



Industria y Comercio

SUPERINTENDENCIA

Delegatura de Propiedad Industrial

División de Nuevas Creaciones

PCT

SOLICITUD

PATENTE DE INVENCION

05-102640

21. EXPEDIENTE No.

54. TITULO

DISPOSITIVOS, METODOS Y SISTEMAS DE CONFIGURACION

DE UN CONJUNTO DE CERRADURA PARA LLAVES

51. CLASIFICACION INTERNACIONAL

71. SOLICITANTE

NEWFREY LLC

DOMICILIO

Newark, Delaware, Estados Unidos de América.

74. APODERADO

EMILIO FERRERO

C.C. 438.019 de Usaquen.

22. BOGOTA, D.C.,



Industria y Comercio
SUPERINTENDENCIA

PETITORIO

SUPERINTENDENCIA Y COMERCIO

Radicación : 101023-48 002200000 Folios: 148
Fecha (RD): 2005-10-07 17:36:12
Trámite : 211 PCT-PAT-INT 370 : 062 PCT 411 PCT-PA-PC
Dependencia: 2750 DIVISION DE MARCAS Y DISEÑOS

**FORMULARIO UNICO DE SOLICITUD DE PATENTE
PCT
ENTRADA EN FASE NACIONAL**

SOLICITUD DE:

- 1

☒ Patente de Invención.
☒ Capítulo I.

☐ Patente de Modelo de Utilidad.
☐ Capítulo II.

2

SOLICITANTE
(71)

Nombre: NEWFREY LLC
sociedad constituida y existente bajo las
leyes de: Estado de Delaware,
Estados Unidos de América.

Dirección: Drummond Plaza Office Park
1423 Kirkwood Highway,
Newark, Delaware 19711
Estados Unidos de América

Domicilio: Newark, Delaware,
Estados Unidos de América

IDENTIFICACIÓN

C.C. ☐ NIT ☐
C.E. ☐ Otro ☐
Cual _____
Número _____

3

**REPRESENTANTE
O APODERADO**

Nombre: EMILIO FERRERO
Dirección: Carrera 4ª. No. 72-35
Teléfono: 347 36 11
Fax: 211 86 50
E-mail: clientes@camvp.com
Domicilio: Bogotá, Colombia.

IDENTIFICACIÓN

C.C. ☒ NIT ☐
C.E. ☐ Otro ☐
Cual _____
Número 438.019 T.P 31.929

4

INVENTOR (ES)
(72)

1. Steve ARMSTRONG
901 Sedona Lane,
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Estados Unidos de América

2. Gerald B. CHONG
18805 Leesbury Way,
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Estados Unidos de América

5

PCT (86)
Solicitud Internacional No. PCT/US2004/006945
Publicación Internacional No. WO 2004/081322

Fecha: 5 de marzo de 2004
Fecha: 23 de septiembre de 2004

6

TÍTULO (54) DISPOSITIVOS, MÉTODOS Y SISTEMAS DE CONFIGURACIÓN DE UN CONJUNTO DE CERRADURA PARA LLAVES

7

Clasificación Internacional (51) E05B

8	Prioridad SI ☒ NO ☐	(33) País de Origen	(32) Fecha	(31) Número de Solicitud
		<u>US</u>	<u>07/03/2003</u>	<u>10/384.294</u>

9

Comprobante de pago No.: 05- 75.989 Fecha: 3 de octubre de 2005

10

Anexos:

- ☒ Comprobante de pago de la tasa de presentación de la solicitud por \$ 443.000.00.
- ☐ Comprobante de pago por reivindicación de prioridad.
- ☐ Documento que acredita la existencia y representación legal cuando el solicitante sea persona jurídica.
- ☒ Poderes, si fuere el caso.
- ☐ Documento de cesión del inventor al solicitante o a su causante.
- ☒ Declaraciones.
- ☒ Copia de la solicitud internacional. (Resumen, descripción, reivindicaciones, dibujos)
- ☒ Traducción de la solicitud internacional al castellano. (Resumen, descripción, reivindicaciones, dibujos)
- ☐ Copia del examen preliminar efectuado por la IPEA.
- ☐ Traducción del examen preliminar efectuado por la IPEA.
- ☐ De ser el caso, copia del contrato de acceso.
- ☐ De ser el caso, documento que acredite la licencia o autorización de uso de conocimientos tradicionales de las comunidades indígenas.
- ☐ De ser el caso, certificado de depósito del material biológico.
- ☒ Arte final 12x12
- ☐ De ser el caso, información sobre otras solicitudes de patente o títulos obtenidos en el extranjero por el mismo titular o su causante, relacionadas parcial o totalmente con la invención de esta solicitud.
- ☒ Otros: VER HOJA DE DOCUMENTOS ANEXOS

