

Clarke, Modet & C^o
COLOMBIA

145

ESCOBAR, URIBE ASOCIADOS
Intellectual Property

As. 2888/P.

SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO
DIVISIÓN DE NUEVAS CREACIONES
E. S. D.

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SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO



No. 05-109589-00004-0000

Dep. 2020 NUECREACIONES
REGDEPOSITO

Ref.: Expediente No. 05-109.589
Solicitud de Patente a nombre de
Ethicon, Inc.

Yo, JIMENA ESCOBAR URIBE, identificada como aparece al pie de mi firma, domiciliada en Bogotá, en la Carrera 11 No. 86-53, piso 6, obrando como apoderada de la sociedad Ethicon, Inc., con domicilio en Somerville, New Jersey, Estados Unidos de América, solicitante de la patente de la referencia, pido a usted que se proceda a examinar si la invención, cuya patente se tramita en el expediente de la referencia, es patentable.

Adjunto al presente memorial los recibos Nos. 07 - 84,106 de 11 de octubre de 2007, 07 - 76,473 de 21 de septiembre de 2007, 07 - 75,727 de 19 de septiembre de 2007, 07 - 75,728 de 19 de septiembre de 2007, 07 - 76,563 de 21 de septiembre de 2007, 07 - 76,559 de 21 de septiembre de 2007, 07 - 76,560 de 21 de septiembre de 2007, 07 - 76,561 de 21 de septiembre de 2007 y 07 - 76,562 de 21 de septiembre de 2007 por la suma de \$404.000.00, con lo cual queda cubierta la tasa oficial correspondiente a dicho estudio.

Señor Superintendente,


JIMENA ESCOBAR URIBE
C.C.39.779.452 de Usaquén
T.P. 68.228

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SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO



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SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO

NIT : 800176089-2

RECIBO OFICIAL DE CAJA : 07 - 84,106
FECHA : OCTUBRE 11 DE 2007

***** CONSIGNACION *****

DEPOSITANTE	TIPO PAGO	BANCO	CUENTA	No. PAGO	FECHA PAGO	Vr. PAGO
CLARKE MODET Y CO. COLOMB	CONSIGNACION	BANCO POPULAR	050-00110-6	63071675	11/10/2007	27,420,000.00

***** CONCEPTO *****

CANT.	RENTISTICO	CONCEPTO	TOTAL CONCEPTO
1	50005-01-04	PRESENTACION DE OBSERVACIONES	
12		MARCAS Y LEMAS COMERCIALES	256,000.00
		TOTAL :	\$ 256,000.00

SON: DOSCIENTOS CINCUENTA Y SEIS MIL PESOS

RESPONSABLE :

RECIBO DE CAJA APLICADO AL EXPEDIENTE No. _____

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SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO

NIT : 800176089-2

RECIBO OFICIAL DE CAJA : 07 - 76,473
FECHA : SEPTIEMBRE 21 DE 2007

***** CONSIGNACION *****

DEPOSITANTE	TIPO PAGO	BANCO	CUENTA	No. PAGO	FECHA PGO	Vr. PAGO
CLARKE MODET Y CO. COLOMB	CONSIGNACION	BANCO POPULAR	050-00110-6	71028042	21/09/2007	10,244,000.00

***** CONCEPTO *****

CANT.	RENTISTICO	CONCEPTO	TOTAL CONCEPTO
1	50005-01-03	CAMBIO DE MODALIDAD Y MODIFICA	
12		MARCAS Y LEMAS COMERCIALES	99,000.00
		TOTAL :	\$ 99,000.00

SON: NOVENTA Y NUEVE MIL PESOS

RESPONSABLE : _____

RECIBO DE CAJA APLICADO AL EXPEDIENTE No. _____

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SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO

NIT : 800176089-2

RECIBO OFICIAL DE CAJA : 07 - 75,727
FECHA : SEPTIEMBRE 19 DE 2007

SECCION DE
RECEPCION

***** CONSIGNACION *****

DEPOSITANTE	TIPO PAGO	BANCO	CUENTA	No. PAGO	FECHA PAGO	Vr. PAGO
CLARKE MODET Y CO. COLOMB	CONSIGNACION	BANCO POPULAR	050-00110-6	63067745	18/09/2007	29,480,000.00

***** CONCEPTO *****

CANT.	RENTISTICO	CONCEPTO	TOTAL CONCEPTO
1	50005-01-09	OTROS SERVICIOS DE PROPIEDAD I	
54		INFORMACION DETALLADA DE UN TRAMI	22,000.00
		TOTAL :	\$ 22,000.00

SON: VEINTIDOS MIL PESOS

RESPONSABLE : _____

RECIBO DE CAJA APLICADO AL EXPEDIENTE No. _____

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SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO

NIT : 800176089-2

RECIBO OFICIAL DE CAJA : 07 - 75,728
FECHA : SEPTIEMBRE 19 DE 2007

INDUSTRIA Y COMERCIO

***** CONSIGNACION *****

DEPOSITANTE	TIPO PAGO	BANCO	CUENTA	No. PAGO	FECHA PGO	Vr. PAGO
CLARKE MODET Y CO. COLOMB	CONSIGNACION	BANCO POPULAR	050-00110-6	63067745	18/09/2007	29,480,000.00

***** CONCEPTO *****

CANT.	RENTISTICO	CONCEPTO	TOTAL CONCEPTO
1	50005-01-09	OTROS SERVICIOS DE PROPIEDAD I	
		54 INFORMACION DETALLADA DE UN TRAMI	22,000.00
		TOTAL :	\$ 22,000.00

SON: VEINTIDOS MIL PESOS

RESPONSABLE :

RECIBO DE CAJA APLICADO AL EXPEDIENTE No.

ESTA CERTIFICACION DE EXCEDENTE DE PAGO SOLO PODRA SER UTILIZADA
COMO PARTE DE LA CANCELACION DE UNA TARIFA VIGENTE Y NO PODRA SER
SUSTITUIDA POR NINGUN RECIBO.

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SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO
BOGOTA, D.C.
SEPTIEMBRE 21 DE 2007

SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO

NIT : 800176089-2

CERTIFICACION DE EXCEDENTE : 07 - 76,563
FECHA : SEPTIEMBRE 21 DE 2007

***** CONSIGNACION *****

DEPOSITANTE	TIPO PAGO	BANCO	CUENTA	No. PAGO	FECHA PAGO	Vr. PAGO
CLARKE MODET Y CO. COLOMB	CONSIGNACION	BANCO POPULAR	050-00110-6	71028042	21/09/2007	10,244,000.00

***** CONCEPTO *****

CANT.	RENTISTICO	CONCEPTO	TOTAL CONCEPTO
1	50005-01-09	OTROS SERVICIOS DE PROPIEDAD I	
		99 OTROS SERVICIOS ADMINISTRATIVOS	1,000.00
		TOTAL :	\$ 1,000.00

SON: MIL PESOS

RESPONSABLE : _____

RECIBO DE CAJA APLICADO AL EXPEDIENTE No. _____

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ESTA CERTIFICACION DE EXCEDENTE DE PAGO SOLO PODRA SER UTILIZADA
-COMO PARTE DE LA CANCELACION DE UNA TARIFA VIGENTE Y NO PODRA SER
SUSTITUIDA POR NINGUN RECIBO.

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SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO



SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO

NIT : 800176089-2

CERTIFICACION DE EXCEDENTE : 07 - 76,559
FECHA : SEPTIEMBRE 21 DE 2007

***** CONSIGNACION *****

DEPOSITANTE	TIPO PAGO	BANCO	CUENTA	No. PAGO	FECHA PGO	Vr. PAGO
CLARKE MODET Y CO. COLOMB	CONSIGNACION	BANCO POPULAR	050-00110-6	71028042	21/09/2007	10,244,000.00

***** C O N C E P T O *****

CANT.	RENTISTICO	CONCEPTO	TOTAL CONCEPTO
1	50005-01-09	OTROS SERVICIOS DE PROPIEDAD I	
		99 OTROS SERVCIOS ADMINISTRATIVOS	1,000.00
		TOTAL :	\$ 1,000.00

SON: MIL PESOS

RESPONSABLE : _____

RECIBO DE CAJA APLICADO AL EXPEDIENTE No. _____

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ESTA CERTIFICACION DE EXCEDENTE DE PAGO SOLO PODRA SER UTILIZADA
COMO PARTE DE LA CANCELACION DE UNA TARIFA VIGENTE Y NO PODRA SER
SUSTITUIDA POR NINGUN RECIBO.

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SEP 21 2007
SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO
BOGOTA

SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO

NIT : 800176089-2

CERTIFICACION DE EXCEDENTE : 07 - 76,560
FECHA : SEPTIEMBRE 21 DE 2007

***** CONSIGNACION *****

DEPOSITANTE	TIPO PAGO	BANCO	CUENTA	No. PAGO	FECHA PAGO	Vr. PAGO
CLARKE MODET Y CO. COLOMB	CONSIGNACION	BANCO POPULAR	050-00110-6	71028042	21/09/2007	10,244,000.00

***** CONCEPTO *****

CANT.	RENTISTICO	CONCEPTO	TOTAL CONCEPTO
1	50005-01-09	OTROS SERVICIOS DE PROPIEDAD I	
		99 OTROS SERVICIOS ADMINISTRATIVOS	1,000.00
		TOTAL :	\$ 1,000.00

SON: MIL PESOS

RESPONSABLE : _____

RECIBO DE CAJA APLICADO AL EXPEDIENTE No. _____

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ESTA CERTIFICACION DE EXCEDENTE DE PAGO SOLO PODRA SER UTILIZADA
COMO PARTE DE LA CANCELACION DE UNA TARIFA VIGENTE Y NO PODRA SER
SUSTITUIDA POR NINGUN RECIBO.

