.

7. El dispensador de la reivindicación 1, en el que la cabeza aplicadora puede inclinarse alrededor de un eje a orientaciones fijas.

8. El dispensador de la reivindicación 7, en el que el carrete de suministro y la cabeza aplicadora giran alrededor del mismo eje.

9. El dispensador de la reivindicación 1, que incluye además una caja que contiene el carrete, siendo la caja sustancialmente de forma cilíndrica.

10. El dispensador de la reivindicación 1, en el que el material está para corrección.

11. El dispensador de la reivindicación 1, en el que el material es seleccionado de un grupo consistente de materiales a enmascarar, destacar, marcar, etiquetar, transferir calcomanías, aromas, pegantes, adherentes, retirar partículas, y materiales en las áreas de cosméticos y médica.

12. Un dispensador para aplicar un material a una superficie, que comprende:

un carrete de suministro rotatorio alrededor de un eje; y

una cabeza aplicadora alrededor de la cual pasa el material, oprimiendo la cabeza el material contra la superficie, en el que la cabeza aplicadora es al menos parcialmente ubicada dentro de un espacio cilíndrico de longitud ilimitada generado alrededor del eje del carreta de suministro con una radio igual al radio del carrete de suministro completamente lleno de material.

13. El dispensador de la reivindicación 12, en el que cada capa de material sobre el carrete de suministro va en la forma de un ovillo helicoidal que atraviesa sustancialmente la longitud total de la región del ovillo del carrete.

14. El dispensador de la reivindicación 12, en el que el diámetro máximo de la región del ovillo del carrete de suministro está en la región central del carrete.

15. El dispensador de la reivindicación 12, que además incluye una guía en el que el material desde el carrete de suministro pasa a través de la guía antes de llegar a la cabeza aplicadora, siendo la guía móvil a lo largo de un eje paralelo al eje del carrete.

16. El dispensador de la reivindicación 12, en el que la cabeza aplicadora está libre para girar alrededor de un eje.

17. El dispensador de la reivindicación 16, en el que el carrete de suministro y la cabeza aplicadora giran alrededor del mismo eje.

18. El dispensador de la reivindicación 12, en el que la cabeza aplicadora puede inclinarse alrededor de un eje a orientaciones fijas.

19. El dispensador de la reivindicación 18, en el que el carrete de suministro y la cabeza aplicadora giran alrededor del mismo eje.

20. El dispensador de la reivindicación 12, que además incluye una caja para contener el carrete, siendo la caja sustancialmente de forma cilíndrica.

21. El dispensador de la reivindicación 12, en el que el material está para corrección.

22. El dispensador de la reivindicación 12, en el que el material es seleccionado del grupo consistente de materiales para enmascarar, destacar, marcar, etiquetar, transferir calcomanías, aromas, pegantes, adherentes, retirar partículas y materiales en las áreas de cosméticos y médica.

23. El dispensador de cualquiera de las reivindicaciones 1 a 3 y 5 a 11, en el que el carrete de suministro también es móvil a lo largo del eje.

24. El dispensador de cualquiera de las reivindicaciones 12-14 y 16-22, en el que el carrete de suministro también es móvil a lo largo del eje.

25. El dispensador de cualquiera de las reivindicaciones 1 y 5-11, que además incluye un carrete de retiro giratorio alrededor de un eje, pasando el material desde el carrete de suministro alrededor de la cabeza aplicadora y sobre el carrete de retiro.

26. El dispensador de la reivindicación 25, en el que cada capa de material sobre el carrete de suministro y sobre el carrete de retiro está en forma de un ovillo helicoidal que atraviesa sustancialmente toda la longitud de la región del ovillo de cada carrete.

27. El dispensador de la reivindicación 25, en el que los diámetros máximos del carrete de suministro y del carrete de retiro está en la región central de una región de ovillo de cada carrete.

28. El dispensador de la reivindicación 25, que además incluye primera y segunda guías, en el que el material desde el carrete de suministro pasa a través de la primera guía antes de llegar a la cabeza aplicadora, siendo la primera guía móvil a lo largo de un eje paralelo al eje del carrete de suministro; en el que el material que ha pasado la cabeza aplicadora pasa a través de la segunda guía antes de ser recogido en el carrete de retiro, siendo la guía móvil a lo largo de un eje paralelo al eje del carrete de retiro.

29. El dispensador de la reivindicación 28, en el que la primera y segunda guía están acopladas mecánicamente en un espaciador fijo aproximadamente igual a la distancia entre

los centros de las longitudes axiales del carrete de suministro y el carrete de retiro.

30. El dispensador de la reivindicación 25, en el que la rotación del carrete de suministro dirige la rotación del carrete de retiro por medio de uno o más elementos mecánicos.

31. El dispensador de la reivindicación 25, en el que el carrete de suministro y el carrete de retiro son coaxiales.

32. El dispensador de la reivindicación 30 o 31, que además incluyen un clutch que permite la variación en la tasa de rotación del carrete de retiro con relación a la tasa de rotación del carrete de suministro.

33. El dispensador de cualquiera de las reivindicaciones 12 y 13-22, que además incluye un carrete de retiro giratorio alrededor de un eje, pasando el material desde el carrete de suministro alrededor de la cabeza aplicadora y sobre el carrete de retiro, en el que la cabeza aplicadora está por lo menos parcialmente ubicada dentro de un espacio cilíndrico de longitud ilimitada generado alrededor del eje del carrete cerca a la cabeza aplicadora o al eje común de los carretes coaxiales, con un radio igual al radio del carrete mas cercano a la cabeza aplicadora cuando este carrete está completamente lleno de material, o para carretes coaxiales, del carrete más grande cuando este carrete está lleno.

34. El dispensador de la reivindicación 33, en el que la cabeza aplicadora está libre para girar alrededor de un eje que es el mismo que emerge de cualquiera de los carretes de suministro o de retiro.

35. El dispensador de la reivindicación 33, en el que los carretes son móviles a lo largo de sus ejes.

36. El dispensador de cualquiera de las reivindicaciones 1 y 5-11, que además incluye un carrete de retiro giratorio alrededor de un eje y móvil a lo largo del eje, siendo también el carrete de suministro móvil a lo largo de su eje, pasando el material desde el carrete de suministro alrededor de la cabeza aplicadora y sobre el carrete de retiro, una cantidad de material depositado sobre el carrete de retiro estando en una pluralidad de magnitudes de ancho.

37. El dispensador de la reivindicación 36, en el cual cada capa de material sobre el carrete de suministro y sobre el carrete de retiro se encuentra en forma de un ovillo helicoidal que atraviesa sustancialmente la longitud completa de la región del ovillo del carrete,

38. El dispensador de la reivindicación 36, en el que los diámetros máximos del carrete de suministro y el carrete de retiro están en la región central de una región de ovillo de cada carrete.

39. El dispensador de la reivindicación 36, en el que la rotación del carrete de suministro dirige la rotación del

carrete de retiro por medio de uno o más elementos mecánicos.

40. El dispensador de la reivindicación 36, en el que el carrete de suministro y el carrete de retiro son coaxiales.

41. El dispensador de las reivindicaciones 39 o 40, en el que un clutch ayuda a la variación en la tasa de rotación del carrete de retiro con relación a la tasa de rotación del carrete de suministro.

42. El dispensador de cualquiera de las reivindicaciones 16-32 y 33, en el que los carretes son cada uno móvil a lo largo de sus ejes y en el que la cabeza aplicadora está por lo menos parcialmente ubicada dentro de un espacio cilíndrico de longitud ilimitada generado alrededor del eje del carrete más cercano a la cabeza aplicadora o el eje común de los carretes coaxiales, con un radio igual al radio del carrete más cercano a la cabeza aplicadora cuando este carrete está completamente lleno de material, o para carretes coaxiales, el carrete más grande cuando este carrete este lleno.

43. El dispensador de la reivindicación 42, en el que cada capa de material sobre el carrete de suministro y sobre el carrete de retiro se encuentra en forma de un ovillo helicoidal que atraviesa sustancialmente toda la longitud de la región del ovillo del carrete.

GABRIEL RUEDA CHAVID
TRADUCTOR OFICIAL
RESOLUCION 5996 DE NOV. 29-82
MINISTERIO DE JUSTICIA

44. El dispensador de la reivindicación 42, en el que los diámetros máximos del carrete de suministro y del carrete de retiro están en la región central de una región de ovillo de cada carrete.

45. El dispensador de la reivindicación 42, en el que la rotación del carrete de suministro dirige la rotación del carrete de retiro por medio de uno o más elementos mecánicos.

46. El dispensador de la reivindicación 42, en el que el carrete del suministro y el carrete de retiro son coaxiales.

47. El dispensador de la reivindicación 45 o 46, en el que un clutch ayuda a la variación en la tasa de rotación del carrete de retiro con relación a la tasa de rotación del carrete de suministro.

48. El dispensador de la reivindicación 1 o 12, en el que el material es una cinta que tiene un ancho en relación con longitud de 0.01 o menos.

49. El dispensador de la reivindicación 1 o 12, en el que la cabeza puede doblarse durante el uso del dispensador.

50. El dispensador de la reivindicación 25, que además incluye un par de guía para guiar respectivamente el material que sale del carrete de suministro y que pasa sobre el carrete de retiro, estando las guías montadas para moverse según el material sea pasado desde el carrete de suministro y

recuperado sobre el carrete de retiro.

51. Un dispensador para aplicar un material a una superficie, que comprende:

un carrete de suministro rotatorio alrededor de un eje;

una cantidad de cinta sin usar depositada sobre el carrete de suministro;

una cabeza aplicadora alrededor de la cual pasa la cinta, oprimiendo la cabeza la cinta contra una superficie para depositar una capa de transferencia de la cinta sobre la superficie;

un carrete de retiro para almacenar una capa de respaldo de la cinta después de que la capa de transferencia ha sido depositada sobre la superficie, siendo el carrete de retiro rotatorio alrededor del eje;

una caja que rodea por lo menos una mayor parte de la cinta, siendo una parte sustancial de la caja de forma cilíndrica: y

medios para guiar la cinta desde el carrete de suministro hasta la cabeza y desde la cabeza hasta el carrete de retiro, estando la cabeza aplicadora ubicada sustancialmente a lo largo del eje, y siendo los carretes móviles a lo largo del eje, causando la cinta un movimiento de los carretes a lo largo del eje en la medida en que los carretes giran alrededor del eje, siendo depositada la cinta sobre cada carrete en una pluralidad de capas de cinta delgada y una pluralidad de dimensiones de ancho de la cinta.

52. Un dispensador para aplicar un material a una superficies, que comprende:

un carrete giratorio alrededor de un eje;

una cantidad de cinta depositada sobre el carrete; y

una cabeza aplicadora alrededor de la cual pasa la cinta, oprimiendo la cabeza la cinta contra la superficie para depositar por lo menos una parte de la cinta sobre la superficie, en el que la cabeza aplicadora está ubicada sustancialmente a lo largo del eje.

53. El dispensador de la reivindicación 52, en el que el carrete es un carrete de suministro sobre el cual se deposita cinta sin usar.

54. El dispensador de la reivindicación 52, en el cual el carrete es un carrete de retiro sobre el cual se deposita la cinta usada.

55. El dispensador de la reivindicación 54, que además incluye un carrete de suministro sobre el cual se deposita cinta sin usar y que es giratorio alrededor del eje, pasando la cinta desde el carrete de suministro alrededor de la cabeza aplicadora y hasta el carrete de retiro.

56. El dispensador de la reivindicación 52, que además comprende:

una pieza de eje alrededor de la cual gira el carrete, estando la cabeza aplicadora conectada a un extremo de la pieza eje.

57. El dispensador de la reivindicación 56, en la que la pieza de eje es rotatoria alrededor del eje.

58. El dispensador de la reivindicación 56, en el que la cabeza es rotatoria alrededor del eje.

59. El dispensador de la reivindicación 56, en el que la pieza de ej y la cabeza son rotatorias alrededor del eje.

60. Un dispensador para aplicar un material a una superficie, que comprende:

un carrete rotatorio alrededor de un eje, siendo el carrete móvil a lo largo del eje; y

una cantidad de cinta depositada sobre el carrete, haciendo la cinta que se mueva el carrete a lo largo del eje en la medida en que el carrete gira alrededor del eje.

61. El dispensador de la reivindicación 60, en el que el carrete es un carrete de suministro en el que se deposita cinta sin usar.

62. El dispensador de la reivindicación 61, que además incluye un carrete de retiro para depositar la cinta usada, estando los dos carretes unidos conjuntamente de modo que en la dirección axial ellos se muevan al unísono a lo largo del eje.

63. Un dispensador para aplicar un material a una superficie que comprende:

un carrete: y

una cantidad de cinta depositada sobre el carrete, teniendo la cinta grosor, ancho y longitud, quedando la cinta depositada sobre el carrete en una pluralidad de grosores de capas de cinta y una pluralidad de anchos de la cinta.

64. El dispensador de la reivindicación 63, en el que el carrete es un carrete de suministro en el que se deposita cinta sin usar.

65. El dispensador de la reivindicación 63, en el que el carrete es un carrete de retiro en el que se deposita cinta usada.

66. El dispensador de la reivindicación 63, en el que el carrete es un carrete de suministro en el que se almacena cinta sin usar, y que comprende además un carrete de retiro para depositar la cinta usada que se almacena en el carrete de retiro en una pluralidad de grosores de capa de cinta y una pluralidad de anchos de la cinta.

67. El dispensador de la reivindicación 63, que además comprende:

una cabeza aplicadora alrededor de la cual pasa la cinta; y

medios para guiar esta cinta entre el carrete y la cabeza, siendo el carrete rotatorio alrededor de un eje, el movimiento de la cinta entre el carrete y la cabeza hacen que el carrete se mueva a lo largo del eje debido a que la cinta está siendo depositada sobre el carrete en una pluralidad de

anchos de cinta.

68. El dispensador de la reivindicación 67, en el que el carrete es un carrete de suministro para depositar cintas sin usar.

69. El dispensador de la reivindicación 67, en el que el carrete es un carrete de suministro para depositar cintas sin usar, y luego comprimiendo:

un carrete de retiro para almacenar la cinta usada, la cinta usada es depositada sobre el carrete de retiro en una pluralidad de grosores de capa de cinta y una pluralidad de anchos de cinta; y

medios para dirigir la cinta entre la cabeza y el carrete de retiro, haciendo que el movimiento de la cinta desde el carrete de suministro alrededor de la cabeza y hasta el carrete de retiro produzca que ambos carretes se muevan a lo largo del eje debido a que la cinta que se deposita sobre el carrete de suministro va en una pluralidad de anchos de la cinta.

70. El dispensador de la reivindicación 69, que además comprende:

un clutch que ayuda a que los dos carretes roten alrededor del eje con relación uno al otro, estando los carretes unidos conjuntamente de modo que se mueven en tándem a lo largo del eje.

71. Un dispensador para aplicar un material a una superficie, que comprende:

una cantidad de cinta; y

una caja que rodea la mayor parte por lo menos de la cinta, siendo una parte sustancial de la caja de forma cilíndrica.

72. Un dispensador para aplicar un material a una superficie, que comprende:

un carrete rotatorio alrededor de un eje;

una cantidad de cinta depositada sobre el carrete;

una cabeza aplicadora alrededor de la cual pasa la cinta, al presionar la cabeza la cinta, la superficie deposita por lo menos una porción de la cinta en la superficie, en el que una línea de contacto entre la cinta y la superficie se extiende en una dirección que intercepta al eje.

73. El dispensador de la reivindicación 72, en el que la línea de contacto entre la cinta y la superficie se extiende en una dirección que intercepta el eje en un ángulo agudo.

74. El dispensador de la reivindicación 72, en el cual la línea de contacto entre la cinta y la superficie se extiende en una dirección que intercepta el eje y sustancialmente en ángulo recto.

75. El dispensador de la reivindicación 63. en el que cada capa de cinta devanada sobre el carrete va en forma de una hélice que atraviesa sustancialmente una longitud axial completa de una región de ovillo del carrete.

76. El dispensador de la reivindicación 75, donde cada porción final de la región de ovillo del carrete disminuye en diámetro hacia su respectivo extremo del carrete para estabilizar un giro en el ovillo al final de cada capa, que a su vez va con ángulo en hélice de los reversos de la cinta devanada, y para facilitar la devolución del ángulo de hélice entre una capa helicoidal y la siguiente capa helicoidal cuyas espirales van en dirección opuesta.

77. El dispensador de cualquiera de las reivindicaciones 6, 8, 17 o 19 que además incluye una pieza de eje que es colineal con el eje, estando la cabeza acoplada a la pieza de eje, siendo el carrete rotatorio alrededor del eje.

La anterior es Traducción Oficial de un documento presentado originalmente en inglés. Esta traducción fue realizada por **GABRIEL RUEDA CHADID (Traductor Oficial)**. Resolución 5996 del Minjusticia, por lo cual estampo mi Sello y Firmo.

Santafé de Bogotá D.C., Octubre 27 del 2000.

GABRIEL RUEDA CHADID
TRADUCTOR OFICIAL
RESOLUCION 5996 DE NOV. 29-82
MINISTERIO DE JUSTICIA

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UNITED STATES DEPARTMENT OF COMMERCE

United States Patent and Trademark Office

September 29, 2000

THIS IS TO CERTIFY THAT ANNEXED HERETO IS A TRUE COPY FROM THE RECORDS OF THE UNITED STATES PATENT AND TRADEMARK OFFICE OF THOSE PAPERS OF THE BELOW IDENTIFIED PATENT APPLICATION THAT MET THE REQUIREMENTS TO BE GRANTED A FILING DATE UNDER 35 USC 111.

APPLICATION NUMBER: ***09/390,965***
FILING DATE: ***September 07, 1999***

By Authority of the
COMMISSIONER OF PATENTS AND TRADEMARKS

H. L. Jackson

H. L. JACKSON
Certifying Officer

157

Docket No.: PM-245

Box Patent Application
Assistant Commissioner of Patents and Trademarks
Washington, DC 20231

NEW APPLICATION TRANSMITTAL

Honorable Sir:

1. Transmitted herewith for filing is the patent application of Inventors: Crispin Miller, Jean Spencer, John Fritz, William Shambley and Vitaly Pesikov.

   For: Dispenser for Applying a material to a Surface.

   Including:

   9 Pages of Specification
   1 Page of Abstract
   11 Pages of Claims
   5 Sheets of Drawing (Informal)

2. An unexecuted Declaration is enclosed herewith.

3. An Assignment of the invention to The Gillette Company will be submitted later.

EXPRESS MAIL CERTIFICATE (37 CFR 1.10)

I hereby certify that this New Application Transmittal and the documents referred to as enclosed herewith are being deposited with the United States Postal Service as "Express Mail Post Office to Addressee" on September 7, 1999 in an envelope addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.

Paula Guerard — EL246443005US — 9/7/99
Paula Guerard — Express Mail Label No. — Date Mailed

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4. Fee calculation:
   (a) Basic filing fee ($760) $760
   (b) Claims in excess of 20 ($18 each) $2034 for 113 claims in excess of 20
   (c) Independent claims in excess of 3 ($78 each) $390 for 5 extra independent claims
   (d) Multiple dependent claims ($250) $250
   Total Fees $3434

5. The Commissioner is hereby authorized to charge the filing fee of $3434, plus any fees under 37 CFR 1.16 and 1.17, to Deposit Account No. 07-1350. A duplicate copy of this authorization is enclosed.

Respectfully submitted,
David Howley
David Howley
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09/029559

DISPENSER FOR APPLYING A MATERIAL TO A SURFACE

FIELD OF THE INVENTION

The invention relates generally to the field of material dispensers, and in particular to dispensers from which a material is deposited to a surface from a tape stored in the dispenser.

BACKGROUND OF THE INVENTION

Correction tape dispensers are used to apply a thin, white, opaque piece of correction tape over visible markings which have been made on a surface. Typically, the tape is used to cover a mistake in text on a piece of paper. After the tape has been applied over the mistake, the correct text can be written on top of the tape to fix the mistake.

U.S. Patent 5,490,898 discloses a fairly typical arrangement of a correction tape dispenser (coating film transfer tool). The tool includes a case 2 formed in a flat box-like shape. Case 2 contains a pay-out reel 6 with a coating film transfer tape T wound thereabout, and a winding reel 7 for collecting the used tape T'. A tape drive D connects the two reels to maintain tension in the tape. The tape includes a backing layer which remains on the reels, and a covering layer for covering the visible image on the surface. Tape T passes around a transfer head H as the tape travels from reel 6 to reel 7. The arrangement of head H causes the tape covering layer to be deposited on the surface contacted by the tape while under pressure from the user.

Tape T and used tape T' are stored respectively on reels 6 and 7 in a multi-layer thick/single-layer wide arrangement. This way of storing the tape on the reels, and the arrangement of the reels relative to each other and to head H causes the case to have the flat box-like shape. Having this case in such a shape is less than optimal for a correction tape dispenser. First, the case can at least partially block the user's view of the material being corrected. Second, users would find a dispenser shaped more along the lines of a writing instrument (e.g. a cylindrically shaped pen or pencil) more natural to use when correcting writing on paper.

U.S. Patent 5,049,229 discloses an apparatus for the application of an adhesive film in which the supply reel 5 and take-up reel 11 are both mounted on a shaft or axis 9. The tape is stored on these reels in a manner similar to that described in the previous paragraph (i.e. a multi-layer thick/single-layer wide arrangement). Such an arrangement also results in an apparatus shape having the drawbacks mentioned at the end of the previous paragraph.

SUMMARY OF THE INVENTION

The present invention is directed to overcoming one or more of the problems set forth above. Briefly summarized, according to one aspect of the present invention, a dispenser for applying a material to a surface includes a spool rotatable about an axis and a quantity of tape stored on the spool. The tape is passed around an applicator head, the head pressing the tape against a surface to deposit at least a portion of the tape on the surface. The applicator head is located substantially along the axis.

According to another aspect of the invention, a dispenser for applying a material to a surface includes a spool rotatable about an axis. The spool is movable along the axis. A quantity of tape is stored on the spool, the tape causing movement of the spool along the axis as the spool is rotated about the axis.

In accordance with a further aspect of the invention, a dispenser for applying a material to a surface includes a spool and a quantity of tape stored on the spool. The tape has a thickness, a width and a length, and is stored on the spool in a plurality of tape layers thick and a plurality of tape widths wide.

According to another aspect of the invention, a dispenser for applying a material to a surface includes a quantity of tape and a housing which surrounds at least a majority of the tape. A substantial portion of the housing is substantially cylindrical in shape.

The various features of the invention described above enable a correction tape dispenser which is more in the shape

of a writing instrument, and thus more naturally wielded by a user of the dispenser.

These and other aspects, objects, features and advantages of the present invention will be more clearly understood and appreciated from a review of the following detailed description of the preferred embodiments and appended claims, and by reference to the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a perspective view of a first embodiment of a correction tape dispenser according to the invention;

Fig. 2 is a perspective view of a second embodiment of a correction tape dispenser;

Fig. 3 is a partial sectional view of FIG. 2 taken along the lines 3-3;

Fig. 4 is a partial sectional exploded view of an alternative pair of spools usable in the invention;

Fig. 5 is a partial sectional exploded view of the spools of Fig. 4 assembled together; and

Figs. 6(a)-(d) are schematic side views showing various orientations of an applicator head to its housing.

DETAILED DESCRIPTION OF THE INVENTION

Beginning with Fig. 1, a correction tape dispenser 10 includes a housing 12, a portion of which has been removed to facilitate viewing of the inside of the dispenser. The housing is preferably made of plastic and is substantially cylindrical in shape. An axle 14 extends down from the top of the housing. A cross section of housing 12 taken perpendicular to the axle is preferably circular or oval in shape (the housing diameter has been exagerated for clarity). The axle is fixed to the housing such that it can either (a) rotate about its long axis, or (b) not rotate about its long axis. If the axle is rotatable, this allows an applicator head 32 secured to an end of the axle to rotate freely about the long axis of the axle. Alternatively, the axle can be arranged to be manually rotated to fixed orientations about its long axis by a ratcheting mechanism (not shown) so that

the head can be rotated or swiveled to fixed orientations about the long axis of the axle.

A supply spool 16 and a take-up spool 18 are rotatably supported on axle 14. The spools are secured together by a nut 20 and spring 22, and a flange 24 of spool 18 and a flange 26 of spool 16 interface to form a clutch between the two spools(operation of the nut, spring and flanges will be explained in more detail below with respect to Fig. 3). As a result, spools 16 and 18 are movable in unison along axle 14 and can rotate freely about the axle, although the clutch provides some resistance to the spools rotating about the axle relative to each other.

A supply of unused correction tape 28 is stored on spool 16. The tape has a thickness, width and length, and is stored on spool 16 in a plurality of layers thick and a plurality of widths wide (similar to thread on a spool). Preferably the tape has a width to length ratio of 0.01 or less. Tape 28 is guided off spool 16 by a first guide slot 30 which extends inward of the housing. The tape then passes around an applicator head 32, past a guide bar 34, through a second guide slot 36, and onto take-up spool 18. Axle 14 and head 32 are preferably made of plastic, thus allowing the head to flex during use.

Head 32 is at least partially located within an imaginary cylindrical space of unlimited length generated around axis 14. The radius of this cylindrical space is equal to the radius of the large spool when this spool is full (in this case the take-up spool). If the two spools were not coaxial, then this cylindrical space would be generated around the axis of the spool close to head 32, with the radius of the cylindrical space equal to the radius of the spool when this spool is full.

As is well known in the art, the tape includes a masking layer 38 and a backing layer 40. To use the dispenser, a user grasps housing 12, presses head 32 against a surface 42 (in this case the head contacts surface 42 just after the letter "E"), and moves the dispenser in the direction of an arrow 44. This causes tape 28 to unwind from spool 16, move in the direction of arrows 46 and 48, and wind up on spool 18. This

tape movement causes the spools to rotate in the direction of arrow 50. The tape movement also causes the spools to move up or down along axis 14 because guide slots 30, 36 are fixed on the housing and the tape unwinds from spool 16 back and forth from one end of the spool to the other. Rather than a masking layer, the tape may alternatively carry a layer of material for highlighting, marking, labeling, transferring decals, scenting, gluing, bonding, adhering, removing debris, or applications in the cosmetic and medical areas.

Alternatively, the spools can be fixed so that they do not move up and down along axis 14 while guides 30, 36 are each mounted for movement on a rod (not shown) which is parallel to axis 14. As such, the guides will move up and down on their respective rods as the tape unwinds from supply spool 16 and rewinds onto take-up spool 18 while the spools themselves will not move up and down along the axis.

As is well known in the art, the adherence of masking layer 38 to surface 42 (e.g. one side of a piece of paper) is greater than the adherence of masking layer 38 to backing layer 40. As a result, masking layer 38 peels away from backing layer 40 and adheres to surface 42, covering up some letters in the process. When the dispenser is lifted off surface 42, masking layer 38 on surface 42 tears free from the masking layer still on tape 28.

The diameter of the take-up spool is greater than the diameter of the supply spool. The reason for this diameter difference is to enable the take-up spool to rewind the backing layer faster than the new tape is being paid out from the supply spool, thereby taking up any slack that may inadvertently be created at head 32. This diameter difference would cause a steady increase in tape tension as the dispenser is used, but the clutch between the two spools 16, 18 relieves this tension buildup and maintains a fairly constant tension in tape 28.

Turning to FIGs. 2 and 3, a second embodiment of the invention will be described. Many of the features of this embodiment are similar to features found in the first embodiment. A correction tape dispenser 60 includes a housing 62 which is substantially cylindrical (having a circular or

oval cross section) along most of its length (1/2 the housing is not shown to facilitate viewing of the inside of the dispenser). The dimensions of this housing are similar to that of a writing instrument such as a porous-tip marker. The design can be altered so that the housing dimensions approach those of a traditional pen.

In this embodiment an axle 64 is secured to a forward and rearward part of the housing. The axle does not rotate about its long axis. An applicator head 66 is secured to the housing rather than to the axle as in FIG. 1. Although head 66 is shown as having an edge 65 about which the tape is wrapped, edge 65 could be replaced by an alternative arrangement such as a cylindrical roller. Edge 65 lies on a line of contact between the tape and the surface being corrected. This line extends in a direction which intersects the axis about which the spools rotate. In this embodiment the intersection is at an acute angle, while in the Fig. 1 embodiment, the intersection is at a right angle.

The path of tape 67 in this embodiment has some similarities to the tape path in the first embodiment (Fig. 1). The tape unwinds from a supply spool 68 and passes through a guide slot 70. The tape then travels down the dispenser, passes over a cylindrical guide 71 (Fig. 2) and twists about 90 degrees about its longitudinal axis behind head 66 as viewed in Figs. 2 and 3. Guide 71 is tapered and somewhat conical (a truncated cone) to facilitate the tape veering toward a midplane of the dispenser. After wrapping around head 66, tape 67 again twists about 90 degrees about its longitudinal axis, and passes over another cylindrical guide 72 which is similar in shape to guide 71. The tape then extends over guide slot 70 and passes through a second guide slot 74, after which the used tape is wound onto take-up spool 76. With the tape coming off the side of spool 68 facing the housing (as shown in Fig. 2), arrows 80, 82, 84 and 86 indicate the path of travel of the tape. In both this embodiment and the embodiment of Fig. 1, each tape layer wound on the spool is in the form of a helix traversing substantially a full axial length of the winding region of the spool.

With reference to FIG. 3, operation of a nut 88 and spring 90 along with spools 68 and 76 will be described. This assemblage holds the two spools together to form a clutch between the spools. Spool 68 actually extends all the way through spool 76 and ends in a threaded portion 92. Spool 68 has a flange 94 at one end and a flange 96 about midway along the spool. Spool 76 surrounds spool 68 and includes a flange 97 at one end and a flange 98 at the other end. Nut 88 is screw-threaded onto threaded end 92 of spool 68 to press spring 90 against flange 98 of spool 76. This arrangement presses flanges 96 and 97 against each other, forming a friction clutch. In this embodiment there is minimal friction between spool 68 and axle 64.

Operation of the dispenser of FIGs. 2 and 3 is essentially the same as for the dispenser of FIG. 1. The tape is maintained under tension and travels from spool 68, around head 66, and back to spool 76. This tape movement causes the spools to rotate about axle 64, with the clutch allowing the spools to slip rotationally relative to each other to maintain tape tension fairly constant. The tape movement also causes the spools to move in unison up and down on axle 64 as the tape unwinds from spool 68 and rewinds on spool 76.

Figs. 6(a)-(d) show some of the possible applicator head orientations. A head 130 in Fig. 6(a) is similar to head 66 in Figs. 2 and 3 in that the center of head edge 132 is below a centerline 134 of a housing 136. Fig. 6(b) discloses a head 138 in which the center of a head edge 140 is along centerline 134 of a housing 142. Fig. 6(c) discloses a head 144 in which a centerline 145 of head 144 is parallel to a centerline 146 of a housing 148. Fig. 6(d) discloses a head 150 in which a centerline of the head and centerline 146 of housing 152 are co-linear.

The four head positions shown in Figs. 6(a)-(d) can be defined by an angle between a centerline of the head and a perpendicular line from the centerline of the housing, and by the perpendicular distance from the centerline of the housing to the centerline of the head where it enters the housing. There could be many more head orientations defined by these two parameters. In addition, the head can be made to swivel

freely along the angle to fixed settings. The head could also be made to swivel freely around its centerline while it is swiveling freely along the angle.

Turning to Figs. 4 and 5, an alternative embodiment of the spools is disclosed. A supply spool 100 is similar in its lower end 102 to spool 68. The upper end 104 of the spool however is different. Spool 100 is made of plastic and is injection molded to have the shape shown in Fig. 4. Spool 100 is partially split lengthwise at end 104 and has a pair of arms 106 and 108. Spool 100 is molded to have a gap 110 between the arms, and a flared portion 109, 111 at the end of each arm. A take-up spool 112 is similar to spool 76 except that an internal annular recess 114 is provided at one end of the spool (half the take-up spool is not shown to facilitate viewing).

Spools 100 and 112 are assembled by pressing arms 106, 108 together and inserting them into an end of spool 112. Gap 110 between the arms allows them to compress sufficiently to fit inside spool 112. Spool 100 is inserted into spool 112 until flared portions 109, 111 of the arms press into annular recess 114 due to the inherent spring characteristics of the arms. Portions 109, 111 and recess 114 hold the spools together. Radially outward force by arms 106 and 108 on surfaces 113 and 115 of take-up spool 112 creates friction between upper spool end 104 and take-up spool 112 to form a friction clutch. Some frictional resistance can also be provided between flanges 116 and 118. This embodiment eliminates the nut and spring of the earlier embodiments.

Referring to Fig. 5, each end portion 120, 122 of a winding region 124 of spool 100 decreases in diameter towards its respective spool end to stabilize a turn in the winding at the end of each layer, in which turn a helix angle of the helically wound tape reverses, and to facilitate that reversal of helix angle between one helical layer and the next helical layer which spirals in the opposite direction. In other words, the maximum winding diameter of each spool (without any tape on the spool) is in the central region of the spool. This same feature is found on spool 112 and the other spools discussed above.