11

FIGURA CARACTERÍSTICA

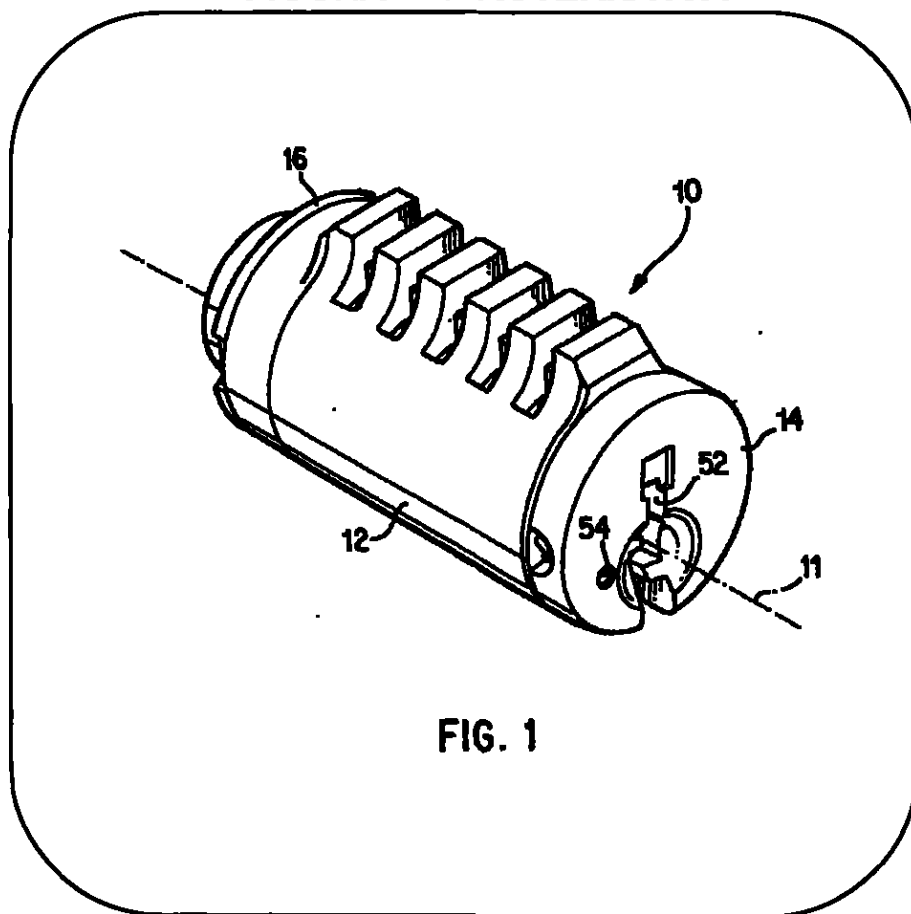


FIG. 1

12

Solicito la concesión de la patente,

NOMBRE:

EMILIO FERRERO

FIRMA:

C.C. 438.019 de Usaquén T.P. 31.929

DOCUMENTOS ANEXOS

1. ☒ **Publicación Internacional WO 2004/081322 A2**

Descripción:

Páginas 20 en el idioma original

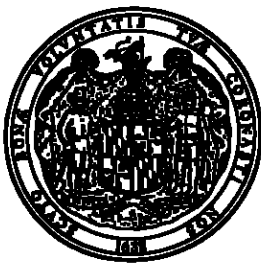
Páginas 17 en español

Reivindicaciones: Número (s) 31

Figuras: Número (s) 43

2. ☒ **Forma PCT/RO/101. PCT Request**
3. ☐ **Forma PCT/RO/106. Invitation to Correct Defects.**
4. ☒ **Forma PCT/ISA/210. Informe de Búsqueda Internacional.**
5. ☐ **Forma PCT/ISA/220. Notificación De La Transmisión Del Informe De Búsqueda Internacional Y De La Opinión Escrita De La Administración Encargada De La Búsqueda Internacional, O De La Declaración.**
6. ☒ **Forma PCT/ISA/237. Opinión Escrita De La Administración Encargada De La Búsqueda Internacional.**
7. ☒ **Forma PCT/IB/304. Notification Concerning Submission Or Transmittal Of Priority Document.**
8. ☐ **Forma PCT/IB/306. Notification Of The Recoding Of A Change.**
Descripción De Modificación:

9. ☐ **Forma PCT/IB/308. Notice Informing The Applicant Of The Communication Of The International Application To The Designated Offices.**
10. ☐ **Forma PCT/IB/332. Information Concerning Elected Offices Notified Of Their Election.**
11. ☐ **FORMA PCT/IB/345. Communication in cases for which no other form is applicable.**
12. ☐ **Forma PCT/IPEA/401. PCT Demand**
13. ☐ **Forma PCT/IPEA/402. Notification Of Receipt Of Demand By Competent International Preliminary Examining Authority.**
14. ☐ **Forma PCT/IPEA/408. Written Opinion.**
15. ☐ **Forma PCT/IPEA/416. Notification Of Transmittal Of The International Preliminary Examination Report.**
16. ☐ **Forma PCT/IPEA/409. Informe Del Examen Preliminar Internacional.**
17. ☐ **Traducción Al Español Del Informe Del Examen Preliminar Internacional.**
18. ☐ **Traducción Al Español De Los Anexos Presentados Junto Con El Informe Del Examen Preliminar Internacional.**
19. ☒ **Extracto de publicación.**



15793
4

The State of Maryland

Office of the Secretary of State

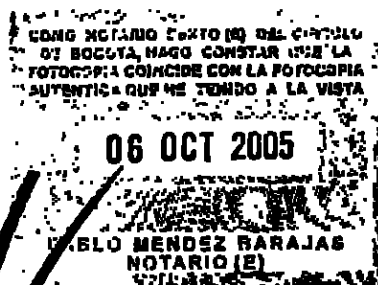
Apostille

(Convention de La Haye du 5 Octobre 1961)

1. Country: United States of America
This public document
2. has been signed by Suzanne Mensh
3. acting in the capacity of Clerk of the Circuit Court for Baltimore County
4. bears the seal/stamp of the Circuit Court for Baltimore County

Certified

5. at Annapolis, Maryland
6. the 13th day of March, 2003
7. by The Secretary of State of Maryland
8. Seal



10. Signature

R. Karl Fumam

Secretary of State

No. 95798



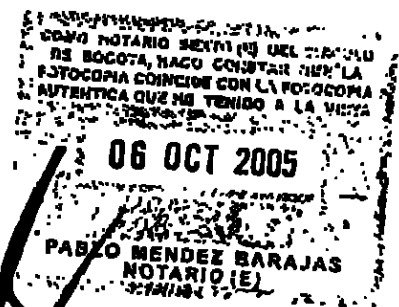
State of Maryland, Baltimore County, to-wit:

I, Suzanne C. Mensh, Clerk of the Circuit Court for Baltimore County, Maryland, a court of record, do hereby certify that **MARY P. NIZIOLEK** was a commissioned/appointed and qualified a Notary Public commencing on 04/04/2001 In Testimony

Whereof, I have hereunto set my hand and affixed the seal of the Court this 13th day of March, 2003.