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SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO
BOGOTA, D.C.
21/09/2007
17 21 441,00
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SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO

NIT : 800176089-2

CERTIFICACION DE EXCEDENTE : 07 - 76,561
FECHA : SEPTIEMBRE 21 DE 2007

***** CONSIGNACION *****

DEPOSITANTE	TIPO PAGO	BANCO	CUENTA	No. PAGO	FECHA PGO	Vr. PAGO
CLARKE MODET Y CO. COLOMB	CONSIGNACION	BANCO POPULAR	050-00110-6	71028042	21/09/2007	10,244,000.00

***** CONCEPTO *****

CANT.	RENTISTICO	CONCEPTO	TOTAL CONCEPTO
1	50005-01-09	OTROS SERVICIOS DE PROPIEDAD I	
		99 OTROS SERVICIOS ADMINISTRATIVOS	1,000.00
		TOTAL :	\$ 1,000.00

SON: MIL PESOS

RESPONSABLE : _____

RECIBO DE CAJA APLICADO AL EXPEDIENTE No. _____

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ESTA CERTIFICACION DE EXCEDENTE DE PAGO SOLO PODRA SER UTILIZADA
COMO PARTE DE LA CANCELACION DE UNA TARIFA VIGENTE Y NO PODRA SER
SUSTITUIDA POR NINGUN RECIBO.

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SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO

NIT : 800176089-2

CERTIFICACION DE EXCEDENTE : 07 - 76,562
FECHA : SEPTIEMBRE 21 DE 2007

***** CONSIGNACION *****

DEPOSITANTE	TIPO PAGO	BANCO	CUENTA	No. PAGO	FECHA PAGO	Vr. PAGO
CLARKE MODET Y CO. COLOMB	CONSIGNACION	BANCO POPULAR	050-00110-6	71028042	21/09/2007	10,244,000.00

***** CONCEPTO *****

CANT.	RENTISTICO	CONCEPTO	TOTAL CONCEPTO
1	50005-01-09	OTROS SERVICIOS DE PROPIEDAD I	
		99 OTROS SERVICIOS ADMINISTRATIVOS	1,000.00
		TOTAL :	\$ 1,000.00

SON: MIL PESOS

RESPONSABLE : _____

RECIBO DE CAJA APLICADO AL EXPEDIENTE No. _____

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DIVISIÓN DE NUEVAS CREACIONES

RADICACIÓN EXPEDIENTE No. 05-109589

EL EXTRACTO DE LA PRESENTE SOLICITUD DE **PATENTE DE INVENCION**

FUE PUBLICADO EN LA GACETA DE PROPIEDAD INDUSTRIAL No **575** DE

FECHA **30 DE ABRIL DE 2007** EL TÉRMINO HÁBIL SEÑALADO POR LA LEY

EXPIRA EL **31 DE JULIO DE 2007**

NOTA: Dentro del plazo de los seis (6) meses siguientes a partir de la fecha de publicación en la gaceta de Propiedad Industrial, deberá solicitar y cancelar el examen de patentabilidad so pena de que la solicitud caiga en abandono, de acuerdo con lo establecido en el Artículo 44 de la Decisión 486/2000.

SE PRESENTARON OPOSICIONES POR PARTE DE TERCEROS.

SI _____

NO X

SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO
DIVISI3N DE NUEVAS CREACIONES

2020
Bogot3, D.C.,

Abogada
Jimena escobar U.
(Apoderado)

ASUNTO	Radicaci3n	05 - 109 589
	Tr3mite	002
	Evento	001
	Actuaci3n	430
	Oficio	2102
	Folios	028

Patente de Invenci3n	☒	Patente de Modelo de Utilidad	☐
V3a Nacional	☐		
V3a PCT (fase nacional)	☐	Cap. I	☐
		Cap. II	☐
Solicitud Internacional n.º	_____		
Fecha de Presentaci3n Intrnl.	_____		

Como resultado del examen de fondo, realizado con fundamento en el art3culo 45 de la Decisi3n 486 de la Comisi3n de la Comunidad Andina, se le comunica:

1. Documentos estudiados

<u>Descripci3n:</u>	Folios 7 a 40 como se radic3 inicialmente
<u>Reivindicaciones:</u>	Folios 41 a 43 como se radic3 inicialmente
<u>Dibujos:</u>	Folios 44 a 65 como se radic3 inicialmente
<u>Prioridad:</u>	Folios 66 a 131; 2004-10-29

2. Objeto de la invenci3n

- T3tulo de la solicitud: *Cartucho y empaado para esterilizaci3n*, folio 1.
- El objeto de la presente solicitud de patente de invenci3n consiste en suministrar un cartucho que contiene una sustancia esterilizante oxidante y un agente absorbente de la sustancia. El cartucho es apropiado para ser empleado en un dispositivo de esterilizaci3n para art3culos de formas exteriores complejas.

El problema planteado en esta solicitud es satisfacer la necesidad de tener una manera de suministrar el esterilizante en una cantidad predeterminada que depende del volumen y el tipo de artículo que se desea esterilizar.

Para solucionar este problema técnico la solicitud en estudio proporciona un cartucho, que tiene una cierta cantidad de esterilizante, que se monta en un dispositivo capaz de manejar múltiples cartuchos, los cuales pueden emplearse simultánea o secuencialmente, dependiendo del artículo que se desea esterilizar.

- Clasificación Internacional de Patentes (IPC) asignada: A61L 2/20, 2/26

3. De la solicitud de Patente

Descripción (artículo 28 D. 486)

- Durante el análisis del texto de la descripción y de las ilustraciones anexadas, se observaron los siguientes defectos:
 - 1) En el título o nombre de la invención aparece la expresión *y empackado* cuyo significado no corresponde al contexto ni a lo que se reclama en las reivindicaciones. Se le sugiere al solicitante que suprima la expresión objetada.
 - 2) En la página 1, folio 7, aparece por primera vez una expresión (4,817,800) en la cual no se emplea correctamente la coma decimal, que es de uso obligatorio en Colombia.
 - 3) En la página 2, folio 8, aparece la expresión *concentraciones elevadas tales como 59%* respecto a la cual se debe aclarar si se trata de un porcentaje en peso o en volumen.
 - 4) En la misma página 2 aparece la expresión *a una presión de 0.19 Kg/cm² manométricos* en la cual, en primer lugar, no se emplea la coma decimal; en segundo lugar, se debe escribir *kg* no *Kg* (que corresponde a kelvin gramo); en tercer lugar, pero no menos importante, se debe hacer la conversión a unidades del Sistema Internacional (pascal, Pa); y, en cuarto lugar, sobra el término *manométricos*, porque se sabe que se está hablando de la presión. El solicitante debe realizar las correcciones sugeridas tanto en la expresión objetada como en varias expresiones similares -que presentan uno o más defectos como los especificados aquí- que se encuentran a lo largo del texto de la solicitud.
 - 5) En la página 3, folio 9, aparece la expresión *la malla se vuelve alrededor de cuerpo* cuyo significado no corresponde al contexto.
 - 6) En la misma página 3 aparece la expresión *Puede unirse a la malla*. En la cual se desconoce el sujeto que realiza la acción.
 - 7) En la misma página 3 aparece la expresión *es no flamable* cuyo significado se desconoce.
 - 8) En la página 5, folio 11, aparece por primera vez una sigla (*RFID*) de la cual no se da el significado correspondiente. El solicitante deberá definir cada sigla que utilice dentro de la solicitud en la primera ocasión que la emplee. Esta objeción es aplicable a la primera vez que aparecen las siglas SPDT, ID, UID, RSA en las páginas 25, 27 y 29.
 - 9) En la página 7, folio 13, aparece la expresión *un vacío inferior de menos de un torr* en la cual se debe revisar la redacción y se debe incluir la conversión a unidades del Sistema Internacional.
 - 10) En la misma página 7 aparece la expresión *la energía de nueva cuenta se aplica* cuyo significado se desconoce.

11) En la página 9, folio 15, aparece por primera vez una expresión en la que se emplea el término *lumen*. El solicitante debe sustituir esta expresión, porque, según el Diccionario de la Real Academia Española (DRAE), *lumen* es una unidad de flujo luminoso del Sistema Internacional, definición que no concuerda con el contexto. El solicitante deberá corregir tanto este término como su derivado, *lúmenes*, que aparecen a lo largo de la solicitud.

12) En la misma página 9 aparece el término *emploma* cuyo significado se desconoce.

13) En la misma página 12, folio 18, aparece por primera vez la expresión *volviendo de nueva cuenta* que, por una parte, es contradictoria, y por otra parte, su uso no corresponde a un texto técnico.

14) En la página 16, folio 22, aparece por primera vez la expresión *las cargas desafiantes* cuyo significado no corresponde al contexto.

15) En la página 17, folio 23, aparece por primera vez la expresión *un apartado del lumen* cuyo significado se ignora.

16) En la misma página 17 se encuentra la expresión *del lumen más desafiante* cuyo significado se ignora.

17) En la página 18, folio 24, aparece la expresión *los apartados del lumen menos demandantes pueden ajustarse* que carece de significado.

18) En la página 20, folio 26, aparece la expresión *la envoltura de "CSR" de cuarto de suministro central* en la cual, en primer lugar, se desconoce el significado del término "CSR"; y, en segundo lugar, se desconoce el sentido general.

19) En la página 22, folio 28, dentro del Cuadro 2, aparecen las expresiones *o/y*, *y/o*. Al respecto, el Diccionario Panhispánico de Dudas de la Real Academia Española y de la Asociación de Academias de la Lengua Española, primera edición, octubre de 2005, página 681, dice:

y/o: Hoy es frecuente el empleo conjunto de las conjunciones copulativa y disyuntiva separadas por una barra oblicua, calco del inglés «and/or», con la intención de hacer explícita la posibilidad de elegir entre la suma o la alternativa de dos opciones: «Se necesitan traductores de inglés y/o francés». Se olvida que la conjunción 'o' puede expresar en español ambos valores conjuntamente.

El examinador ha subrayado la frase aplicable al caso.

20) En la misma página 22, dentro del Cuadro 2, se encuentran varias expresiones en las cuales se emplea mal la barra (/). Se le sugiere al solicitante que consulte el artículo BARRA del Diccionario panhispánico de dudas de la Real Academia Española y de la Asociación de Academias de la Lengua Española, edición de 2005, páginas 87 y 88.

21) En la página 24, folio 30, aparece la expresión *salvar este registro de ciclo* cuyo significado no corresponde al contexto según el significado del verbo *salvar* que trae el Diccionario de la Real Academia Española (DRAE).