The invention has been described with reference to a preferred embodiment. However, it will be appreciated that variations and modifications can be effected by a person of ordinary skill in the art without departing from the scope of the invention. For example, rather than applying a white, opaque correction layer to a surface, a tinted transparent highlight layer or other type of layer can be applied. Also, a further embodiment can utilize only one spool such as a single supply spool which can deliver a backingless tape, or a single take-up spool which can be driven by a roller applicator head.

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CLAIMS:

1. A dispenser for applying a material to a surface, comprising:

a supply spool rotatable about an axis;

a quantity of material stored on the supply spool in a plurality of widths wide; and

an applicator head about which the material is passed, the head pressing the material against the surface.

2. The dispenser of claim 1, wherein each layer of material on the supply spool is in the form of a helical winding traversing substantially a full length of a winding region of the spool.

3. The dispenser of claim 1, wherein the maximum diameter of a winding region of the supply spool is in the central region of the spool.

4. The dispenser of claim 1, further including a guide, wherein the material from the supply spool passes through the guide before reaching the applicator head, the guide being movable along an axis parallel to the axis of the spool.

5. The dispenser of claim 1, wherein the applicator head is free to rotate about an axis.

6. The dispenser of claim 5, wherein the supply spool and applicator head rotate about the same axis.

7. The dispenser of claim 1, wherein the applicator head can swivel about an axis to fixed orientations.

8. The dispenser of claim 7, wherein the supply spool and applicator head rotate about the same axis.

9. The dispenser of claim 1, further including a housing for containing the spool, the housing being substantially cylindrical in shape.

10. The dispenser of claim 1, wherein the material is for correction.

11. The dispenser of claim 1, wherein the material is selected from the group consisting of materials for masking, highlighting, marking, labeling, transferring decals, scenting, gluing, bonding, adhering, removing debris, and materials in the cosmetic and medical areas.

12. A dispenser for applying a material to a surface, comprising:

a supply spool rotatable about an axis; and

an applicator head about which the material is passed, the head pressing the material against the surface, wherein the applicator head is at least partially located within a cylindrical space of unlimited length generated around the axis of the supply spool with a radius equal to the radius of a supply spool with a full supply of material.

13. The dispenser of claim 12, wherein each layer of material on the supply spool is in the form of a helical winding traversing substantially a full length of a winding region of the spool.

14. The dispenser of claim 12, wherein the maximum diameter of a winding region of the supply spool is in the central region of the spool.

15. The dispenser of claim 12, further including a guide, wherein the material from the supply spool passes through the guide before reaching the applicator head, the guide being movable along an axis parallel to the axis of the spool.

16. The dispenser of claim 12, wherein the applicator head is free to rotate about an axis.

17. The dispenser of claim 16, wherein the supply spool and applicator head rotate about the same axis.

18. The dispenser of claim 12, wherein the applicator head can swivel about an axis to fixed orientations.

19. The dispenser of claim 18, wherein the supply spool and applicator head rotate about the same axis.

20. The dispenser of claim 12, further including a housing for containing the spool, the housing being substantially cylindrical in shape.

21. The dispenser of claim 12, wherein the material is for correction.

22. The dispenser of claim 12, wherein the material is selected from the group consisting of materials for masking, highlighting, marking, labeling, transferring decals, scenting, gluing, bonding, adhering, removing debris, and materials in the cosmetic and medical areas.

23. The dispenser of any one of claims 1-3 and 5-11, wherein the supply spool is also movable along the axis.

24. The dispenser of any one of claims 12-14 and 16-22, wherein the supply spool is also movable along the axis.

25. The dispenser of any one of claims 1 and 5-11, further including a take-up spool rotatable about an axis, the material passing from the supply spool about the applicator head and onto the take-up spool.

26. The dispenser of claim 25, wherein each layer of material on the supply spool and on the take-up spool is in the form of a helical winding traversing substantially a full length of a winding region of each spool.

27. The dispenser of claim 25, wherein the maximum diameters of the supply spool and the take-up spool are in the central region of a winding region of each spool.

28. The dispenser of claim 25, further including first and second guides, wherein the material from the supply spool passes through the first guide before reaching the applicator head, the first guide being movable along an axis parallel to the axis of the supply spool; wherein the material which has passed the applicator head passes through the second guide before being collected on the take-up spool, the second guide being movable along an axis parallel to the axis of the take-up spool.

29. The dispenser of claim 28, wherein the first and second guides are mechanically coupled at a fixed spacing approximately equal to the distance between the centers of the axial lengths of the supply spool and the take-up spool.

30. The dispenser of claim 25, wherein the rotation of the supply spool drives the rotation of the take-up spool by means of one or more mechanical elements.

31. The dispenser of claim 25, wherein the supply spool and the take-up spool are coaxial.

32. The dispenser of claim 30 or 31, further including a clutch which allows variation in a rotation rate of the take-up spool relative to a rotation rate of the supply spool.

33. The dispenser of any one of claims 12 and 13-22, further including a take-up spool rotatable about an axis, the material passing from the supply spool about the applicator head and onto the take-up spool, wherein the applicator head is at least partially located within a cylindrical space of unlimited length generated around the axis of the spool closer to the applicator head or the common axis of coaxial spools, with a radius equal to the radius of the spool closer to the applicator head when this spool is full of material, or for coaxial spools, the larger spool when this spool is full.

34. The dispenser of claim 33, wherein the applicator head is free to rotate about an axis which is the same as the axis of either the supply spool or the take-up spool.

35. The dispenser of claim 33, wherein the spools are movable along their axes.

36. The dispenser of any one of claims 1 and 5-11, further including a take-up spool rotatable about an axis and movable along the axis, the supply spool also being movable along its axis, the material passing from the supply spool about the applicator head and onto the take-up spool, a quantity of material stored on the take-up spool being in a plurality of widths wide.

37. The dispenser of claim 36, wherein each layer of material on the supply spool and on the take-up spool is in the form of a helical winding traversing substantially a full length of a winding region of the spool.

38. The dispenser of claim 36, wherein the maximum diameters of the supply spool and the take-up spool are

in the central region of a winding region of each spool.

39. The dispenser of claim 36, wherein the rotation of the supply spool drives the rotation of the take-up spool by means of one or more mechanical elements.

40. The dispenser of claim 36, wherein the supply spool and the take-up spool are coaxial.

41. The dispenser of claim 39 or 40, wherein a clutch allows variation in a rotation rate of the take-up spool relative to a rotation rate of the supply spool.

42. The dispenser of any one of claims 16-22 and 33, wherein the spools are each movable along their axes, and wherein the applicator head is at least partially located within a cylindrical space of unlimited length generated around the axis of the spool closest to the applicator head or the common axis of coaxial spools, with a radius equal to the radius of the spool closest to the applicator head when this spool is full of material, or for coaxial spools, the largest spool when this spool is full.

43. The dispenser of claim 42, wherein each layer of material on the supply spool and on the take-up spool is in the form of a helical winding traversing substantially a full length of a winding region of the spool.

44. The dispenser of claim 42, wherein the maximum diameters of the supply spool and the take-up spool are in the central region of a winding region each spool.

45. The dispenser of claim 42, wherein the rotation of the supply spool drives the rotation of the take-up spool by means of one or more mechanical elements.

46. The dispenser of claim 42, wherein the supply spool and the take-up spool are coaxial.

47. The dispenser of claim 45 or 46, wherein a clutch allows variation in a rotation rate of the take-up spool relative to a rotation rate of the supply spool.

48. The dispenser of claim 1 or 12, wherein the material is a tape having a width to length ratio of 0.01 or less.

49. The dispenser of claim 1 or 12, wherein the head can flex during use of the dispenser.

50. The dispenser of claim 25, further including a pair of guides for respectively guiding the material off the supply spool and onto the take-up spool, the guides being mounted to move as the material is taken off the supply spool and recovered onto the take-up spool.

51. A dispenser for applying a material to a surface, comprising:

a supply spool rotatable about an axis;

a quantity of unused tape stored on the supply spool;

an applicator head about which the tape is passed, the head pressing the tape against a surface to deposit a transfer layer of the tape onto the surface;

a take-up spool for storing a backing layer of the tape after the transfer layer has been deposited on the surface, the take-up spool being rotatable about the axis;

a housing which surrounds at least a majority of the tape, a substantial portion of the housing being substantially cylindrical in shape; and

means for guiding the tape from the supply spool to the head and from the head to the take-up spool, the applicator head being located substantially along the axis, the spools being movable along the axis, the tape causing movement of the

spools along the axis as the spools are rotated about the axis, the tape being stored on each spool in a plurality of tape layers thick and a plurality of tape widths wide.

52. A dispenser for applying a material to a surface, comprising:

a spool rotatable about an axis;

a quantity of tape stored on the spool; and

an applicator head around which the tape is passed, the head pressing the tape against a surface to deposit at least a portion of the tape on the surface, wherein the applicator head is located substantially along the axis.

53. The dispenser of claim 52, wherein the spool is a supply spool on which is stored unused tape.

54. The dispenser of claim 52, wherein the spool is a take-up spool on which is stored used tape.

55. The dispenser of claim 54, further including a supply spool on which is stored unused tape and which is rotatable about the axis, the tape passing from the supply spool, around the applicator head, and to the take-up spool.

56. The dispenser of claim 52, further comprising:

an axle about which the spool is rotatable, the applicator head being connected to one end of the axle.

57. The dispenser of claim 56, wherein the axle is rotatable about the axis.

58. The dispenser of claim 56, wherein the head is rotatable about the axis.

59. The dispenser of claim 56, wherein the axle and head are rotatable about the axis.

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60. A dispenser for applying a material to a surface, comprising:

a spool rotatable about an axis, the spool being movable along the axis; and

a quantity of tape stored on the spool, the tape causing movement of the spool along the axis as the spool is rotated about the axis.

61. The dispenser of claim 60, wherein the spool is a supply spool which stores unused tape.

62. The dispenser of claim 61, further including a take-up spool for storing used tape, the two spools being joined together such that in the axial dimension they move in unison along the axis.

63. A dispenser for applying a material to a surface, comprising:

a spool; and

a quantity of tape stored on the spool, the tape having a thickness, a width and a length, the tape being stored on the spool in a plurality of tape layers thick and a plurality of tape widths wide.

64. The dispenser of claim 63, wherein the spool is a supply spool which stores unused tape.

65. The dispenser of claim 63, wherein the spool is a take-up spool which stores used tape.

66. The dispenser of claim 63, wherein the spool is a supply spool which stores unused tape, and further comprising a take-up spool for storing used tape which is stored on the take-up spool in a plurality of tape layers thick and a plurality of tape widths wide.

67. The dispenser of claim 63, further comprising:

an applicator head around which the tape is passed; and

means for guiding the tape between the spool and the head, the spool being rotatable about an axis, movement of the tape between the spool and the head causing the spool to move along the axis due to the tape being stored on the spool in a plurality of tape widths wide.

68. The dispenser of claim 67, wherein the spool is a supply spool for storing unused tape.

69. The dispenser of claim 67, wherein the spool is a supply spool for storing unused tape, and further comprising:

a take-up spool for storing used tape, the used tape being stored on the take-up spool in a plurality of tape layers thick and a plurality of tape widths wide; and

means for directing the tape between the head and the take-up spool, movement of the tape from the supply spool, around the head and to the take-up spool causing both spools to move along the axis due to the tape being stored on the supply spool in a plurality of tape widths wide.

70. The dispenser of claim 69, further comprising:

a clutch which allows the two spools to rotate about the axis relative to each other, the spools being joined together such that they move in tandem along the axis.

71. A dispenser for applying a material to a surface, comprising:

a quantity of tape; and

a housing which surrounds at least a majority of the tape, a substantial portion of the housing being substantially cylindrical in shape.

72. A dispenser for applying a material to a surface, comprising:

a spool rotatable about an axis;

a quantity of tape stored on the spool;

an applicator head around which the tape is passed, the head pressing the tape against a surface to deposit at least a portion of the tape on the surface, wherein a

line of contact between the tape and the surface extends in a direction which intersects the axis.

73 The dispenser of claim 72, wherein the line of contact between the tape and the surface extends in a direction which intersects the axis at an acute angle.

74. The dispenser of claim 72, wherein the line of contact between the tape and the surface extends in a direction which intersects the axis at substantially a right angle.

75. The dispenser of claim 63, wherein each tape layer wound on the spool is in the form of a helix traversing substantially a full axial length of a winding region of the spool.

76. The dispenser of claim 75, wherein each end portion of the winding region of the spool decreases in diameter towards its respective spool end to stabilize a turn in the winding at the end of each layer, in which turn a helix angle of the helically wound tape reverses, and to facilitate that reversal of helix angle between one helical layer and the next helical layer which spirals in the opposite direction.

77. The dispenser of any one of claim 6, 8, 17 or 19 further including an axle which is co-linear with the axis, the head being attached to the axle, the spool being rotatable about the axle.

DISPENSER FOR APPLYING A MATERIAL TO A SURFACE

ABSTRACT OF THE DISCLOSURE

A dispenser for applying a material to a surface includes a supply spool rotatable about an axis, a quantity of unused tape stored on the supply spool, and an applicator head about which the tape is passed. The head presses the tape against a surface to deposit a transfer layer of the tape onto the surface. A take-up spool stores a backing layer of the tape after the transfer layer has been deposited on the surface. The take-up spool is also rotatable about the axis. A housing surrounds at least a majority of the tape, a substantial portion of the housing being substantially cylindrical in shape. The tape is guided from the supply spool to the head and from the head to the take-up spool. The applicator head is located substantially along the axis, and the spools are movable along the axis. The tape causes movement of the spools along the axis as the spools are rotated about the axis. The tape is stored on each spool in a plurality of tape layers thick and a plurality of tape widths wide.

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Docket No. PM-245

COMBINED DECLARATION AND POWER OF ATTORNEY

As a below named inventor, I hereby declare that:

My residence, post office address, and citizenship are as stated below next to my name;

I believe I am the original, first, and sole inventor (if only one name is listed below), or an original, first, and joint inventor (if plural names are listed below), of the subject matter which is claimed and for which a patent is sought on the invention entitled:

DISPENSER FOR APPLYING A MATERIAL TO A SURFACE

the specification of which

_X_ is attached hereto.
__ was filed on _____ as Application Serial No. _____ and amended on _____
__ was filed as PCT International Application No. _____ on _____

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to the examination of this application in accordance with Title 37, Code of Federal Regulations, Section 1.56(a).

I hereby claim foreign priority benefits under Title 35, United States Code, Section 119 (a)-(d) and/or Section 172 of any foreign application(s) for patent or inventor's certificate or PCT application(s) (not designating U.S.) listed below and have also identified below any foreign application(s) for patent or inventor's certificate or PCT application(s) (not designating U.S.) filed by me on the same subject matter having a filing date before that of the application on which priority is claimed:

Country	Application No.	Filing Date	Priority Claimed

I hereby claim the benefit under Title 35, United States Code, Section 119(e) of any United States provisional application(s) listed below:

Provisional Application Number	Filing Date

I hereby claim the benefit under Title 35, United States Code, Section 120 of any United States application(s) or PCT application (designating U.S.) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior application(s) in the manner provided by the first paragraph of Title 35, United States Code, Section 112, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, Section 1.56(a) which occurred between the filing date of the prior application(s) and the national or PCT international filing date of this application:

Application Serial No.	Filing Date	Status

I hereby appoint the following attorneys to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith, and to file and prosecute national, international, and regional applications which claim priority from this application:

Donal B. Tobin (Reg. No. 25,711)
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Edward S. Podszus (Reg. No. 35,983)
David A. Howley (Reg. 34,624)
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I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true, and further, that these statements were made with knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

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Citizenship: United States Date: _____

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_____

Residence Address Same

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Residence Address Same

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Inventor's signature: _____

Citizenship: United States Date: _____

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_____

Residence Address Same

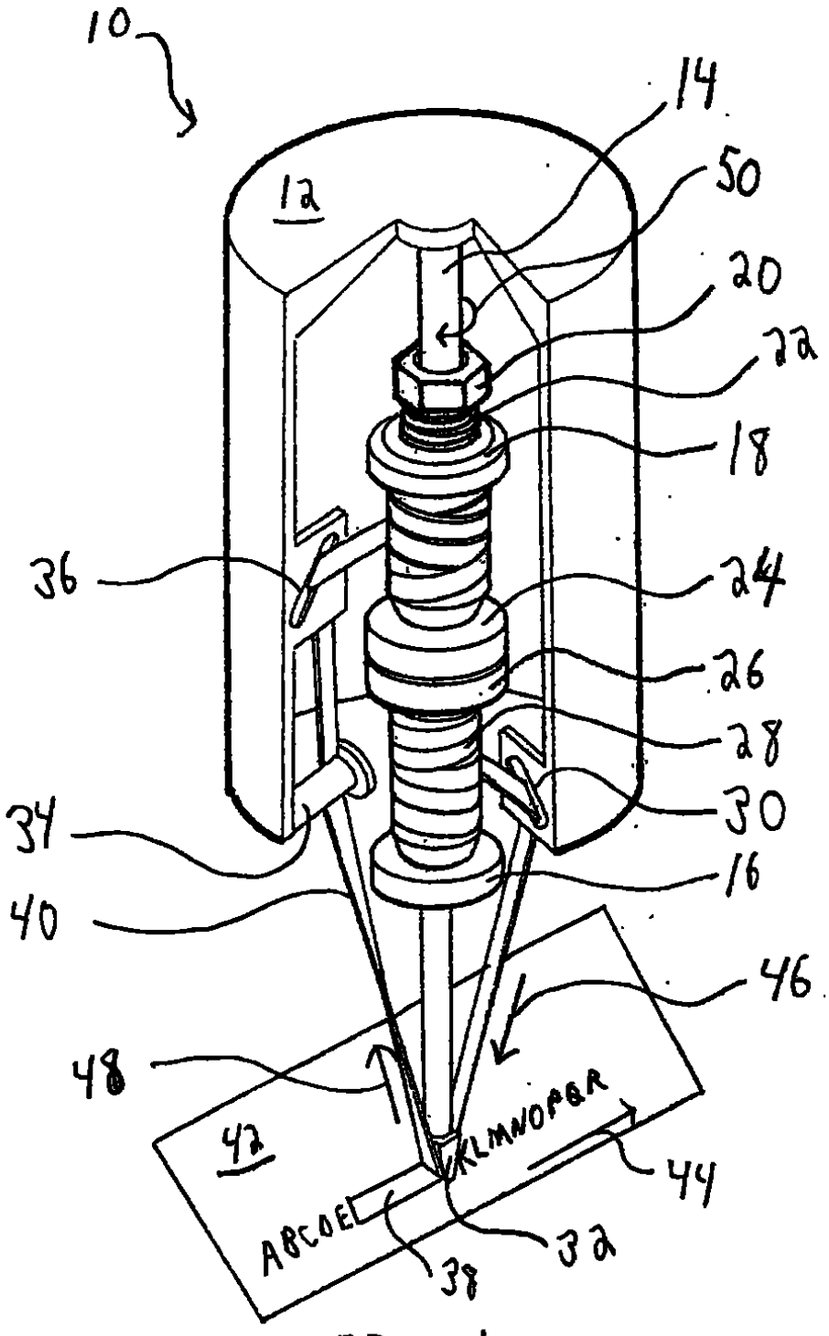

FIG. 1

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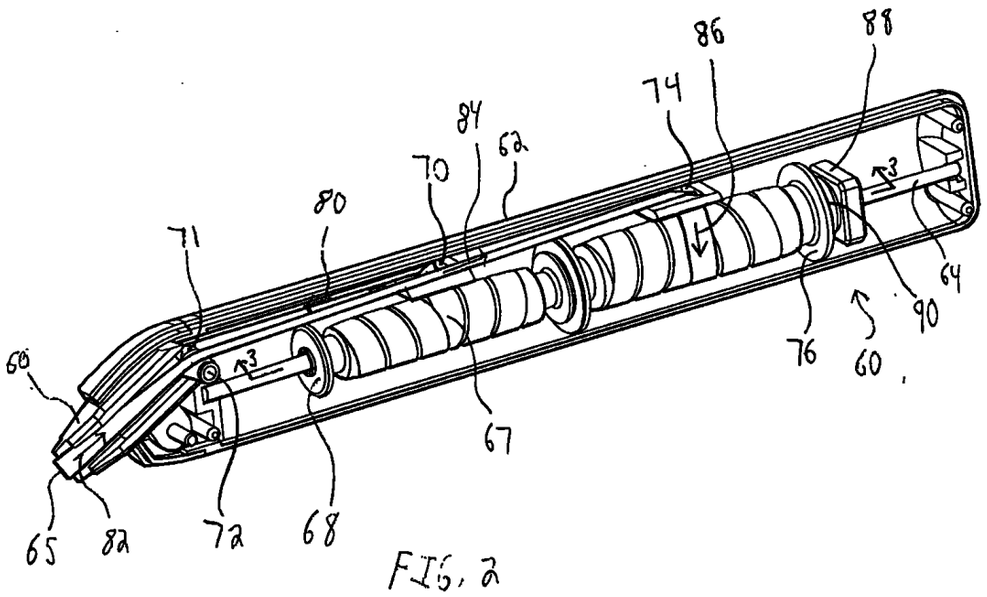


FIG. 2

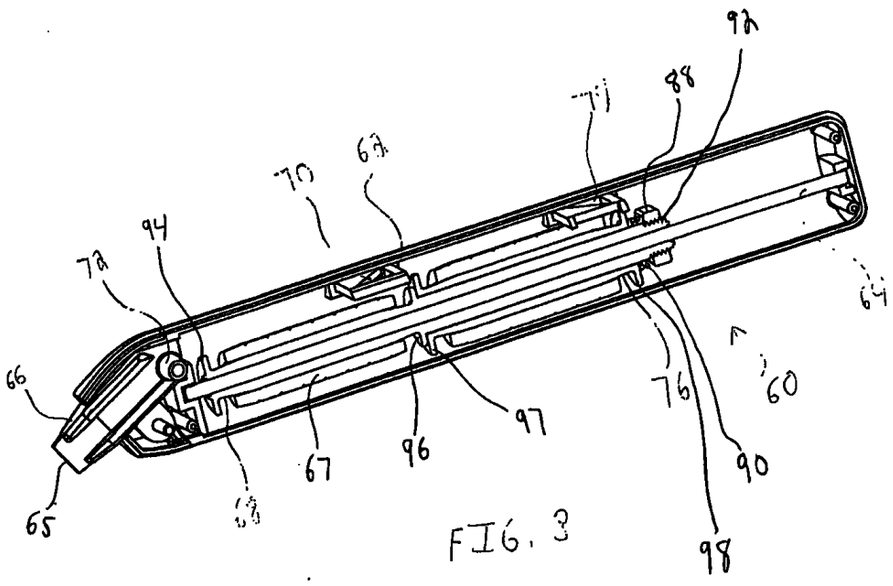


FIG. 3

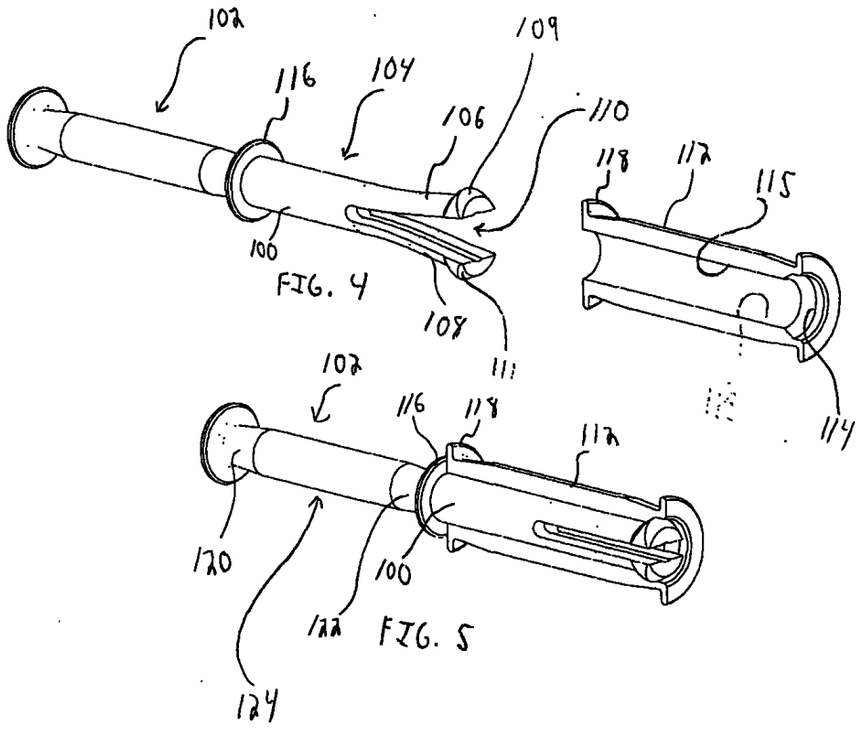
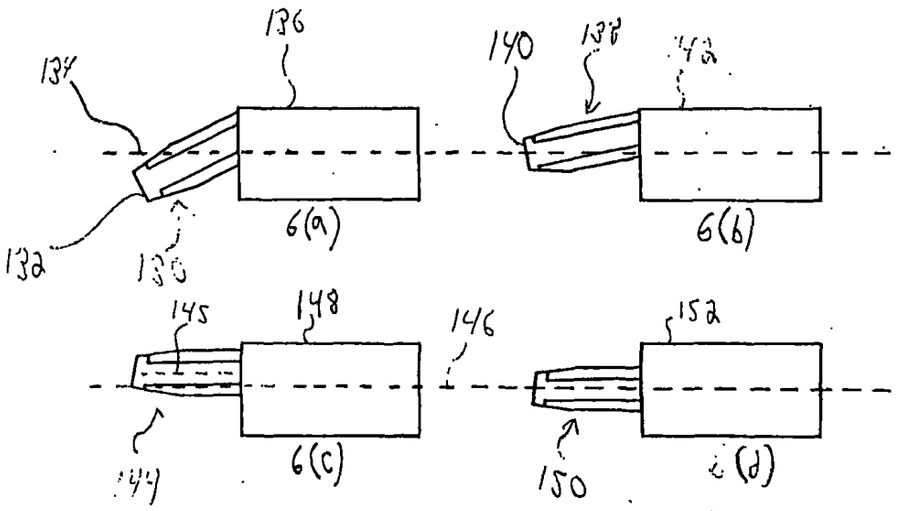


FIG. 4

FIG. 5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The Gillette Company 00.066.678

REF: LLC-100-2000. La presente es Traducción Oficial de un documento presentado originalmente en inglés. Esta traducción es elaborada por Gabriel Rueda Chadid (Traductor Oficial).

ESTADOS UNIDOS DE AMERICA

A TODOS AQUELLOS QUE LLEGAREN A LEER EL CONTENIDO DEL PRESENTE DOCUMENTO LES CERTIFICAMOS:

DEPARTAMENTO DE COMERCIO DE LOS ESTADOS UNIDOS

Oficina de Marcas y Patentes de los Estados Unidos

Septiembre 29, 2000

Se certifica que anexo se encuentra fiel copia de los Registros de la Oficina de Marcas y Patentes de los Estados Unidos correspondientes a los documentos de la patente solicitada y cuya identificación aparece más adelante, la cual cumplió con los requerimientos exigidos para que se otorgue una fecha de presentación de acuerdo con los dispuesto en la Sección 35 USC 111.

Número de Solicitud: 09/556.598

Fecha de presentación: Abril 21, 2000

Por autorización del

COMISIONADO DE MARCAS REGISTRADAS Y PATENTES

T. WALLACE

Funcionario Encargado de Certificaciones (Hay firma y sello)

GABRIEL RUEDA CHADID
TRADUCTOR OFICIAL
RESOLUCION 5996 DE NOV. 29-83
MINISTERIO DE JUSTICIA

FISH & RICHARDSON P.C.

Abril 21, 2000
Expediente No. 00216-503001
Solicitudes de Patente
Comisionado de Patentes
Washington, DC 20231

Presentado para radicar como nueva solicitud de patente original de:

Solicitante: CRISPIN M. MILLER Y JEAN L. SPENCER
Título: DISPENSADOR PARA APLICACION DE UN MATERIAL A UNA SUPERFICIE

Adjunto se encuentran los siguientes documentos, que incluyen los requeridos para recibir una fecha de radicación conforme al 37 CFR 1.53(b):

	Páginas
Especificaciones	18
Reivindicaciones	5
Abstract	1
Declaración	(ha radicarse en fecha posterior)
Diagramas	19

Anexos:

- Tarjeta postal

Formulario básico de radicación	0	$690
Total de reivindicaciones por encima de 20 de veces	$18	$324
Reivindicaciones independientes por encima de 3 veces	$78	$234
Honorario por múltiples reivindicaciones dependientes		$260
Honorarios de radicación total:		$1508

GABRIEL RUEDA CHARRID
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MINISTERIO DE JUSTICIA

De acuerdo a 37 CFR 1.53(d), no se pagan honorarios de radicación en esta vez.

CERTIFICADO DE ENVIO POR CORREO EXPRESO

No. de la Etiqueta del Correo: **EL245474681US**

Certifico de acuerdo a 37 CFR 1.10 que esta correspondencia está siendo depositada en el Servicio Postal de los Estados Unidos como Correo Expreso para el Destinatario con suficiente Cargo Postal en la fecha que abajo se indica y está dirigida al Comisionado de Patentes, Washington, D.C., 20231.

Fecha de Depósito: Abril 21, 2000

Firmado: (Hay firma)

En el letra tipo de imprenta nombre de la personas que firman el certificado: (firmado)

Si está aplicación se encontrase incompleta, o si fuese necesaria, útil una conversación telefónica, por favor llamar al suscrito al (617) 542-5070.

Sírvase dar reconocimiento del recibo de esta solicitud devolviendo la tarjeta postal adjunta.

Por favor enviar toda la correspondencia a:

ROBERT C. NABINGER
Fish & Richardson P.C.
225 Franklin Street
Boston, MA 02110-2804

Atentamente,

(Firmado) Reg. No. 35,306
Celia H. Leber
Reg. No. 33,524

GABRIEL RUEDA CHALDID
TRADUCTOR OFICIAL
RESOLUCION 5996 DE NOV. 29-83
MINISTERIO DE JUSTICIA

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SOLICITUD DE PATENTE

DE LOS ESTADOS UNIDOS

a nombre de

Crispin M. Miller y Jean L. Spencer

para

DISPENSADOR PARA APLICACION DE UN MATERIAL A UNA SUPERFICIE

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EXPEDIENTE LEGAL: 00216-503001

FECHA DE DEPOSITO: Abril 21, 2000

No. CORREO EXPRESO: EM EL245474681US

GABRIEL PUEDA CI[illegible]
TRADUCTOR OFICIAL
RESOLUCION 5996 DE NOV. 29-02
MINISTERIO DE JUSTICIA

REIVINDICACIONES **Expediente No. 00216-503001**

1. Un dispensador para aplicar un material a una superficie, que comprende:

una caja, que al menos una buena parte de la cual sea sustancialmente cilíndrica;

dentro de la caja un carrete de suministro rotatorio alrededor de un eje y una cantidad de material depositado sobre el carrete de suministro que una pluralidad de anchos; y

un extremo de la caja, una cabeza aplicadora alrededor de la cual pasa el material, estando la cabeza construida de forma que oprima el material contra la superficie, llevando la cabeza un borde, sobre el cual pasa el material, que es dispuesto en un ángulo de más de 5 grados en relación con una línea que es perpendicular al eje central longitudinal de la caja.

2. El dispensador de la reivindicación 1 en el que el borde está dispuesto en un ángulo de más de 20 grados con relación a dicha línea.

3. El dispensador de la reivindicación 1 en el que el borde está dispuesto en un ángulo desde cerca de 5 hasta 30 grados con relación a dicha línea.

4. El dispensador de la reivindicación 3 en el que el borde está dispuesto en un ángulo de desde unos 10 hasta 20 grados con relación a dicha línea.

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MINISTERIO DE JUSTICIA

5. El dispensador de la reivindicación 1 en el que el borde está dispuesto en un ángulo de cerca de 15 grados con relación a dicha línea.

6. El dispensador de la reivindicación 1 en el que el eje central longitudinal de la caja pasa a menos de 1 mm del punto medio de la longitud de dicho borde.

7. El dispensador de la reivindicación 6 en el que el eje central longitudinal de la caja pasa a través del punto medio de la longitud de dicho borde.

8. El dispensador de la reivindicación 1 en el que dicha cabeza aplicadora presenta una flexión relativamente plana cuando se oprime contra una superficie.

9. El dispensador de la reivindicación 1 en el que dicha cabeza aplicadora presenta una flexión similar al borde cuando se oprime contra la superficie.