Suzanne Mensh

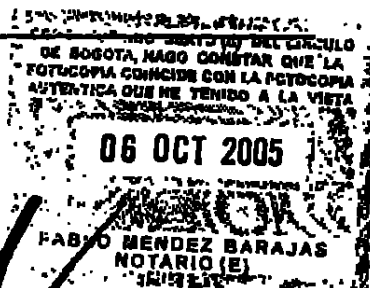
Clerk of the Circuit Court For Baltimore County, Maryland



REPRESENTACION Y PODER

REPRESENTATION AND POWER-OF-ATTORNEY

Yo (nosotros), abajo firmado (s)/I (we), the undersigned
NEWFREY LLC
domiciliado (s) en/of
Drummond Plaza Office Park
1423 Kirkwood Highway
Newark, Delaware 19711, U.S.A.



por el presente nombramos a EMILIO FERRERO, tpa. 31929; GONZALO PERDOMO, tpa. 831; LUZ CLEMENCIA DE PAEZ, tpa. 23555 y GERMAN CAVELIER, tpa. 832, domiciliados en la Carrera 4a N° 72-35, Bogotá, Colombia, en obediencia a lo dispuesto en el parágrafo 1o del Artículo 543 del Código de Comercio, el primero como principal y los demás como suplentes, en su orden, como mis (nuestros) representantes en todos los asuntos de propiedad industrial con facultad para recibir notificaciones y nombrar apoderados judiciales o extrajudiciales. El primer representante suplente reemplazará al principal en caso de ausencia o impedimento temporal o definitivo de aquél. La misma regla se aplicará cuando el segundo representante suplente haya de reemplazar al primero, o el tercero al segundo. En tales casos, el representante principal, o el primero, o segundo suplente, en su caso, o ambos, declararán su intención de no ejercer la representación mediante declaración autenticada por Notario Público en Colombia, o por Notario u otro Funcionario Público, o Cónsul de Colombia, en el extranjero; y si se tratare de impedimento, con el certificado respectivo. Si alguno de los nombrados faltare definitivamente, el siguiente tomará su lugar. Cuando cesare la ausencia o impedimento del representante principal, o de su primero o segundo suplentes, en su caso, podrán ejercer la presentación, en su orden, uno u otros según el caso, asumiéndola por el solo hecho de ejercerla, cesando en ese momento el ejercicio de la representación por el primero, segundo o tercer suplente en su caso. Además, confiero (conferimos) poder a los abogados arriba nombrados, para obtener la protección de mi (nuestra) propiedad industrial y contra la competencia desleal, a cuyo efecto autorizo (amos) a los dichos apoderados para que me (nos) representen ante cualesquiera entidades o personas, ejerzan o no jurisdicción, especialmente ante las del orden administrativo, contencioso-administrativo y judicial, así como los tribunales de arbitramento, en todo lo concerniente a los siguientes asuntos: a) Obtención de patentes de invención, modelos de utilidad y diseños industriales; el registro de marcas de fábrica, colectivas, defensivas, de servicio, lemas comerciales, nombres comerciales, enseñas, nombres de dominio, variedades vegetales y denominaciones de

in due compliance with the terms of paragraph 1st. of article 543 of the Commercial Code, do hereby appoint EMILIO FERRERO, tpa. 31929; GONZALO PERDOMO, tpa. 831; LUZ CLEMENCIA DE PAEZ, tpa. 23555 and GERMAN CAVELIER, tpa. 832, domiciled at Carrera 4a N° 72 35, Bogotá, Colombia, the first as principal and the others as alternates, in the order of their appointment, as our representatives for all industrial property matters with faculty to receive notifications and to appoint attorneys in and out of Court. The first alternate shall replace the principal in case of his absence or of temporal or definitive impediment. The same rule will apply when the second alternate representative is to replace the first one, or when the third is to replace the first or second alternates in their turn, or both of them, second. In such cases, the principal representative, or the first or second alternates in their turn, or both of them, shall state their intention not to act as representatives through a declaration given before a Notary Public in Colombia, or before a Notary or another Public Official or a Colombian Consul abroad; and in case of impediment, the appropriate certificate shall suffice. If any of the appointees were to be definitely absent, the following alternate shall take his place. When the absence or impediment of the principal representative, or of the first or second alternate in their turn ceases, the representation can be taken again in their sequence, by the principal, the first or second alternate depending on case, and the mere fact or its exercise will suffice. The exercise of the representation by the first, second or third alternates in their turn shall end at such time. In addition, we grant a Power of Attorney in favor of the above named attorneys at law so that they may obtain the protection of my (our) industrial property and against the unfair competition, for which purpose I (we) authorize the said attorneys to represent me (us) before any authorities or persons, with or without Jurisdiction, specially those administrative, administrative contentious and judicial, as well as before Arbitration Court, in all matters concerning the following: a) Obtainment of patents, utility models and industrial designs; the registration of trademarks, collective, defensive and service marks, slogans, commercial names, trade emblems, domain names,

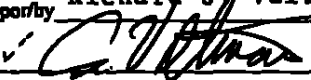
origen; su renovación, traspaso, cambio de nombre o domicilio, cancelación voluntaria; y el registro de licencias de uso de esos derechos: b) Las acciones de competencia desleal, protección del consumidor, oposiciones u observaciones, cancelación administrativa y judicial, nulidad, medidas cautelares, concesión de licencias, la tutela, la protección de secretos industriales, y en general los juicios civiles, penales, administrativos o contencioso administrativos relacionados con estos derechos; acciones y procesos que promovamos o se nos promuevan. Y para que en todos los asuntos arriba determinados, puedan sustituir este mandato, transigir, conciliar, admitir los hechos del proceso, desistir, cancelar, recibir, renunciar, y ratificar los actos de agentes oficiosos.

vegetal varieties and denominations of origin; its renewal, assignment, change of name or domicile, voluntary cancellation; and the registration of licenses of use of the above rights: b) Actions of unfair competition, protection to the consumer, oppositions or observations, administrative or Court cancellation, nullity, infringement, granting of licenses, the action for writ mandamus, the protection of trade secrets, and in general the civil, penal, and administrative suits relating to those rights; actions and suits instituted by me (us) or against me (us). And that in all the above matters they may substitute this Power of Attorney, compromise, conciliate, admit the facts of the case, desist, cancel, receive, resign, and ratify acts done by representatives without a power of attorney.