22) En la misma página 24 aparece la expresión *corridas de pruebas* cuyo significado es confuso.

- La descripción no cumple con los requisitos de claridad y divulgación completa, lo que dificulta o impide su comprensión y ejecución de acuerdo al art. 28 de la Decisión 486

Reivindicaciones (artículo 30 D 486)

- Durante el análisis del texto de las reivindicaciones se observaron los siguientes defectos:

1) La reivindicación 1, folio 41, contiene numerosas expresiones redundantes, por lo que se ve afectada negativamente su concisión:

- Un cartucho, para un procedimiento de esterilización, el cartucho comprende (...) puede ser sustituida por: Un cartucho, para un procedimiento de esterilización, que comprende (...)
- un cuerpo, el cuerpo tiene en el mismo una o más (...) puede ser sustituida por: un cuerpo que tiene una o más (...)
- (...) el cuerpo empacado dentro de una cubierta (...) puede ser sustituida por: (...) y que está empacado dentro de una cubierta (...)
- (...) también contiene un material absorbente que comprende un absorbente polimérico superabsorbente del esterilizante oxidante, el material absorbente siendo resistente al fuego que puede ser sustituida por: (...) también contiene un material polimérico, resistente al fuego, superabsorbente del esterilizante oxidante.

En cada caso, se puede emplear una expresión distinta a la sugerida por el examinador, que se adapte mejor al contexto.

2) En la reivindicación 2, folio 41, y en la reivindicación 7, folio 42, aparece la expresión *una presión de 0.19 kg/cm²* que fue objetada arriba, con relación a la descripción.

3) En las reivindicaciones 2 y 3, folio 41, se reclaman características que no fueron correctamente divulgadas en la descripción, ver página 3, folio 9.

4) En el caso de la reivindicación 6, folios 41 y 42, se estableció que si bien en la página 3, folio 9, de la descripción se encuentra la mención de la característica *-la cantidad de material absorbente es suficiente para absorber todo el esterilizante-*, no está claro allí cuánto se considera *suficiente*, porque se trata de un término subjetivo, que depende de la opinión del lector. En consecuencia, esta reivindicación carece de definición.

5) En la reivindicación 15, folio 43, aparece la expresión *es no flamable* que fue objetada arriba, con relación a la descripción.

- Las reivindicaciones no cumplen con los requisitos de definición, claridad, concisión o sustento por la descripción de acuerdo al art. 30 de la Decisión 486. Debe entenderse que las reivindicaciones dependientes de las reivindicaciones objetadas son, asimismo, objetadas, por razones análogas.

Se deben presentar, entonces, nuevos capítulos descriptivo y reivindicatorio, ambos completos, donde se hayan corregido todas las objeciones que se han hecho arriba. Esto con el fin de evitar -cuando solo se presentan algunas páginas sueltas corregidas- que el lector tenga que desplazarse desde un sitio a otro de la solicitud y luego regresar a donde estaba antes sin perder la ilación de la lectura, porque esto produce confusión y afecta negativamente la claridad de dichos capítulos.

4. Determinación del Estado de la Técnica

El dispositivo o el método que utiliza los cartuchos de la invención fue reclamado en las solicitudes CO 05 – 20 331 (que corresponde a la publicación US 2005/0196313 A1) y CO 05 – 103 740 (que corresponde a la patente US 7 252 800), se incluyen estos datos como información complementaria.

- La fecha que se ha tenido en cuenta para determinar el Estado de la Técnica es la

Fecha de presentación de la solicitud prioritaria 2004-10-29

- Se realizó la búsqueda en el estado de la técnica de documentos relacionados con la solicitud teniendo en cuenta la fecha indicada; y durante la búsqueda de anterioridades se encontraron los siguientes documentos, que forman parte de la familia de patentes de la presente solicitud: Publicación US 2006/0093539 A1 del 06-05-04; y, publicación EP 1 652 537 A1 del 06-05-03. Se anexa la copia de las primeras páginas de estos documentos junto con la copia del Informe de Búsqueda Europeo.
- También se encontraron los siguientes documentos que forman parte del estado de la técnica más cercano al objeto de la solicitud:

n.º	Documento	Título	Fecha de publicación
D1	Patente US 5 275 310, cuyos inventores son Thaddeus J. Mielnik y William C. Little, quienes le cedieron sus derechos a la American Sterilizer Company	«Vented, non-reusable, multi-dose cartridge» (Un cartucho ventilado, de un solo uso, para múltiples dosis)	1994-01-04
D2	Patente US 6 364 103, cuyos inventores son Roberto M. Sergio y Winfield Wodd, Jr., quienes le cedieron sus derechos a la Sermed Industries, Inc.	«Cartridge for holding a first and second fluid» (Un cartucho para mantener un primero y un segundo fluidos)	2002-04-02
D3	Publicación EP 1 214 947 A2, cuyos inventores son Michael Hahs, Su-Syin Wu y Edward V. Quoss, quienes le cedieron sus derechos a la Ethicon, Inc.	«Cassette and delivery system»(Un cartucho y un sistema de suministro)	2002-06-19
D4	Patente US 6 648 862 B2, cuyo inventor es Richard Watson, quine le cedió sus derechos a la Spheric Products, Ltd.	«Personally portable vacuum desiccator»(Un desecador al vacío, portátil, personal)	2003-11-18
D5	Publicación WO 03/104561 A1, cuyos inventores son James A. Aamodt y John W. Colvin, quienes le cedieron sus derechos a la Cathm. LLC	«Paper product for sterilizing a surface»(Un producto de papel para esterilizar una superficie)	2003-12-18

Se anexa la copia de las páginas pertinentes de estos documentos

NOTAS: No se realizaron las evaluaciones de los demás requisitos de patentabilidad, porque se hicieron algunas objeciones respecto a la definición, la claridad, la concisión y el sustento por la descripción de las reivindicaciones.

A pesar de lo anterior, con base en el Informe de Búsqueda Europeo y en las enseñanzas de los documentos encontrados hasta ahora, en especial los documentos D3 a D5, se prevén objeciones respecto a la novedad o respecto al nivel inventivo del objeto de la solicitud.

5. Conclusión:

Los requisitos de patentabilidad de la presente solicitud se encuentran afectados negativamente por la falta de claridad de la descripción y las reivindicaciones y por la falta de definición, de sustento y de concisión de estas últimas.

En cumplimiento del artículo 45 de la Decisión 486 de la Comisión de la Comunidad Andina, se le indica que debe dar respuesta dentro del término de sesenta días contados a partir de la fecha de notificación de la presente comunicación. En caso de no dar respuesta al presente requerimiento, o si a pesar de la respuesta subsistieran los impedimentos para la concesión, se denegará la patente.

Notifíquese el presente oficio conforme a lo dispuesto en el número 5.2, letra e), del capítulo quinto del título primero de la Circular Única n.º 10 de 2001.



Doris Elena Polo Córdoba
Jefe de División de Nuevas Creaciones (E)

El anterior requerimiento fue notificado por fijación en lista, de fecha
19 FEB. 2009

CONCEPTO TÉCNICO n.º 0316	EXAMINADOR TÉCNICO Código n.º 202009
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(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2006/0093539 A1**
Morrison (43) **Pub. Date: May 4, 2006**

(54) **STERILIZATION CASSETTE AND PACKAGING**

Publication Classification

(76) **Inventor: Todd Morrison, Dana Point, CA (US)**

(51) **Int. Cl.**
A61L 2/16 (2006.01)
(52) **U.S. Cl.** **422/292**

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(57) **ABSTRACT**

(21) **Appl. No.: 10/977,961**

A cassette for a sterilizer has one or more cells containing a sterilant. Packaging for the cassette includes an outer fluid impermeable envelope and an absorbent web wrapped around the cassette to absorb and contain any sterilant which may leak out of the cassette. The absorbent web includes a superabsorbent polymer.

(22) **Filed: Oct. 29, 2004**

(19)



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(11)

EP 1 652 537 A1

(12)

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AL BA HR MK YU

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(30) Priority: 29.10.2004 US 977961

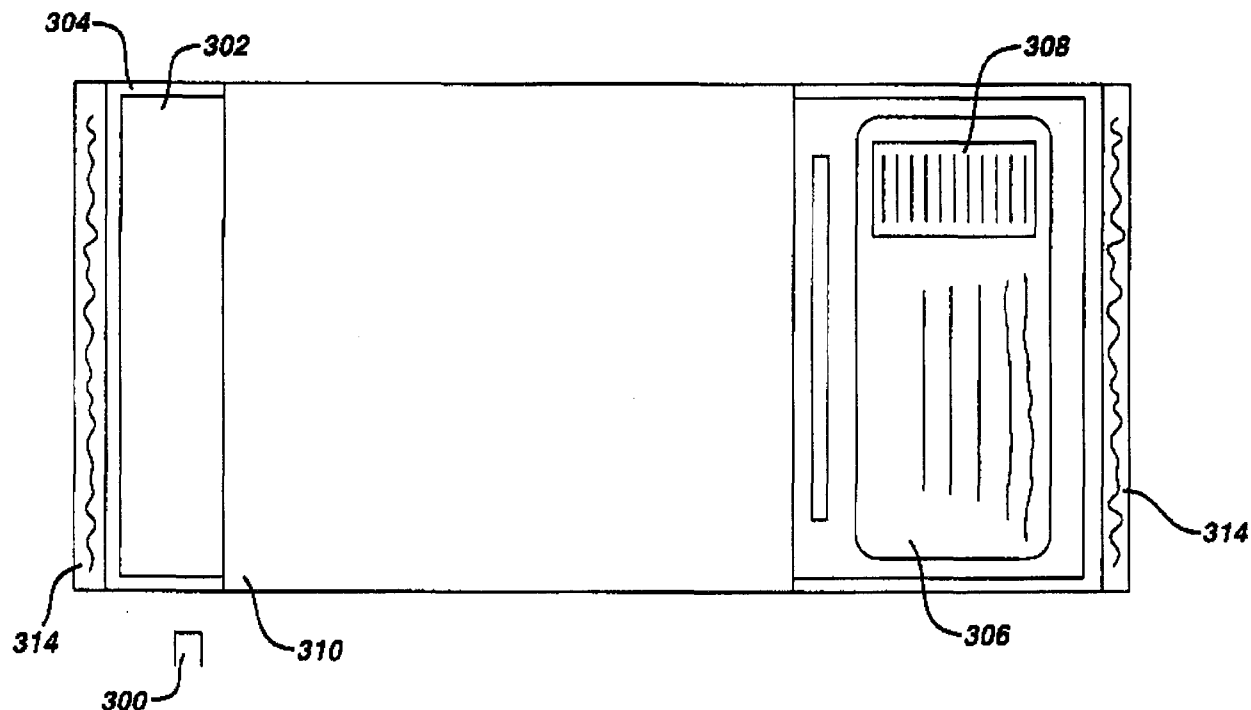
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(54) Sterilization cassette and packaging

(57) A cassette (302) for a sterilizer has one or more cells containing a sterilant. Packaging for the cassette includes an outer fluid impermeable envelope (304,312)

and an absorbent web (310) wrapped around the cassette to absorb and contain any sterilant which may leak out of the cassette. The absorbent web includes a superabsorbent polymer.