10. El dispensador de la reivindicación 8 o 9 en el que dicho borde es definido por un miembro que está montado sobre una lengüeta flexible.

11. El dispensador de la reivindicación 1 en el que dicho material es una cinta correctora.

12. El dispensador de la reivindicación 1 en el que la cabeza aplicadora está construida para girar alrededor de un eje.

13. El dispensador de la reivindicación 12 en el que la cabeza aplicadora gira alrededor del eje de rotación del carrete de suministro.

14. Un dispensador para aplicar un material a una superficie, que comprende:

una caja de la que al menos una buena parte sea sustancialmente cilíndrica;

dentro de la caja, un carrete de suministro rotatorio alrededor de un eje y una cantidad del material depositado sobre el carrete de suministro que una pluralidad de anchos, siendo el eje de rotación del carrete sustancialmente paralelo al eje longitudinal de la caja; y

en un extremo de la caja, una cabeza aplicadora alrededor de la cual pasa el material, estando la cabeza construida para oprimir el material contra la superficie, llevando la cabeza un borde, por el cual pasa el material, que es colocado en posición de modo que su punto medio longitudinal este en las vecindades del eje central longitudinal de la caja de modo que la caja no gire en forma significativa alrededor de su eje central longitudinal cuando el borde es presionado contra una superficie durante el uso.

15. El dispensador de la reivindicación 14 en el que el punto medio está a menos de 1 mm del eje central longitudinal.

16. El dispensador de la reivindicación 15 en el que el punto medio descansa en el eje central longitudinal.

17. El dispensador de la reivindicación 14 en el que dicho material es una cinta correctora.

18. Un dispensador para aplicación de un material a una superficie, que comprende:

una caja que al menos en buena parte es sustancialmente cilíndrica;

dentro de la caja, un carrete de suministro rotatorio alrededor de un eje y una cantidad de material depositado sobre el carrete de suministro en una pluralidad de anchos, siendo el eje de rotación del carrete sustancialmente paralelo al eje longitudinal de la caja; y

en un extremo de la caja, una cabeza aplicadora alrededor de la cual pasa el material, estando la cabeza construida para oprimir el material contra la superficie, teniendo la cabeza un miembro bruñidor que define un borde, sobre el cual pasa el material;

estando el miembro bruñidor montado sobre una lengüeta sobresaliente de modo que permita al miembro bruñidor flexionarse en forma plana cuando el borde es presionado contra la superficie.

19. El dispensador de la reivindicación 18 en el que la lengüeta está construida para permitir al miembro bruñidor flexionarse como este el borde cuando el borde es sometido a una carga sobre el borde.

20. El dispensador de la reivindicación 18 donde el borde está dispuesto en un ángulo de más de 5 grados con

relación a la línea que es perpendicular al eje central longitudinal de la caja.

21. El dispensador de la reivindicación 18 donde el eje central longitudinal de la caja pasa a menos de 1 mm del punto medio longitudinal de dicho eje.

22. El dispensador de la reivindicación 18 donde el eje central longitudinal de la caja pasa a través del punto medio longitudinal de dicho borde.

23. Un dispensador para manejar un material a una superficie, que comprende:

un carrete de suministro rotatorio alrededor de un eje;

una cantidad de cinta sin usar depositada sobre el carrete en el suministro;

una cabeza aplicadora alrededor de la cual pasa la cinta, oprimiendo la cabeza la cinta contra una superficie para depositar una capa de transferencia de la cinta sobre la superficie, definiendo la cabeza un borde por encima del cual pasa la cinta, estando el borde dispuesto en un ángulo de más de 5 grados con relación a la línea que es perpendicular al eje central longitudinal de la caja;

una caja que rodea por lo menos una mayor parte de la cinta, parte sustancial de la caja estando sustancialmente en forma cilíndrica; y

una superficie de soporte construida para sostener la cinta en la medida en que se mueve desde el carrete de suministro hasta el borde de una manera que evite que la

cinta quede sujetada a una carga del borde significativa.

24. El dispensador de la reivindicación 23, en el que dicha superficie de soporte comprende una superficie sustancialmente continua.

25. El dispensador de la reivindicación 24, donde dicha superficie de soporte comprende una parte en forma de rampa y una forma cónica.

26. El dispensador de la reivindicación 23, donde dicha superficie de soporte comprende una superficie segmentada discontinua.

27. El dispensador de la reivindicación 26 donde dicha superficie segmentada comprende una serie de guías espaciadas, postes, o lengüetas.

28. Un dispensador para aplicación de un material a una superficie, que comprende:

un carrete de suministro rotatorio alrededor del eje;

una cantidad de cinta sin usar depositada sobre el carrete de suministro;

una cabeza aplicadora alrededor de la cual pasa la cinta, oprimiendo la cabeza la cinta contra una superficie para depositar una capa de transferencia de la cinta sobre la superficie, definiendo la cabeza un borde sobre el cual pasa la cinta;

una caja que rodea por lo menos la mayor parte de la cinta; y

una superficie de soporte construida para sostener la cinta en la medida en que se mueve desde el carrete del suministro hasta el borde para permitir la aventación del plano de la cinta para cambiar desde sustancialmente paralelo al eje a sustancialmente perpendicular al mismo sobre una distancia parcial de menos de unos 30 mm.

29. El dispensador de la reivindicación 28 donde el eje longitudinal de la cinta está encorvado durante el cambio de orientación.

30. El dispensador de la reivindicación 28 donde la superficie de soporte está configurada para permitir que se presente el cambio de orientación dentro de una distancia radial de menos de unos 5 mm.

31. Un dispensador para aplicación de un material a una superficie, que comprende:

un carrete de suministro rotatorio alrededor de un eje;

una cantidad de cinta sin usar depositada sobre el carrete de suministro;

una cabeza aplicadora alrededor de la cual pasa la cinta, oprimiendo la cabeza la cinta contra una superficie para depositar una capa de transferencia de la cinta sobre la superficie, definiendo la cabeza un borde sobre el cual pasa la cinta, estando el eje del borde dispuesto en un ángulo no mayor a 5 grados con relación a la línea que es perpendicular

al eje central longitudinal de la caja;

una caja que rodea por lo menos la mayor parte de la cinta, parte sustancial de la caja siendo de forma sustancialmente cilíndrica; y

una superficie de soporte construida para sostener la cinta en la medida en que se mueve desde el carrete de suministro hasta el borde, siendo la superficie de soporte configurada de tal modo que ambos bordes de la cinta atraviesen la misma distancia en la medida en que la cinta pasa entre el carrete de suministro y el borde.

32. El dispensador de la reivindicación 23, 28 o 31, donde el material comprende una cinta correctora, que lleva una capa correctora sobre una superficie.

33. El dispensador de la reivindicación 32, donde la superficie de soporte está configurada para sostener la cinta solamente sobre la superficie opuesta a la superficie que lleva la capa correctora.

La anterior es Traducción Oficial de un documento presentado originalmente en inglés. Esta traducción fue realizada por **GABRIEL RUEDA CHADID (Traductor Oficial)**. Resolución 5996 del Minjusticia, por lo cual estampo mi Sello y Firmo.

Bogotá D.C., Octubre 30 del 2000.

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APPLICATION NUMBER: ***09/556,598***
FILING DATE: ***April 21, 2000***

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April 21, 2000

Attorney Docket No.: 00216-503001

Box Patent Application
Commissioner of Patents
Washington, DC 20231

Presented for filing is a new original patent application of:

Applicant: CRISPIN M. MILLER AND JEAN L. SPENCER

Title: DISPENSER FOR APPLYING A MATERIAL TO A SURFACE

BOSTON
DELAWARE
NEW YORK
SAN DIEGO
SILICON VALLEY
TWIN CITIES
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Enclosed are the following papers, including those required to receive a filing date under 37 CFR 1.53(b):

	Pages
Specification	18
Claims	5
Abstract	1
Declaration	[To be Filed at a Later Date]
Drawing(s)	19

Enclosures:
— Postcard.

Basic filing fee	$690
Total claims in excess of 20 times $18	$324
Independent claims in excess of 3 times $78	$234
Fee for multiple dependent claims	$260
Total filing fee:	$1508

Under 37 CFR §1.53(d), no filing fee is being paid at this time.

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APPLICATION FOR UNITED STATES PATENT

in the names of

Crispin M. Miller and Jean L. Spencer

for

Dispenser for Applying a Material to a Surface

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DATE OF DEPOSIT: April 21, 2000

EXPRESS MAIL NO.: EM EL245474681US US

Dispenser for Applying a Material to a Surface

This application is a Continuation-in-Part of U.S. Serial No. 09/390,965, filed September 7, 1999.

TECHNICAL FIELD

The invention relates generally to the field of dispensers, and in particular to dispensers from which a material is deposited onto a surface from a tape, e.g., a correction tape, stored in the dispenser.

BACKGROUND

Correction tape dispensers are used to apply a thin, white, opaque piece of correction tape over visible markings which have been made on a surface. Typically, the tape is used to cover a mistake in text on a piece of paper. After the tape has been applied over the mistake, the correct text can be written on top of the tape to fix the mistake.

U.S. Patent 5,490,898 discloses a fairly typical arrangement of a correction tape dispenser (coating film transfer tool). The tool includes a case 2 formed in a flat box-like shape. Case 2 contains a pay-out reel 6 with a coating film transfer tape T wound thereabout, and a winding reel 7 for collecting the used tape T'. A tape drive D connects the two reels to maintain tension in the tape. The tape includes a backing layer which remains on the reels, and a covering layer for covering the visible image on the surface. Tape T passes around a transfer head H as the tape travels from reel 6 to reel 7. The arrangement of head H causes the tape covering layer to be deposited on the surface contacted by the tape while under pressure from the user.

Tape T and used tape T' are stored respectively on reels 6 and 7 in a multi-layer thick/single-layer wide arrangement. This way of storing the tape on the reels, and the arrangement of the reels relative to each other and to head H causes the case to have the flat box-like shape. Having this case in such a shape is less than optimal for a correction tape dispenser. First, the case can at least partially block the user's view of the material being

corrected. Second, users would find a dispenser shaped more along the lines of a writing instrument (e.g. a cylindrically shaped pen or pencil) more natural to use when correcting writing on paper.

U.S. Patent 5,049,229 discloses an apparatus for the application of an adhesive film in which the supply reel 5 and take-up reel 11 are both mounted on a shaft or axis 9. The tape is stored on these reels in a manner similar to that described in the previous paragraph (i.e. a multi-layer thick/single-layer wide arrangement). Such an arrangement also results in an apparatus shape having the drawbacks mentioned at the end of the previous paragraph.

SUMMARY

The present invention is directed to overcoming one or more of the problems set forth above. Briefly summarized, according to one aspect of the present invention, a dispenser for applying a material to a surface includes a spool rotatable about an axis and a quantity of tape stored on the spool. The tape is passed around an applicator head, the head pressing the tape against a surface to deposit at least a portion of the tape on the surface. The applicator head is located substantially along the axis.

Preferred dispensers of the invention are similar in shape to a writing instrument, and thus are naturally and comfortably wielded by a user of the dispenser.

In one aspect, the invention features a dispenser for applying a material to a surface, including a housing, at least a major portion of which is substantially cylindrical; within the housing, a supply spool rotatable about an axis and a quantity of material stored on the supply spool in a plurality of widths wide; and, at one end of the housing, an applicator head about which the material is passed, the head being constructed to press the material against the surface, the head having an edge, over which the material passes, that is disposed at an angle of greater than 5 degrees relative to a line that is perpendicular to the longitudinal center axis of the housing.

Preferred implementations of this aspect of the invention may include one or more of the following features. The edge is disposed at an angle of greater than 20 degrees relative to the line, more preferably an angle of from about 5 to 30 degrees, and most preferably an

angle of from about 10 to 20 degrees, e.g., about 15 degrees. The longitudinal center axis of the housing passes within 1 mm of the lengthwise midpoint of the edge, more preferably through the midpoint. The applicator head exhibits flat-wise flexure when pressed against a surface. The applicator head exhibits edge-wise flexure when pressed against a surface. The edge is defined by a member that is mounted on a flexible tongue. The material is a correction tape. The applicator head is constructed to pivot about an axis. The applicator head pivots about the axis of rotation of the supply spool.

In another aspect, the invention features a dispenser for applying a material to a surface, including a housing, at least a major portion of which is substantially cylindrical; within the housing, a supply spool rotatable about an axis and a quantity of material stored on the supply spool in a plurality of widths wide, the axis of rotation of the spool being substantially parallel to the longitudinal axis of the housing; and, at one end of the housing, an applicator head about which the material is passed, the head being constructed to press the material against the surface. The head has an edge, over which the material passes, that is positioned so that its lengthwise midpoint is in the vicinity of the longitudinal center axis of the housing so that the housing will not rotate to any significant extent about its longitudinal center axis when the edge is pressed against a surface during use.

Preferred implementations of this aspect of the invention may include one or more of the following features. The midpoint is within 1 mm of the longitudinal center axis, more preferably the midpoint lies on the longitudinal center axis. The material is a correction tape.

In another aspect, the invention features a dispenser for applying a material to a surface, including a housing, at least a major portion of which is substantially cylindrical; within the housing, a supply spool rotatable about an axis and a quantity of material stored on the supply spool in a plurality of widths wide, the axis of rotation of the spool being substantially parallel to the longitudinal axis of the housing; and, at one end of the housing, an applicator head about which the material is passed, the head being constructed to press the material against the surface, the head having a burnishing member defining an edge over which the material passes. The burnishing member is mounted on a cantilevered tongue so as to allow the burnishing member to flex flat-wise when the edge is pressed against a surface.

Preferred implementations of this aspect of the invention may include one or more of the following features. The tongue is constructed to allow the burnishing member to flex edge-wise when the edge is subjected to an edge-wise load. The edge is disposed at an angle of greater than 5 degrees relative to a line that is perpendicular to the longitudinal center axis of the housing. The longitudinal center axis of the housing passes within 1 mm of the lengthwise midpoint of said edge, preferably the longitudinal center axis of the housing passes through the lengthwise midpoint of said edge.

In another aspect, the invention features a dispenser for applying a material to a surface, including (a) a supply spool rotatable about an axis; a quantity of unused tape stored on the supply spool; (b) an applicator head about which the tape is passed, the head pressing the tape against a surface to deposit a transfer layer of the tape onto the surface, the head defining an edge over which the tape passes, the edge being disposed at an angle of greater than 5 degrees relative to a line that is perpendicular to the longitudinal center axis of the housing; (c) a housing which surrounds at least a majority of the tape, a substantial portion of the housing being substantially cylindrical in shape; and (d) a support surface constructed to support the tape as it moves from the supply spool to the edge in a manner that prevents the tape from being subjected to a significant edgewise load.

Preferred implementations of this aspect of the invention may include one or more of the following features. The support surface includes a substantially continuous surface. The support surface includes a ramped portion and a conical portion. The support surface includes a discontinuous, segmented surface. The segmented surface comprises a series of spaced guides, posts or pegs. The material comprises a correction tape, carrying a correction layer on one surface. The support surface is configured to support the tape only on the surface opposite the surface carrying the correction layer.

In a further aspect, the invention features a dispenser for applying a material to a surface, including (a) a supply spool rotatable about an axis; (b) a quantity of unused tape stored on the supply spool; (c) an applicator head about which the tape is passed, the head pressing the tape against a surface to deposit a transfer layer of the tape onto the surface, the head defining an edge over which the tape passes; (e) a housing which surrounds at least a majority of the tape; and (f) a support surface constructed to support the tape as it moves from the supply spool to the edge to allow the orientation of the plane of the tape to change

from substantially parallel to the edge to substantially perpendicular thereto over an axial distance of less than about 30 mm.

Preferred implementations of this aspect of the invention may include one or more of the following features. The longitudinal axis of the tape is curved during the change of orientation. The support surface is configured to allow the change of orientation to occur within a radial distance of less than about 5 mm. The material comprises a correction tape, carrying a correction layer on one surface. The support surface is configured to support the tape only on the surface opposite the surface carrying the correction layer.

In yet another aspect, the invention features a dispenser for applying a material to a surface, including (a) a supply spool rotatable about an axis; (b) a quantity of unused tape stored on the supply spool; (c) an applicator head about which the tape is passed, the head pressing the tape against a surface to deposit a transfer layer of the tape onto the surface, the head defining an edge over which the tape passes, the edge being disposed at an angle of greater than 5 degrees relative to a line that is perpendicular to the longitudinal center axis of the housing; (d) a housing which surrounds at least a majority of the tape, a substantial portion of the housing being substantially cylindrical in shape; and (e) a support surface constructed to support the tape as it moves from the supply spool to the edge, the support surface being configured so that both edges of the tape travel the same distance as the tape moves between the supply spool and the edge.

Preferred implementations of this aspect of the invention may include one or more of the following features. The material comprises a correction tape, carrying a correction layer on one surface. The support surface is configured to support the tape only on the surface opposite the surface carrying the correction layer.

Other features and advantages of the invention will be apparent from the description and drawings, and from the claims.

DESCRIPTION OF DRAWINGS

Fig. 1 is a perspective view of a first embodiment of a correction tape dispenser according to the invention;

Fig. 2 is a perspective view of a second embodiment of a correction tape dispenser;

Fig. 3 is a partial sectional view of Fig. 2 taken along the lines 3-3;

Fig. 4 is a partial sectional exploded view of an alternative pair of spools usable in the invention;

Fig. 5 is a partial sectional view of the spools of Fig. 4 assembled together;

Figs. 6(a)-(d) are schematic side views showing various orientations of an applicator head to its housing;

Fig. 7 is a perspective view of a correction tape dispenser according to an alternate embodiment of the invention;

Fig. 7(a) is a side cross-sectional view of the correction tape dispenser of Fig. 7;

Fig. 7(b) is an axial cross-sectional view of the correction tape dispenser of Fig. 7(a), taken along line B-B;

Fig. 8 is a side view of the tip portion of the correction tape dispenser of Fig. 7;

Fig. 9 is a partial enlarged perspective view of an alternate tip portion, showing the tape bed;

Fig. 9(a) is a perspective view of a correction tape traveling along a tape bed having a shape similar to that shown in Fig. 9;

Figs. 10 and 10(a) are, respectively, a perspective view and a top view of the shape of the correction tape as it travels along the tape bed in the path shown in Fig. 9(a);

Fig. 11 is a diagram showing the layout of a pattern of bends that will give the tape path shown in Figs. 9(a), 10 and 10(a);

Fig. 12 is a partial enlarged side view of a tip portion according to one embodiment of the invention;

Fig. 13 is a partial enlarged perspective view of a tip portion according to an alternate embodiment of the invention;

Fig. 13(a) is a partial further enlarged perspective view of the tip portion of Fig. 13, with a portion of the tongue and burnishing member cut away;

Fig. 14 is a partial enlarged perspective view of a tip portion according to another alternate embodiment of the invention;

Fig. 14(a) is view similar to Fig. 14, but taken from a different orientation, showing the axes of rotation of the tongue portion;

Fig. 15 is a partial enlarged perspective view of a tip portion according to another alternate embodiment of the invention.

DETAILED DESCRIPTION

Beginning with Fig. 1, a correction tape dispenser 10 includes a housing 12, a portion of which has been removed to facilitate viewing of the inside of the dispenser. The housing is preferably made of plastic and is substantially cylindrical in shape. An axle 14 extends down from the top of the housing. A cross section of housing 12 taken perpendicular to the axle is preferably circular or oval in shape (the housing diameter has been exaggerated for clarity). The axle is fixed to the housing such that it can either (a) rotate about its long axis, or (b) not rotate about its long axis. If the axle is rotatable, this allows an applicator head 32 secured to an end of the axle to rotate freely about the long axis of the axle. Alternatively, the axle can be arranged to be manually rotated to fixed orientations about its long axis by a ratcheting mechanism (not shown) so that the head can be rotated or swiveled to fixed orientations about the long axis of the axle.

A supply spool 16 and a take-up spool 18 are rotatably supported on axle 14. The spools are secured together by a nut 20 and spring 22, and a flange 24 of spool 18 and a flange 26 of spool 16 interface to form a clutch between the two spools (operation of the nut, spring and flanges will be explained in more detail below with respect to Fig. 3). As a result, spools 16 and 18 are movable in unison along axle 14 and can rotate freely about the axle, although the clutch provides some resistance to the spools rotating about the axle relative to each other.

A supply of unused correction tape 28 is stored on spool 16. The tape has a thickness, width and length, and is stored on spool 16 in a plurality of layers thick and a plurality of widths wide (similar to thread on a spool). The tape may be wound helically, as will be discussed below, or in any suitable manner. Preferably the tape has a width to length ratio of 0.01 or less. Tape 28 is guided off spool 16 by a first guide slot 30 which extends inward of the housing. The tape then passes around an applicator head 32, past a guide bar 34, through a second guide slot 36, and onto take-up spool 18. Head 32 is preferably made of plastic, thus allowing the head to flex during use.

Head 32 is at least partially located within an imaginary cylindrical space of unlimited length generated around axis 14. The radius of this cylindrical space is equal to the radius of the large spool when this spool is full (in this case the take-up spool). If the two spools were not coaxial, then this cylindrical space would be generated around the axis of the

spool closer to head 32, with the radius of the cylindrical space equal to the radius of the spool when this spool is full.

As is well known in the art, the tape includes a masking layer 38 and a backing layer 40. To use the dispenser, a user grasps housing 12, presses head 32 against a surface 42 (in this case the head contacts surface 42 just after the letter "E"), and moves the dispenser in the direction of an arrow 44. This causes tape 28 to unwind from spool 16, move in the direction of arrows 46 and 48, and wind up on spool 18. This tape movement causes the spools to rotate in the direction of arrow 50. The tape movement also causes the spools to move up or down along axis 14 because guide slots 30, 36 are fixed on the housing and the tape unwinds from spool 16 back and forth from one end of the spool to the other. Rather than a masking layer, the tape may alternatively carry a layer of material for highlighting, marking, labeling, transferring decals, scenting, gluing, bonding, adhering, removing debris, or applications in the cosmetic and medical areas.

Alternatively, the spools can be fixed so that they do not move up and down along axis 14 while guides 30, 36 are each mounted for coordinated movement on a rod (not shown) which is parallel to axis 14. As such, the guides will move up and down on their respective rods as the tape unwinds from supply spool 16 and rewinds onto take-up spool 18 while the spools themselves will not move up and down along the axis.

As is well known in the art, the adherence of masking layer 38 to surface 42 (e.g. one side of a piece of paper) is greater than the adherence of masking layer 38 to backing layer 40. As a result, masking layer 38 peels away from backing layer 40 and adheres to surface 42, covering up some letters in the process. When the dispenser is lifted off surface 42, masking layer 38 on surface 42 tears free from the masking layer still on tape 28.

The diameter of the take-up spool is greater than the diameter of the supply spool. The reason for this diameter difference is to enable the take-up spool to rewind the backing layer faster than the new tape is being paid out from the supply spool, thereby taking up any slack that may inadvertently be created at head 32. This diameter difference would cause a steady increase in tape tension as the dispenser is used, but the clutch between the two spools 16, 18 relieves this tension buildup and maintains a fairly constant tension in tape 28.

Turning to Figs. 2 and 3, a second embodiment of the invention will be described. Many of the features of this embodiment are similar to features found in the first

embodiment. A correction tape dispenser 60 includes a housing 62 which is substantially cylindrical (having a circular or oval cross section) along most of its length (1/2 the housing is not shown to facilitate viewing of the inside of the dispenser). The dimensions of this housing are similar to that of a writing instrument such as a porous-tip marker. The design can be altered so that the housing dimensions approach those of a traditional pen.

In this embodiment an axle 64 is secured to a forward and rearward part of the housing. The axle does not rotate about its long axis. An applicator head 66 is secured to the housing rather than to the axle as in Fig. 1. Although head 66 is shown as having an edge 65 about which the tape is wrapped, edge 65 could be replaced by an alternative arrangement such as a cylindrical roller. Edge 65 lies on a line of contact between the tape and the surface being corrected. This line extends in a direction that intersects the axis about which the spools rotate. In this embodiment the line and axis intersect at an acute angle, while in the Fig. 1 embodiment, they intersect at a right angle. In other embodiments, the line may pass near the axis without intersecting it.

The path of tape 67 in this embodiment has some similarities to the tape path in the first embodiment (Fig. 1). The tape unwinds from a supply spool 68 and passes through a guide slot 70. The tape then travels down the dispenser, passes over a cylindrical guide 71 (Fig. 2) and twists about 90 degrees about its longitudinal axis behind head 66 as viewed in Figs. 2 and 3. Guide 71 is tapered and somewhat conical (a truncated cone) to facilitate the tape veering toward a midplane of the dispenser. After wrapping around head 66, tape 67 again twists about 90 degrees about its longitudinal axis, and passes over another cylindrical guide 72 which is similar in shape to guide 71. The tape then extends over guide slot 70 and passes through a second guide slot 74, after which the used tape is wound onto take-up spool 76. With the tape coming off the side of spool 68 facing the housing (as shown in Fig. 2), arrows 80, 82, 84 and 86 indicate the path of travel of the tape. In both this embodiment and the embodiment of Fig. 1, each tape layer wound on the spool is in the form of a helix traversing substantially a full axial length of the winding region of the spool.

With reference to Fig. 3, operation of a nut 88 and spring 90 along with spools 68 and 76 will be described. This assemblage holds the two spools together to form a clutch between the spools. Spool 68 actually extends all the way through spool 76 and ends in a threaded portion 92. Spool 68 has a flange 94 at one end and a flange 96 about midway

along the spool. Spool 76 surrounds spool 68 and includes a flange 97 at one end and a flange 98 at the other end. Nut 88 is screw-threaded onto threaded end 92 of spool 68 to press spring 90 against flange 98 of spool 76. This arrangement presses flanges 96 and 97 against each other, forming a friction clutch. In this embodiment there is minimal friction between spool 68 and axle 64.

Operation of the dispenser of Figs. 2 and 3 is essentially the same as for the dispenser of Fig. 1. The tape is maintained under tension and travels from spool 68, around head 66, and back to spool 76. This tape movement causes the spools to rotate about axle 64, with the clutch allowing the spools to slip rotationally relative to each other to maintain tape tension fairly constant. The tape movement also causes the spools to move in unison up and down on axle 64 as the tape unwinds from spool 68 and rewinds on spool 76.

Figs. 6(a)-(d) show some of the possible applicator head orientations. A head 130 in Fig. 6(a) is similar to head 66 in Figs. 2 and 3 in that the center of head edge 132 is below a centerline 134 of a housing 136. Fig. 6(b) discloses a head 138 in which the center of a head edge 140 is along centerline 134 of a housing 142. Fig. 6(c) discloses a head 144 in which a centerline 145 of head 144 is parallel to a centerline 146 of a housing 148. Fig. 6(d) discloses a head 150 in which a centerline of the head and centerline 146 of housing 152 are co-linear.

The four head positions shown in Figs. 6(a)-(d) can be defined by an angle between a centerline of the head and a line perpendicular to the centerline of the housing, and by the perpendicular distance from the centerline of the housing to the centerline of the head edge. There could be many more head orientations defined by these two parameters. In addition, the head can be made to swivel freely along the angle to fixed settings. The head could also be made to swivel freely around its centerline while it is swiveling freely along the angle.

Turning to Figs. 4 and 5, an alternative embodiment of the spools is disclosed. A supply spool 100 is similar in its lower end 102 to spool 68. The upper end 104 of the spool however is different. Spool 100 is made of plastic and is injection molded to have the shape shown in Fig. 4. Spool 100 is partially split lengthwise at end 104 and has a pair of arms 106 and 108. Spool 100 is molded to have a gap 110 between the arms, and a flared portion 109, 111 at the end of each arm. A take-up spool 112 is similar to spool 76 except that an internal

annular recess 114 is provided at one end of the spool (half the take-up spool is not shown to facilitate viewing).

Spools 100 and 112 are assembled by pressing arms 106, 108 together and inserting them into an end of spool 112. Gap 110 between the arms allows them to compress sufficiently to fit through spool 112. Spool 100 is inserted into spool 112 until flared portions 109, 111 of the arms spring outward into annular recess 114 due to the inherent spring characteristics of the arms. Portions 109, 111 and recess 114 hold the spools together. Radially outward force by arms 106 and 108 on surfaces 113 and 115 of take-up spool 112 creates friction between upper spool end 104 and take-up spool 112 to form a friction clutch. Some frictional resistance can also be provided between flanges 116 and 118. This embodiment eliminates the nut and spring of the earlier embodiments.

Referring to Fig. 5, each end portion 120, 122 of a winding region 124 of spool 100 decreases in diameter towards its respective spool end to stabilize a turn in the winding at the end of each layer, in which turn, if the tape is wound helically, a helix angle of the wound tape reverses, and to facilitate that reversal of helix angle between one helical layer and the next helical layer which spirals in the opposite direction. In other words, the maximum winding diameter of each spool (without any tape on the spool) is in the central region of the spool. This same feature is found on spool 112 and the other spools discussed above.

An alternate embodiment of the invention is shown in Figs. 7-7A. In this embodiment, the edge 165 of head 166 is disposed at an angle A with respect to a perpendicular (P) to the centerline CL (longitudinal axis) of the housing 12. Preferably, angle A is from about 5 to 30 degrees, more preferably about 10 to 20 degrees. The angled edge allows the user to comfortably apply the tape to a paper surface while holding the housing in an ergonomic position. It is also preferred that the lengthwise midpoint M of the edge 165 lie on or relatively close to the centerline of the housing, e.g., within 1 mm of the centerline, more preferably within 0.5 mm, and most preferably on the centerline. This positioning of the edge allows the edge to be pressed against a surface without the housing 12 tending to rotate in the user's hand (if the above constraints are not met, the off-center force resulting from pressing the edge against a surface will exert a rotational moment on the housing, requiring extra effort to keep the housing from turning in the user's hand).

As shown in Fig. 8, head 166 is preferably a modular unit that is molded separately and assembled into the housing during manufacture of the dispenser. In the embodiment shown in Figures 7 and 8, the head is located within the housing and pinned in place using guide aperture 168 located on guide member 170. Guide member 170 is sandwiched between two clam-shell halves of the housing and secured in place by a pin (not shown) inserted through guide aperture 168. The positioning of the head 166 relative to housing 12 is further guided by the engagement of surface 172 with the circular opening of housing 12. Edge 165 is defined by a burnishing member 198.

The edge positioning described above requires the tape to travel in a non-planar path as it runs between the spool 167 (Fig. 7A) and the edge 165, and again as the tape backing runs from the edge to the take-up spool 176 (i.e., as the tape moves through both "runs" of the tape path). The travel to the edge 165 and back should be accomplished without tearing, stretching or otherwise distorting or damaging the tape, and thus it is important that the tape not encounter any significant edge-wise loads (by "significant", we mean sufficient to cause damage to or distortion – such as wrinkling – of the tape). Also, the tape should not be drawn off of its intended path, as this could lead to malfunctioning of the dispenser; and the tape path must have as smooth a shape as practicable, to minimize drag on the motion of the tape.

To keep the pen-like form of the housing as slender as possible, both runs of tape – from the supply spool to the tip, and from the tip back to the takeup spool – should pass through the housing on the same side of the spools, e.g., as shown in Fig. 7(b). Thus, as the tape passes in each direction past the forward end 169 of the space provided in the housing for the spool 167 to travel toward edge 165, both runs of tape must pass through a crescent-shaped opening 188 (indicated in dotted lines) between the housing and the space reserved for the spool. For the position and orientation of the tip 166 shown in Fig. 7, this travel between opening 188 and edge 165 will also entail a need for the orientation of the tip (as defined by a vector normal to its surface) to rotate through nearly 90 degrees between opening 188 and the parts of the run approaching or leaving edge 165.

The degree of the inclination angle of edge 165 in this product configuration (for example, as discussed above, in the embodiment shown in Fig. 7, the angle A is preferably greater than about 7 degrees), and the need for the tape to pass through opening 188, combined with the need for a tape path that will minimize edgewise loads and deviation of

the tape from its path, make it generally necessary to guide the tape along a specific non-planar course designed to meet these constraints. Because the inclination of edge 165 causes the lower end of edge 165 to be closer than the upper end to opening 188; the tape path should be designed to compensate for this distance discrepancy so as not to create a corresponding distance discrepancy in the path lengths of the two edges of the tape. That is, the tape path should be arranged so that, over some portion of its axial travel distance, the path of the lower edge of the tape traverses more length than the path of the upper edge of the tape, to "use up" some length of the lower edge of the tape and "draw in" (rearward) the forward extreme of the lower edge of the tape's travel (where the tape substantially reverses its direction upon reaching the burnishing edge 165). In this manner, both edges of the tape will have traveled the same distance by the time they reach edge 165, and therefore will have equal tension around edge 165, despite the upper and lower portions of edge 165 not being equidistant from opening 188. In contrast, if the tape were simply suspended in midair as it traveled between the opening 188 and the edge 165, one edge of the tape would be pulled tighter than the other edge, creating an edgewise load on the tape.