Dado y firmado hoy/Given and signed this 12 day of March 2003

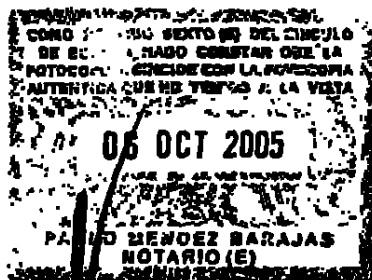
en/in Towson, Maryland 21286 USA

por/by Richard J. Veltman, Senior Group Patent Counsel



Firma Newfrey LLC

Signature



CERTIFICADO NOTARIAL (SOCIEDAD)

Hoy _____ de _____ de 200__

Compareció(eron) ante mí
Richard J. Veltman

quien(es) conozco personalmente y que firma(n) este documento en representación de la Sociedad/compañía denominada
NEWFREY LLC

Certifico:

1. Que he visto los siguientes documentos:*

ACTOS DE LOS DIRECTIVOS POR CONSENTIMIENTO UNANIMO ESCRITO FECHADO 11 NOVIEMBRE, 2002 TOWSON, MARYLAND, ESTADOS UNIDOS DE AMERICA

2. Que dichos documentos prueban lo siguiente:

2.1. Que **NEWFREY LLC** es una Sociedad/Compañía legalmente constituida y existente de acuerdo con las leyes del Estado de Delaware.

2.2. Que el domicilio de dicha Sociedad/Compañía es Drummond Plaza Office Park, 1423 Kirkwood Highway, Newark, Delaware 19711, EE.UU.

2.3. Que el objeto u objetos para los cuales se otorga el presente poder están comprendidos dentro del objeto social de la mencionada Sociedad/Compañía.

2.4. Que el(los) Sr.(Sres.) **RICHARD J. VELTMAN**

está(n) autorizado(s) para otorgar el presente Poder.

Ciudad **BALTIMORE**

Estado **MARYLAND**

Hoy **12 MARZO** de 200__ **3**

Notario Público o Funcionario Autorizado – Notary Public or Attesting Official

* Los documentos deben identificarse con fecha y origen

NOTARIAL CERTIFICATE (CORPORATION)

On this _____ day of **March** 200__ **3**

appeared before me
Richard J. Veltman

who(m) I know personally and who(m) signed this document as representative(s) of the Corporation/Company named
Newfrey LLC

I certify:

1. That I have seen the following documents:

Action of Directors by Unanimous Written Consent of November 11, 2002, Towson, Maryland, United States of America

2. That the above documents duly prove the following:

2.1. That **Newfrey LLC** is a Corporation/Company legally constituted and in existence in accordance with the laws of the State of Delaware.

2.2. That the domicile of said Corporation/Company is Drummond Plaza Office Park, 1423 Kirkwood Highway, Newark, Delaware 19711, U.S.A.

2.3. That the purpose or purposes for which the present Power of Attorney is granted are comprised within the corporation purposes set forth in the charter of the mentioned Corporation/Company.

2.4. That Mr.(Messrs.) **Richard J. Veltman**

is(are) authorized to grant the present Power of Attorney.

City **Baltimore**

State **Maryland**

This **12** day of **March** 200__ **3**

[Signature]

Mary Nisplek

My Commission Expires: **1-1-2005**

* Documents must be identified with date and origin

APOSTILLE
(Convention de La Haye du 5 octobre 1961)

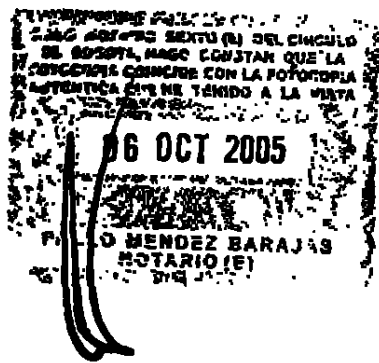
1. Country:
This public document

2. has been signed by
3. acting in the capacity of
4. bears the seal/stamp of

Certified

5. at 6. the
7. by
8. No.
9. Seal/stamp 10. Signature

.....



8

TRADUCCIÓN OFICIAL No. 38.03/03 preparada por **María Elvira Martelo**, traductora oficial aprobada por el Ministerio de Justicia mediante Resolución No. 2879 de 1995 y reconocida por el Ministerio de Relaciones Exteriores.

(A continuación se traducen los sellos y legalizaciones de un documento escrito en inglés y español, por el cual **NEWFREY LLC**, domiciliada en Drummond Plaza Office Park, 1423 Kirkwood Highway, Newark, Delaware, 19711, Estados Unidos de América, otorga poder a **EMILIO FERRERO, GONZALO PERDOMO, LUZ CLEMENCIA DE PAEZ Y GERMAN CAVELIER**). Dado y firmado el 12 de marzo de 2003 en Towson, Maryland, EUA, por Richard J. Veltman, Asesor de Patentes, Grupo Principal, (firma ilegible), Newfrey LLC.

CERTIFICADO NOTARIAL (SOCIEDAD) en inglés y español referente a la existencia legal de **NEWFREY LLC**. Dado en la ciudad de Baltimore, Estado de Maryland, el 12 de marzo de 2003. (Firma ilegible), Funcionario Autorizado. (Sello notarial en tinta) (Firmado) Mary Niziolek. Mi comisión expira el 1 de enero de 2005. (Sello seco) **MARY NIZIOLEK**, Notario Público, Condado de **BALTIMORE**, MD.