FIG. 21



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164

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European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 05 25 6692

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The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 23 February 2006	Examiner Edmueller, P
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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EPO FORM 1513 03 02 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 05 25 6692

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The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

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US005275310A

United States Patent [19]
Mielnik et al.

[11] **Patent Number:** **5,275,310**
[45] **Date of Patent:** **Jan. 4, 1994**

- [54] **VENTED, NON-RESUABLE, MULTI-DOSE CARTRIDGE**
- [75] **Inventors:** Thaddeus J. Mielnik, Apex; William C. Little, Cary, both of N.C.
- [73] **Assignee:** American Sterilizer Company, Erie, Pa.
- [21] **Appl. No.:** 850,645
- [22] **Filed:** Mar. 13, 1992
- [51] **Int. Cl.⁵** B67D 5/60
- [52] **U.S. Cl.** 222/130; 215/263; 222/147; 222/188; 222/189; 222/416; 222/464; 222/481.5
- [58] **Field of Search** 222/80, 81, 129, 130, 222/147, 188, 189, 402.19, 416, 464, 478, 481, 481.5, 482, 541; 215/263

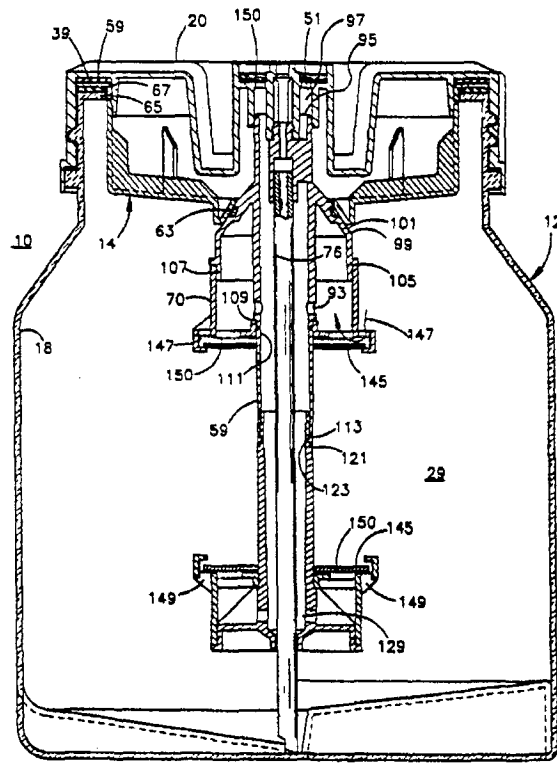
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[57] **ABSTRACT**
A vented cartridge comprises a container having a top surface, a bottom surface, and side surfaces connected together to define a predetermined volume. A dip tube extends from the top surface substantially to the bottom surface. A vent tube extends from the top surface and is positioned coaxially with the dip tube. The vent tube has an upper opening positioned in the upper third of the predetermined volume and a lower opening positioned in the lower third of the predetermined volume. A space between an outer surface of the dip tube and an inner surface of the vent tube forms a central fluid communication path between the upper and lower openings and the top surface. An upper valve is positioned at the upper opening for closing the upper opening if the cartridge is oriented with the top surface facing down; a lower valve is positioned at the lower opening for closing the lower opening if the cartridge is oriented with the top surface facing up. When the cartridge is spent, a liquid feed system pushes the vent tube and dip tube further into the cartridge thereby disconnecting those tubes from the top surface and preventing the cartridge from being reused. A reservoir member is provided which is drained when the vent tube and dip tube are pushed into the cartridge. When the reservoir member is drained, a diluent is released into the cartridge which renders the designed maximum allowable fluid remaining in the cartridge harmless.

Primary Examiner—Andres Kashnikow

9 Claims, 7 Drawing Sheets





US006364103B1

(12) **United States Patent**
Sergio et al.

(10) **Patent No.: US 6,364,103 B1**
(45) **Date of Patent: Apr. 2, 2002**

(54) **CARTRIDGE FOR HOLDING A FIRST AND SECOND FLUID**

(75) Inventors: **Roberto M. Sergio**, Jenkintown;
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(73) Assignee: **Sermed Industries, Inc.**, Abington, PA
(US)

(*) Notice: Subject to any disclaimer, the term of this
patent is extended or adjusted under 35
U.S.C. 154(b) by 0 days.

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Primary Examiner—Luan K. Bui

(74) *Attorney, Agent, or Firm*—Akin, Gump, Strauss,
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(57) **ABSTRACT**

A cartridge for holding a first and a second fluid including an outer capsule containing the first fluid and having a first end and a second end. An inner capsule is enclosed within the outer capsule and is positioned such that while the outer capsule is in a first position the inner capsule is positioned in a generally spaced apart relationship from the first end and the second end of the outer capsule. The inner capsule contains the second fluid. At least one spike is positioned on at least one of the first end and the second end of the outer capsule. The at least one spike is attached to an inner surface of the outer capsule and is oriented toward the inner capsule for piercing the inner capsule when the outer capsule is deformed. Wherein the outer capsule is deformable into a second position permitting the at least one spike to penetrate the inner capsule allowing the first fluid and the second fluid to mix. A base for the cartridge and a system including the cartridge and the base is also detailed herein.

20 Claims, 7 Drawing Sheets

Related U.S. Application Data

(63) Continuation-in-part of application No. 09/425,263, filed on
Oct. 22, 1999, now Pat. No. 6,092,649.
(60) Provisional application No. 60/105,221, filed on Oct. 22,
1998, provisional application No. 60/105,115, filed on Oct.
22, 1998, and provisional application No. 60/105,225, filed
on Oct. 22, 1998.

(51) **Int. Cl.**⁷ **B65D 25/08**

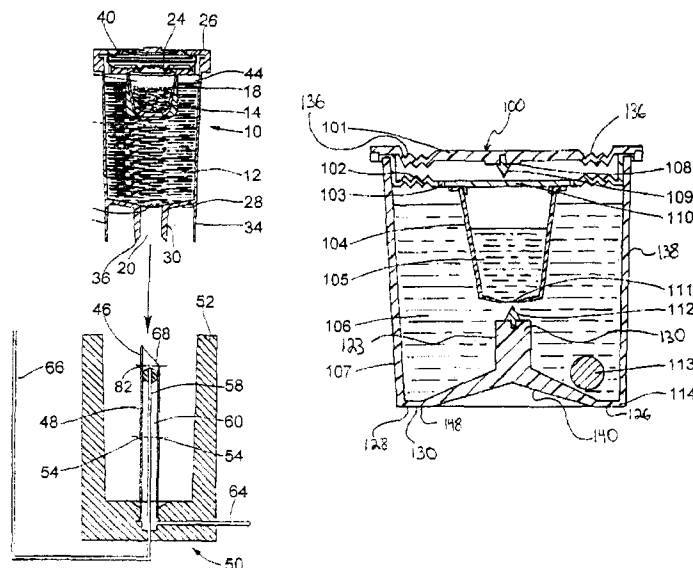
(52) **U.S. Cl.** **206/222; 206/568; 141/330;**
215/DIG. 8; 222/83.5

(58) **Field of Search** **206/219–222,**
206/568; 141/105, 106, 330; 215/6, 10,
DIG. 8; 222/81, 83, 83.5, 88; 422/100,
102, 104, 292, 294

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EP 1 214 947 A2

(12)

EUROPEAN PATENT APPLICATION

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(21) Application number: 01310522.6

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(30) Priority: 15.12.2000 US 737399

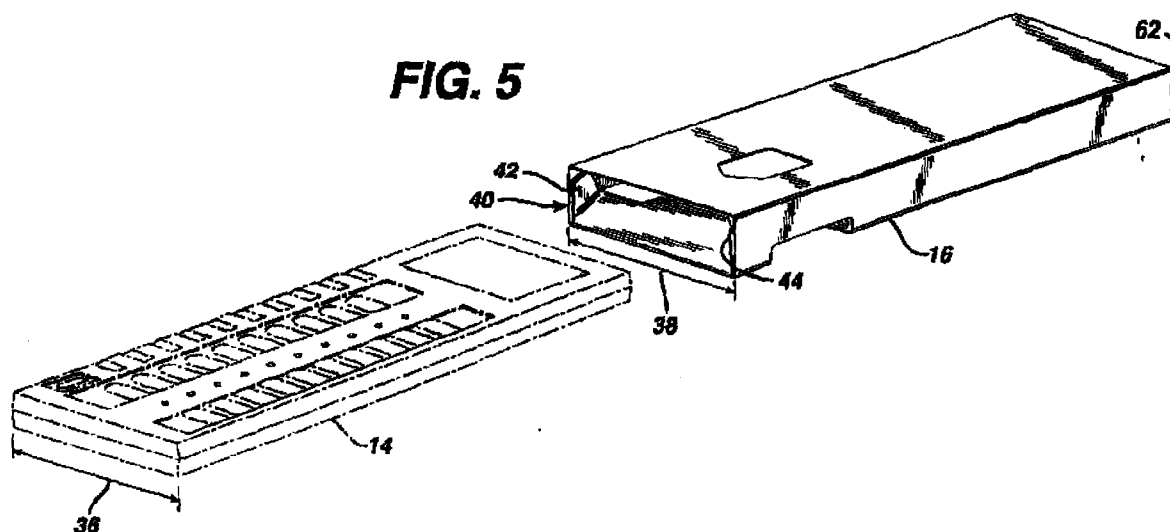
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(74) Representative: Fisher, Adrian John et al
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(54) **Cassette and delivery system**

(57) A cassette (14) is received within a sleeve (16) having an open end (40). Specially folded flaps (42,44)

at the open end are applied to center the cassette in the sleeve and to reduce a width of the open end of the sleeve.