Thus, the tape should "see" its path as "straight," in the sense that the tape can follow it without either edge of the tape being left slack or required to stretch, i.e., both edges of the tape should travel substantially the same distance throughout the tape path, so that the tension on both edges will be substantially the same, and the tape will not experience any significant edgewise load. A tape path meeting this criterion may be created by supporting the tape over at least a major portion of its path with a surface having a geometry that will provide the required equalization of path lengths.

The preferred shape of the housing 12 imposes an additional constraint on the axial distance that the tape can travel from the tip edge 165 before it changes its orientation. So that the dispenser can be gripped at a location reasonably near the edge 165, the housing should enclose the tape until near the edge (e.g., about 15 mm from the midpoint M of the edge). Also, the housing is preferably circular in cross-section in the gripping region and has an external diameter D of less than 14mm at the forward end 191 of the gripping region. These design considerations require that both tape runs also fit within an opening 190 of limited size (e.g., having a 12 mm internal diameter) at the forward end 191 of the gripping region.

Thus, the compensation in tape edge path length must be accomplished over a relatively short axial distance D1 (i.e., the axial distance between opening 188 and the edge 165), and within a relatively short radial distances D2 from the housing axis CL (i.e., the radial distance between CL and the outer limits of openings 188). Generally, D1 is less than 60 mm and D2 is less than 10 mm. In preferred dispensers, D1 may be less than about 50 mm and D2 may be less than 6 mm.

An example of a dispenser having a tape path meeting these criteria is shown in Figs. 9 and 9A. In this embodiment, the tape bed 200, i.e., the surface of the head 166 over which the tape travels from spool 167 to edge 165, includes a ramped portion 202 and a portion 204 comprising a section of a cone (Fig. 9). Thus, the tape is guided, by this surface geometry of tape bed 200, in the path shown in Figs. 9A, 10 and 10A (in Figs. 10 and 10A the tape is shown alone, for clarity). The bulging of tape edge 206 due to its passage over conical portion 204 causes the tape edge 206, which would otherwise travel a shorter distance than the opposite tape edge 205, to travel a substantially equal distance. Meanwhile the curvature of the conical surface 204 is highly compatible with the curvature of the opening 190 through which the tape path must fit. The opposite tape bed surface (not shown), over which the tape backing travels, may be generally symmetrical to tape bed 200, or may have a different geometry that guides the tape in a similarly shaped path. In the embodiment shown in Fig. 9, the tape bed 200 includes open areas 201. These open areas are provided to facilitate molding of the head 166. The openings may be omitted if not needed for molding purposes, or may be of different shapes and sizes, provided the tape bed 200 has sufficient remaining surface area to support the tape in the desired tape path.

Other suitable tape bed geometries and tape paths can be designed using CAD software to simulate the bends that are created in the tape as it travels through its path and inputting selected values for angle A and distances D1 and D2 for the desired dispenser design. For example, the conically-curved path followed by the tape in Figs. 9A-10A was derived from an approximation made up of a set of discrete bends indicated by the dotted lines in Figs. 9A-10A. The preferred positions of these bends (each one bent 10 degrees in this case, except at edge 165) are indicated graphically in Fig. 11. The procedure used to select this pattern was one of progressive approximation, gradually adjusting the positions and aggregate magnitude of the bends in order to have the tape pass perpendicularly around

edge 165, which is inclined at angle A, and pass through both openings 190 and 188 without touching the housing or the spool or experiencing any substantial edgewise deflection. The same procedure could be used for different values of A, although the value of D3 might need to be varied.

The degree to which burnishing member 198 deflects when edge 165 is pressed against a surface can be varied in order to provide a more ergonomic dispenser. The head can be designed to provide flexing of burnishing member 198 about an axis that is parallel to the edge 165 (referred to herein as "flat-wise flexure"), about an axis that is perpendicular to the edge 165 (referred to herein as "edge-wise flexure"), or both. If flatwise flexure occurs in varying degrees along the edge due to uneven pressure or support along the edge, this uneven flatwise flexure may also provide a degree of twist flexure about an axis of twist (Fig. 14A). If edge 165 is flexibly supported so that flatwise flexure can occur in a continuously varying manner from point to point along the edge, this variation in flatwise flexure can also provide a degree of accommodation to unevenness in the substrate to which the tape is being applied. Alternatively, if it is desired that edge 165 be capable of maintaining firm pressure along its entire length when it is pressed against a flat surface, then the region immediately behind edge 165 may be designed as a reinforced "straight-edge" structure, i.e., the thickness of burnishing member 198 is locally increased immediately behind edge 165 as shown in, e.g., Fig. 13A.

In one embodiment, shown in Fig. 12, the burnishing member 198 is mounted on a solid molded structure 209 having stiffening ribs 210 that define the borders of the tape bed 200. This arrangement provides a dispenser that has a relatively rigid head with little flat-wise or edge-wise flexure.

If more flat-wise flexure is desired, the burnishing member 198 can be mounted on a central tongue 212 that is thinned with respect to the tape bed 200 (i.e., the tongue thickness in the dimension perpendicular to edge 165 is reduced relative to that of the tape bed), and cantilevered out from the tape bed 200, as shown in Figs. 13 and 13A. The tongue should have a sufficiently high section modulus and flexural strength so that it will not suffer permanent deformation during normal use. A suitable material is polycarbonate.

The section modulus, defined as the section moment divided by the greatest distance of any strain-bearing material from its neutral axis, is the structural property of a cross-

section which, combined with the elastic modulus of the material, will predict the maximum level of strain imposed by a given bending moment, under conventional linear assumptions of solid mechanics. For a cantilevered structure such as this tongue, in which it is desired to maximize both compliance and robustness, it is advantageous that the section modulus increase linearly with increasing distance from the edge, so that the portion of the structure bearing the highest leverage during flexure will have the highest section modulus (i.e., so that every portion contributes as much compliance as its material strength allows, with no portion avoiding the strain borne by other portions). For a structure of rectangular cross-section, the section modulus is proportional to the width and to the square of the thickness. Consequently, if the tongue has a uniform width it will have a substantially linearly increasing section modulus over portions where it has a substantially parabolic axial cross-sectional shape as shown in Fig. 13A (see curve C). The function defining the parabolic curve is $Y=kX^{1/2}$, where Y is the thickness of the tongue, X is the distance from edge 165, and k is a constant chosen to match the material properties to the expected load. More generally, it is preferred that tongue 212 become progressively thicker as it extends away from edge 165, to provide adequate strength to withstand the leverage experienced at a given distance from the edge. However, it is also preferred that the tongue be sufficiently thin overall so that it will flex readily, i.e., so that the tongue will have a relatively low section moment.

To achieve adequate section modulus without undesirably increasing the section moment, it is generally preferred that the tongue be as wide as possible while still allowing sufficient clearance for the tongue to flex. However, the width of the tongue is generally constrained by side rails 215, which, like stiffening ribs 210, discussed above, are provided to act as curbs to help keep the tape on course on the tape bed. If side rails 215 are included, as shown, the width of the tongue is preferably from about 3 to 4 mm. In some embodiments, the side rails 215 may be omitted (e.g., if they are not needed to keep the tape on the tape bed), in which case the tongue may be wider, e.g., from about 4 to 8 mm. Preferably, the slots 214 that define the side edges of the tongue extend back from edge 165 far enough to form a tongue having a deflection that gives users a comfortable level of flexure without the tongue having to bend so sharply as to overstrain the material, e.g., about 3 to 6 mm, more preferably about 4 to 5 mm.

If it is desired that the dispenser head have substantial edge-wise flex, in addition to its flat-wise flex, the burnishing member 198 may be mounted on a longer tongue 216, as shown in Fig. 14. As shown, tongue 216 has a substantially hour-glass shaped profile. The neck region 218 of tongue 216 is thinner (i.e., smaller in the dimension that is parallel to edge 165) than the rest of the tongue (e.g., thickness T, Fig. 14, is about 0.8 mm, vs. 4 mm for the rest of the tongue). Thus, neck region 218 has a relatively low section moment about the axis of edgewise rotation (axis A, Fig. 14A), allowing the front portion 220 of the tongue, and thus the burnishing member 198, to pivot about axis A when an edge-wise load is applied to edge 165. The width W (Fig. 14) of neck region 218 (i.e., the dimension parallel to axis A) is much greater than the thickness in this area (e.g., the width is about 5 mm vs. the thickness of about 0.8 mm noted above), so that this "hinge" region remains robust against sideways loads. It is generally preferred, as shown in Fig. 14, to also include a second, wider neck region 218, to allow sufficient clearance for the tongue to flex edgewise without hitting side rails 215.

Preferably, the narrowest point of this neck region 216 is located near enough to edge 165 that the pivoting of the tongue will tend to provide a balanced burnishing pressure across the breadth of the tape, pivoting readily in response to pressure forces from the page exerted in a direction normal to edge 165 and less readily in response to incidental frictional forces exerted parallel to edge 165. On the other hand, the narrowest point of the neck region is located far enough from edge 165 so that the tape path can swing up and down, to a limited extent, with the pivoting tongue and minimize the degree to which the edge 165 goes out of square with respect to the tape passing around it. Based on these constraints, the distance from the narrowest point of the neck region to edge 165 is preferably about 5 to 15 mm, more preferably about 9 to 11 mm.

The stiffening ribs 210, or side rails 215, may be of any desired height, or may be omitted entirely, depending upon whether it is preferred to constrain the course of the tape more positively, or to allow the tape more freedom of movement from its course. Allowing the tape some freedom of movement may cause less pressure against the edges of the tape and thereby reduce the risk of damage to the coating layer of the tape. For example, side rails may 215' may be relatively low, as shown in Fig. 15.

Other embodiments are within the scope of the following claims.

For example, rather than applying a white, opaque correction layer to a surface, a tinted transparent highlight layer or other type of layer can be applied.

Also, the dispenser may utilize only one spool such as a single supply spool, which can deliver a backingless tape, or a single take-up spool, which can be driven by a roller applicator head.

Moreover, when the tape is wound in a helical pattern on one or both of the spools, the turns of the helical pattern can be spaced either so that there is little or no overlap between the turns, or so that each turn overlaps one or more adjacent turns. If there is no overlap, both edges of the tape will be wound on the same diameter, which may be advantageous if the tape is relatively inelastic, so that a discrepancy between the winding diameters for the two edges of the tape would tend to cause wrinkles in the less taut edge. If the tape is wound so that adjacent turns overlap, the slope at which the helix spirals will be minimized, and the edge of the tape which overlaps the preceding turn will be wound on a slightly larger diameter than the other edge. This option would be preferred when the magnitude of the helix slope is found to be a severe design constraint, for example because of difficulty accommodating the two opposite alternating helix slopes where the tape encounters the guides 70 and 74 (Figs. 2 and 3).

In addition, the edge over which the tape passes may have a smoother or sharper curvature, relative to the embodiments shown in Figs. 1-15 and discussed above. Generally, a smoother curvature will allow the edge to move more smoothly over a substrate, while a sharper curvature will provide a higher application pressure by concentrating the force applied by the user into a narrower band of contact.

WHAT IS CLAIMED IS:

1. A dispenser for applying a material to a surface, comprising:

a housing, at least a major portion of which is substantially cylindrical;

within the housing, a supply spool rotatable about an axis and a quantity of material stored on the supply spool in a plurality of widths wide; and

at one end of the housing, an applicator head about which the material is passed, the head being constructed to press the material against the surface, the head having an edge, over which the material passes, that is disposed at an angle of greater than 5 degrees relative to a line that is perpendicular to the longitudinal center axis of the housing.

2. The dispenser of claim 1 wherein the edge is disposed at an angle of greater than 20 degrees relative to said line.

3. The dispenser of claim 1 wherein the edge is disposed at an angle of from about 5 to 30 degrees relative to said line.

4. The dispenser of claim 3 wherein the edge is disposed at an angle of from about 10 to 20 degrees relative to said line.

5. The dispenser of claim 1 wherein the edge is disposed at an angle of about 15 degrees relative to said line.

6. The dispenser of claim 1 wherein the longitudinal center axis of the housing passes within 1 mm of the lengthwise midpoint of said edge.

7. The dispenser of claim 6 wherein the longitudinal center axis of the housing passes through the lengthwise midpoint of said edge.

8. The dispenser of claim 1 wherein said applicator head exhibits flat-wise flexure when pressed against a surface.

9. The dispenser of claim 1 wherein said applicator head exhibits edge-wise flexure when pressed against a surface.

10. The dispenser of claim 8 or 9 wherein said edge is defined by a member that is mounted on a flexible tongue.

11. The dispenser of claim 1 wherein said material is a correction tape.

12. The dispenser of claim 1 wherein the applicator head is constructed to pivot about an axis.

13. The dispenser of claim 12 wherein the applicator head pivots about the axis of rotation of the supply spool.

14. A dispenser for applying a material to a surface, comprising:

a housing, at least a major portion of which is substantially cylindrical;

within the housing, a supply spool rotatable about an axis and a quantity of material stored on the supply spool in a plurality of widths wide, the axis of rotation of the spool being substantially parallel to the longitudinal axis of the housing; and

at one end of the housing, an applicator head about which the material is passed, the head being constructed to press the material against the surface, the head having an edge, over which the material passes, that is positioned so that its lengthwise midpoint is in the vicinity of the longitudinal center axis of the housing so that the housing will not rotate to any significant extent about its longitudinal center axis when the edge is pressed against a surface during use.

15. The dispenser of claim 14 wherein the midpoint is within 1 mm of the longitudinal center axis.

16. The dispenser of claim 15 wherein the midpoint lies on the longitudinal center axis.

17. The dispenser of claim 14 wherein said material is a correction tape.

18. A dispenser for applying a material to a surface, comprising:

a housing, at least a major portion of which is substantially cylindrical;

within the housing, a supply spool rotatable about an axis and a quantity of material stored on the supply spool in a plurality of widths wide, the axis of rotation of the spool being substantially parallel to the longitudinal axis of the housing; and

at one end of the housing, an applicator head about which the material is passed, the head being constructed to press the material against the surface, the head having a burnishing member defining an edge, over which the material passes,

the burnishing member being mounted on a cantilevered tongue so as to allow the burnishing member to flex flat-wise when the edge is pressed against a surface.

19. The dispenser of claim 18 wherein the tongue is constructed to allow the burnishing member to flex edge-wise when the edge is subjected to an edge-wise load.

20. The dispenser of claim 18 wherein said edge is disposed at an angle of greater than 5 degrees relative to a line that is perpendicular to the longitudinal center axis of the housing.

21. The dispenser of claim 18 wherein the longitudinal center axis of the housing passes within 1 mm of the lengthwise midpoint of said edge.

22. The dispenser of claim 18 wherein the longitudinal center axis of the housing passes through the lengthwise midpoint of said edge.

23. A dispenser for applying a material to a surface, comprising:

a supply spool rotatable about an axis;

a quantity of unused tape stored on the supply spool;

an applicator head about which the tape is passed, the head pressing the tape against a surface to deposit a transfer layer of the tape onto the surface, the head defining an edge over which the tape passes, the edge being disposed at an angle of greater than 5 degrees relative to a line that is perpendicular to the longitudinal center axis of the housing;

a housing which surrounds at least a majority of the tape, a substantial portion of the housing being substantially cylindrical in shape; and

a support surface constructed to support the tape as it moves from the supply spool to the edge in a manner that prevents the tape from being subjected to a significant edgewise load.

24. The dispenser of claim 23 wherein said support surface comprises a substantially continuous surface.

25. The dispenser of claim 24 wherein said support surface comprises a ramped portion and a conical portion.

26. The dispenser of claim 23 wherein said support surface comprises a discontinuous, segmented surface.

27. The dispenser of claim 26 wherein said segmented surface comprises a series of spaced guides, posts or pegs.

28. A dispenser for applying a material to a surface, comprising:

a supply spool rotatable about an axis;

a quantity of unused tape stored on the supply spool;

an applicator head about which the tape is passed, the head pressing the tape against a surface to deposit a transfer layer of the tape onto the surface, the head defining an edge over which the tape passes;

a housing which surrounds at least a majority of the tape; and

a support surface constructed to support the tape as it moves from the supply spool to the edge to allow the orientation of the plane of the tape to change from substantially parallel

to the edge to substantially perpendicular thereto over an axial distance of less than about 30 mm.

29. The dispenser of claim 28 wherein the longitudinal axis of the tape is curved during the change of orientation.

30. The dispenser of claim 28 wherein the support surface is configured to allow the change of orientation to occur within a radial distance of less than about 5 mm.

31. A dispenser for applying a material to a surface, comprising:

a supply spool rotatable about an axis;

a quantity of unused tape stored on the supply spool;

an applicator head about which the tape is passed, the head pressing the tape against a surface to deposit a transfer layer of the tape onto the surface, the head defining an edge over which the tape passes, the edge being disposed at an angle of greater than 5 degrees relative to a line that is perpendicular to the longitudinal center axis of the housing;

a housing which surrounds at least a majority of the tape, a substantial portion of the housing being substantially cylindrical in shape; and

a support surface constructed to support the tape as it moves from the supply spool to the edge, the support surface being configured so that both edges of the tape travel the same distance as the tape moves between the supply spool and the edge.

32. The dispenser of claim 23, 28 or 31, wherein the material comprises a correction tape, carrying a correction layer on one surface.

33. The dispenser of claim 32 wherein the support surface is configured to support the tape only on the surface opposite the surface carrying the correction layer.

ABSTRACT

The invention features dispensers for applying a material, e.g., a tape, to a surface. For example, the invention features a dispenser for applying a material to a surface, including a housing, at least a major portion of which is substantially cylindrical; within the housing, a supply spool rotatable about an axis and a quantity of material stored on the supply spool in a plurality of widths wide; and, at one end of the housing, an applicator head about which the material is passed, the head being constructed to press the material against the surface, the head having an edge, over which the material passes, that is disposed at an angle of greater than 5 degrees relative to a line that is perpendicular to the longitudinal center axis of the housing.

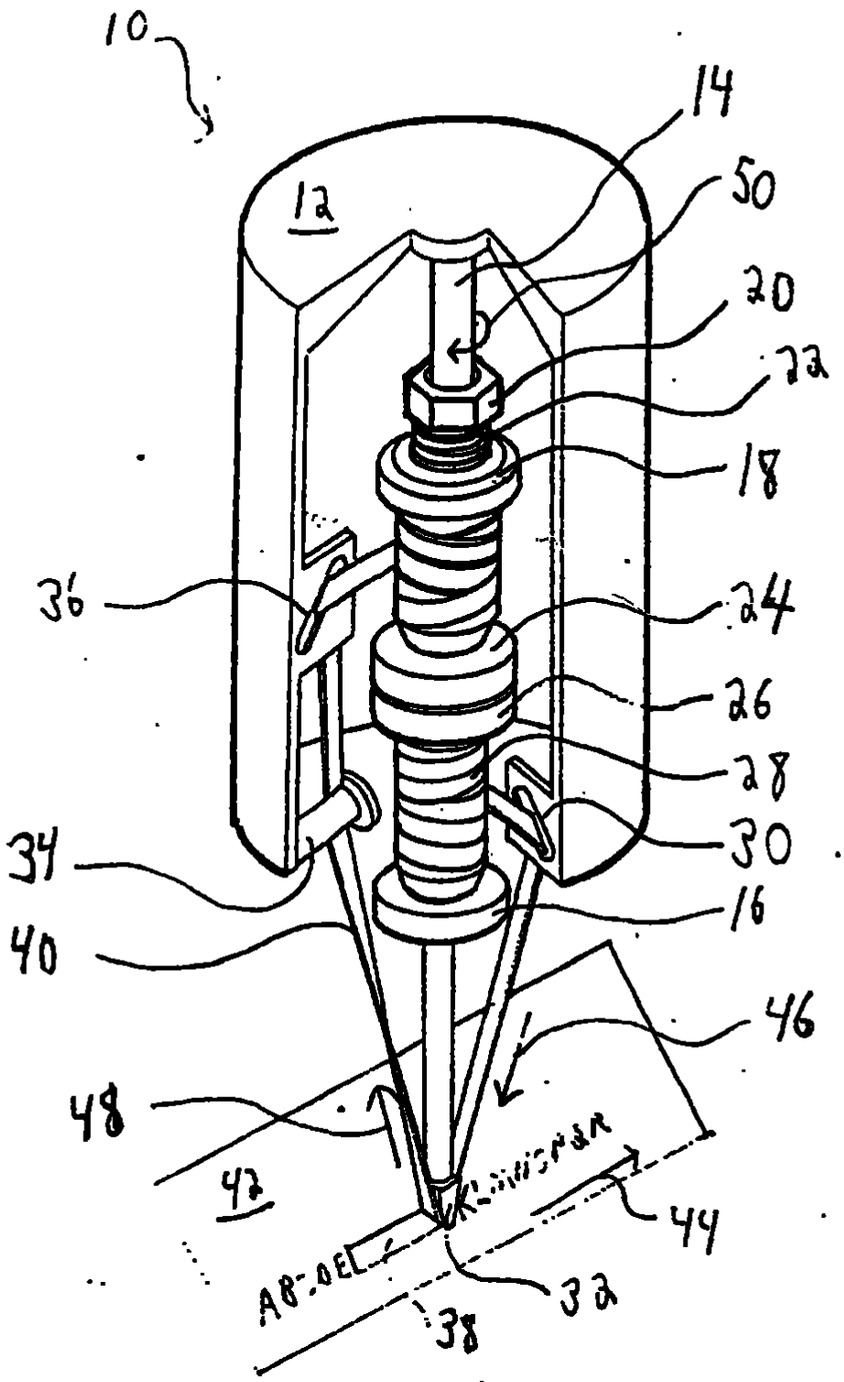


FIG. 1

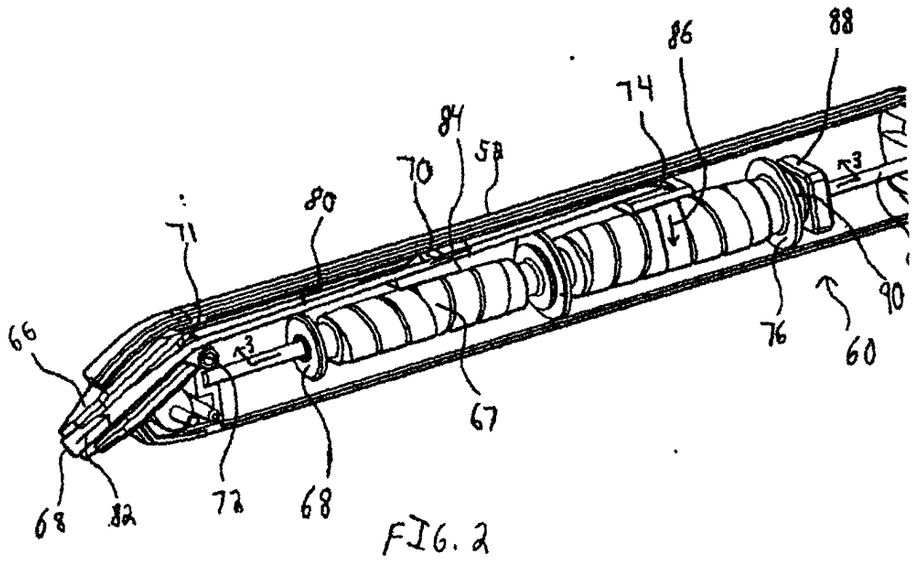


FIG. 2

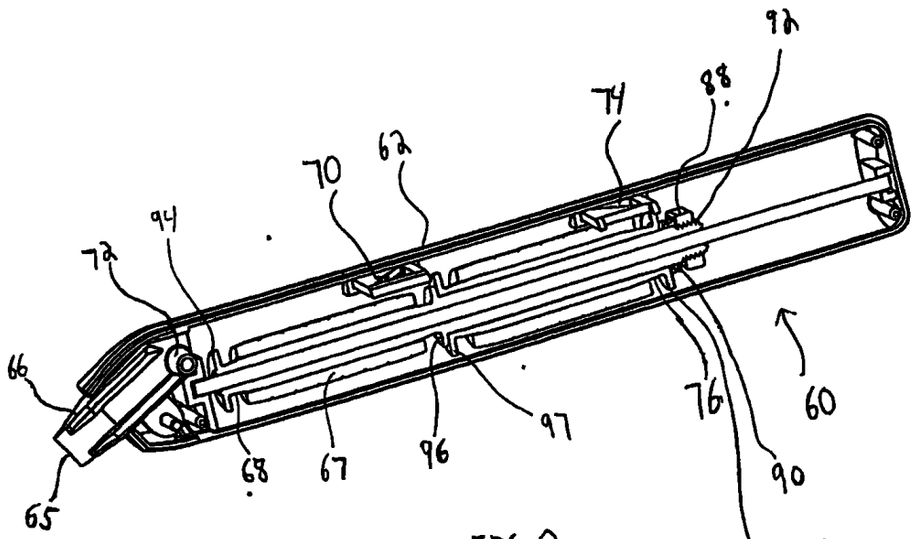


FIG. 3

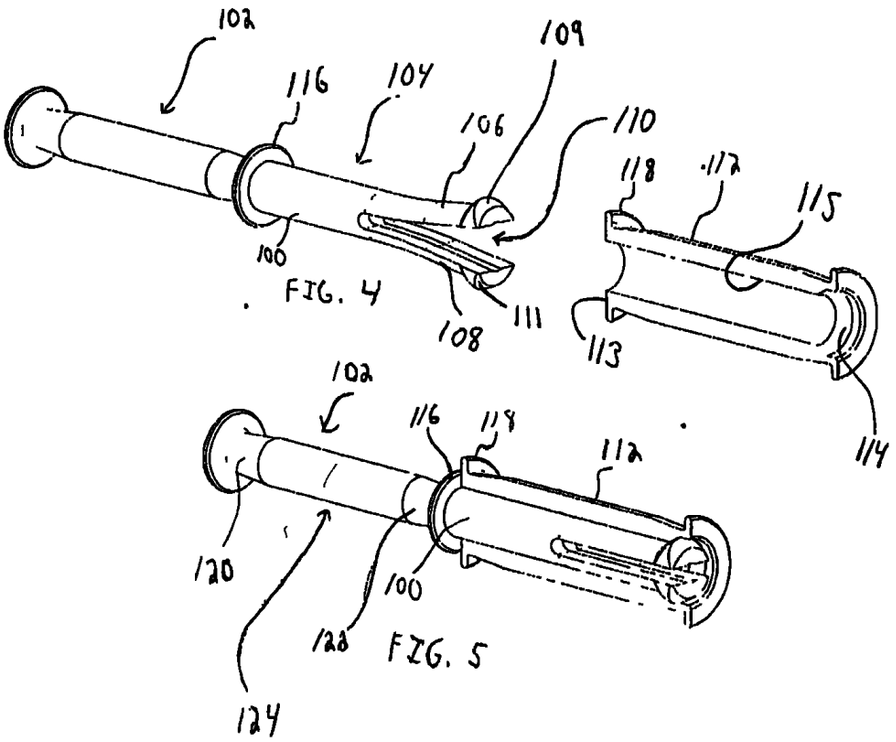
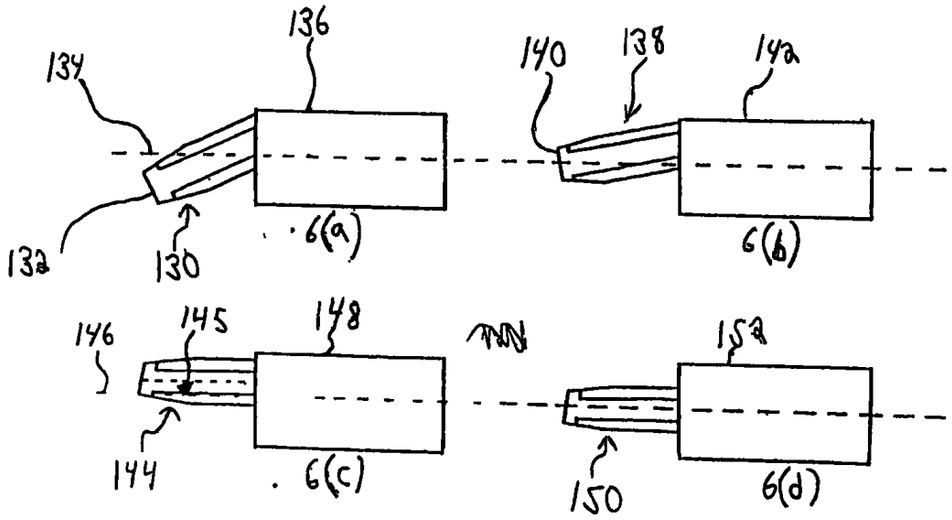


FIG. 4

FIG. 5



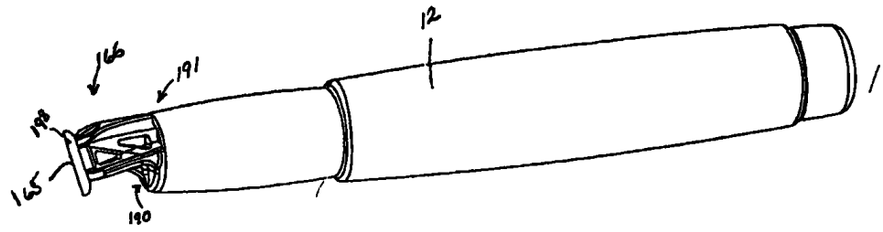


FIG. 7

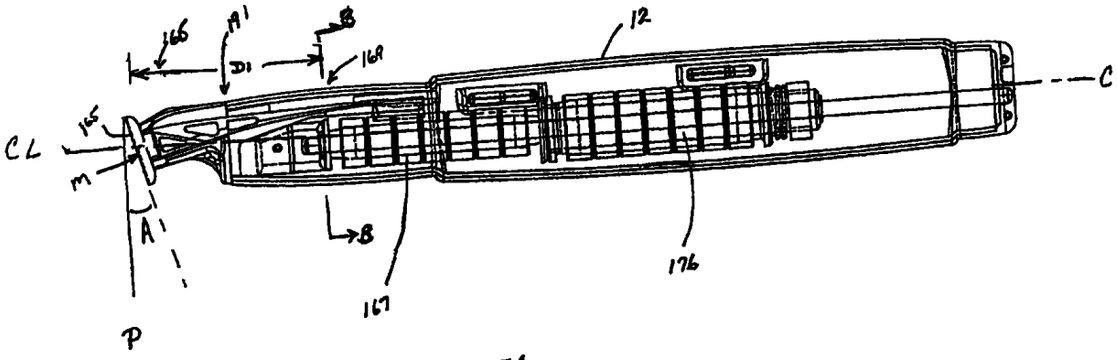


FIG 7A

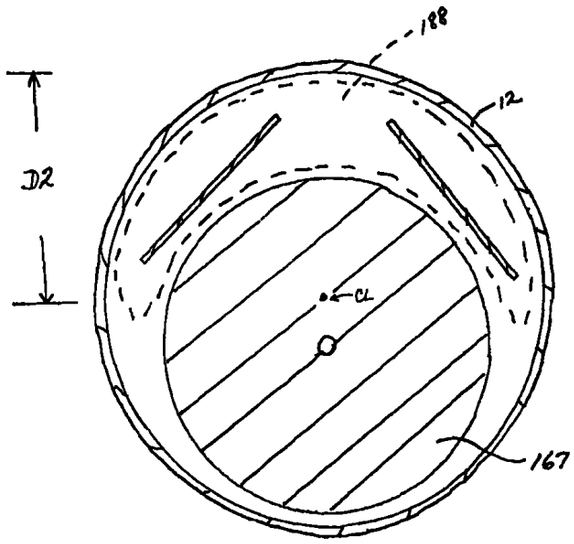


FIG. 7B

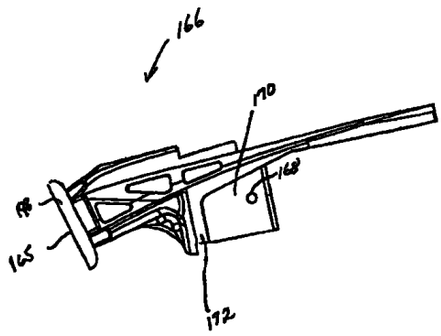


FIG. 8'