Estado de Maryland, Condado de Baltimore, Constancia

Yo, Suzanne C. Mensh, Escribano de la Corte de Circuito para el Condado de Baltimore, Maryland, una corte de registro, por el presente certifico que **MARY P. NIZIOLEK** fue comisionada/ nombrada y calificada como Notario Público el 13 de marzo de 2001. En fe de lo cual, he firmado e impuesto el sello de la Corte hoy 13 de marzo de 2003.

(Firma facsimilar), Suzanne Mensh, Escribano de la Corte de Circuito para el Condado de Baltimore. (Sello de oblea) Corte de Circuito para el Condado de Baltimore, MD.

ESTADO DE MARYLAND

Secretaría de Estado

APOSTILLA

(Convención de La Haya del 5 de octubre de 1961)

1. País: Estados Unidos de América

Este documento público

2. Ha sido firmado por **Suzanne Mensh**

3. Actuando en su capacidad de **Escribano de la Corte de Circuito para el Condado de Baltimore.**

4. Lleva el sello/timbre de **la Corte de Circuito del Condado de Baltimore.**

CERTIFICADO

5. En Anápolis, Maryland

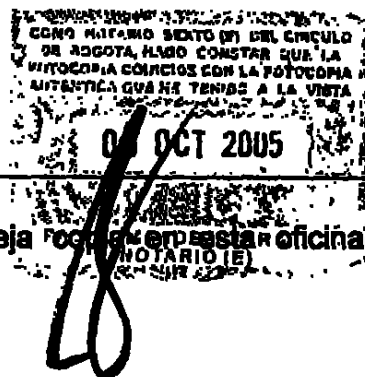
6. el 13 de marzo de 2003

7. Por el Secretario de Estado de Maryland.

8. Sello: (sello impreso) SELLO DE LA SECRETARIA DE ESTADO.

10. Firma: (Firma ilegible), Secretario de Estado.

No. 95798



Es traducción fiel y completa de la cual se deja copia en esta oficina para su confrontación.

COLO 13698-701-001-6

WPCL 002f - ID 2172

MAR 31/03

Maria Elvira Martelo
TRADUCCION No.: 38.03/03
MARIA ELVIRA MARTELO
Traductora e Interprete Oficial
Inglés - Español - Inglés
Res. No. 2879 Min. Justicia

MINISTERIO DE RELACIONES
EXTERIORES

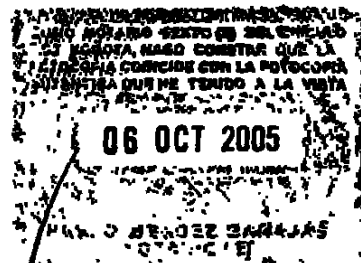
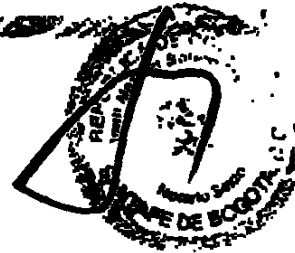
428645
Rina Pantoja
CUTA FIRMA APARECE EN EL
DOCUMENTO DESPUES DE
LAS FUNCIONES DE DESPACHO

NO SE ASUME
RESPONSABILIDAD DEL TEXTO

2003 MAR 31 A 11:36

Rina Pantoja
DE LEGALIZACIONES
SANTAFE DE BOGOTA D.C.

COPIA NOTARIAL DEL SEPTIMO DEL CIRCUITO DE SANTAFE DE BOGOTA D.C. NOTARIAL GARCIA SANTANA (NIES) FIA-
Rina Pantoja
AUTENTICADOS CON C.C. No. (S)
ESP. (ON) AUTENTICAR:
SANTAFE DE BOGOTA, 31 MAR 2003



(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
23 September 2004 (23.09.2004)

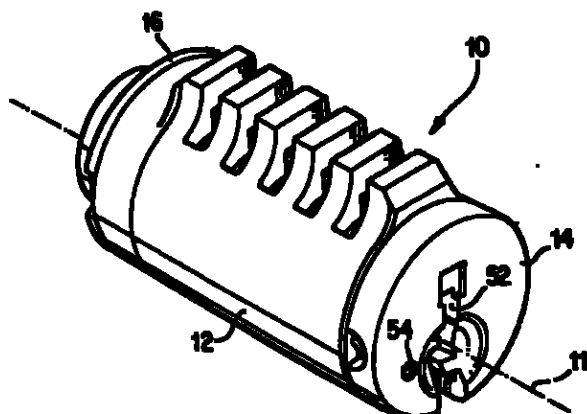
PCT

(10) International Publication Number
WO 2004/081322 A2

- (51) International Patent Classification⁷: E05B 92808 (US). CHONG, Gerald, B. [US/US]; 18805 Leesbury Way, Rowland Heights, CA 91748 (US).
- (21) International Application Number: PCT/US2004/006945 (74) Agents: VELTMAN, Richard, J. et al.; c/o Black & Decker Corporation, 701 E. Joppa Road TW-199, Towson, MD 21286 (US).
- (22) International Filing Date: 5 March 2004 (05.03.2004)
- (25) Filing Language: English (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW.
- (26) Publication Language: English
- (30) Priority Data: 10/384,294 7 March 2003 (07.03.2003) US (63) Related by continuation (CON) or continuation-in-part (CIP) to earlier application: US 10/384,294 (CON) 7 March 2003 (07.03.2003) Filed on
- (71) Applicant (for all designated States except US): NEWFREY LLC [US/US]; 1207 Drummond Plaza, Newark, DE 19711 (US).
- (72) Inventors; and
- (73) Inventors/Applicants (for US only): ARMSTRONG, Steve [US/US]; 901 Sedona Lane, Anaheim Hills, CA

[Continued on next page]