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Description**Field of the Invention**

[0001] The present invention relates to a system for storing and delivering cassettes to a device.

Background of the Invention

[0002] U.S. Patent No. 4,843,876, incorporated herein by reference, discloses a sterilization system in which an agent such as hydrogen peroxide is introduced into a evacuated sterilizing chamber where it is vaporized and allowed to disperse onto the items to be sterilized. After a desired period of time, electrical energy is applied to the chamber to ionize the gas and form a plasma field at a power level sufficient to achieve sterilization.

[0003] This system has been successfully commercialized as the STERRAD® Sterilization System and is available from Advance Sterilization Products, Division of Ethicon Endo-Surgery, Inc., Irvine, California. The system is used in hospitals and other environments where it is operated repeatedly throughout the day by personnel having a widely varying range of understanding of the apparatus. To ensure simple and automatic operation with adequate safeguards with respect to human error, the system employs an automated delivery system for delivering the liquid sterilant to the sterilization chamber. Measured portions of the sterilant, in this case hydrogen peroxide but many other sterilizing agents could be substituted therefor, are provided in rupturable cells within a rigid cassette housing. A transport system maneuvers the cassette within the STERRAD® sterilizer and releases the given quantity of hydrogen peroxide into the sterilization chamber automatically. One form of cassette and operation of the delivery system are more fully described in the Williams et al. U. S. Patent Nos. 4,817,800 issued April 4, 1989; 4,913,196 issued April 3, 1990; 4,938,262 issued July 3, 1990; and 4,941,518 issued July 17, 1990, all of which are incorporated herein by reference.

[0004] An improved cassette and delivery system is shown in the Williams et al. U.S. Patent No. 5,882,611 directed to a sleeve which retains and protects the cassette and U.S. Patent No. 5,877,716 directed to an indicia system on a cassette sleeve. Each of these patents are incorporated herein by reference. The '611 patent describes a sleeve having an inner layer of corrugated cardboard and an outer layer of pressboard, producing a sleeve of considerable thickness.

[0005] The present cassette and sleeve employ a single layer sleeve which eases manufacturing and reduces the expense of the sleeve and employs a pair of folded tabs so accommodate both the present type of cassette and sleeve and that shown in the '611 patent in the same machine by providing that the important external dimensions of the cassette and sleeve can be the same for each system even though the present system em-

plies a sleeve with different thickness.

Summary of the Invention

[0006] A cassette assembly for delivering a substance according to the present invention comprises a cassette having at least one cell therein containing a quantity of the substance and a protective sleeve containing the cassette. The cassette has a first side, a second side opposite the first side and a first end and the sleeve has a first side, a second side opposite the first side and a first end. A first tab at the sleeve first end extends inwardly from the first side toward the second side and abuts the cassette's first side. A second tab at the sleeve first end extends inwardly from the second side toward the first side and abuts the cassette's second side. The cassette has a first lateral dimension between its first side and its second side which is smaller than a second lateral dimension between the sleeve first side and the sleeve second side.

[0007] Preferably, the cassette further comprises a first face between its first side and its second side and the sleeve further comprises a first edge at its first end between its first side and its second side with the sleeve having a retaining member connected to the sleeve by a hinge at the sleeve first edge and abutting the cassette first face, and with the first tab and the second tab extending inwardly from respective first and second lateral edges of the retaining member.

[0008] Preferably, the first and second tabs have at least one flap folded inwardly toward the sleeve sides. Preferably, the sleeve is formed of absorbent stock, as for instance cardboard or a coated cardboard, so that a small quantity of the substance on the cassette can be absorbed into the stock.

[0009] An indicator strip can be provided on the sleeve for indicating the presence of substance thereon. Identifying indicia on the cassette can be provided along with and an aperture through the sleeve in registry with the indicia whereby the indicia can be read through the aperture.

[0010] A method, according to the present invention, supplies a cassette encased in a sleeve for a machine, the machine having an opening sized to accommodate cassettes having a first fixed dimension between first and second sides thereof and to accommodate sleeves containing the cassettes having a second fixed dimension between first and second sides thereof, the difference between the second and the first dimensions being substantially greater than twice the thickness of the sleeve. The cassette is provided with the first dimension between the first and second sides thereof and the sleeve is provided with the second dimension between the first and second sides thereof. A first tab is folded inwardly from the sleeve first side and a second tab inwardly from the sleeve second side to create a space equaling the first fixed dimension between the first tab and the second tab and the cassette is contained within

the sleeve between the first tab and the second tab. Preferably, the cassette is centered in the sleeve between the first and second sides of the sleeve.

Brief Description of the Drawings

[0011]

FIG. 1 is a perspective view of a cassette and sleeve according to the present invention, in preparation for entering a sterilization apparatus;

FIG. 2 is a cutaway view of a receiver on the sterilization apparatus of FIG. 1 for receiving the cassette and sleeve of FIG. 1;

FIG. 3 is a sectional view taken along lines 3 - 3 of FIG. 1, but showing only the cassette without the sleeve;

FIG. 4 is a plan view of an unfolded blank for forming the sleeve of FIG. 1;

FIG. 5 is an exploded perspective view of the cassette and sleeve;

FIG. 6 is a perspective view of the sleeve of FIG. 1;

FIG. 7 is a sectional view taken along lines 5 - 5 of FIG. 1 and showing a retaining tab on the sleeve;

FIG. 8 is a detail view a portion of FIG. 1 showing the folding of tabs on the sleeve;

FIG. 9 is a side elevational view of the cassette and sleeve of FIG. 1; and

FIG. 10 is a plan view of an unfolded blank for forming an alternative embodiment of a sleeve according to the invention.

Detailed Description of the Invention

[0012] FIGS. 1 and 2 illustrate a sterilization or other machine 10 and receiver 12 for receiving a cassette 14. The cassette 14 is received within a protective sleeve 16 which will later be described in more detail. Such a machine and receiver generally comprises a pair of motorized wheels 18 for driving the cassette 14 out of the sleeve 16, a position sensing switch 20 for detecting the presence of the cassette 14 within the receiver 12, a bar code reader 22 or other device for reading indicia (to be described later) on the cassette 14 and a controller 24 for controlling the receiver 12. The cassette 14 has a plurality of cells 26 containing a liquid 28 to be dispensed into the machine 10 (see also FIG. 3) through a hollow piercing needle 30. In the preferred embodiment, the machine 10 is a sterilizer having a sterilization chamber

32 capable of being lowered to subatmospheric pressures, preferable about 10 Torr or less, and the liquid 28 is hydrogen peroxide which vaporizes in the chamber 32 to create a sterilizing vapor. Such systems are described in more detail in the aforementioned patents.

[0013] Certain such machines 10 are already commercially available and employ cassettes 14 encased in a thick two layer sleeve such as shown in U.S. Patent No. 5,882,611. The present cassette 14 is essentially the same as described in the '611 patent. However, the sleeve 16 of the present invention is of a single layer. As shown in FIG. 4, the sleeve 16 is folded from a blank 34 of material such as pressboard or other suitable material and folded into a configuration shown in FIGS. 5 and 6. Preferably, it is absorbent so that after the spent cassette 14 is returned to the sleeve 16 any droplets of the liquid 28 are absorbed by the sleeve 16. However, any number of cellulosic or polymeric materials, coated or uncoated, among others, are suitable for the stock.

[0014] The receiver 12 is adapted to receive the cassette 14 having a first fixed lateral dimension 36 and the sleeve having a second wider fixed lateral dimension 38. In the prior cassette/sleeve combinations having a two layer sleeve, the cassette 14 fit closely within the sleeve and the sleeve had a thickness of about 0.086 inch due to its two layer construction employing a layer of corrugated cardboard. Sleeves of a smaller dimension due to a thinner construction would not operate suitably in the receiver 12. Accordingly, the sleeve 16 of the present invention has a unique folded opening 40 with first and second inwardly extending tabs 42 and 44 whereby to provide a sleeve 16 having the same second fixed lateral dimension 38 as the prior sleeves with the two wall construction yet which properly receive the cassette 14 having the first fixed lateral dimension 36. Additionally, the tabs 42 and 44 provide the needed mechanism to center the cassette 14 in the sleeve 16.

[0015] A lateral fold line 66 at a forward end 68 (at the sleeve open end 40) of the bottom panel 50 forms a hinge 70 about which rotates a retaining flap 72. The retaining flap 72 extends from the fold line 66 to terminate in a tang 74, a terminal edge 76 of which engages the cassette 14 to retain the cassette 14 within the sleeve 16. (See also FIG. 7). An annular post 78 surrounds each of a plurality of piercing apertures 80 in the cassette 14 such that each aperture 80 extends axially through the post 78. The post has a vertical annular sidewall 82 against which the terminal edge 76 abuts. The retaining flap 72 holds the cassette 14 within the sleeve 16. Additionally, the tabs 42 and 44 can further reinforce the retaining flap 72 to secure the cassette 14 in the sleeve 16 during shipping or after use. Even fairly vigorous shaking will not dislodge the cassette 14 from the sleeve 16. They are assisted by a pair of central tabs 84 centrally located on the bottom panel 50 which fold inwardly and rearwardly about fold lines 86 to abut an edge (not shown) on the cassette 14 to further hold the cassette 14 within the sleeve 16. Additional functions of

central tabs 84 are fully disclosed in the incorporated U. S. patent 5,882,611.