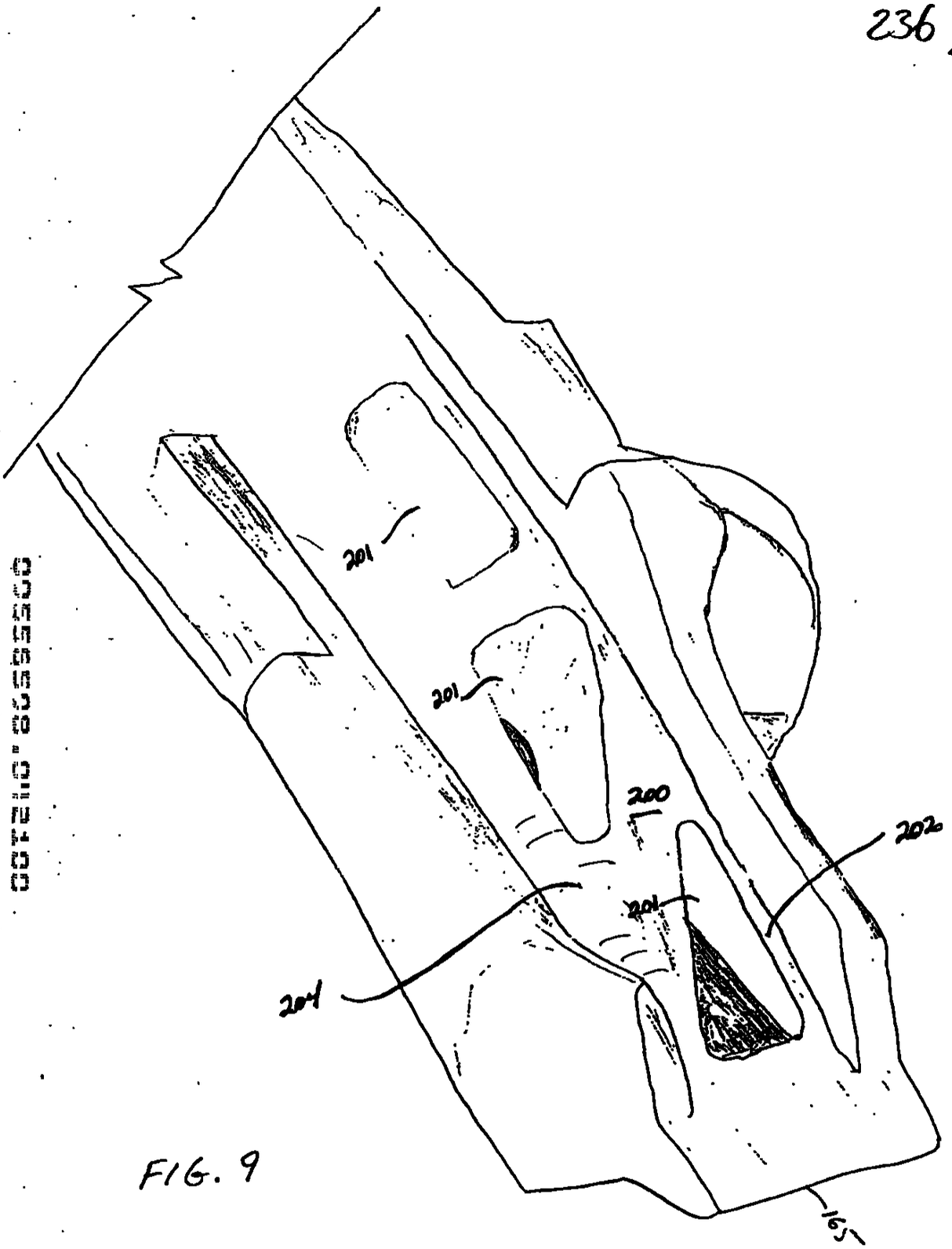


FIG. 9

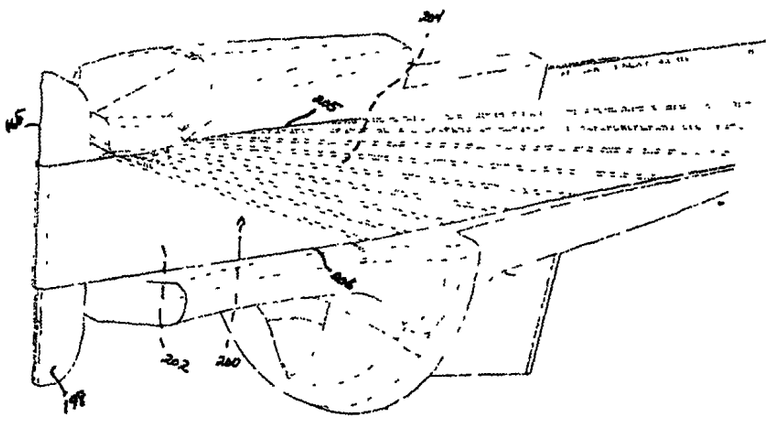


FIG. 9A

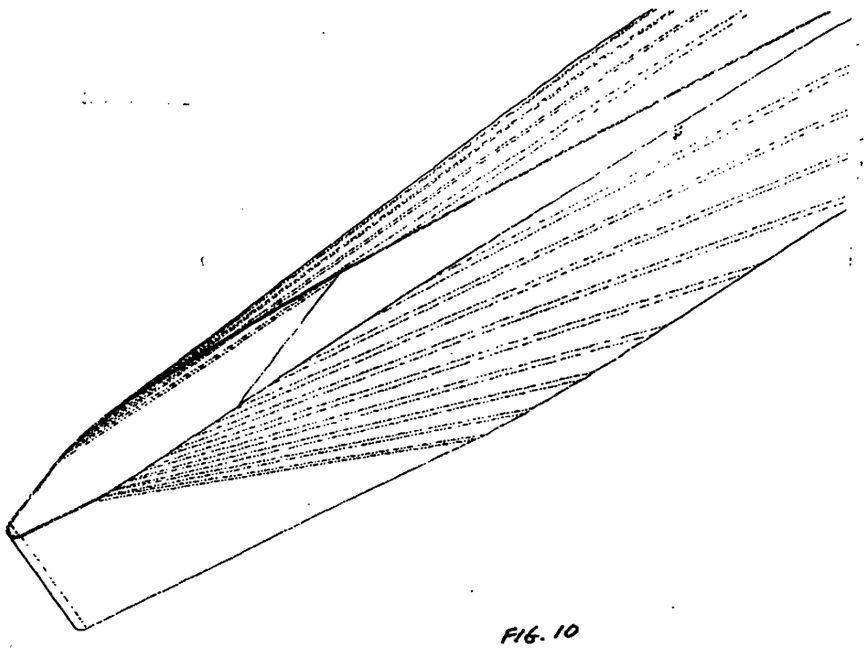


FIG. 10

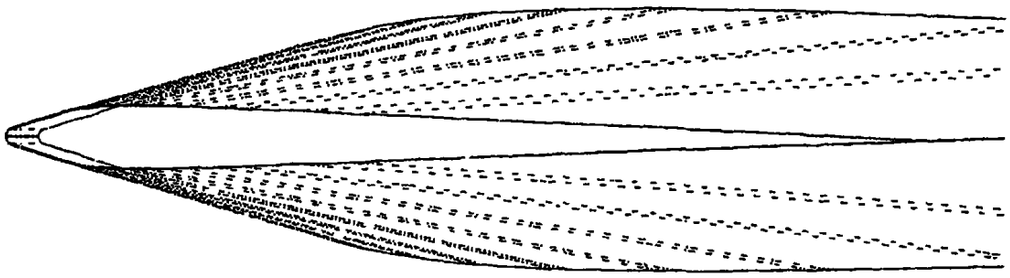


FIG. 10A

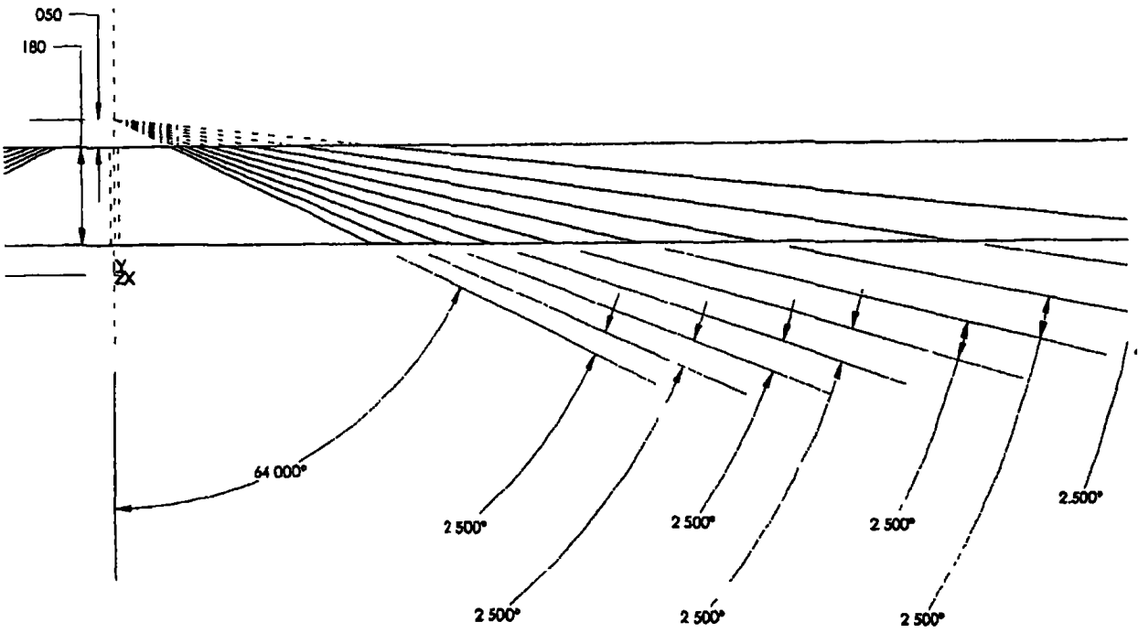


FIG. 11

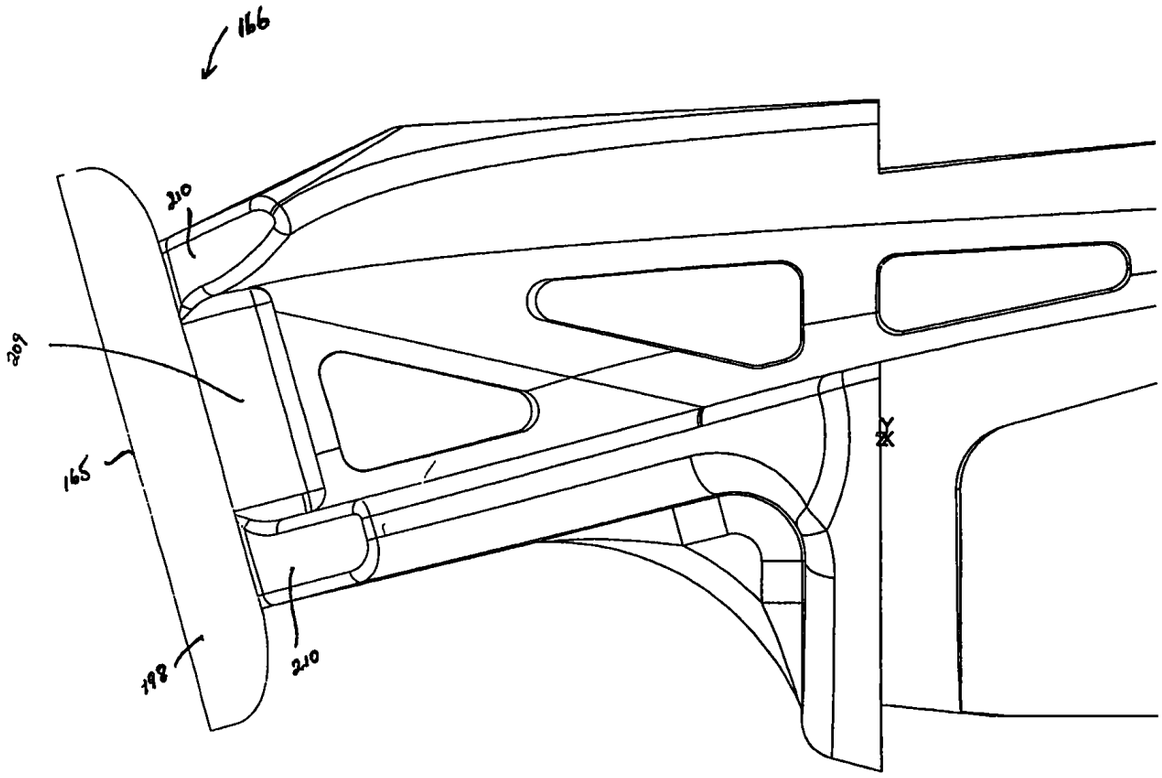


FIG. 12

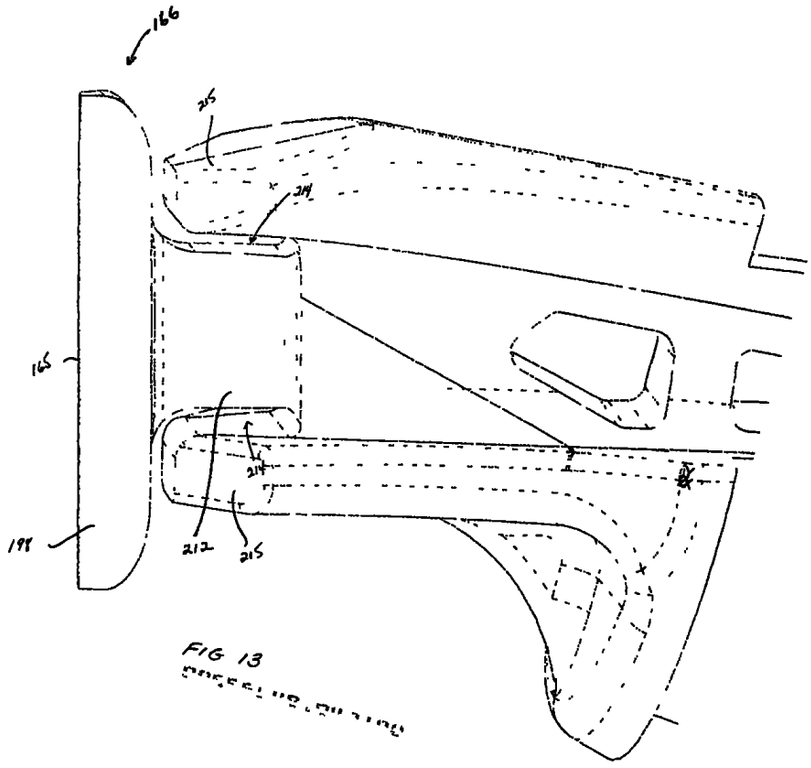


FIG 13

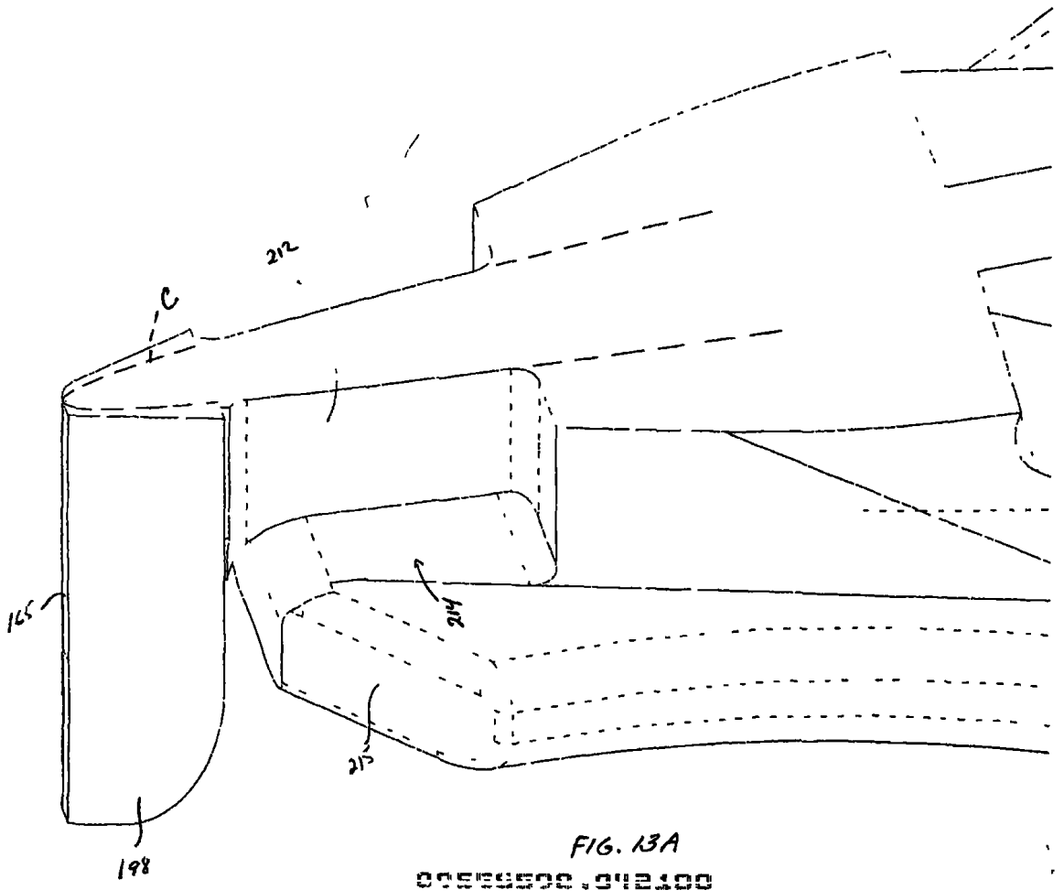


FIG. 13A

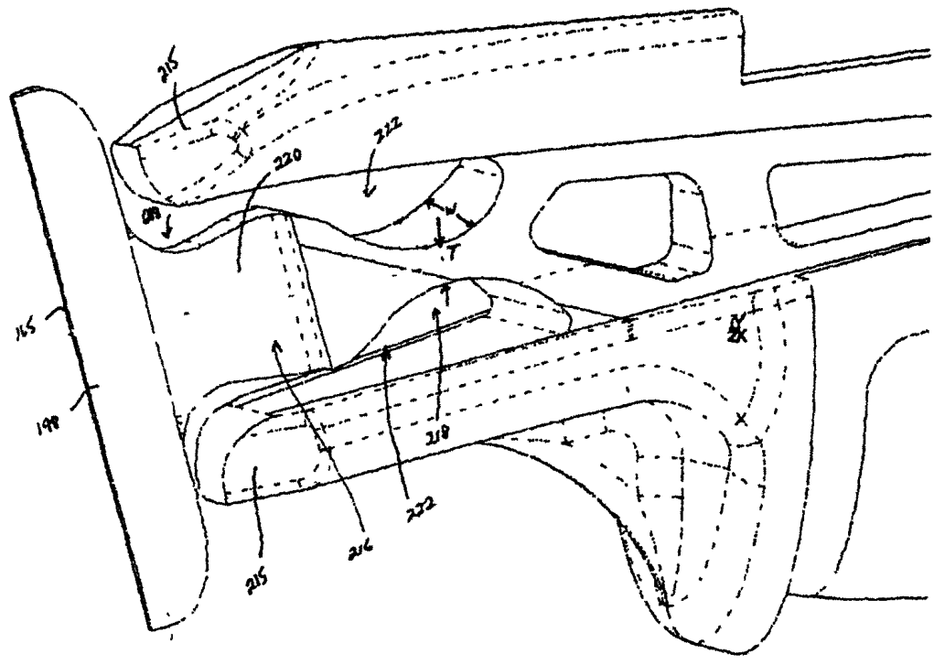


FIG. 14

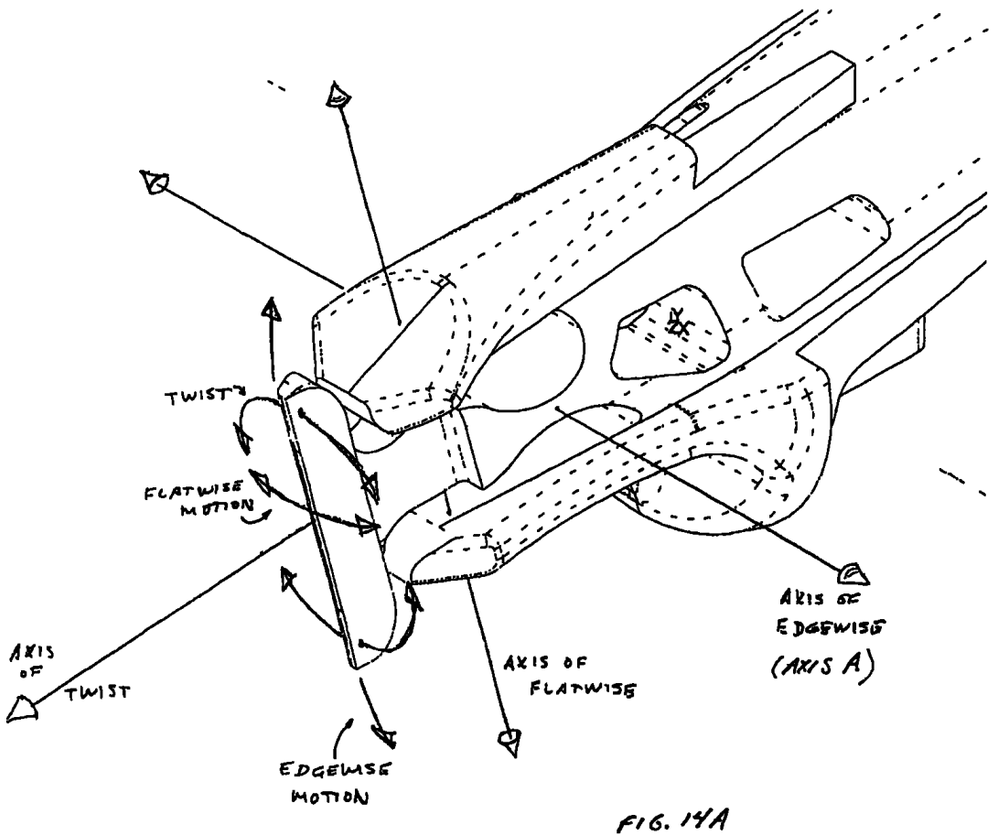


FIG. 14A

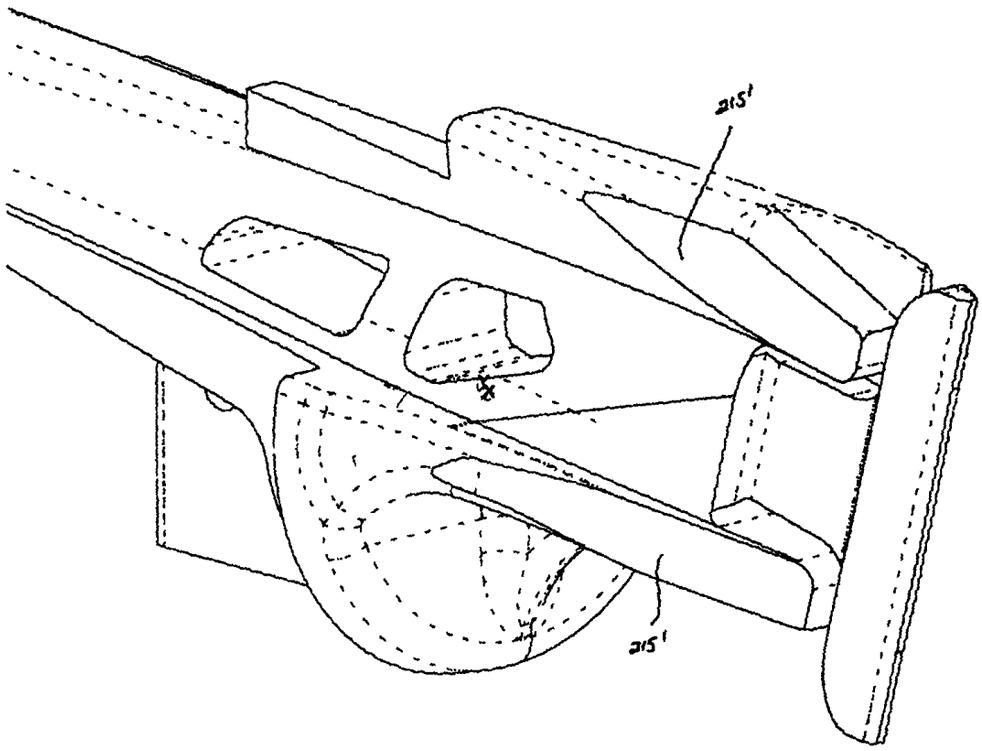


FIG. 15

The Gillette Company 00.066.768

REF: LLC-115-2000. La presente es Traducción Oficial de un documento presentado originalmente en inglés. Esta traducción es elaborada por Gabriel Rueda Chadid (Traductor Oficial).

ESTADOS UNIDOS DE AMERICA

A TODOS AQUELLOS QUE LLEGAREN A LEER EL CONTENIDO DEL PRESENTE DOCUMENTO LES CERTIFICAMOS:

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Se certifica que anexo se encuentra fiel copia de los Registros de la Oficina de Marcas y Patentes de los Estados Unidos correspondientes a los documentos de la patente solicitada y cuya identificación aparece más adelante, la cual cumplió con los reguerimientos exigidos para que se otorgue una fecha de presentación de acuerdo con los dispuesto en la Sección 35 USC 111.

Número de Solicitud: 09/635,972

Fecha de presentación: Agosto 10, 2000

Por autorización del

COMISIONADO DE MARCAS REGISTRADAS Y PATENTES

P. R. GRANT

Funcionario Encargado de Certificaciones (Hay firma y sello)

GABRIEL RUEDA CHADID
TRADUCTOR OFICIAL
RESOLUCION 5996 DE NOV. 29-82
MINISTERIO DE JUSTICIA

FISH & RICHARDSON P.C.

Agosto 10, 2000
Expediente No. 00216-503002
Solicitudes de Patente
Comisionado de Patentes
Washington, DC 20231

Presentado para radicar como nueva solicitud de patente original de:

Solicitante: CRISPIN M. MILLER Y JEAN L. SPENCER
Título: DISPENSADOR PARA APLICACION DE UN MATERIAL A UNA SUPERFICIE

Adjunto se encuentran los siguientes documentos, que incluyen los requeridos para recibir una fecha de radicación conforme al 37 CFR 1.53(b):

	Páginas
Especificaciones	20
Reivindicaciones	7
Abstract	1
Declaración	(ha radicarse en fecha posterior)
Diagramas	23

Anexos:

- Tarjeta postal

Formulario básico de radicación		$690
Total de reivindicaciones por encima de 20 de veces	$18	$522
Reivindicaciones independientes por encima de 3 veces	$78	$234
Honorario por múltiples reivindicaciones dependientes		$ 0
Honorarios de radicación total:		$1446

GABRIEL RUEDA CHADID
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CERTIFICADO DE ENVIO POR CORREO EXPRESO

No. de la Etiqueta del Correo: EL228029557US

Certifico de acuerdo a 37 CFR 1.10 que esta correspondencia está siendo depositada en el Servicio Postal de los Estados Unidos como Correo Expreso para el Destinatario con suficiente Cargo Postal en la fecha que abajo se indica y está dirigida al Comisionado de Patentes, Washington, D.C., 20231.

Fecha de Depósito: 08/10/00

Firmado: (Hay firma)

En el letra tipo de imprenta nombre de la personas que firman el certificado: (firmado)

Esta solicitud es continuación parcial (y las reivindicaciones se hacen con el fin de recibir el beneficio de prioridad de acuerdo con lo dispuesto en el numeral 35 USC 120) de la solicitud U.S. No. serial 09/556,598 presentada en Abril 21, 2000 que es continuación de U.S. No. serial 09/390.965 presentada en Septiembre 7, 1999. La existencia de solicitudes anteriores se consideran como parte de la exposición de esta solicitud (y se incorpora por referencia).

Se adjunta cheque para el pago de derechos de presentación. Favor aplicar los demás derechos requeridos o los créditos a la cuenta 06-1050, haciendo referencia al número de expediente que aparece al comienzo del presente comunicado.

Si está aplicación se encontrase incompleta, o si fuese necesaria, útil una conversación telefónica, por favor llamar al suscrito al (617) 542-5070.

Sirvase dar reconocimiento del recibo de esta solicitud devolviendo la tarjeta postal adjunta.

GABRIEL RUEDA CHADID
TRADUCTOR OFICIAL
RESOLUCION 5996 DE NOV. 29-82
MINISTERIO DE JUSTICIA

310
250

Por favor enviar toda la correspondencia a:

ROBERT C. NABINGER
Fish & Richardson P.C.
225 Franklin Street
Boston, MA 02110-2804

Atentamente,
Celia H. Leber
(Firmado) Reg. No. 33,524

GABRIEL RUEDA CHADID
TRADUCTOR OFICIAL
RESOLUCION 5996 DE NOV. 29-82
MINISTERIO DE JUSTICIA

311
251

SOLICITUD DE PATENTE

DE LOS ESTADOS UNIDOS

a nombre de

Crispin M. Miller y Jean L. Spencer

para

DISPENSADOR PARA APLICACION DE UN MATERIAL A UNA SUPERFICIE

Fish & Richardson P.C.
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Boston, MA 02110-2804
Tel.: (617) 542-5070
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EXPEDIENTE LEGAL: 00216-503002

FECHA DE DEPOSITO: Agosto 10, 2000

No. CORREO EXPRESO: EM EL228029557US

GABRIEL RUEDA CHADID
TRADUCTOR OFICIAL
RESOLUCION 5996 DE NOV. 29-82
MINISTERIO DE JUSTICIA

REIVINDICACIONES **Expediente No. 00216-503002**

1. Un dispensador para aplicar un material a una superficie, que comprende:

un alojamiento, por lo menos una porción principal la cual es principalmente cilíndrica;

dentro del compartimento se encuentra un carretel de alimentación que gira alrededor de un eje y una cantidad de material almacenado en el mencionado carretel de alimentación en una serie de anchos, y

en uno de los extremos del alojamiento, hay un cabezal de aplicador alrededor del cual se hace pasar el material, donde dicho cabezal está construido de manera que presione el material contra la superficie, y el cabezal dispone de un borde, sobre el cual pasa el material, que está distribuido en un ángulo superior a 5 grados en relación con un plano perpendicular al eje central y longitudinal del mencionado alojamiento.

2. El dispensador de la reivindicación 1 donde el borde está dispuesto en un ángulo superior a 10 grados en relación con el mencionado plano.

3. El dispensador de la reivindicación 1 donde el borde está distribuido en un ángulo de aproximadamente 5 a 30 grados en relación con el plano antes mencionado.

4. El dispensador de la reivindicación 3 donde el borde está distribuido en un ángulo de 10 a 20 grados

aproximadamente en relación con el mencionado plano.

5. El dispensador de la reivindicación 1 donde el borde está distribuido en un ángulo de 15 grados aproximadamente en relación con el mencionado plano.

6. El dispensador de la reivindicación 1 donde el eje del centro longitudinal del alojamiento pasa dentro de un área de 1 mm del punto medio a lo largo del borde antes mencionado.

7. El dispensador de la reivindicación 6 donde el eje del centro longitudinal del alojamiento pasa a través del punto medio a lo largo de dicho borde.

8. El dispensador de la reivindicación 1 donde el mencionado cabezal del aplicador exhibe una flexión aplanada cuando se presiona contra una superficie.

9. El dispensador de la reivindicación 1 donde dicho cabezal de la aplicadora exhibe una flexión hacia el borde cuando se presiona contra una superficie.

10. El dispensador de las reivindicaciones 8 o 9 donde el mencionado borde se define por una pieza que está instalada sobre una lengüeta flexible.

11. El dispensador de la reivindicación 1 donde el mencionado material es una cinta de corrección.

12. El dispensador de la reivindicación 1 donde el cabezal del aplicador está construido de manera que gire alrededor de un eje.

13. El dispensador de la reivindicación 12 donde el cabezal del aplicador gira alrededor del eje de rotación del carretel de alimentación.

14. Un dispensador para aplicarle un material a una superficie, que comprende:

un alojamiento, por lo menos una porción principal que es en esencial cilíndrica;

dentro del alojamiento, se encuentra un carretel de alimentación que gira alrededor de un eje y una cantidad de material almacenado en el mencionado carretel de alimentación en una serie de anchos, donde el eje de rotación del carretel se encuentra sustancialmente en paralelo al eje longitudinal del alojamiento,

y en un extremo del alojamiento, se encuentra un cabezal de aplicador alrededor del cual se hace pasar el material, y además el cabezal está construido de tal manera que presione el material contra la superficie, y el cabezal tiene un borde, sobre el cual se hace pasar el material, que se ubica de tal manera que quede en su punto medio a lo largo muy cerca del eje central longitudinal del alojamiento, de tal manera que el alojamiento no gire en ninguna cantidad significativa alrededor de su eje central longitudinal cuando el borde se haga presionar contra una superficie durante el uso.

15. El dispensador de la reivindicación 14 donde el punto medio está dentro de un 1 mm de eje central longitudinal.

16. El dispensador de la reivindicación 15 donde el punto medio se ubica en el eje del centro longitudinal.

17. El dispensador de la reivindicación 14 donde dicho material es una cinta de corrección.

18. Un dispensador para aplicarle un material a una superficie, que comprende:

un alojamiento, una porción principal por lo menos que es en forma cilíndrica,

dentro del alojamiento, un carretel rotativo alrededor de un eje y una cantidad de material almacenado en el carretel de alimentación en una serie de anchos, donde el eje de rotación del carretel está esencialmente en paralelo al eje longitudinal del alojamiento, y

un extremo del alojamiento, un cabezal del aplicador alrededor del cual se hace pasar el material, donde el cabezal está construido de tal manera que presione el material contra la superficie, además el cabezal tiene una pieza de bruñido que define un borde, sobre el cual pasa el material.

y esta pieza de bruñido está instalada en una lengüeta en forma de cantiléver de tal manera que se le permita a la pieza de bruñido flexionarse en un sentido plano cuando el borde se presione contra una superficie.