(54) Title: DEVICES, METHODS, AND SYSTEMS FOR KEYING A LOCK ASSEMBLY



(57) Abstract: Certain exemplary embodiments of the present invention provide a lock keying System comprising: a lock cylinder comprising: a cylinder body; a plug assembly disposed in said cylinder body and comprising a plurality of pins and a one-to-one corresponding plurality of racks for relocating said plurality of pins; and a rack alignment tool receiving aperture defined by said lock cylinder; and a rack alignment tool comprising: a base plate; and a plurality of spaced elongated prongs, each prong from said plurality of prongs comprising a first longitudinal end adapted to engage a corresponding one of said plurality of racks, each prong from said plurality of prongs dimensioned lengthwise to relocate to a first predetermined position said corresponding one of said plurality of racks, said first predetermined position common to each of said plurality of racks, each prong from said plurality of prongs comprising a second longitudinal end connected to said base plate, wherein said rack alignment tool is adapted to restrain a carrier assembly comprising said plurality of racks in an unengaged position wherein said plurality of racks are unengaged with said plurality of pins. It is emphasized that this abstract is provided to comply with the rules requiring an abstract that will allow a searcher or other reader to quickly ascertain the subject matter of the technical disclosure. This abstract is submitted with the understanding that it will not be used to interpret or limit the scope or meaning of the claims.

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DEVICES, METHODS, AND SYSTEMS FOR KEYING A LOCK ASSEMBLY

Cross-Reference to Related Applications

This application is a Continuation-In-Part of the following pending application:

- 5 Serial No. 10/256,088, (Attorney Docket No. 5845-03, filed 26 September 2002, and titled "Rekeyable Lock Assembly and Method of Operation".

Brief Description of the Drawings

The invention and its wide variety of potential embodiments will be readily understood via the following detailed description of certain exemplary
10 embodiments, with reference to the accompanying drawings in which:

FIG. 1 illustrates a lock cylinder according to the present invention.

FIG. 2 is an exploded view of the lock cylinder of FIG. 1.

FIG. 3 is a perspective view of a plug assembly illustrating a carrier sub-assembly with a locking bar disposed in a locking position to lock the plug
15 assembly in a lock cylinder body.

FIG. 4 is a top plan view of the plug assembly of FIG. 3.

FIG. 5 is a partially broken away side view of the plug assembly of FIG. 3.

FIG. 6 is a partially exploded view of the plug assembly of FIG. 3.

FIG. 7 is a section view through the plug assembly of FIG. 3 and a cylinder
20 body, the section being taken transversely at one of the pins and illustrating the positioning of the pin, a rack, and the locking bar relative to each other and the cylinder body in a locked configuration.

FIG. 8 is a perspective view of the plug assembly of FIG. 3 with a valid key inserted therein and illustrating the locking bar disposed in an unlocking position to allow the plug assembly to rotate in the lock cylinder body.

FIG. 9 is a top plan view of the plug assembly of FIG. 8.

5 FIG. 10 is a partially broken away side view of the plug assembly of FIG. 8.

FIG. 11 is a partially exploded view of the plug assembly of FIG. 8.

FIG. 12 is a section view through the plug assembly of FIG. 8 and a cylinder body, the section being taken transversely at one of the pins and
10 illustrating the positioning of the pin, the rack, and the locking bar relative to each other and the cylinder body in an unlocked configuration.

FIG. 13 is a perspective view similar to FIG. 8 but with the carrier assembly moved axially to a rekeying position.

FIG. 14 is a top plan view of the plug assembly of FIG. 13.

15 FIGS. 15a-15e are various views of a cylinder body for use in the present invention.

FIGS. 16a-16f are various views of the cylinder plug body for use in the present invention.

FIGS. 17a-17f are various view of the carrier for use in the present
20 invention.

FIGS. 18a-18b are views of a rack for use in the present invention.

FIGS. 19a-19b are views of a spring catch for use in the present invention.

FIGS. 20a-20b are views of a pin for use in the present invention.

FIGS. 21a-21b are views of a locking bar for use in the present invention.

FIGS. 22a-22d are views of a spring retaining cap for use in the present invention.

FIG. 23 is an exploded perspective view of an alternative embodiment of the invention.

5 FIGS. 24a-24e are views of an alternative embodiment of the lock cylinder housing.

FIG. 25 is a transverse section view taken through an alternative embodiment of the present invention.

FIGS. 26a-26b are views of an alternative embodiment of the spring catch.

10 FIGS. 27a-27eb are views of an alternative embodiment of the carrier.

FIGS. 28a-28b are views of an alternative embodiment of the pin.

FIGS. 29a-29b are views of an alternative embodiment of the rack.

FIGS. 30a-30b are views of an alternative embodiment of the locking bar.

15 FIG. 31 is a perspective view of an exemplary embodiment of a rekeying tool of the present invention.

FIG. 32 is a front view of an exemplary embodiment of a rekeying tool of the present invention engaged with an exemplary embodiment of a lock cylinder of the present invention.

20 FIG. 33 is a perspective view of an exemplary embodiment of a rekeying tool of the present invention engaged with an exemplary embodiment of a lock cylinder of the present invention.

FIG. 34 is a partially exploded view of an exemplary embodiment of a rekeying tool of the present invention engaged with an exemplary embodiment of a lock cylinder of the present invention.

FIG. 35 is a front perspective view of an exemplary embodiment of a cylinder body of the present invention.

FIG. 36 is a rear view of an exemplary embodiment of a cylinder body of the present invention.

5 FIG. 37 is a top view of an exemplary embodiment of a cylinder body of the present invention.

FIG. 38 is a front view of an exemplary embodiment of a cylinder body of the present invention.

10 FIG. 39 is a rear perspective view of an exemplary embodiment of a cylinder body of the present invention.

FIG. 40 is a perspective view of an exemplary embodiment of a carrier dislocation tool of the present invention engaged with an exemplary embodiment of a lock cylinder of the present invention.