[0016] The first tab 42 extends laterally from a first side 90 of the retaining flap 72 and the second tab 44 extends laterally from a second side 94 of the retaining flap. Each of the first and second tabs 42 and 44 comprise a proximal portion 96 attached to the retaining flap and a distal portion 98 extending forwardly from the proximal portion 96 and separated therefrom by a fold line 100. The proximal portions 96 are folded inwardly toward each other and the distal portions 98 are folded outwardly over the proximal portions 96 as best seen in FIG. 8. This creates the second lateral dimension between the first tab 42 and second tab 44 which accommodates the cassette 14 which has a width slightly smaller than the second lateral dimension.

[0017] The sleeve 16 contains several additional features, such as openings 102 through the bottom and side panels through which driving wheels (not shown) in the receiver 12 can access the cassette 14. A pair of chemical indicator strips 104 shows whether the sleeve 16 has been exposed to hydrogen peroxide (or, as adapted, to whatever is stored therein). The cassette 14 and sleeve 16 are preferably supplied within a non-permeable overwrap (not shown), such as a sealed clear plastic wrap. If the indicator strips 104 show a color change then the operator knows that the hydrogen peroxide contained in the cassette 14 has leaked and should not open the overwrap. Instructions to this effect are also provided on the sleeve 16. A bar code 106 can provide machine readable information on what is contained in the cassette 14, lot numbers, expiration dates, serial numbers and the like. Each cassette 14 can have a unique identification number or code encoded into the bar code 106. A used cassette 14 can be easily recognized by storing and comparing the unique identification number or code in the memory of the controller 24 each time a cassette 14 is placed in the receiver 12. Used cassettes 14 can thus be rejected. Turning also to FIG. 9, a window 108 through the sleeve 16 can show printed indicia 110 on the cassette 14 indicative of lot numbers and expiration dates and the like.

[0018] FIG. 10 illustrates an alternative embodiment of a sleeve 200 according to the present invention. It is similar in most respects to the sleeve 16. However, it employs tabs 202 similar to tabs 42 and 44 but which do not fold upon themselves. They are but a single layer. Of course, the tabs could alternatively be structured to fold more than once so as to produce a tab of three, four or more layers depending upon the thickness of the material and the desired dimensions.

[0019] While the invention has been described with regard to a particular embodiment thereof, those skilled in the art will understand, of course, that the invention is not limited thereto since modifications can be made by those skilled in the art, particularly in light of the foregoing teachings. Reasonable variation and modification are possible within the foregoing disclosure of the inven-

tion without the departing from the spirit of the invention.

Claims

1. A cassette assembly for delivering a substance, the assembly comprising:

a cassette having at least one cell therein containing a quantity of the substance, and the cassette further comprising a first side, a second side opposite the first side and a first end; a protective sleeve containing the cassette, the sleeve comprising:

a first side, a second side opposite the first side and a first end;

a first tab at the first end which extends inwardly from the first side toward the second side and abutting the cassette's first side; a second tab at the first end which extends inwardly from the second side toward the first side and abutting the cassette's second side; and

wherein the cassette has a first lateral dimension between its first side and its second side which is smaller than a second lateral dimension between the sleeve first side and the sleeve second side.

2. A cassette assembly according to claim 1 wherein:

the cassette further comprises a first face between its first side and its second side; the sleeve further comprises a first edge at its first end between its first side and its second side;

the sleeve further comprises a retaining member connected to the sleeve by a hinge at the sleeve first edge and abutting the cassette first face; and

wherein the first tab and the second tab extend inwardly from respective first and second lateral edges of the retaining member.

3. A cassette assembly according to claim 2 wherein the first tab further comprises at least one flap folded inwardly toward the sleeve first side and the second tab further comprises at least one flap folded inwardly toward the sleeve second side.

4. A cassette assembly according to claim 1 wherein the sleeve is formed of absorbent stock, whereby a small quantity of the substance on the cassette can be absorbed into the stock.

5. A cassette assembly according to claim 4 wherein

the stock is cardboard.

6. A cassette assembly according to claim 5 wherein the stock is a coated cardboard. 5
7. A cassette assembly according to claim 1 and further comprising an indicator strip on the sleeve for indicating the presence of substance thereon.
8. A cassette assembly according to claim 7 having identifying indicia on the cassette and an aperture through the sleeve in registry with the indicia whereby the indicia can be read through the aperture. 10
9. A method for supplying a cassette encased in a sleeve for a machine, the machine having an opening sized to accommodate cassettes having a first fixed dimension between first and second sides thereof and to accommodate sleeves containing the cassettes having a second fixed dimension between first and second sides thereof, the difference between the second and the first dimensions being substantially greater than twice the thickness of the sleeve, the method comprising the steps of: 15
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 providing the cassette with the first dimension between the first and second sides thereof;
 providing the sleeve with the second dimension between the first and second sides thereof;
 folding a first tab inwardly from the sleeve first side and a second tab inwardly from the sleeve second side to create a space equaling the first fixed dimension between the first tab and the second tab; and 30
 containing the cassette within the sleeve between the first tab and the second tab. 35
10. A method according to claim 9 and further comprising the steps of folding a retaining member inwardly of the sleeve from a first edge thereof, and abutting a surface on the cassette with the retaining member to hold the cassette within the sleeve. 40
11. A method according to claim 9 wherein the first and second tabs are folded from adjacent a first end of the sleeve. 45
12. A method according to claim 9 further comprising the step of centering the cassette in the sleeve between the first and second sides of the sleeve. 50
13. A method according to claim 9 further comprising the step of folding at least one flap on the first tab inwardly toward the sleeve first side and folding at least one flap on the second tab inwardly toward the sleeve second side. 55

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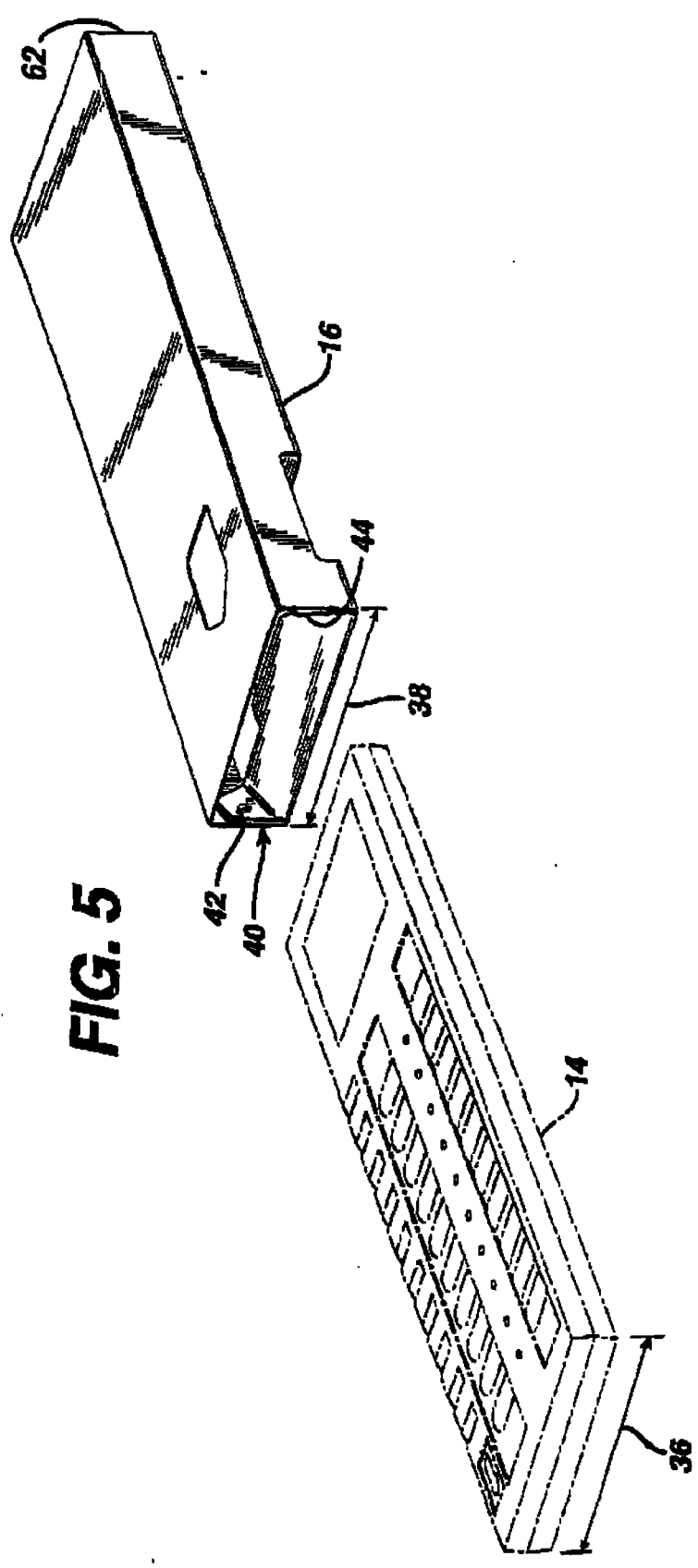
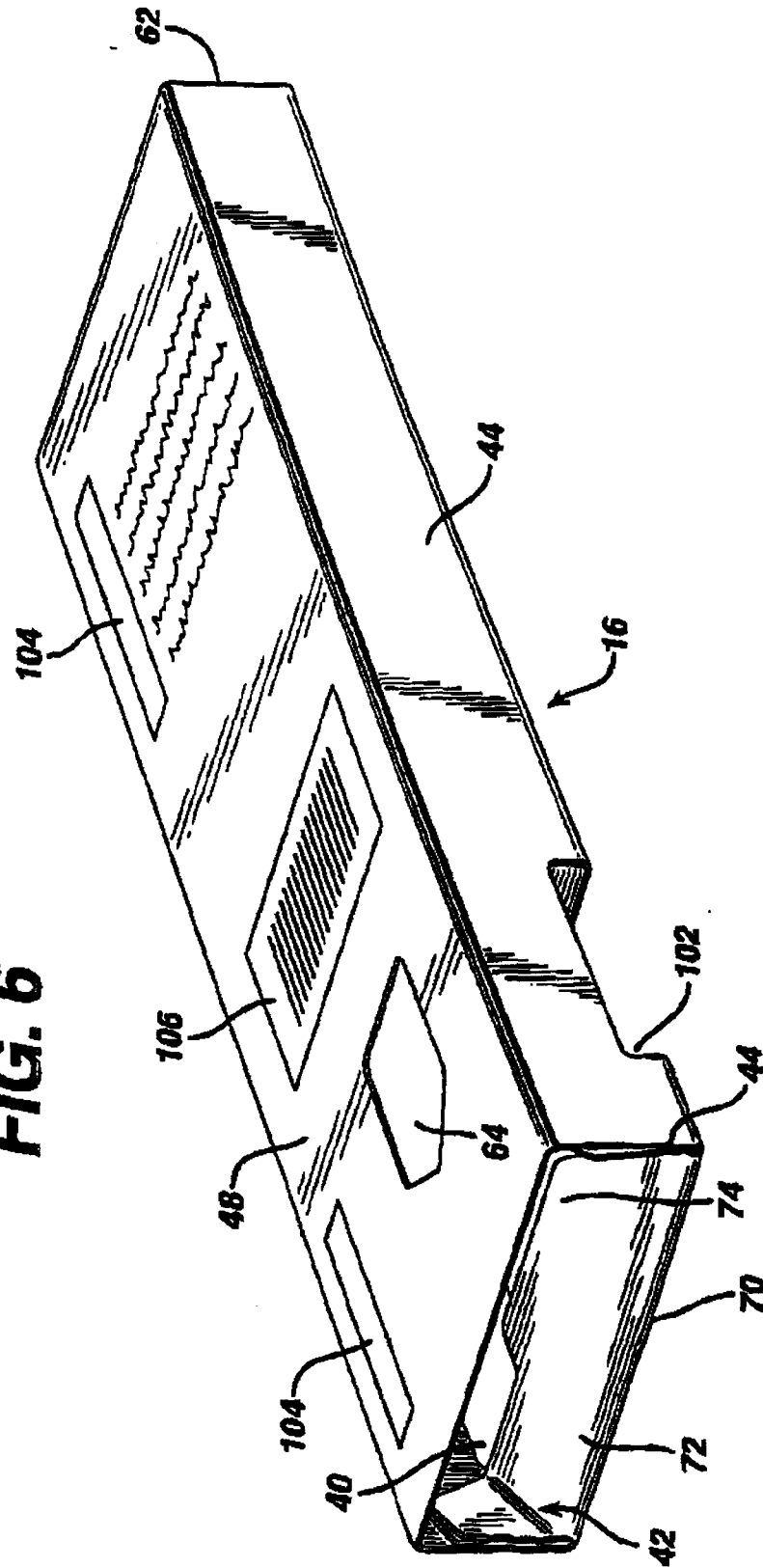