19. El dispensador de la reivindicación 18 donde la lengüeta está construida de manera que le permita a la pieza de bruñido flexionarse hacia el borde cuando este se someta a una carga en el sentido de dicho borde.

20. El dispensador de la reivindicación 18 donde el mencionado borde está dispuesto en un ángulo superior a 5 grados en relación con un plano perpendicular al eje del centro de longitudinal del alojamiento.

21. El dispensador de la reivindicación 18 donde el eje del centro longitudinal del alojamiento pasa dentro de un área de 1 mm del punto medio a lo largo del mencionado borde.

22. El dispensador de la reivindicación 18 donde el eje del centro longitudinal del alojamiento atraviesa el punto medio a lo largo del mencionado borde.

23. Un dispensador para aplicar un material a una superficie, que comprende:

un carretel de alimentación que gira alrededor de un eje;

una cantidad de cinta no utilizada que se almacena en el mencionado carretel de alimentación;

un cabezal de aplicador alrededor del cual se hace pasar la cinta, donde el cabezal presiona la cinta contra una superficie con el fin de depositar una capa de transferencia de la cinta sobre la superficie, donde el cabezal define un borde sobre el cual pasa la cinta, donde el borde está

dispuesto en un ángulo superior a 5 grados en relación con un plano que es perpendicular al eje central longitudinal del alojamiento;

un alojamiento que rodea por lo menos una mayor parte de la cinta, una porción sustancial del alojamiento es esencialmente cilíndrica en su forma; y

una superficie de apoyo construida para soportar la cinta en la medida en que esta se desplaza desde el carretel de alimentación hasta el borde de manera que evite que la cinta se someta a una carga significativa en el sentido del borde.

24. El dispensador de la reivindicación 23, donde la mencionada superficie de soporte comprende una superficie esencialmente continua.

25. El dispensador de la reivindicación 24, donde la mencionada superficie de soporte comprende una porción en forma de rampa y una porción cónica.

26. El dispensador de la reivindicación 23, donde la mencionada superficie de soporte comprende una superficie discontinua y segmentada.

27. El dispensador de la reivindicación 26 donde la mencionada superficie segmentada comprende una serie de guías espaciadas, piezas o espigas.

28. Un dispensador para aplicar un material a una superficie, que comprende:

un carretel de administración que gira alrededor de un eje;

una cantidad de cinta no utilizada almacenada en el mencionado carretel de alimentación;

un cabezal de aplicador sobre el cual se pasa la cinta, y el cabezal presiona la cinta contra una superficie con el fin de depositar una capa de transferencia de la cinta sobre la superficie, y el cabezal define un borde sobre el cual pasa la cinta;

un alojamiento que rodea por lo menos una gran parte de la cinta; y

una superficie de soporte construida para apoyar la cinta cuando esta se desplaza desde el carretel de alimentación hasta el borde permitiendo la orientación del vector normal al plano de la cinta con el fin de cambiar desde la posición esencialmente paralela hasta el borde, por una posición esencialmente perpendicular sobre una distancia del eje inferior a 30 mm aproximadamente.

29. El dispensador de la reivindicación 28 donde el eje longitudinal de la cinta es curvado durante el cambio de orientación.

30. El dispensador de la reivindicación 28 donde la superficie de soporte está configurada para permitir que se presente el cambio de orientación dentro de una distancia radial de menos de unos 5 mm.

31. Un dispensador para aplicarle un material a una superficie, que comprende:

un carretel de alimentación rotativo alrededor de un eje:

una cantidad de cinta no utilizada almacenada en el mencionado carretel;

un cabezal de aplicador alrededor del cual se hace pasar la cinta, donde el cabezal presiona la cinta contra una superficie para depositar una capa de transferencia de la cinta sobre la superficie, y el cabezal define un borde sobre el cual se pasa la cinta, y el borde está dispuesto en un ángulo superior a 5 grados en relación con un plano perpendicular al eje del centro longitudinal del alojamiento;

un alojamiento que rodea por lo menos una gran parte de la cinta, donde una sección sustancial del alojamiento es especialmente cilíndrica en su forma; y

una superficie de apoyo construida para soportar la cinta a medida que esta se desplaza desde el carretel de alimentación hasta el borde, y la superficie de soporte se configura de manera que ambos bordes de la cinta recorran la misma trayectoria a medida que la cinta se desplaza entre el carretel de abastecimiento y el borde.

32. El dispensador de las reivindicaciones 18, 23, 28 o 31, donde el material comprende una cinta de corrección, que lleva una capa de transferencia sobre una de las superficies.

33. El dispensador descrito en la reivindicación 32, donde la superficie de soporte está configurada para apoyar la cinta solamente sobre la superficie opuesta a aquella superficie que lleva la capa de transferencia.

34. El dispensador de las reivindicaciones 1, 14, 18, 23, 28 o 31 donde el borde tiene una longitud de por lo menos 9 mm.

35. El dispensador de la reivindicación 34 donde el borde tiene una longitud de 9 a 15 mm aproximadamente.

36. El dispensador de la reivindicación 35 donde el borde tiene una longitud de 10 a 12 mm aproximadamente.

37. El dispensador de las reivindicaciones 1, 14, o 18 donde dicho material está enrollado helicoidalmente sobre el mencionado carretel de abastecimiento.

38. El dispensador de la reivindicación 37 donde los embobinados adyacentes del material se traslapan uno sobre otro en 10 a 40% aproximadamente del ancho del material.

39. El dispensador de las reivindicaciones 23, 28 o 31 donde la mencionada cinta se enrolla helicoidalmente sobre el mencionado carretel de abastecimiento.

40. El dispensador de la reivindicación 39 donde los embobinados adyacentes de la cinta se traslapan uno sobre otro en un 10 al 40% del ancho del material aproximadamente.

41. El dispensador de las reivindicaciones 1, 14, 18, 23, 28 o 31 donde por lo menos una porción del cabezal del aplicador es transparente.

42. El dispensador de las reivindicaciones 1, 14 o 18 que comprende además una o más guías de cinta que reorientan el material a medida que este se desplaza desde el carretel de abastecimiento hasta el cabezal.

43. El dispensador de la reivindicación 42 donde las guías de cinta comprenden un material de energía de superficie baja.

44. El dispensador de la reivindicación 43 donde el mencionado material de energía de superficie baja comprende un politetrafluoroetileno (PTFE).

45. El dispensador de las reivindicaciones 23, 28 o 31 que comprende además una o más guías de cinta que reorientan la cinta a medida que esta se desplaza desde el carretel de abastecimiento hasta el cabezal.

46. El dispensador de la reivindicación 45 donde las guías de cinta comprenden un material de energía de superficie baja.

47. El dispensador de la reivindicación 46 donde el mencionado material de energía de superficie baja comprende politetrafluoroetileno (PTFE).

48. El dispensador de la reivindicación 42 donde las guías de cinta incluyen una superficie con una porción cóncava sobre la cual pasa el material.

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49. El dispensador de la reivindicación 45 donde las guías de cinta incluyen una superficie con porción cóncava sobre la cual pasa la cinta.

La anterior es Traducción Oficial de un documento presentado originalmente en inglés. Esta traducción fue realizada por **GABRIEL RUEDA CHADID (Traductor Oficial)**. Resolución 5996 del Minjusticia, por lo cual estampo mi Sello y Firmo.

Bogotá D.C., Noviembre 24 del 2000.

GABRIEL RUEDA CHADID
TRADUCTOR OFICIAL
RESOLUCION 5996 DE NOV. 29-82
MINISTERIO DE JUSTICIA.

JOSE LLOREDA CAMACHO
The Gille
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PA 325686

THE UNITED STATES OF AMERICA

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UNITED STATES DEPARTMENT OF COMMERCE

United States Patent and Trademark Office

November 03, 2000

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APPLICATION NUMBER: ***09/635,972***
FILING DATE: ***August 10, 2000***

By Authority of the
COMMISSIONER OF PATENTS AND TRADEMARKS

P. R. Grant

P. R. GRANT
Certifying Officer

08-11-00

A 264

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Frederick P. Fish
1855-1930

W.K. Richardson
1859-1951

August 10, 2000

Attorney Docket No.: 00216-503002

Box Patent Application
Commissioner for Patents
Washington, DC 20231

Presented for filing is a new original patent application of:

Applicant: Crispin M. Miller and Jean L. Spencer

Title: DISPENSER FOR APPLYING A MATERIAL TO A SURFACE

BOSTON
DALLAS
DELAWARE
NEW YORK
SAN DIEGO
SILICON VALLEY
TWIN CITIES
WASHINGTON, DC

Enclosed are the following papers, including those required to receive a filing date under 37 CFR 1.53(b):

	Pages
Specification	20
Claims	7
Abstract	1
Declaration	[To be Filed at a Later Date]
Drawing(s)	23

Enclosures:
— Postcard.

Basic filing fee	$690
Total claims in excess of 20 times $18	$522
Independent claims in excess of 3 times $78	$234
Fee for multiple dependent claims	$0
Total filing fee:	$1446

CERTIFICATE OF MAILING BY EXPRESS MAIL

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I hereby certify under 37 CFR §1.10 that this correspondence is being deposited with the United States Postal Service as Express Mail Post Office to Addressee with sufficient postage on the date indicated below and is addressed to the Commissioner for Patents, Washington, D.C. 20231.

8-10-00
Date of Deposit

Linda Wesele
Signature

Linda Wesele
Typed or Printed Name of Person Signing Certificate

This application is a continuation-in-part (and claims the benefit of priority under 35 USC 120) of U.S. application serial no. 09/556,598, filed April 21, 2000, which is a continuation of U.S. serial no. 09/390,965, filed September 7, 1999. The disclosure of the prior applications are considered part of (and are incorporated by reference in) the disclosure of this application.

A check for the filing fee is enclosed. Please apply any other required fees or any credits to deposit account 06-1050, referencing the attorney docket number shown above.

If this application is found to be incomplete, or if a telephone conference would otherwise be helpful, please call the undersigned at (617) 542-5070.

Kindly acknowledge receipt of this application by returning the enclosed postcard.

Please send all correspondence to:

Robert Nabinger
Fish & Richardson P.C.
225 Franklin Street
Boston, MA 02110-2804

Respectfully submitted,

Celia H. Leber

Celia H. Leber
Reg. No. 33,524
Enclosures
CHL/jzd
20107090.doc

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APPLICATION FOR UNITED STATES PATENT

in the names of

Crispin M. Miller and Jean L. Spencer

for

Dispenser for Applying a Material to a Surface

09635972 .081000

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Tel.: (617) 542-5070
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ATTORNEY DOCKET: 00216-503002

DATE OF DEPOSIT: August 10, 2000

EXPRESS MAIL NO.: EM EL228029557US

Dispenser for Applying a Material to a Surface

This application is a Continuation-in-Part of U.S. Serial No. 09/556,598, filed April 21, 2000, which was a Continuation-in-Part of U.S. Serial No. 09/390,965, filed September 7, 1999.

TECHNICAL FIELD

The invention relates generally to the field of dispensers, and in particular to dispensers from which a material is deposited onto a surface from a tape, e.g., a correction tape, stored in the dispenser.

BACKGROUND

Correction tape dispensers are used to apply a thin, white, opaque piece of correction tape over visible markings which have been made on a surface. Typically, the tape is used to cover a mistake in text on a piece of paper. After the tape has been applied over the mistake, the correct text can be written on top of the tape to fix the mistake.

U.S. Patent 5,490,898 discloses a fairly typical arrangement of a correction tape dispenser (coating film transfer tool). The tool includes a case 2 formed in a flat box-like shape. Case 2 contains a pay-out reel 6 with a coating film transfer tape T wound thereabout, and a winding reel 7 for collecting the used tape T'. A tape drive D connects the two reels to maintain tension in the tape. The tape includes a backing layer which remains on the reels, and a covering layer for covering the visible image on the surface. Tape T passes around a transfer head H as the tape travels from reel 6 to reel 7. The arrangement of head H causes the tape covering layer to be deposited on the surface contacted by the tape while under pressure from the user.

Tape T and used tape T' are stored respectively on reels 6 and 7 in a multi-layer thick/single-layer wide arrangement. This way of storing the tape on the reels, and the arrangement of the reels relative to each other and to head H, causes the case to have the flat box-like shape. Having this case in such a shape is less than optimal for a correction tape

dispenser. First, the case can at least partially block the user's view of the material being corrected. Second, users would find a dispenser shaped more along the lines of a writing instrument (e.g. a cylindrically shaped pen or pencil) more natural to use when correcting writing on paper.

U.S. Patent 5,049,229 discloses an apparatus for the application of an adhesive film in which the supply reel 5 and take-up reel 11 are both mounted on a shaft or axis 9. The tape is stored on these reels in a manner similar to that described in the previous paragraph (i.e. a multi-layer thick/single-layer wide arrangement). Such an arrangement also results in an apparatus shape having the drawbacks mentioned at the end of the previous paragraph.

SUMMARY

The present invention is directed to overcoming one or more of the problems set forth above. Briefly summarized, according to one aspect of the present invention, a dispenser for applying a material to a surface includes a spool rotatable about an axis and a quantity of tape stored on the spool. The tape is passed around an applicator head, the head pressing the tape against a surface to deposit at least a portion of the tape on the surface. The applicator head is located substantially along the axis.

In preferred embodiments, the dispenser is similar in shape to a writing instrument, and thus may be naturally and comfortably wielded by a user of the dispenser.

In one aspect, the invention features a dispenser for applying a material to a surface, including a housing, at least a major portion of which is substantially cylindrical; within the housing, a supply spool rotatable about an axis and a quantity of material stored on the supply spool in a plurality of widths wide; and, at one end of the housing, an applicator head about which the material is passed, the head being constructed to press the material against the surface, the head having an edge, over which the material passes, that is disposed at an angle of greater than 5 degrees relative to a plane that is perpendicular to the longitudinal center axis of the housing.

Preferred implementations of this aspect of the invention may include one or more of the following features. The edge is disposed at an angle of greater than 10 degrees relative to the plane. The edge is disposed at an angle of from about 5 to 30 degrees, and more

preferably an angle of from about 10 to 20 degrees, e.g., about 15 degrees. The longitudinal center axis of the housing passes within 1 mm of the lengthwise midpoint of the edge, more preferably through the midpoint. The applicator head exhibits flat-wise flexure when pressed against a surface. The applicator head exhibits edge-wise flexure when pressed against a surface. The edge is defined by a member that is mounted on a flexible tongue. The material is a correction tape. The applicator head is constructed to pivot about an axis. The applicator head pivots about the axis of rotation of the supply spool.

In another aspect, the invention features a dispenser for applying a material to a surface, including a housing, at least a major portion of which is substantially cylindrical; within the housing, a supply spool rotatable about an axis and a quantity of material stored on the supply spool in a plurality of widths wide, the axis of rotation of the spool being substantially parallel to the longitudinal axis of the housing; and, at one end of the housing, an applicator head about which the material is passed, the head being constructed to press the material against the surface. The head has an edge, over which the material passes, that is positioned so that its lengthwise midpoint is in the vicinity of the longitudinal center axis of the housing so that the housing will not tend to rotate about its longitudinal center axis when the edge is pressed against a surface during use.

Preferred implementations of this aspect of the invention may include one or more of the following features. The midpoint is within 1 mm of the longitudinal center axis, more preferably the midpoint lies on the longitudinal center axis. The material is a correction tape.

In another aspect, the invention features a dispenser for applying a material to a surface, including a housing, at least a major portion of which is substantially cylindrical; within the housing, a supply spool rotatable about an axis and a quantity of material stored on the supply spool in a plurality of widths wide, the axis of rotation of the spool being substantially parallel to the longitudinal axis of the housing; and, at one end of the housing, an applicator head about which the material is passed, the head being constructed to press the material against the surface, the head having a burnishing member defining an edge over which the material passes. The burnishing member is mounted on a cantilevered tongue so as to allow the burnishing member to flex flat-wise when the edge is pressed against a surface.

Preferred implementations of this aspect of the invention may include one or more of the following features. The tongue is constructed to allow the burnishing member to flex edge-wise when the edge is subjected to an edge-wise load. The edge is disposed at an angle of greater than 5 degrees relative to a plane that is perpendicular to the longitudinal center axis of the housing. The longitudinal center axis of the housing passes within 1 mm of the lengthwise midpoint of said edge, preferably the longitudinal center axis of the housing passes through the lengthwise midpoint of said edge.

In another aspect, the invention features a dispenser for applying a material to a surface, including (a) a supply spool rotatable about an axis; a quantity of unused tape stored on the supply spool; (b) an applicator head about which the tape is passed, the head pressing the tape against a surface to deposit a transfer layer of the tape onto the surface, the head defining an edge over which the tape passes, the edge being disposed at an angle of greater than 5 degrees relative to a plane that is perpendicular to the longitudinal center axis of the housing; (c) a housing which surrounds at least a majority of the tape, a substantial portion of the housing being substantially cylindrical in shape; and (d) a support surface constructed to support the tape as it moves from the supply spool to the edge in a manner that prevents the tape from being subjected to a significant edgewise load.

Preferred implementations of this aspect of the invention may include one or more of the following features. The support surface includes a substantially continuous surface. The support surface includes a ramped portion and a conical portion. The support surface includes a discontinuous, segmented surface. The segmented surface comprises a series of spaced guides, posts or pegs. The material comprises a correction tape, carrying a transfer layer on one surface. The support surface is configured to support the tape only on the surface opposite the surface carrying the transfer layer.

In a further aspect, the invention features a dispenser for applying a material to a surface, including (a) a supply spool rotatable about an axis; (b) a quantity of unused tape stored on the supply spool; (c) an applicator head about which the tape is passed, the head pressing the tape against a surface to deposit a transfer layer of the tape onto the surface, the head defining an edge over which the tape passes; (e) a housing which surrounds at least a majority of the tape; and (f) a support surface constructed to support the tape as it moves from the supply spool to the edge to allow the orientation of the vector normal to the plane of

the tape to change from substantially parallel to the edge to substantially perpendicular thereto over an axial distance of less than about 30 mm.

Preferred implementations of this aspect of the invention may include one or more of the following features. The longitudinal axis of the tape is curved during the change of orientation. The support surface is configured to allow the change of orientation to occur within a radial distance of less than about 5 mm from the longitudinal axis of the housing. The material comprises a correction tape, carrying a transfer layer on one surface. The support surface is configured to support the tape only on the surface opposite the surface carrying the transfer layer.

In yet another aspect, the invention features a dispenser for applying a material to a surface, including (a) a supply spool rotatable about an axis; (b) a quantity of unused tape stored on the supply spool; (c) an applicator head about which the tape is passed, the head pressing the tape against a surface to deposit a transfer layer of the tape onto the surface, the head defining an edge over which the tape passes, the edge being disposed at an angle of greater than 5 degrees relative to a plane that is perpendicular to the longitudinal center axis of the housing; (d) a housing which surrounds at least a majority of the tape, a substantial portion of the housing being substantially cylindrical in shape; and (e) a support surface constructed to support the tape as it moves from the supply spool to the edge, the support surface being configured so that both edges of the tape travel the same distance as the tape moves between the supply spool and the edge.

Preferred implementations of this aspect of the invention may include one or more of the following features. The material comprises a correction tape, carrying a transfer layer on one surface. The support surface is configured to support the tape only on the surface opposite the surface carrying the transfer layer.

Other features and advantages of the invention will be apparent from the description and drawings, and from the claims.

DESCRIPTION OF DRAWINGS

Fig. 1 is a perspective view of a first embodiment of a correction tape dispenser according to the invention;

Fig. 2 is a perspective view of a second embodiment of a correction tape dispenser;

Fig. 3 is a partial sectional view of Fig. 2 taken along the lines 3-3;

Fig. 4 is a partial sectional exploded view of an alternative pair of spools usable in the invention;

Fig. 5 is a partial sectional view of the spools of Fig. 4 assembled together;

Figs. 6(a)-(d) are schematic side views showing various orientations of an applicator head to its housing;

Fig. 7 is a perspective view of a correction tape dispenser according to an alternate embodiment of the invention;

Fig. 7(a) is a side view of the correction tape dispenser of Fig. 7 with the tape and a portion of the housing omitted for clarity;

Fig. 7(b) is a cross-sectional view of the correction tape dispenser of Fig. 7(a), taken along line B-B;

Fig. 8 is a side view of the tip portion of the correction tape dispenser of Fig. 7;

Fig. 9 is a partial enlarged perspective view of the tip portion, showing the tape bed;

Fig. 9(a) is a perspective view of a correction tape traveling along the tape bed shown in Fig. 9;

Figs. 10 and 10(a) are, respectively, a perspective view and a top view of the shape of the correction tape as it travels along the tape bed in the path shown in Fig. 9(a);

Fig. 11 is a diagram showing the layout of a pattern of bends that will give the tape path shown in Figs. 9(a), 10 and 10(a);

Fig. 12 is a partial enlarged side view of a tip portion according to one embodiment of the invention;

Fig. 13 is a partial enlarged perspective view of a tip portion according to an alternate embodiment of the invention;

Fig. 13(a) is a partial further enlarged perspective view of the tip portion of Fig. 13, with a portion of the tongue and burnishing member cut away;

Fig. 14 is a partial enlarged perspective view of a tip portion according to another alternate embodiment of the invention;

Fig. 14(a) is view similar to Fig. 14, but taken from a different orientation, showing the axes of rotation of the tongue portion;

Fig. 15 is a partial enlarged perspective view of a tip portion according to another alternate embodiment of the invention;

Fig. 16 is a partially cut-away side view of a tape dispenser;

Figs. 17 and 18 are highly enlarged schematic views illustrating the different paths taken over a tape guide by tape from alternate layers of helical windings;

Figs. 19 and 20 are highly enlarged perspective views showing the different paths taken over the tape guide shown in the cut-away area of Fig. 16 by tape from alternate layers of helical windings.

DETAILED DESCRIPTION

Beginning with Fig. 1, a correction tape dispenser 10 includes a housing 12, a portion of which has been removed to facilitate viewing of the inside of the dispenser. The housing is preferably made of plastic and is substantially cylindrical in shape. An axle 14 extends down from the top of the housing. A cross section of housing 12 taken perpendicular to the axle is preferably circular or oval in shape (the housing diameter has been exaggerated for clarity). The axle is fixed to the housing such that it can either (a) rotate about its long axis, or (b) not rotate about its long axis. If the axle is rotatable, this allows an applicator head 32 secured to an end of the axle to rotate freely about the long axis of the axle. Alternatively, the axle can be arranged to be manually rotated to fixed orientations about its long axis by a detent mechanism (not shown) so that the head can be rotated or swiveled to fixed orientations about the long axis of the axle.

A supply spool 16 and a take-up spool 18 are rotatably supported on axle 14. The spools are secured together by a nut 20 and spring 22, and a flange 24 of spool 18 and a flange 26 of spool 16 interface to form a clutch between the two spools (operation of the nut, spring and flanges will be explained in more detail below with respect to Fig. 3). As a result, spools 16 and 18 are movable in unison along axle 14 and can rotate freely about the axle, although the clutch provides some resistance to the spools rotating about the axle relative to each other.

A supply of unused correction tape 28 is stored on spool 16. The tape has a thickness, width and length, and is stored on spool 16 in a plurality of layers thick and a plurality of widths wide (similar to thread on a spool). The tape may be wound helically, as

will be discussed below, or in any suitable manner. Preferably the tape has a width to length ratio of 0.01 or less. Tape 28 is guided off spool 16 by a first guide slot 30 which extends inward of the housing. The tape then passes around an applicator head 32, past a guide bar 34, through a second guide slot 36, and onto take-up spool 18. Head 32 is preferably made of plastic, thus allowing the head to flex during use.

Head 32 is at least partially located within an imaginary cylindrical space of unlimited length generated around axis 14. The radius of this cylindrical space is equal to the radius of the large spool when this spool is full (in this case the take-up spool). If the two spools were not coaxial, then this cylindrical space would be generated around the axis of the spool closer to head 32, with the radius of the cylindrical space equal to the radius of the spool when this spool is full.

As is well known in the art, the tape includes a masking layer 38 and a backing layer 40. To use the dispenser, a user grasps housing 12, presses head 32 against a surface 42 (in this case the head contacts surface 42 just after the letter "E"), and moves the dispenser in the direction of an arrow 44. This causes tape 28 to unwind from spool 16, move in the direction of arrows 46 and 48, and wind up on spool 18. This tape movement causes the spools to rotate in the direction of arrow 50. The tape movement also causes the spools to move up or down along axis 14 because guide slots 30, 36 are fixed on the housing and the tape unwinds from spool 16 back and forth from one end of the spool to the other. Rather than a masking layer, the tape may alternatively carry a layer of material for highlighting, marking, labeling, transferring decals, scenting, gluing, bonding, adhering, removing debris, or applications in the cosmetic and medical areas.

Alternatively, the spools can be fixed so that they do not move up and down along axis 14 while guides 30, 36 are each mounted for coordinated movement on a rod (not shown) which is parallel to axis 14. In this case, the guides will move up and down on their respective rods as the tape unwinds from supply spool 16 and rewinds onto take-up spool 18 while the spools themselves will not move up and down along the axis.

As is well known in the art, the adherence of masking layer 38 to surface 42 (e.g. one side of a piece of paper) is greater than the adherence of masking layer 38 to backing layer 40. As a result, masking layer 38 peels away from backing layer 40 and adheres to surface

42, covering up some letters in the process. When the dispenser is lifted off surface 42, masking layer 38 on surface 42 tears free from the masking layer still on tape 28.

The diameter of the take-up spool is greater than the diameter of the supply spool. The reason for this diameter difference is to enable the take-up spool to rewind the backing layer faster than the new tape is being paid out from the supply spool, thereby taking up any slack that may inadvertently be created at head 32. This diameter difference would cause a continual stretching of the tape as the dispenser is used, but the clutch between the two spools 16, 18 relieves this tension buildup and maintains a fairly constant tension in tape 28.

Turning to Figs. 2 and 3, a second embodiment of the invention will be described. Many of the features of this embodiment are similar to features found in the first embodiment. A correction tape dispenser 60 includes a housing 62 which is substantially cylindrical (having a circular or oval cross section) along most of its length (one half of the housing is not shown to facilitate viewing of the inside of the dispenser). The dimensions of this housing are similar to those of a writing instrument such as a porous-tip marker. The design can be altered so that the housing dimensions approach those of a traditional pen.

In this embodiment an axle 64 is secured to a forward and rearward part of the housing. The axle does not rotate about its long axis. An applicator head 66 is secured to the housing rather than to the axle as in Fig. 1. Although head 66 is shown as having an edge 65 about which the tape is wrapped, edge 65 could be replaced by an alternative arrangement such as a cylindrical roller. Edge 65 lies on a line of contact between the tape and the surface being corrected. This line extends in a direction that intersects the axis about which the spools rotate. In this embodiment the line and axis intersect at an acute angle, while in the Fig. 1 embodiment, they intersect at a right angle. In other embodiments, the line may pass near the axis without intersecting it.

The path of tape 67 in this embodiment has some similarities to the tape path in the first embodiment (Fig. 1). The tape unwinds from a supply spool 68 and passes through a guide slot 70. The tape then travels down the dispenser, passes over a peg-shaped guide 71 (Fig. 2) and twists about 90 degrees about its longitudinal axis behind head 66 as viewed in Figs. 2 and 3. Guide 71 is tapered and somewhat conical (a truncated cone) to facilitate the tape veering toward a midplane of the dispenser. After wrapping around head 66, tape 67 again twists about 90 degrees about its longitudinal axis, and passes over another peg-shaped

guide 72 which is similar in shape to guide 71. The tape then extends over guide slot 70 and passes through a second guide slot 74, after which the used tape is wound onto take-up spool 76. With the tape coming off the side of spool 68 facing the housing (as shown in Fig. 2), arrows 80, 82, 84 and 86 indicate the path of travel of the tape. In both this embodiment and the embodiment of Fig. 1, each tape layer wound on the spool is in the form of a helix traversing substantially a full axial length of the winding region of the spool.

With reference to Fig. 3, operation of a nut 88 and spring 90 along with spools 68 and 76 will be described. This assemblage holds the two spools together to form a clutch between the spools. Spool 68 actually extends all the way through spool 76 and ends in a threaded portion 92. Spool 68 has a flange 94 at one end and a flange 96 about midway along the spool. Spool 76 surrounds spool 68 and includes a flange 97 at one end and a flange 98 at the other end. Nut 88 is screw-threaded onto threaded end 92 of spool 68 to press spring 90 against flange 98 of spool 76. This arrangement presses flanges 96 and 97 against each other, forming a friction clutch. In this embodiment there is minimal friction between spool 68 and axle 64.

Operation of the dispenser of Figs. 2 and 3 is essentially the same as for the dispenser of Fig. 1. The tape is maintained under tension and travels from spool 68, around head 66, and back to spool 76. This tape movement causes the spools to rotate about axle 64, with the clutch allowing the spools to slip rotationally relative to each other to maintain tape tension fairly constant. The tape movement also causes the spools to move in unison up and down on axle 64 as the tape unwinds from spool 68 and rewinds on spool 76.

Figs. 6(a)-(d) show some of the possible applicator head orientations. A head 130 in Fig. 6(a) is similar to head 66 in Figs. 2 and 3 in that the center of head edge 132 is below a centerline 134 of a housing 136. Fig. 6(b) discloses a head 138 in which the center of a head edge 140 is along centerline 134 of a housing 142. Fig. 6(c) discloses a head 144 in which a centerline 145 of head 144 is parallel to a centerline 146 of a housing 148. Fig. 6(d) discloses a head 150 in which a centerline of the head and centerline 146 of housing 152 are collinear.

The four head positions shown in Figs. 6(a)-(d) can be defined by an angle between a centerline of the head and the centerline of the housing, and by the perpendicular distance from the centerline of the housing to the midpoint of the head edge. There could be many

more head orientations defined by these two parameters. In addition, the head can be made to swivel freely along the angle to fixed settings. The head could also be made to swivel freely around its centerline while it is swiveling freely along the angle.

Turning to Figs. 4 and 5, an alternative embodiment of the spools is disclosed. A supply spool 100 is similar in its lower end 102 to spool 68. The upper end 104 of the spool however is different. Spool 100 is made of plastic and is injection molded to have the shape shown in Fig. 4. Spool 100 is partially split lengthwise at end 104 and has a pair of arms 106 and 108. Spool 100 is molded to have a gap 110 between the arms, and a flared portion 109, 111 at the end of each arm. A take-up spool 112 is similar to spool 76 except that an internal annular recess 114 is provided at one end of the spool (half the take-up spool is not shown to facilitate viewing).

Spools 100 and 112 are assembled by pressing arms 106, 108 together and inserting them into an end of spool 112. Gap 110 between the arms allows them to compress sufficiently to fit through spool 112. Spool 100 is inserted into spool 112 until flared portions 109, 111 of the arms spring outward into annular recess 114 due to the inherent spring characteristics of the arms. Portions 109, 111 and recess 114 hold the spools together. Radially outward force by arms 106 and 108 on surfaces 114 and 115 of take-up spool 112 creates friction between upper spool end 104 and take-up spool 112 to form a friction clutch. Some frictional resistance can also be provided between flanges 116 and 118. This embodiment eliminates the nut and spring of the earlier embodiments.

Referring to Fig. 5, each end portion 120, 122 of a winding region 124 of spool 100 decreases in diameter towards its respective spool end to stabilize a turn in the winding at the end of each layer, in which turn, if the tape is wound helically, a helix angle of the wound tape reverses, and to facilitate that reversal of helix angle between one helical layer and the next helical layer which spirals in the opposite direction. In other words, the maximum winding diameter of each spool (without any tape on the spool) is in the central region of the spool. This same feature is found on spool 112 and the other spools discussed above.

An alternate embodiment of the invention is shown in Figs. 7-7A. In this embodiment, the edge 165 of head 166 is disposed at an angle A with respect to a perpendicular (P) to the centerline CL (longitudinal axis) of the housing 12. Preferably, angle A is from about 5 to 30 degrees, more preferably about 10 to 20 degrees. The angled

edge allows the user to comfortably apply the tape to a paper surface while holding the housing in an ergonomic position. It is also preferred that the lengthwise midpoint M of the edge 165 lie on or relatively close to the centerline of the housing, e.g., within 1 mm of the centerline, more preferably within 0.5 mm, and most preferably on the centerline. This positioning of the edge allows the edge to be pressed against a surface without the housing 12 tending to rotate in the user's hand (if the above constraints are not met, the off-center force resulting from pressing the edge against a surface will exert a rotational moment with respect to the centerline of the housing, requiring extra effort to keep the housing from turning in the user's hand).