15 FIG. 41 is a flow chart of an exemplary embodiment of rekeying method of the present invention.

FIG. 42 is a partially exploded view of an exemplary embodiment of a keying tool of the present invention engaged with an exemplary embodiment of a lock cylinder of the present invention.

20 FIG. 43 is a flow chart of an exemplary embodiment of keying method of the present invention.

Detailed Description

When rekeying a lock assembly having a traditional cylinder design, the user is required to remove the cylinder plug from the cylinder body and replace the appropriate pins so that a new key can be used to unlock the cylinder. This typically requires the user to remove the cylinder mechanism from the lockset and then disassemble the cylinder to some degree to remove the plug and

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replace the pins. This requires a working knowledge of the lockset and cylinder mechanism and is usually only performed by locksmiths or trained professionals. Additionally, the process usually employs special tools and requires the user to have access to pinning kits to interchange pins and replace components that can get lost or damaged in the rekeying process. Finally, professionals using appropriate tools can easily pick traditional cylinders.

Certain exemplary embodiments of the present invention provide a rekeying system comprising: a rekeyable lock cylinder comprising: a cylinder body; a plug assembly disposed in said cylinder body and comprising a plurality of pins and a one-to-one corresponding plurality of racks for relocating said plurality of pins; and a rekeying tool receiving aperture defined by said rekeyable lock cylinder; and a rekeying tool comprising: a base plate; and a plurality of spaced elongated prongs, each prong from said plurality of prongs comprising a first longitudinal end adapted to engage a corresponding one of said plurality of racks, each prong from said plurality of prongs dimensioned lengthwise to relocate to a first predetermined position said corresponding one of said plurality of racks, said first predetermined position common to each of said plurality of racks, each prong from said plurality of prongs comprising a second longitudinal end connected to said base plate.

Certain exemplary embodiments of the present invention provide a rekeying tool for a rekeyable lock cylinder comprising a cylinder body and a plug assembly disposed in the cylinder body and comprising a plurality of pins and a one-to-one corresponding plurality of racks for relocating the pins, said lock cylinder defining a tool-receiving aperture, said rekeying tool comprising: a base plate defining a first face and a second face, said first face opposing said second face; a plurality of spaced elongated prongs, each prong from said plurality of prongs comprising a concave first longitudinal end adapted to engage a corresponding one of the plurality of racks, each prong from said plurality of prongs dimensioned lengthwise to relocate to a first predetermined position the corresponding one of the plurality of racks, the first predetermined position

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common to each of the plurality of racks, each prong from said plurality of prongs comprising a second longitudinal end connected to said base plate; and a handle connected to said second face of said base plate.

Certain exemplary embodiments of the present invention provide a method
5 for rekeying a rekeyable lock cylinder comprising a cylinder body, and a plug
assembly disposed in said cylinder body and comprising a plurality of pins and a
one-to-one corresponding plurality of racks for relocating said pins, said lock
cylinder defining a tool-receiving aperture, comprising the activities of: inserting a
10 rekeying tool into the tool-receiving aperture, relocating the plurality of racks to a
first predetermined level; rotating the plug assembly with respect to the cylinder
body from a first position to a second position; and disengaging the plurality of
racks from the plurality of pins.

Certain exemplary embodiments of the present invention provide a lock
keying system comprising: a lock cylinder comprising: a cylinder body; a plug
15 assembly disposed in said cylinder body and comprising a plurality of pins and a
one-to-one corresponding plurality of racks for relocating said plurality of pins;
and a rack alignment tool receiving aperture defined by said lock cylinder; and a
rack alignment tool comprising: a base plate; and a plurality of spaced elongated
prongs, each prong from said plurality of prongs comprising a first longitudinal
20 end adapted to engage a corresponding one of said plurality of racks, each prong
from said plurality of prongs dimensioned lengthwise to relocate to a first
predetermined position said corresponding one of said plurality of racks, said first
predetermined position common to each of said plurality of racks, each prong
from said plurality of prongs comprising a second longitudinal end connected to
25 said base plate, wherein said rack alignment tool is adapted to restrain a carrier
assembly comprising said plurality of racks in an unengaged position wherein
said plurality of racks are unengaged with said plurality of pins.

Certain exemplary embodiments of the present invention provide a lock
keying tool for a lock cylinder comprising a cylinder body and a plug assembly
30 disposed in the cylinder body and comprising a plurality of pins and a one-to-one

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corresponding plurality of racks for relocating the pins, said lock cylinder defining a tool-receiving aperture, said lock keying tool comprising: a base plate defining a first face and a second face, said first face opposing said second face; a plurality of spaced elongated prongs, each prong from said plurality of prongs comprising
5 a concave first longitudinal end disposed on a first portion of said prong and adapted to engage a corresponding one of the plurality of racks, each prong from said plurality of prongs defining a longitudinal axis and longitudinally dimensioned to relocate to a first predetermined position the corresponding one of the plurality of racks, the first predetermined position common to each of the plurality of racks,
10 each prong from said plurality of prongs comprising a second longitudinal end disposed on a second portion of said prong and connected to said base plate, said second portion having a wider axial cross-section than said first portion; and a handle connected to said second face of said base plate.

Certain exemplary embodiments of the present invention provide a method
15 for keying a lock cylinder comprising a cylinder body and a plug assembly disposed in said cylinder body, said plug assembly comprising a plurality of pins and a one-to-one corresponding plurality of racks for relocating said pins, said lock cylinder defining a tool-receiving aperture, comprising the activities of: while the plurality of racks are not engaged with the plurality of pins: aligning the
20 plurality of racks to a first predetermined level; and after aligning the plurality of racks to the first predetermined level, inserting a key into the plug assembly, the plurality of pins relocated by the key; and after inserting the key into the plug assembly, engaging the plurality of racks with the plurality of pins.

A lock cylinder 10 according to an exemplary embodiment of the present
25 invention is illustrated in FIG. 1-2. The lock cylinder 10 includes a longitudinal axis 11; a lock cylinder body 12, a plug assembly 14 and a retainer 16. In FIG. 1, the plug assembly 14 is in the home position relative to the cylinder body 12.