FIG. 5

FIG. 6





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(54) **PERSONALLY PORTABLE VACUUM
DESICCATOR**

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604/313**

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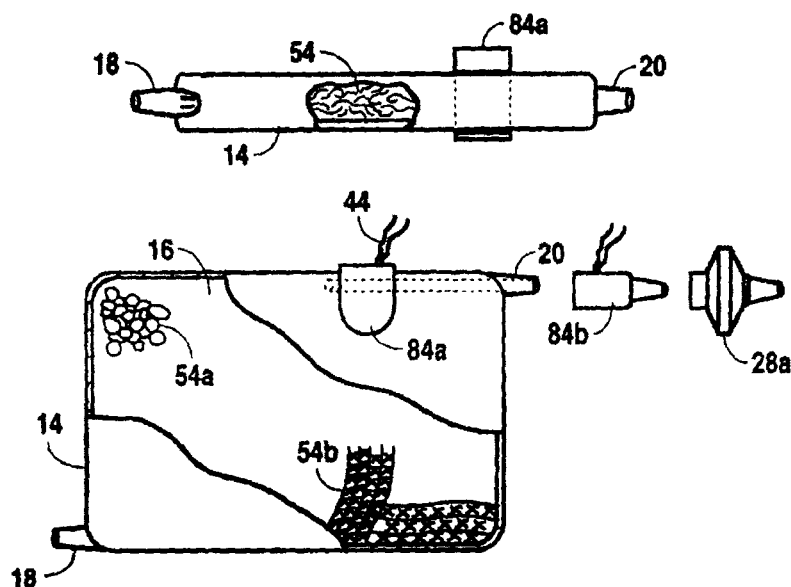
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(57) **ABSTRACT**

The vacuum desiccator low pressure vacuum pump and trap and is transportable upon a user's person. The device is especially useful to remove excess fluids from wounds and incisions as they heal. The device includes a desiccator cartridge containing a fluid trapping agent. The desiccator cartridge is connected to a vacuum pump member providing a low vacuum pressure to the interior chamber of the desiccator cartridge. A small battery powered, electric motor drives the pump member. An electrical control circuit, including the battery power source, controls the operation of the electric motor. A single passage, one-way, gas/liquid flow pathway connects the inlet port of the desiccator cartridge to an occlusive dressing covering the wound to be drained. The control circuit includes one or more ancillary circuits for controlling operation of the device, such as: a power circuit, a moisture sensor, a timer circuit, a vacuum pressure sensor, and a pressure differential sensor.

34 Claims, 4 Drawing Sheets



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with the electric motive means. The control circuit is operable to control the operation of the electric motive means.

The desiccator cartridge of the trap has only a single, ingress gas/liquid flow pathway, which is the inlet port. Additionally, the flow path at the inlet port is unidirectional, in that gas/liquid flow can enter the trap via the inlet port, but not exit or back flow out of the trap via the inlet port. Optionally, the personally portable vacuum desiccator includes a single passage gas/liquid flow path delivery tube for connecting the trap to a source of gas or liquids to be delivered into the trap. The delivery tube has an input end for communicating with the gas/liquid source and an output end connectable to the inlet port of the desiccator cartridge. A one-way valve is located proximate the inlet port of the desiccator cartridge. The one-way valve prevents the contents of the desiccator cartridge from back-flowing out of the inlet port. The one way valve may be separate from or incorporated into the inlet port. The desiccator cartridge is removable from the vacuum desiccator and separately disposable. A fresh desiccator cartridge is installed in the desiccator to replace the removed cartridge.

The desiccator cartridge contains a trapping agent for containing the liquids or moisture delivered to the trap under the force of the vacuum. The trapping agent combines with the liquid or moisture to alter its physical features, i.e., from a liquid or vapor to a mixed phase or solid state. Compositions suitable for use as trapping agents in the present invention are selectable by one of ordinary skill in the art in view of the present disclosure and teachings herein. The trapping agent should adsorb, absorb or in some way combine with the liquid or moisture to immobilize and keep it from sloshing in the desiccator cartridge as it is accumulated in the interior chamber. Examples of potentially suitable trapping agents include: a desiccant, an adsorbent and an absorbent. Specific examples include silica gel, sodium polyacrylate, potassium polyacrylamide and related compounds. Such moisture trapping materials are often found in disposable baby diapers and in feminine napkins. The level of moisture in the desiccant chamber is monitored by the moisture sensor circuit. When the amount of moisture trapped in desiccant material approaches saturation, the chamber may either be removed and disposed of or recharged with fresh desiccant material and repositioned in the device (depending on the design of the desiccator cartridge).

The present vacuum desiccator can further comprise a filter for blocking bacteria and/or untrapped moisture from passing into the vacuum pump member or from being vented to atmosphere. The filter may be located proximate the outlet port to protect the pump member and/or proximate the exhaust port to prevent venting bacteria or moisture to atmosphere.

The electric motive means of the vacuum desiccator includes an electric motor. The motor is coupled to the vacuum pump member to drive the pump. The motor may be coupled to the pump head by any of a number of means known to and practicable by the ordinary skilled artisan. For example, the motor shaft may be integrated with the vacuum pump head, it may be mechanically coupled to the vacuum pump so as to be readily separable from the pump head, or it may be magnetically coupled to the pump head so as to, again, be readily separable from the vacuum pump member. A readily separable motive means is particularly useful where the vacuum pump member and the desiccator cartridge are integrated together as a unit.

A purpose of the electrical control circuit is to monitor the condition of the device and to control operation of the

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motive means. The electrical control circuit includes the electrical power source for the device. The power source comprises an electrical power storage means, such as a battery. A feature of the power source is that the electrical storage means is removable from the electrical control circuit and is replaceable. Additionally, the electric control circuit optionally includes other ancillary circuits for the operation and control of the device. These circuits include: a moisture sensor circuit for detecting the presence of moisture proximate the low pressure port of the vacuum pump member; a timer circuit for intermittently operating the electric motive means; a vacuum pressure sensor circuit for detecting a vacuum pressure in the interior chamber or elsewhere in the device; and a pressure differential sensor circuit for sensing a difference in pressure between the inlet and outlet ports of the desiccator cartridge.

The component parts of the vacuum desiccator device which are in gas/liquid flow communication are replaceable. This allows the components of the device which are exposed to contact with the wound fluids to be separable from the other components of the device to facilitate cleaning or disposal of contaminated components.

The present personally portable vacuum desiccator can further comprise a housing for containing some or all of the component parts of the device. For example, the housing may contain the electric motive means and the electrical control circuit, while the other components are simply attached to the housing, e.g., an integrated pump head/trap combination assembly. Other configurations obviously are possible, such as a housing containing the electric motive means and the electrical control circuit and additionally either or both of the trap (desiccator cartridge) and the vacuum pump member.

Additionally, the present vacuum desiccator device may comprise the battery being housed in a battery compartment attached or integral to the desiccator cartridge of the moisture trap. In this configuration, the battery and the desiccator cartridge are replaceable in the device as a single unit.

It is a feature of the present invention that the personally portable vacuum desiccator can be used as part of a treatment regimen to promote wound healing by drawing excess wound exudate away from the wound site. As an example of using the desiccator for this purpose, an open, full thickness dermal wound is covered with an air tight dressing, such as are commercially available. The input end of the gas/liquid flow delivery tube is positioned under the dressing in flow communication with the wound site. The vacuum desiccator is activated, a low negative pressure is produced at the wound site via the delivery tube and excess fluids excreted by the wound are removed under the force of the low negative pressure.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a schematic diagram of the major components of the present vacuum desiccator showing the electric control circuit contained in a housing with the motor coupled to the trap and vacuum pump member.