Preferably, edge 165 is relatively long, as shown, to give added stability and help the user orient the edge on the paper. This feature may also help to prevent the tape from slipping off the edge during use. The length L of edge 165 is preferably at least 9 mm, more preferably from about 9-15 mm, and most preferably from about 10-12 mm.

The dispenser shown in Figs. 7-7A also includes tape guides 270, 274, which reorient the tape as it passes from the supply spool 167 to the edge 165, and again as the tape backing runs from the edge to the take-up spool 176. These tape guides are preferably formed of a low surface-energy material, e.g., a polytetrafluoroethylene (PTFE) polymer such as TEFLON polymer. A preferred geometry for tape guides 270, 274 will be described below with reference to Figs. 16-20.

As shown in Fig. 8, head 166 is preferably a modular unit that is molded separately and assembled into the housing during manufacture of the dispenser. In the embodiment shown in Figures 7 and 8, the head is located within the housing and pinned in place using guide aperture 168 located on guide member 170. Guide member 170 is sandwiched between two clam-shell halves of the housing and secured in place by a pin (not shown) inserted through guide aperture 168. The positioning of the head 166 relative to housing 12 is further guided by the engagement of surface 172 with the circular opening of housing 12. Edge 165 is defined by a burnishing member 198. Preferably, at least the burnishing member 198 is transparent, so that the user can look through the burnishing member to see the marking being corrected. For ease of manufacture, preferably the entire head 166 is formed of a transparent plastic.

The edge positioning described above requires the tape to travel in a non-planar path as it runs between the spool 167 (Fig. 7A) and the edge 165, and again as the tape backing runs from the edge to the take-up spool 176 (i.e., as the tape moves through both "runs" of the tape path). The travel to the edge 165 and back should be accomplished without tearing, stretching or otherwise distorting or damaging the tape, and thus it is important that the tape not encounter any significant edge-wise loads (by "significant", we mean sufficient to cause damage to or distortion – such as wrinkling – of the tape). Also, the tape should not be drawn off its intended path, as this could lead to malfunctioning of the dispenser; and the tape path must have as smooth a shape as practicable, to minimize drag on the motion of the tape.

To keep the pen-like form of the housing as slender as possible, both runs of tape – from the supply spool to the tip, and from the tip back to the takeup spool – should pass through the housing on the same side of the spools, e.g., as shown in Fig. 7(b). Thus, as the tape passes in each direction past the forward end 169 of the space provided in the housing for the spool 167 to travel toward edge 165, both runs of tape must pass through a crescent-shaped opening 188 (indicated in dotted lines) between the housing and the space reserved for the spool. For the position and orientation of the tip 166 shown in Fig. 7, this travel between opening 188 and edge 165 will also entail a need for the orientation of the tape (as defined by a vector normal to its surface) to rotate through nearly 90 degrees between opening 188 and the parts of the run approaching or leaving edge 165.

The degree of the inclination angle of edge 165 in this product configuration (for example, as discussed above, in the embodiment shown in Fig. 7, the angle A is preferably greater than about 5 degrees), and the need for the tape to pass through opening 188, combined with the need for a tape path that will minimize edgewise loads and deviation of the tape from its path, make it generally necessary to guide the tape along a specific non-planar course designed to meet these constraints. Because the inclination of edge 165 causes the lower end of edge 165 to be closer than the upper end to opening 188, the tape path should be designed to compensate for this distance discrepancy so as not to create a corresponding discrepancy in the path lengths of the two edges of the tape. That is, the tape path should be arranged so that, over some portion of its axial travel distance, the lower edge of the tape traverses more path length than does the upper edge of the tape, to "use up" some length of the lower edge of the tape and "draw in" (rearward) the forward extreme of the

lower edge of the tape's travel (where the tape substantially reverses its direction upon reaching the burnishing edge 165). In this manner, both edges of the tape will have traveled the same path length by the time they reach edge 165, and therefore will have equal tension around edge 165, despite the upper and lower portions of edge 165 not being spatially equidistant from opening 188. In contrast, if the tape were simply suspended in midair as it traveled between the opening 188 and the edge 165, one edge of the tape would be pulled tighter than the other edge, creating an edgewise load on the tape.

Thus, the tape should "see" its path as "straight," in the sense that the tape can follow it without either edge of the tape being left slack or required to stretch, i.e., both edges of the tape should travel substantially the same distance throughout the tape path, so that the tension on both edges will be substantially the same, and the tape will not experience any significant edgewise load. A tape path meeting this criterion may be created by supporting the tape over at least a major portion of its path with a surface having a geometry that will provide the required equalization of path lengths.

The preferred shape of the housing 12 imposes an additional constraint on the axial distance that the tape can travel from the tip edge 165 before it changes its orientation. So that the dispenser can be gripped at a location reasonably near the edge 165, the housing should enclose the tape until near the edge (e.g., about 15 mm from the midpoint M of the edge). Also, the housing is preferably circular in cross-section in the gripping region and has an external diameter D of less than 14mm at the forward end 191 of the gripping region. These design considerations require that both tape runs also fit within an opening 190 of limited size (e.g., having a 12 mm internal diameter) at the forward end 191 of the gripping region.

Thus, the compensation in tape edge path length must be accomplished over a relatively short axial distance D1 (i.e., the axial distance between opening 188 and the edge 165), and within a relatively short radial distance D2 from the housing axis CL (i.e., the radial distance between CL and the outer limits of openings 188). Generally, D1 is less than 60 mm and D2 is less than 10 mm. In preferred dispensers, D1 may be less than about 50 mm and D2 may be less than 6 mm.

An example of a dispenser tip having a tape path meeting these criteria is shown in Figs. 9 and 9A. In this embodiment, the tape bed 200, i.e., the surface of the head 166 over

which the tape backing travels from edge 165 to spool 176, includes a ramped portion 202 and a portion 204 comprising a section of a cone (Fig. 9). Thus, the tape backing is guided, by this surface geometry of tape bed 200, in the path shown in Figs. 9A, 10 and 10A (in Figs. 10 and 10A the tape is shown alone, for clarity). The bulging of tape edge 206 due to its passage over conical portion 204 causes the tape edge 206, which would otherwise travel a shorter path length than the opposite tape edge 205, to travel a substantially equal path length. Meanwhile the curvature of the conical surface 204 is highly compatible with the curvature of the opening 190 through which the tape path must fit. The opposite tape bed surface (not shown), over which the tape travels from spool 167 to edge 165, may be generally symmetrical to tape bed 200, or may have a different geometry that guides the tape in a similarly shaped path. In the embodiment shown in Fig. 9, the tape bed 200 includes open areas 201. These open areas are provided to facilitate molding of the head 166. The openings may be omitted if not needed for molding purposes, or may be of different shapes and sizes, provided the tape bed 200 has sufficient remaining surface area to support the tape in the desired tape path.

Other suitable tape bed geometries and tape paths can be designed using CAD software to simulate the bends that are created in the tape as it travels through its path and inputting selected values for angle A and distances D1 and D2 for the desired dispenser design. For example, the conically-curved path followed by the tape in Figs. 9A-10A was derived from an approximation made up of a set of discrete bends indicated by the dotted lines in Figs. 10 and 10A. The preferred positions of these bends (each one bent 10 degrees in this case, except at edge 165) are indicated graphically in Fig. 11. The procedure used to select this pattern was one of progressive approximation, gradually adjusting the positions and aggregate magnitude of the bends in order to have the tape pass perpendicularly around edge 165, which is inclined at angle A, and pass through both openings 190 and 188 without touching the housing or the spool or experiencing any substantial edgewise deflection. The same procedure could be used for different values of A, although the size of opening 190 might need to be varied.

The degree to which burnishing member 198 deflects when edge 165 is pressed against a surface can be varied in order to provide a more ergonomic dispenser. The head can be designed to provide flexing of burnishing member 198 about an axis that is parallel to

the edge 165 (referred to herein as "flat-wise flexure"), about an axis that is perpendicular to the edge 165 and housing axis CL (referred to herein as "edge-wise flexure"), or both. If flatwise flexure occurs in varying degrees along the edge due to uneven pressure or support along the edge, this uneven flatwise flexure may also provide a degree of twist flexure about an axis of twist (Fig. 14A). If edge 165 is flexibly supported so that flatwise flexure can occur in a continuously varying manner from point to point along the edge, this variation in flatwise flexure can also provide a degree of accommodation to unevenness in the substrate to which the tape is being applied. Alternatively, if it is desired that edge 165 be capable of maintaining firm pressure along its entire length when it is pressed against a flat surface, then the region immediately behind edge 165 may be designed as a reinforced "straight-edge" structure, i.e., the thickness of burnishing member 198 is locally increased immediately behind edge 165 as shown in, e.g., Fig. 13A.

In one embodiment, shown in Fig. 12, the burnishing member 198 is mounted on a solid molded structure 209 having stiffening ribs 210 that define the borders of the tape bed 200. This arrangement provides a dispenser that has a relatively rigid head with little flat-wise or edge-wise flexure.

If more flat-wise flexure is desired, the burnishing member 198 can be mounted on a central tongue 212 that is thinned with respect to the tape bed 200 (i.e., the tongue thickness in the dimension perpendicular to edge 165 and housing axis CL is reduced relative to that of the tape bed), and cantilevered out from the tape bed 200, as shown in Figs. 13 and 13A. The tongue should have a sufficiently high section modulus and flexural strength so that it will not suffer permanent deformation during normal use. A suitable material is polycarbonate.

The section modulus, defined as the section moment divided by the greatest distance of any strain-bearing material from its neutral axis, is the structural property of a cross-section which, combined with the elastic modulus of the material, will predict the maximum level of strain imposed by a given bending moment, under conventional linear assumptions of solid mechanics. For a cantilevered structure such as this tongue, in which it is desired to maximize both compliance and robustness, it is advantageous that the section modulus increase linearly with increasing distance from the edge, so that the portion of the structure bearing the highest leverage during flexure will have the highest section modulus (i.e., so that every portion contributes as much compliance as its material strength allows, with no portion

avoiding the strain borne by other portions). For a structure of rectangular cross-section, the section modulus is proportional to the width and to the square of the thickness. Consequently, if the tongue has a uniform width it will have a substantially linearly increasing section modulus over portions where it has a substantially parabolic axial section as shown in Fig. 13A (see curve C). The function defining the parabolic curve is $Y=kX^{1/2}$, where Y is the thickness of the tongue, X is the distance from edge 165, and k is a constant chosen to match the material properties to the expected load. More generally, it is preferred that tongue 212 becomes progressively thicker as it extends away from edge 165, to provide adequate strength to withstand the leverage experienced at a given distance from the edge. However, it is also preferred that the tongue be sufficiently thin overall so that it will flex readily, i.e., so that the tongue will have a relatively low section moment.

To achieve adequate section modulus without undesirably increasing the section moment, it is generally preferred that the tongue be as wide as possible while still allowing sufficient clearance for the tongue to flex. However, the width of the tongue is generally constrained by side rails 215, which, like stiffening ribs 210, discussed above, are provided to act as curbs to help keep the tape on course on the tape bed. If side rails 215 are included, as shown, the width of the tongue is preferably from about 3 to 4 mm. In some embodiments, the side rails 215 may be omitted (e.g., if they are not needed to keep the tape on the tape bed), in which case the tongue may be wider, e.g., from about 4 to 8 mm. Preferably, the slots 214 that define the side edges of the tongue extend back from edge 165 far enough to form a tongue having a deflection that gives users a comfortable level of flexure without the tongue having to bend so sharply as to overstrain the material, e.g., about 3 to 6 mm, more preferably about 4 to 5 mm.

If it is desired that the dispenser head have substantial edge-wise flex, in addition to its flat-wise flex, the burnishing member 198 may be mounted on a longer tongue 216, as shown in Fig. 14. As shown, tongue 216 has a substantially hour-glass shaped profile. The neck region 218 of tongue 216 is thinner (i.e., smaller in the dimension that is parallel to edge 165) than the rest of the tongue (e.g., thickness T, Fig. 14, is about 0.8 mm, vs. 4 mm for the rest of the tongue). Thus, neck region 218 has a relatively low section moment about the axis of edgewise rotation (axis A, Fig. 14A), allowing the front portion 220 of the tongue, and thus the burnishing member 198, to pivot about axis A when an edge-wise load is applied to

edge 165. The width W (Fig. 14) of neck region 218 (i.e., the dimension parallel to axis A) is much greater than the thickness in this area (e.g., the width is about 5 mm vs. the thickness of about 0.8 mm noted above), so that this "hinge" region remains robust against sideways loads. It is generally preferred, as shown in Fig. 14, to also include a second, wider neck region 225, to allow sufficient clearance for the tongue to flex edgewise without hitting side rails 215.

Preferably, the narrowest point of this neck region 216 is located near enough to edge 165 that the pivoting of the tongue will tend to provide a balanced burnishing pressure across the breadth of the tape, pivoting readily in response to pressure forces from the page exerted in a direction normal to edge 165 and less readily in response to incidental frictional forces exerted parallel to edge 165. On the other hand, the narrowest point of the neck region is located far enough from edge 165 so that the tape path can swing up and down, to a limited extent, with the pivoting tongue and minimize the degree to which the edge 165 goes out of square with respect to the tape passing around it. Based on these constraints, the distance from the narrowest point of the neck region to edge 165 is preferably about 5 to 15 mm, more preferably about 9 to 11 mm.

The stiffening ribs 210, or side rails 215, may be of any desired height, or may be omitted entirely, depending upon whether it is preferred to constrain the course of the tape more positively, or to allow the tape more freedom of movement from its course. Allowing the tape some freedom of movement may cause less pressure against the edges of the tape and thereby reduce the risk of damage to the coating layer of the tape. For example, side rails 215' may be relatively low, as shown in Fig. 15. The side rails may be provided on only one side of the tip, e.g., the take-up side, or may be provided on both sides.

In some embodiments, it is preferred that the tape guides 270, 274 have a curved surface over which the tape passes, as shown in Figs. 16-20. This curved surface allows the tape to remain relatively centered on the tape guide even though tape in alternate layers on the supply spool approaches the tape guide from different angles. (If the tape is wound in helical layers on the supply spool, the tape will come off the spool at an oblique angle as it is used, and this angle will reverse from one layer to the next. In some embodiments, for example, the helical slope is about 15 degrees, so that tape unwinding from the "odd-numbered" layers of the supply windings will be arriving at the supply guide from a direction

about 15 degrees to one side of a plane perpendicular to the spool axis, and tape unwinding from the "even-numbered" layers will be arriving from about 15 degrees to the other side of such a plane. If the takeup windings are patterned after the supply windings, due to the coordinated motion of the supply and takeup spools, there will also be a similar alternation in the angles at which the backing is wound onto the takeup spool.) In order to accommodate this difference in directions of tape travel, the edge of each guide is curved in a crescent shape so that, under the tension maintained by the clutch, the tape will act in a self-centering manner. Thus, the tape will adjust its position on the tape guide so as to maintain the shortest path length but will still stay substantially centered, i.e., not straying beyond either end of the guide edge.

Fig. 16 shows a dispenser with a portion cut away to show the tape guide 270 with tape passing over it. Figs. 17 and 18 illustrate schematically the adjustment of the tape position on the curved edge 275. The cut away region of Fig. 16 is shown enlarged in Figs. 19 and 20, illustrating the two different tape arrival directions corresponding to the different helix angles of alternating layers of tape windings.

Referring to Figs. 17 and 18, when the tape's bend at the guide forms an obtuse angle as in Fig. 18, the oblique fold in the tape as it passes over the crescent edge becomes longer than in the acute-angle case, shown in Fig. 17. Under certain conditions of tape tension and tape composition, this extended fold can be vulnerable to buckling or wrinkling since its mid-region is not closely supported, due to the concave curvature of the crescent guide edge. To better support the tape, the edge 275 may have a nonuniform edge curvature, so as to reduce the concavity of the portion where this longer fold sits, since the acute bend and the obtuse bend tend to rest at different places on the edge 275. For example, in a suitable edge geometry the portion of the edge where the longer fold sits is straight, and the portion where the shorter fold sits is curved somewhat more sharply than in a uniformly-curved version, so as to present substantially the same total curvature as in a uniformly-curved version.

Other embodiments are within the scope of the following claims.

For example, rather than applying a white, opaque transfer layer to a surface, a tinted transparent highlight layer or other type of layer can be applied.

Also, the dispenser may utilize only one spool such as a single supply spool, which can deliver a backingless tape, or a single take-up spool, which can be driven by a roller applicator head. In a two-spool dispenser, the spool that is closest to the tip may be either the supply spool or the take-up spool.

Moreover, when the tape is wound in a helical pattern on one or both of the spools, the turns of the helical pattern can be spaced either so that there is little or no overlap between the turns, or so that each turn overlaps one or more adjacent turns. If there is no overlap, both edges of the tape will be wound on the same diameter, which may be advantageous if the tape is relatively inelastic, so that a discrepancy between the winding diameters for the two edges of the tape would tend to cause wrinkles in the less taut edge. If the tape is wound so that adjacent turns overlap, the slope at which the helix spirals will be minimized, and the edge of the tape which overlaps the preceding turn will be wound on a slightly larger diameter than the other edge. This option would be preferred when the magnitude of the helix slope is found to be a severe design constraint, for example because of difficulty accommodating the two opposite alternating helix slopes where the tape encounters the tape guides 270 and 274. Generally, it is preferred that the overlap between adjacent turns be from about 10 to 40 percent of the tape width. The tape may be wound on the spool with the transfer layer facing inwards (towards the surface of the spool) or outwards. The geometry of tape guide 270 that is illustrated in Figs. 16-20 is for use with inward facing tape. For outward facing tape, it may be advantageous for spatial reasons to have the tape make a broad turn as it comes off the supply spool. This turn may be best supported by a guide having a broader concave supporting surface, e.g., a more saddle-shaped guide.

In addition, the burnishing edge over which the tape passes may have a smoother or sharper curvature, relative to the embodiments shown in Figs. 1-15 and discussed above. Generally, a smoother curvature will allow the edge to move more smoothly over a substrate, while a sharper curvature will provide a higher application pressure by concentrating the force applied by the user into a narrower band of contact.

WHAT IS CLAIMED IS:

1. A dispenser for applying a material to a surface, comprising:

a housing, at least a major portion of which is substantially cylindrical;

within the housing, a supply spool rotatable about an axis and a quantity of material stored on the supply spool in a plurality of widths wide; and

at one end of the housing, an applicator head about which the material is passed, the head being constructed to press the material against the surface, the head having an edge, over which the material passes, that is disposed at an angle of greater than 5 degrees relative to a plane that is perpendicular to the longitudinal center axis of the housing.

2. The dispenser of claim 1 wherein the edge is disposed at an angle of greater than 10 degrees relative to said plane.

3. The dispenser of claim 1 wherein the edge is disposed at an angle of from about 5 to 30 degrees relative to said plane.

4. The dispenser of claim 3 wherein the edge is disposed at an angle of from about 10 to 20 degrees relative to said plane.

5. The dispenser of claim 1 wherein the edge is disposed at an angle of about 15 degrees relative to said plane.

6. The dispenser of claim 1 wherein the longitudinal center axis of the housing passes within 1 mm of the lengthwise midpoint of said edge.

7. The dispenser of claim 6 wherein the longitudinal center axis of the housing passes through the lengthwise midpoint of said edge.

8. The dispenser of claim 1 wherein said applicator head exhibits flat-wise flexure when pressed against a surface.

9. The dispenser of claim 1 wherein said applicator head exhibits edge-wise flexure when pressed against a surface.

10. The dispenser of claim 8 or 9 wherein said edge is defined by a member that is mounted on a flexible tongue.

11. The dispenser of claim 1 wherein said material is a correction tape.

12. The dispenser of claim 1 wherein the applicator head is constructed to pivot about an axis.

13. The dispenser of claim 12 wherein the applicator head pivots about the axis of rotation of the supply spool.

14. A dispenser for applying a material to a surface, comprising:

a housing, at least a major portion of which is substantially cylindrical;

within the housing, a supply spool rotatable about an axis and a quantity of material stored on the supply spool in a plurality of widths wide, the axis of rotation of the spool being substantially parallel to the longitudinal axis of the housing; and

at one end of the housing, an applicator head about which the material is passed, the head being constructed to press the material against the surface, the head having an edge, over which the material passes, that is positioned so that its lengthwise midpoint is in the vicinity of the longitudinal center axis of the housing so that the housing will not rotate to any significant extent about its longitudinal center axis when the edge is pressed against a surface during use.

15. The dispenser of claim 14 wherein the midpoint is within 1 mm of the longitudinal center axis.

16. The dispenser of claim 15 wherein the midpoint lies on the longitudinal center axis.

17. The dispenser of claim 14 wherein said material is a correction tape.

18. A dispenser for applying a material to a surface, comprising:

a housing, at least a major portion of which is substantially cylindrical;

within the housing, a supply spool rotatable about an axis and a quantity of material stored on the supply spool in a plurality of widths wide, the axis of rotation of the spool being substantially parallel to the longitudinal axis of the housing; and

at one end of the housing, an applicator head about which the material is passed, the head being constructed to press the material against the surface, the head having a burnishing member defining an edge, over which the material passes,

the burnishing member being mounted on a cantilevered tongue so as to allow the burnishing member to flex flat-wise when the edge is pressed against a surface.

19. The dispenser of claim 18 wherein the tongue is constructed to allow the burnishing member to flex edge-wise when the edge is subjected to an edge-wise load.

20. The dispenser of claim 18 wherein said edge is disposed at an angle of greater than 5 degrees relative to a plane that is perpendicular to the longitudinal center axis of the housing.

21. The dispenser of claim 18 wherein the longitudinal center axis of the housing passes within 1 mm of the lengthwise midpoint of said edge.

22. The dispenser of claim 18 wherein the longitudinal center axis of the housing passes through the lengthwise midpoint of said edge.

23. A dispenser for applying a material to a surface, comprising:

a supply spool rotatable about an axis;

a quantity of unused tape stored on the supply spool;

an applicator head about which the tape is passed, the head pressing the tape against a surface to deposit a transfer layer of the tape onto the surface, the head defining an edge over which the tape passes, the edge being disposed at an angle of greater than 5 degrees relative to a plane that is perpendicular to the longitudinal center axis of the housing;

a housing which surrounds at least a majority of the tape, a substantial portion of the housing being substantially cylindrical in shape; and

a support surface constructed to support the tape as it moves from the supply spool to the edge in a manner that prevents the tape from being subjected to a significant edgewise load.

24. The dispenser of claim 23 wherein said support surface comprises a substantially continuous surface.

25. The dispenser of claim 24 wherein said support surface comprises a ramped portion and a conical portion.

26. The dispenser of claim 23 wherein said support surface comprises a discontinuous, segmented surface.

27. The dispenser of claim 26 wherein said segmented surface comprises a series of spaced guides, posts or pegs.

28. A dispenser for applying a material to a surface, comprising:

a supply spool rotatable about an axis;

a quantity of unused tape stored on the supply spool;

an applicator head about which the tape is passed, the head pressing the tape against a surface to deposit a transfer layer of the tape onto the surface, the head defining an edge over which the tape passes;

a housing which surrounds at least a majority of the tape; and

a support surface constructed to support the tape as it moves from the supply spool to the edge to allow the orientation of the vector normal to the plane of the tape to change from

substantially parallel to the edge to substantially perpendicular thereto over an axial distance of less than about 30 mm.

29. The dispenser of claim 28 wherein the longitudinal axis of the tape is curved during the change of orientation.

30. The dispenser of claim 28 wherein the support surface is configured to allow the change of orientation to occur within a radial distance of less than about 5 mm from the longitudinal axis of the housing.

31. A dispenser for applying a material to a surface, comprising:

a supply spool rotatable about an axis;

a quantity of unused tape stored on the supply spool;

an applicator head about which the tape is passed, the head pressing the tape against a surface to deposit a transfer layer of the tape onto the surface, the head defining an edge over which the tape passes, the edge being disposed at an angle of greater than 5 degrees relative to a plane that is perpendicular to the longitudinal center axis of the housing;

a housing which surrounds at least a majority of the tape, a substantial portion of the housing being substantially cylindrical in shape; and

a support surface constructed to support the tape as it moves from the supply spool to the edge, the support surface being configured so that both edges of the tape travel the same path length as the tape moves between the supply spool and the edge.

32. The dispenser of claim 18, 23, 28 or 31, wherein the material comprises a correction tape, carrying a transfer layer on one surface.

33. The dispenser of claim 32 wherein the support surface is configured to support the tape only on the surface opposite the surface carrying the transfer layer.

34. The dispenser of claim 1, 14, 18, 23, 28 or 31 wherein the edge has a length of at least 9 mm.

35. The dispenser of claim 34 wherein the edge has a length of from about 9 to 15 mm.

36. The dispenser of claim 35 wherein the edge has a length of from about 10 to 12 mm.

37. The dispenser of claim 1, 14 or 18 wherein said material is wound helically on said supply spool.

38. The dispenser of claim 37 wherein adjacent windings of the material overlap each other by from about 10 to 40 percent of the width of the material.

39. The dispenser of claim 23, 28 or 31 wherein said tape is wound helically on said supply spool.

40. The dispenser of claim 39 wherein adjacent windings of the tape overlap each other by from about 10 to 40 percent of the width of the material.

41. The dispenser of claim 1, 14, 18, 23, 28 or 31 wherein at least a portion of the applicator head is transparent.

42. The dispenser of claim 1, 14 or 18 further comprising one or more tape guides that reorient the material as it travels from the supply spool to the head.

43. The dispenser of claim 42 wherein the tape guides comprise a low surface energy material.

44. The dispenser of claim 43 wherein said low surface energy material comprises polytetrafluoroethylene (PTFE).

45. The dispenser of claim 23, 28 or 31 further comprising one or more tape guides that reorient the tape as it travels from the supply spool to the head.

46. The dispenser of claim 45 wherein the tape guides comprise a low surface energy material.

47. The dispenser of claim 46 wherein said low surface energy material comprises polytetrafluoroethylene (PTFE).

48. The dispenser of claim 42 wherein the tape guides include a surface with a concave aspect over which the material passes.

49. The dispenser of claim 45 wherein the tape guides include a surface with a concave aspect over which the tape passes.

ABSTRACT

The invention features dispensers for applying a material, e.g., a tape, to a surface. For example, the invention features a dispenser for applying a material to a surface, including a housing, at least a major portion of which is substantially cylindrical; within the housing, a supply spool rotatable about an axis and a quantity of material stored on the supply spool in a plurality of widths wide; and, at one end of the housing, an applicator head about which the material is passed, the head being constructed to press the material against the surface, the head having an edge, over which the material passes, that is disposed at an angle of greater than 5 degrees relative to a plane that is perpendicular to the longitudinal center axis of the housing.

FIG. 1

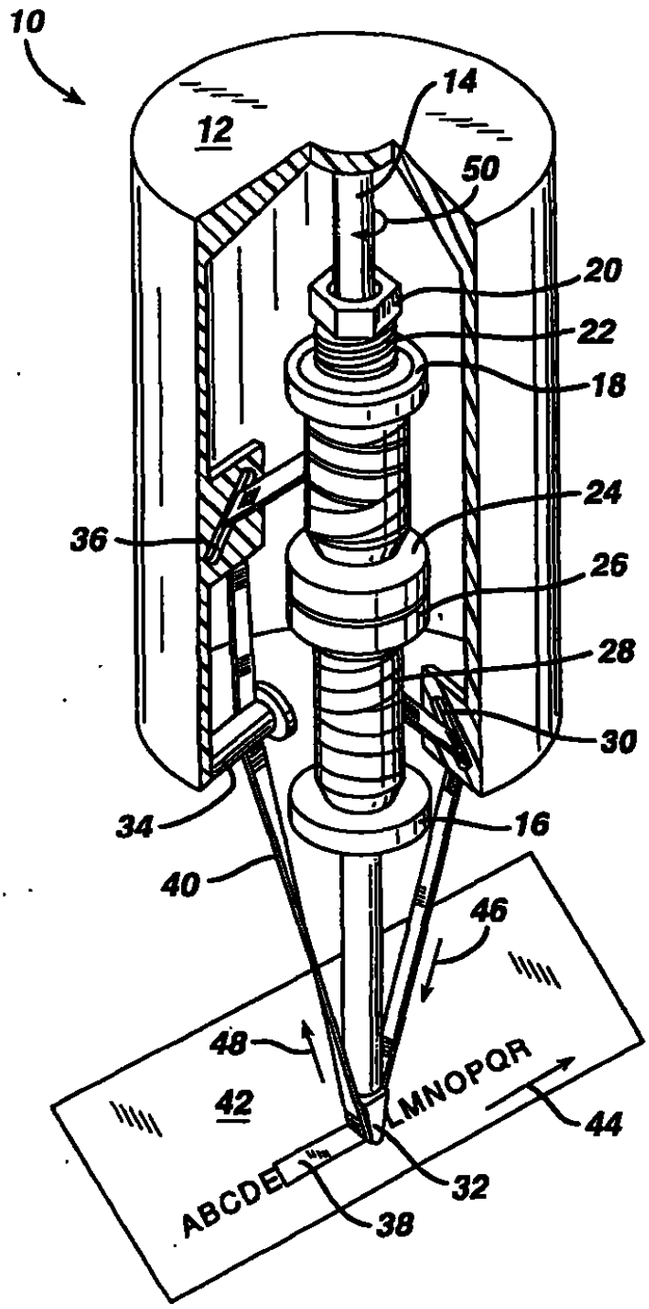


FIG. 2

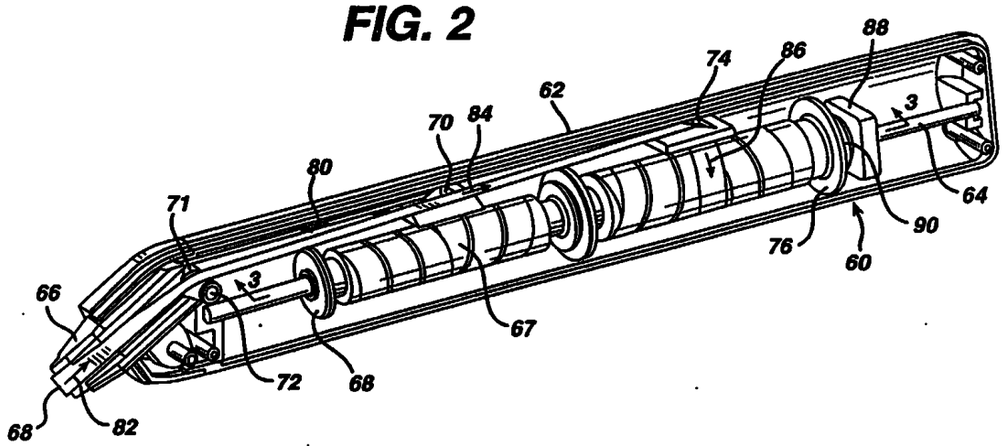
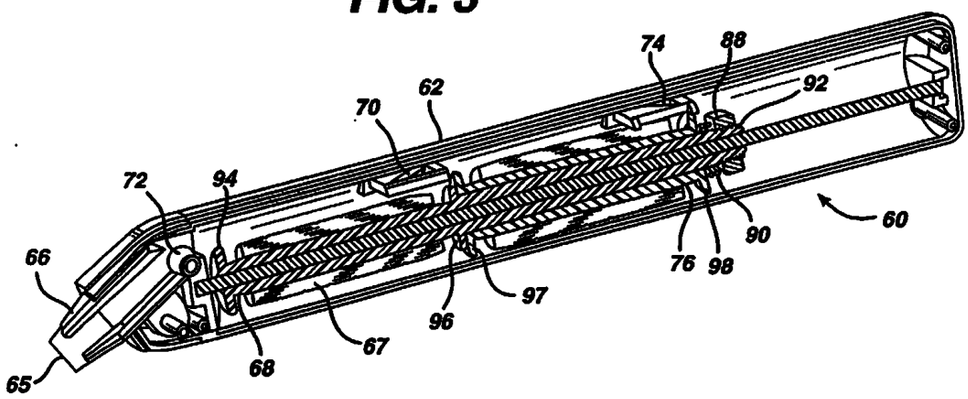
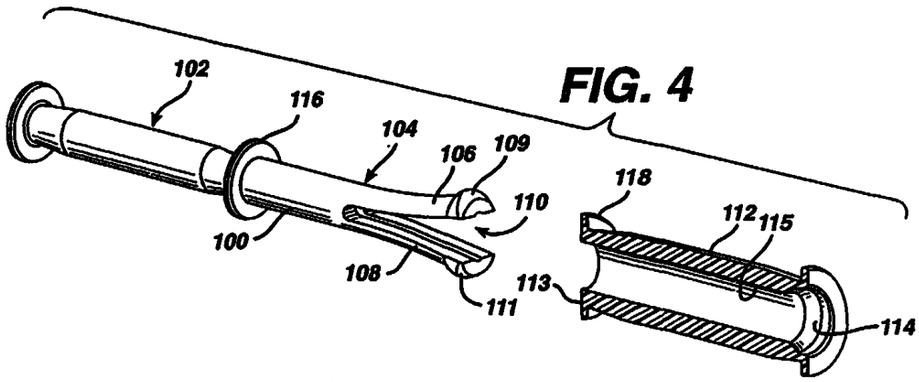


FIG. 3

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116
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106
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110
118
112
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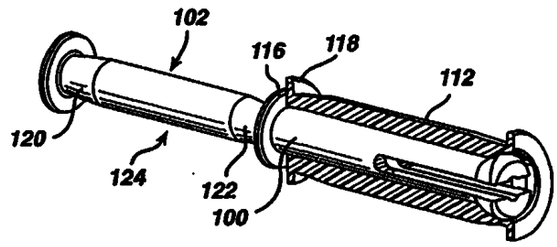
100
108
113
111
114

FIG. 4


102
116
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124
122
100

FIG. 5

FIG. 6(a)

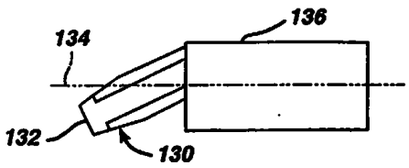


FIG. 6(b)

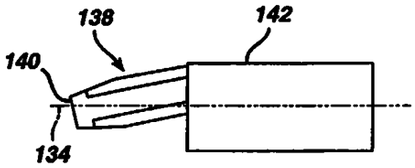


FIG. 6(c)

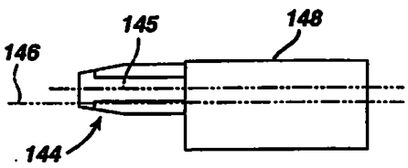


FIG. 6(d)

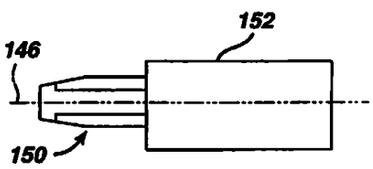


FIG. 7

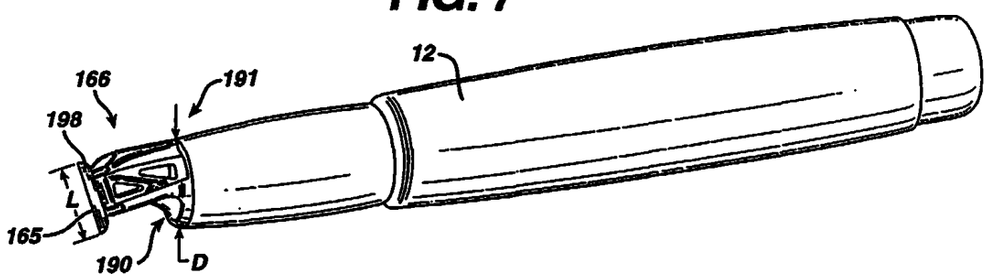
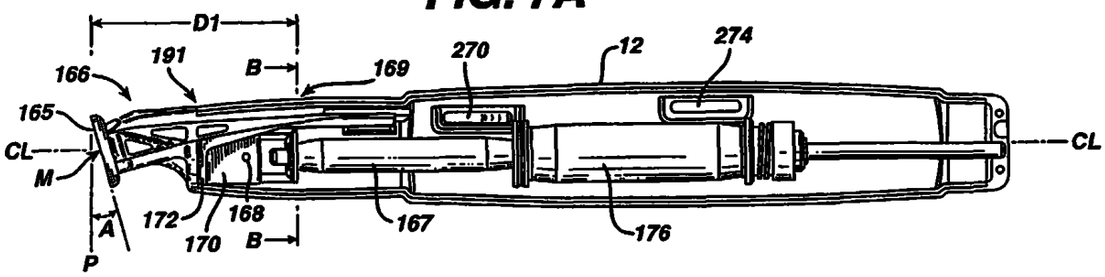

166
191
12
198
L
165
190
D

FIG. 7A


D1
166
191
B
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12
274
165
CL
M
CL
A
P
172
170
168
B
167
176

FIG. 7B

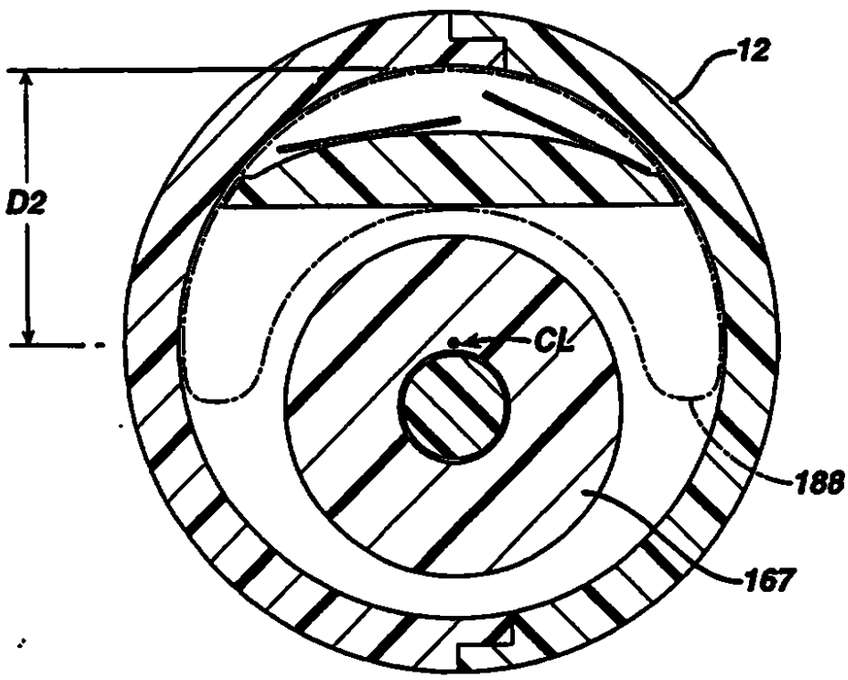


FIG. 8

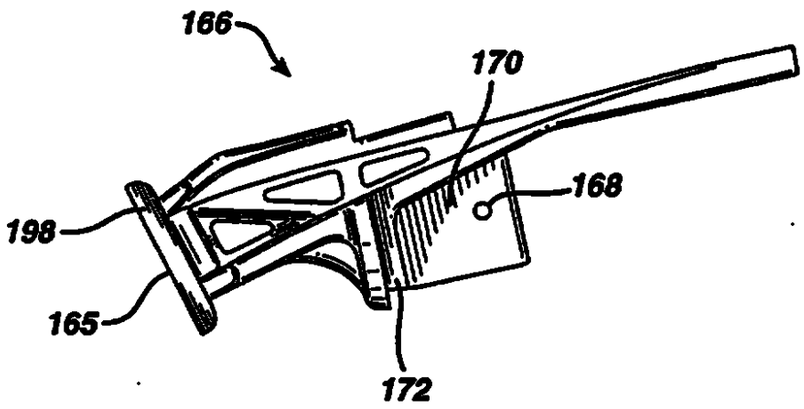


FIG. 9

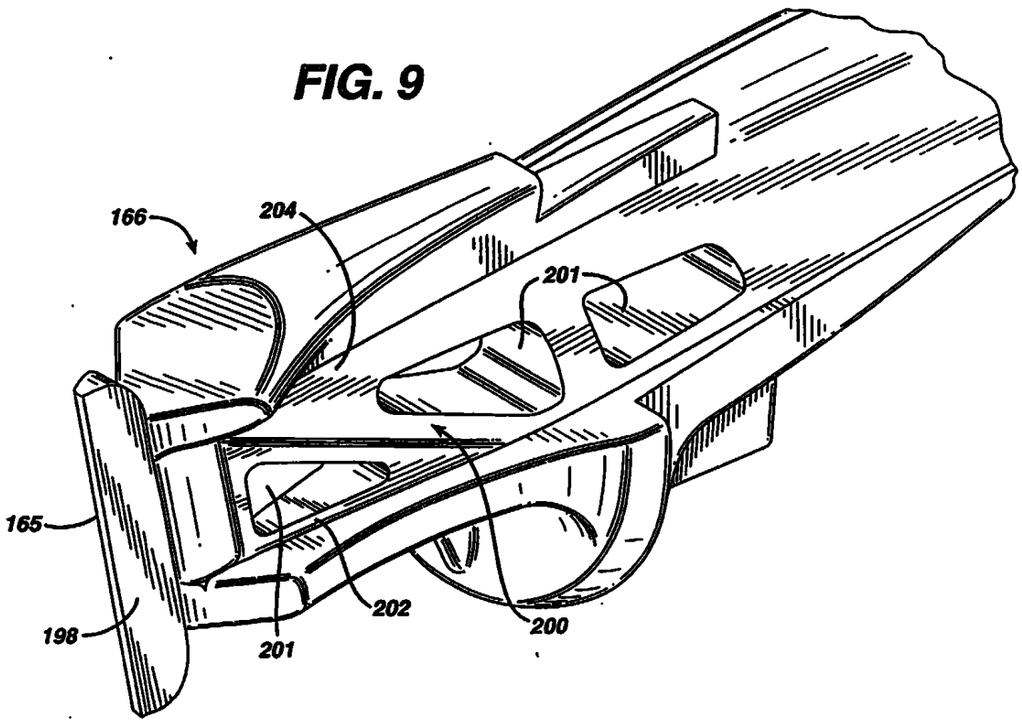


FIG. 9A

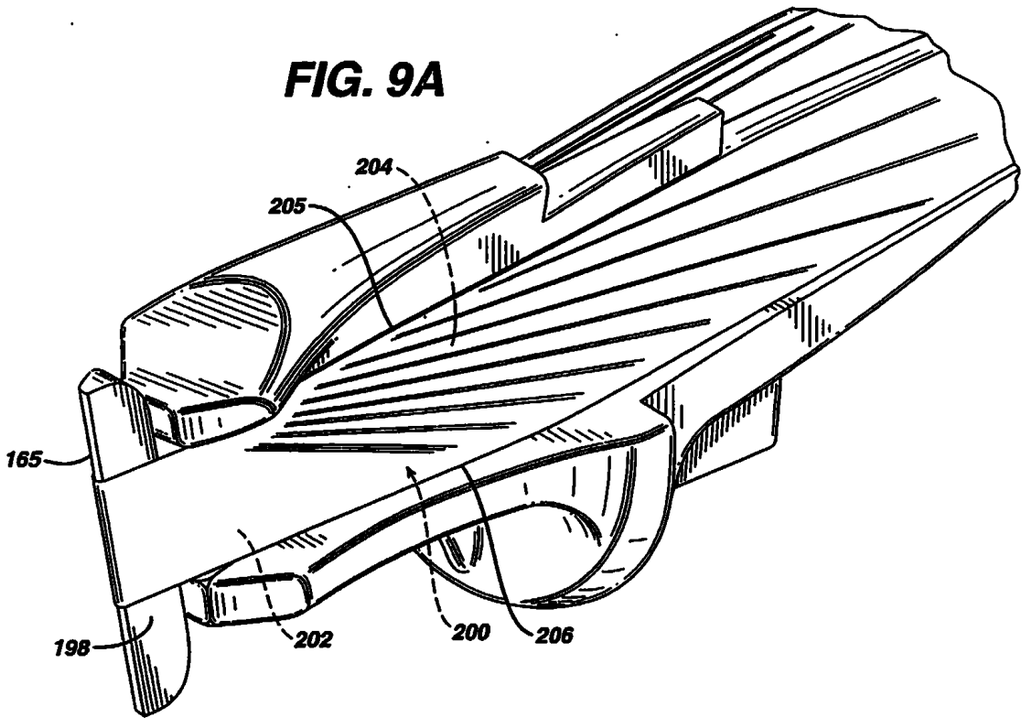


FIG. 10

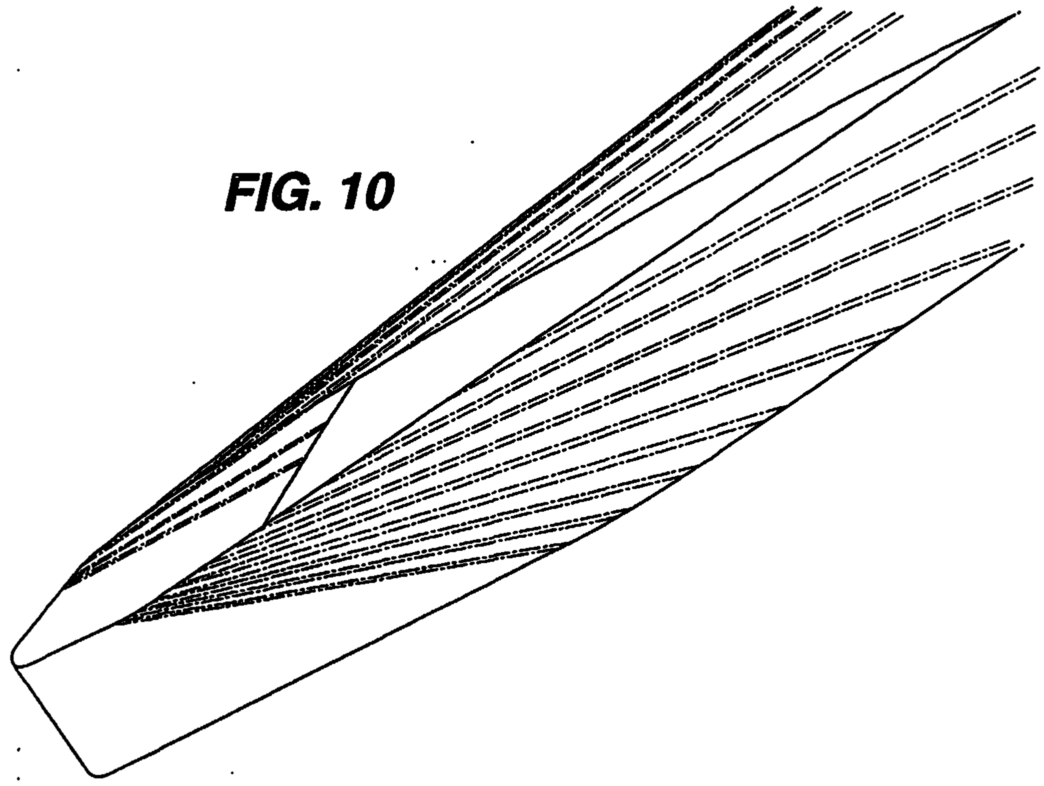


FIG. 10A

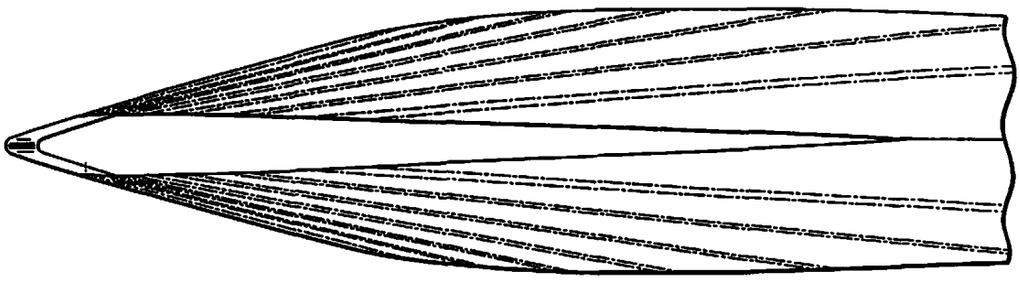
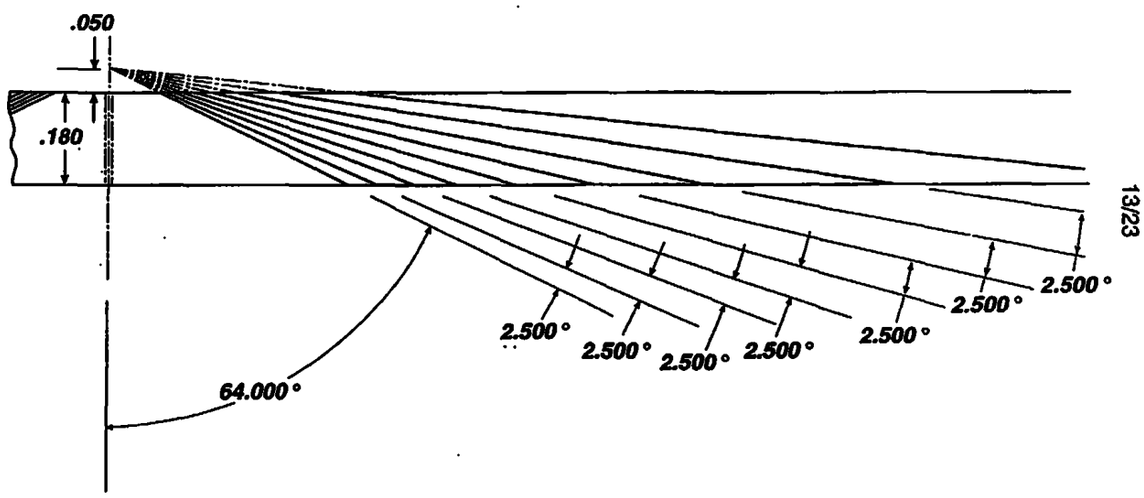


FIG. 11



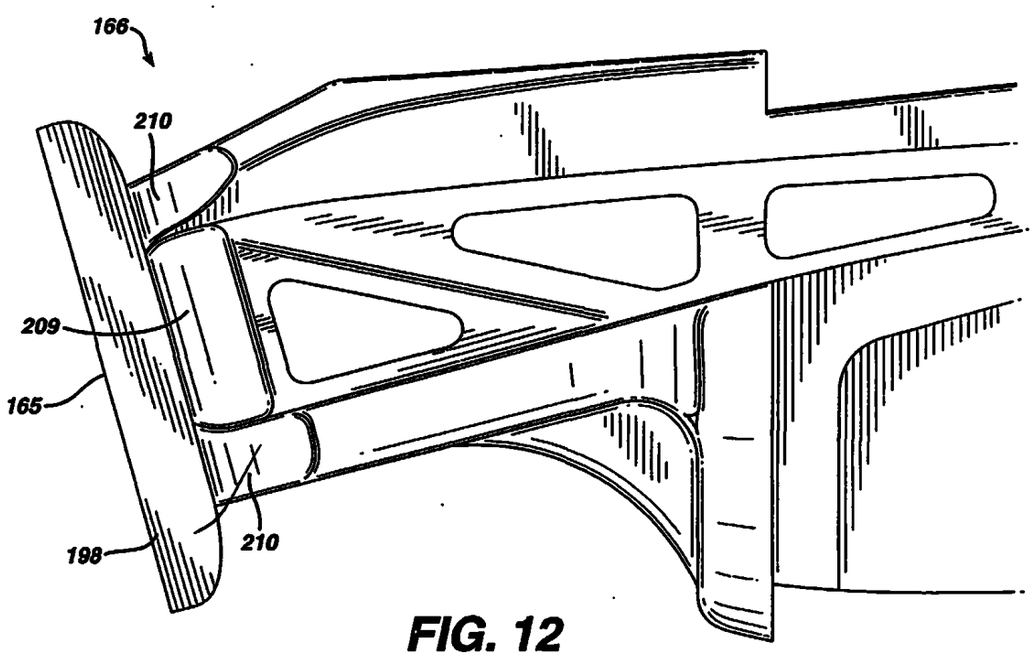


FIG. 12

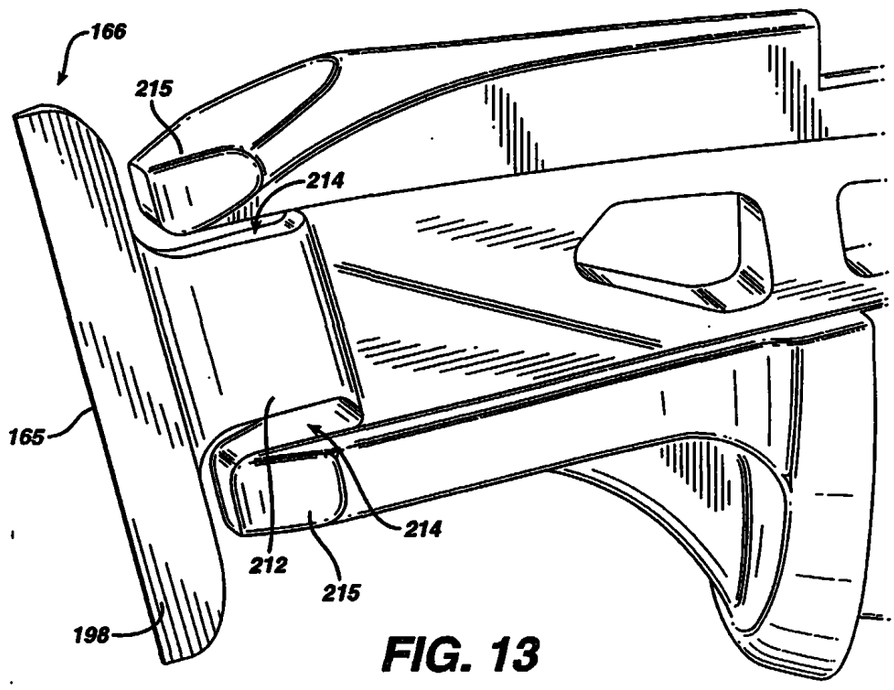
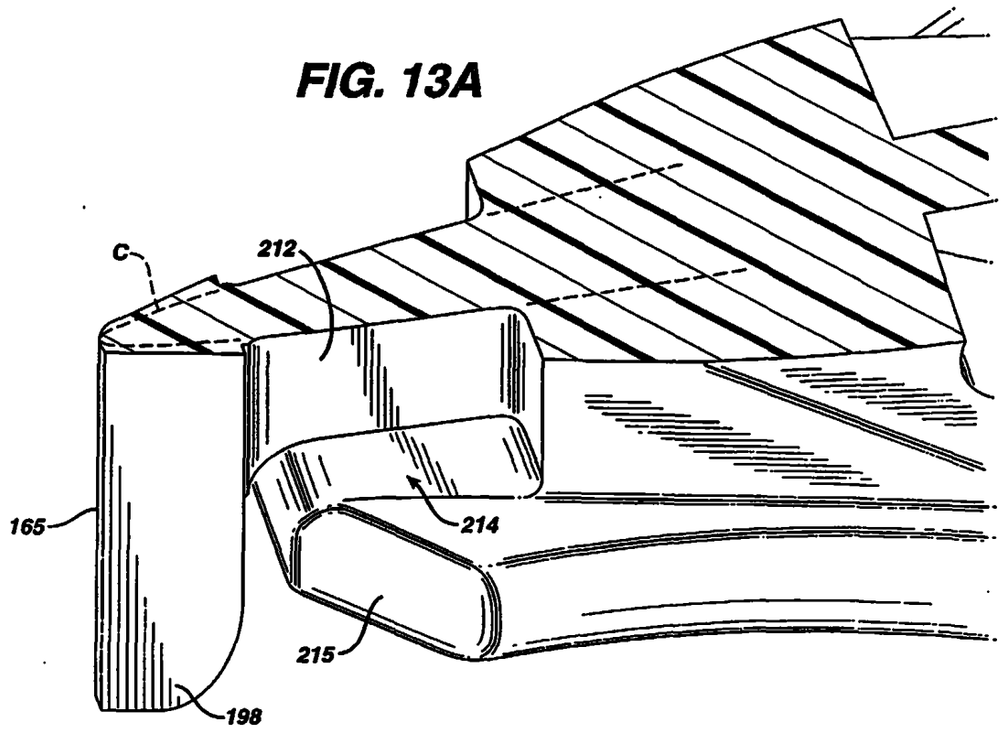


FIG. 13

FIG. 13A



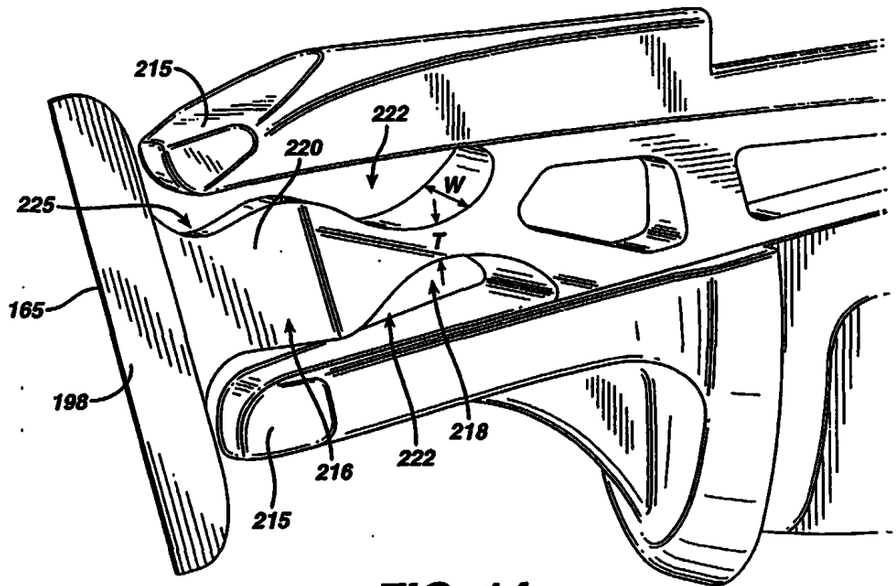
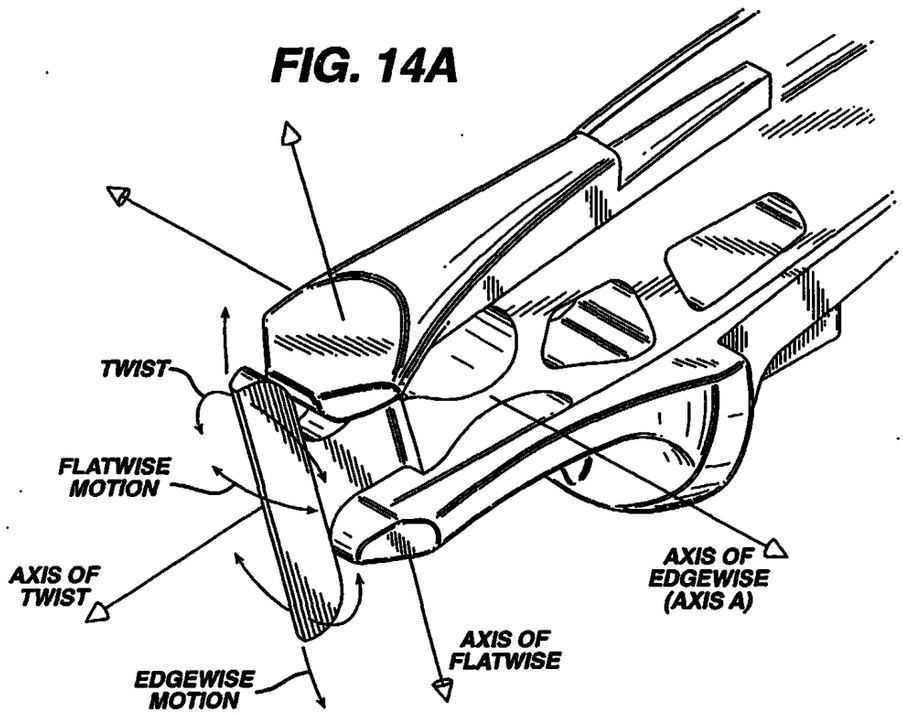


FIG. 14

FIG. 14A


TWIST
FLATWISE MOTION
AXIS OF TWIST
EDGEWISE MOTION
AXIS OF FLATWISE
AXIS OF EDGEWISE (AXIS A)

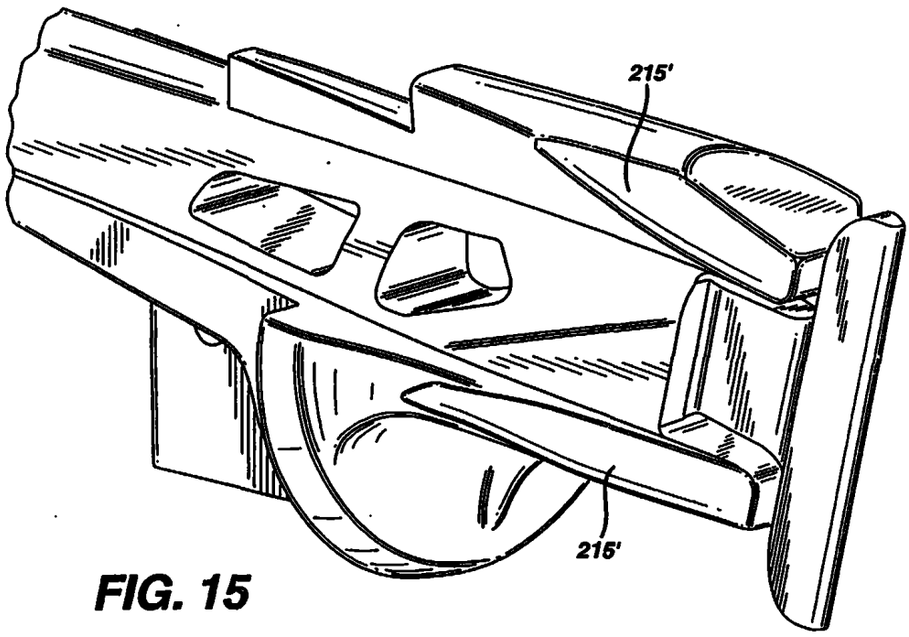


FIG. 15

FIG. 16

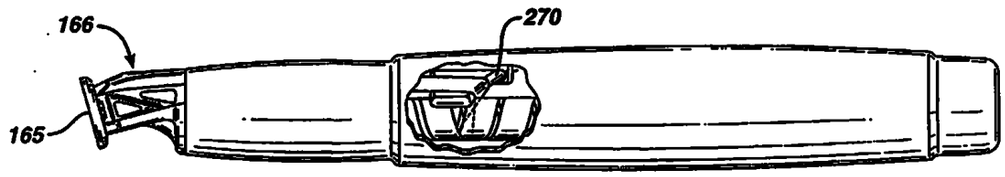


FIG. 17

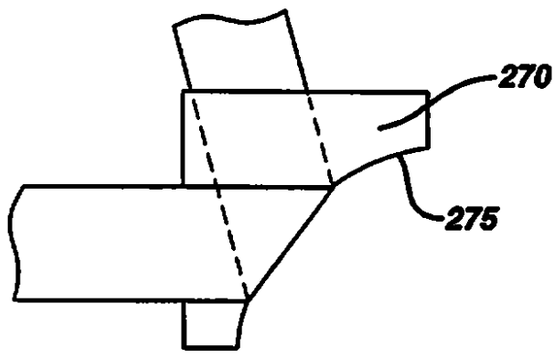


FIG. 18

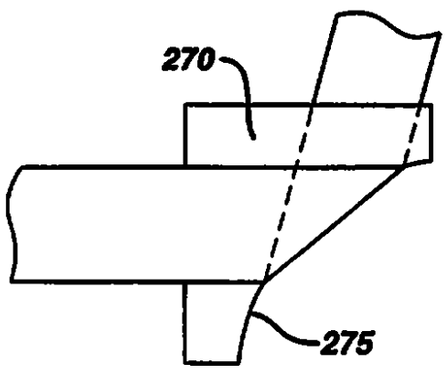


FIG. 19

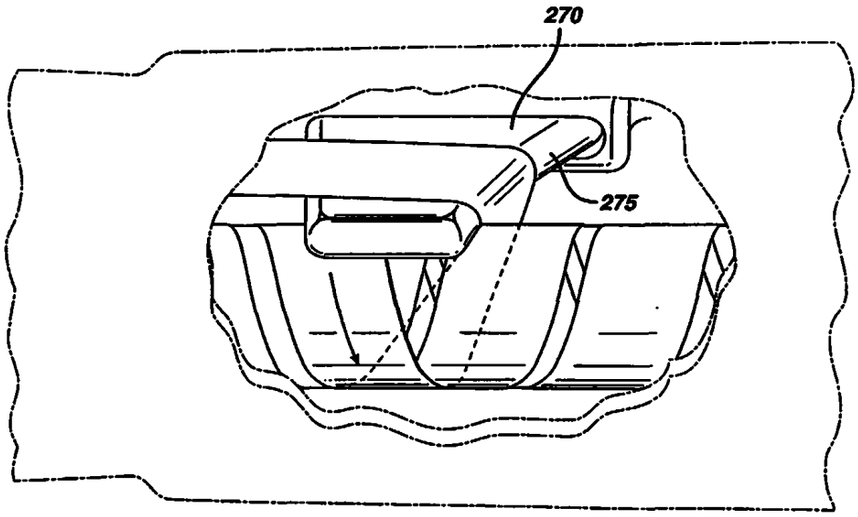


FIG. 20