FIG. 2A is a side elevation and partial cross-sectional view of the desiccator cartridge of the present device, showing the interior chamber containing a trapping agent.

FIG. 2B is a top plan and partial cross-section view of the desiccator cartridge showing the interior chamber containing alternative trapping agents and showing alternative moisture/fluid sensors for detecting fluid in flow path proximate the outlet port of the cartridge. Also shown is a separately mountable outlet microfilter.

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(54) Title: PAPER PRODUCT FOR STERILIZING A SURFACE

(57) Abstract: The present invention provides a paper product for use in sterilizing an area. The paper product contains at least one paper sheet or pellet containing one or more dry chemical materials, one or more dry deliquescent materials, or mixtures thereof. The dry chemical materials are either inactive antimicrobial or biocidal chemical materials or are capable of reacting with another chemical material to produce one or more active antimicrobial or biocidal materials. When the paper product is placed in an atmosphere containing water vapor, the deliquescent material(s) attracts water and dissolves, thereby either hydrating and rendering active the inactive antimicrobial or biocidal chemical material(s), or providing a medium in which the chemical materials will react to produce one or more active antimicrobial or biocidal chemical materials.

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[0058] In yet another further embodiment of the present invention, the chemical and deliquescent materials are used in conjunction with one or more superabsorbent materials, and preferably are used in conjunction with one or more carrier and superabsorbent materials.

[0059] The term "superabsorbent" or "superabsorbent material" means a water-swellable, water-insoluble organic or inorganic material capable of absorbing at least about 20 times its weight and, more preferably, at least about 30 times its weight in an aqueous solution. The superabsorbent materials can be natural, synthetic, modified natural polymers and materials, inorganic materials (*i.e.*, silica gels) or organic compounds (*i.e.*, cross-linked polymers).

[0060] Suitable superabsorbent materials include, but are not limited to: (1) synthetic superabsorbent material polymers such as alkali metal and ammonium salts of poly(acrylic acid) and poly(methacrylic acid), poly(acrylamides), poly(vinyl ethers), maleic anhydride copolymers with vinyl ethers and alpha-olefins, poly(vinyl pyrrolidone), poly(vinylmorpholinone), poly(vinyl alcohol), and mixtures and copolymers thereof; (2) natural and modified natural polymers such as hydrolyzed acrylonitrile-grafted starch, acrylic acid grafted starch, methyl cellulose, chitosan, carboxymethyl cellulose, hydroxypropyl cellulose and natural gums (*e.g.*, alginates, xanthan gum, locust bean gum); and (3) mixtures of natural and wholly or partially synthetic superabsorbent polymers.

[0061] The superabsorbent materials may be considered secondary carriers that serve to absorb the antimicrobial or biocidal chemical material(s) upon activation or formation, thereafter allowing for the controlled release of these materials from the paper product, increasing or further increasing the product's useful life.

[0062] The superabsorbent material, like the carrier material, is not readily lost during dewatering, and may be added at any stage during the papermaking process.

[0063] A variety of methods may be utilized to impregnate the paper with chemical materials during *e.g.* a subsequent converting process. For example, the paper may be dunked or immersed in a bath containing the chemical, with the liquid chemical drawn into the pores of the paper through the process of diffusion. Alternatively, the chemical may be sprayed upon the surface of the paper, with impregnation of the paper accomplished through diffusion of the chemical from the paper's surface into the underlying pores.

[0064] The present invention is applicable to impregnate a variety of paper products. Paper made from softwood pulp, kenaf, flax, and hemp are all suitable for chemical impregnation in accordance with the present invention.

[0065] In order to further illustrate the present invention, the following experimental examples are described. Each of these examples illustrates impregnation of paper with chemicals that impart biocidal properties.

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9. The paper product of claim 1, wherein said one or more dry deliquescent materials are selected from the group of alumina, calcium chloride, lithium chloride, magnesium chloride, magnesium nitrate, silica gel and mixtures thereof.

10. The paper product of claim 1, wherein said one or more dry chemical materials are contained on a granular carrier material, wherein said granular carrier material is selected from the group of siliceous minerals, kenaf fibers, zeolite molecular sieves, synthetic porous silicas, silicates and mixtures thereof.

11. The paper product of claim 1, wherein said one or more dry deliquescent materials are contained on a granular carrier material, wherein said granular carrier material is selected from the group of siliceous minerals, kenaf fibers, zeolite molecular sieves, synthetic porous silicas, silicates and mixtures thereof.

12. The paper product of claim 1, wherein said at least one paper sheet or pellet further contains one or more dry superabsorbent materials.

13. A papermaking process for preparing an activatable, antimicrobial or biocidal paper product, which comprises:

adding one or more chemical materials and one or more deliquescent materials to a dewatered fibrous web, wherein said one or more chemical materials are either antimicrobial or biocidal chemical materials or are capable of reacting with another chemical material to produce one or more antimicrobial or biocidal chemical materials, and

drying said fibrous web to a moisture level of from about 4 to about 6 % by weight, based on the total weight of said fibrous web, thereby rendering inactive any said antimicrobial or biocidal chemical materials present in said dried web,

wherein, when said paper product is placed in an atmosphere containing water vapor, said one or more deliquescent materials attract water and dissolve, thereby either hydrating and rendering active said inactive antimicrobial or biocidal chemical materials, or providing a medium in which said chemical materials will react to produce one or more active antimicrobial or biocidal chemical materials.

14. The papermaking process of claim 13, wherein said process further comprises adding a granular carrier material to pulp used to prepare said fibrous web, wherein said granular carrier material is selected from the group of siliceous minerals, kenaf fibers, zeolite molecular sieves, synthetic porous silicas, silicates and mixtures thereof.

15. The papermaking process of claim 13, wherein said process further comprises adding one or more superabsorbent materials to pulp used to prepare said fibrous web.

16. The papermaking process of claim 13, wherein said fibrous web is formed from at least one of softwood pulp, kenaf, flax and hemp.

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17. The papermaking process of claim 13, wherein said one or more chemical materials are selected from the group of citric acid, cinnamon leaf oil, citronella oil, lemongrass oil, sodium acid pyrophosphate, ascorbic acid and mixtures thereof.

18. The papermaking process of claim 13, wherein said one or more deliquescent materials are selected from the group of alumina, calcium chloride, lithium chloride, magnesium chloride, magnesium nitrate, silica gel and mixtures thereof.

19. The papermaking process of claim 13, wherein said one or more chemical materials are contained on a granular carrier material, wherein said granular carrier material is selected from the group of siliceous minerals, kenaf fibers, zeolite molecular sieves, synthetic porous silicas, silicates and mixtures thereof.

20. The papermaking process of claim 13, wherein said one or more deliquescent materials are contained on a granular carrier material, wherein said granular carrier material is selected from the group of siliceous minerals, kenaf fibers, zeolite molecular sieves, synthetic porous silicas, silicates and mixtures thereof.

21. The papermaking process of claim 13, wherein said process further comprises adding one or more superabsorbent materials to said dewatered fibrous web.

22. A paper product for use in sterilizing an area, which comprises: at least one paper sheet or pellet containing one or more dry chemical materials, one or more dry deliquescent materials, or mixtures thereof, wherein, said paper product is prepared by a papermaking process, which comprises:

adding one or more chemical materials and one or more deliquescent materials to a dewatered fibrous web, wherein said one or more chemical materials are either antimicrobial or biocidal chemical materials or are capable of reacting with another chemical material to produce one or more antimicrobial or biocidal chemical materials, and

drying said fibrous web to a moisture level of from about 4 to about 6 % by weight, based on the total weight of said fibrous web, thereby rendering inactive any said antimicrobial or biocidal chemical materials present in said dried web,

wherein, when said paper product is placed in an atmosphere containing water vapor, said one or more deliquescent materials attract water and dissolve, thereby either hydrating and rendering active said inactive antimicrobial or biocidal chemical materials, or providing a medium in which said chemical materials will react to produce one or more active antimicrobial or biocidal chemical materials.

23. The paper product of claim 22, which comprises a paper sheet or pellet impregnated with a mixture of said dry chemical and deliquescent materials.

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24. The paper product of claim 22, which comprises contiguous first and second paper sheets, wherein said first paper sheet is impregnated with said one or more dry chemical materials, and wherein said second paper sheet is impregnated with said one or more dry deliquescent materials.
- 5 25. The paper product of claim 22, which comprises contiguous first and second paper pellets, wherein said first paper pellet is impregnated with said one or more dry chemical materials, and wherein said second paper pellet is impregnated with said one or more dry deliquescent materials.
- 10 26. The paper product of claim 22, which comprises contiguous first and second paper sheets, wherein a mixture of said dry chemical and deliquescent materials is contained between said first and said second paper sheets.
27. The paper product of claim 26, wherein said mixture is contained in pockets formed by said first and second paper sheets.
- 15 28. The paper product of claim 22, wherein said paper sheet or pellet is formed from at least one of softwood pulp, kenaf, flax and hemp.
29. The paper product of claim 22, wherein said one or more dry chemical materials are selected from the group of citric acid, cinnamon leaf oil, citronella oil, lemongrass oil, sodium acid pyrophosphate, ascorbic acid and mixtures thereof.
- 20 30. The paper product of claim 22, wherein said one or more dry deliquescent materials are selected from the group of alumina, calcium chloride, lithium chloride, magnesium chloride, magnesium nitrate, silica gel and mixtures thereof.
- 25 31. The paper product of claim 22, wherein said one or more dry chemical materials are contained on a granular carrier material, wherein said granular carrier material is selected from the group of siliceous minerals, kenaf fibers, zeolite molecular sieves, synthetic porous silicas, silicates and mixtures thereof.
32. The paper product of claim 22, wherein said one or more dry deliquescent materials are contained on a granular carrier material, wherein said granular carrier material is selected from the group of siliceous minerals, kenaf fibers, zeolite molecular sieves, synthetic porous silicas, silicates and mixtures thereof.
- 30 33. The paper product of claim 22, wherein said at least one paper sheet or pellet further contains one or more dry superabsorbent materials.
34. A paper product for use in sterilizing an area, which comprises: at least one paper sheet or pellet containing one or more dry chemical materials, one or more dry deliquescent materials, or mixtures thereof,
- I