The lock cylinder body 12, as seen in FIGS. 15a-15e, includes a generally cylindrical body 20 having a front end 22, a back end 24 and a cylinder wall 26 defining an interior surface 28. The cylinder wall 26 includes an interior, locking bar-engaging groove 29 and a pair of detent recesses 30, 32. The generally V-shaped locking bar-engaging groove 29 extends longitudinally along a portion of the cylinder body 12 from the front end 22. The first detent recess 30 is disposed at the back end 24 and extends to a first depth. The second detent recess 32 is disposed adjacent the first detent recess 30 and extends to a lesser depth. A detent bore 34 extends radially through the cylinder wall 26 for receiving a detent ball 36 (FIG. 2).

The plug assembly 14 includes a plug body 40, a carrier sub-assembly 42 and a plurality of spring-loaded pins 38 (FIGS. 2 and 20a-20b). The plug body 40, illustrated in FIGS. 16a-16f, includes a plug face 44, an intermediate portion 46 and a drive portion 50. The plug face 44 defines a keyway opening 52, a rekeying tool opening 54 and a pair of channels 56 extending radially outwardly for receiving anti-drilling ball bearings 60 (FIG. 2). The drive portion 50 includes an annular wall 62 with a pair of opposed projections 64 extending radially inwardly to drive a spindle or torque blade (neither shown). The drive portion 50 further includes a pair of slots 66 formed in its perimeter for receiving the retainer 16 to retain the plug body 40 in the cylinder body 12.

The intermediate portion 46 includes a main portion 70 formed as a cylinder section and having a first longitudinal planar surface 72 and a plurality of channels 74 for receiving the spring-loaded pins 38. The channels 74 extend transversely to the longitudinal axis of the plug body 40 and parallel to the planar surface 72. A second planar surface 76 extends perpendicular to the first planar surface 72 and defines a recess 80 for receiving a retaining cap 82 (FIGS. 2 and 22a-22d). The channels 74 extend from the second planar surface 76 partially through the plug body 40, with the sidewalls of the channels open to the first planar surface 72. The first planar surface 72 further includes a plurality of bullet-shaped, rack-engaging features 78. A bore 86 for receiving a spring-loaded

detent ball 36 (FIG. 2) extends radially inwardly from opposite the first planar surface 72.

The carrier sub-assembly 42 (FIGS. 2, 6 and 10) includes a carrier 90 (FIGS. 17a-17e), a plurality of racks 92 (FIGS. 18a-18b), a spring catch 96 (FIGS. 19a-19b), a spring-loaded locking bar 94 (FIGS. 21a-21b), and a return spring 98 (FIG. 2). The carrier 90 includes a body 100 in the form of a cylinder section that is complementary to the main portion 70 of the plug body 40, such that the carrier 90 and the main portion 70 combine to form a cylinder that fits inside the lock cylinder body 12. The carrier 90 includes a curved surface 102 and a flat surface 104. The curved surface 102 includes a locking bar recess 106 and a spring catch recess 108. The locking bar recess 106 further includes a pair of return spring-receiving bores 109 (FIG. 17c) for receiving the locking bar return springs. The flat surface 104 includes a plurality of parallel rack-receiving slots 102 extending perpendicular to the longitudinal axis of the carrier. A semi-circular groove 111 extends along the flat surface 104 parallel to the longitudinal axis of the carrier 90. The back end of the carrier 90 includes a recess 112 for receiving the return spring 98.

Each spring-loaded pin 38 includes a pin 113 and a biasing spring 115. The pins 113, illustrated in FIGS. 20a-20b, are generally cylindrical with annular gear teeth 114 and a central longitudinal bore 116 for receiving biasing springs 115 (FIG. 2). The racks 92, illustrated in FIGS. 18a-18b, include a pin-engaging surface 118 having a plurality of gear teeth 122 configured to engage the annular gear teeth 114 on the pins 113, as illustrated in FIGS. 7 and 12, and a semi-circular recess 124 for engaging the bullet-shaped, rack-engaging features 78 on the planar surface 72, as illustrated in FIG. 12. The racks 92 further include a second surface 126 that includes a plurality of anti-pick grooves 128 and a pair of locking bar-engaging grooves 132.

The spring-loaded locking bar 94, illustrated in FIGS. 21a-22b, is sized and configured to fit in the locking bar recess 106 in the carrier 90 and includes a triangular edge 134 configured to fit in the V-shaped locking bar-engaging groove 29. Opposite the triangular edge 134, the locking bar 94 includes a pair of
5 longitudinally extending gear teeth 136 configured to engage the locking bar-engaging grooves 132 formed in the racks 92, as illustrated in FIG. 12.

The spring-retaining cap 82, illustrated in FIGS. 22a-22d, includes a curvilinear portion 140 having an upper surface 142 and a lower surface 144. The thickness of the curvilinear portion 140 is set to allow the curvilinear portion
10 140 to fit in the recess 80 with the upper surface 142 flush with the intermediate portion 46 of the plug body 40, as illustrated in FIGS. 7 and 12. A plurality of spring alignment tips 146 extend from the lower surface 144 to engage the springs 148. In addition, a pair of cap retaining tips 152 extend from the lower surface 144 to engage alignment openings 154 formed in the plug body 40 (FIG.
15 s 16e-16f).

To assemble the lock cylinder 10, the pins 113 and spring 115 are disposed in the channels 74 of the plug body 40. The spring-retaining cap 82 is placed in the recess 80, with the cap retaining tips 152 disposed in the alignment openings 154 and the spring alignment tips 146 engaged with the springs 115.
20 The carrier sub-assembly 42 is assembled by placing the racks 92 into the slots 102 and the spring-loaded locking bar 94 into the locking bar recess 106, with the gear teeth 136 engaging the locking bar-engaging grooves 132 formed in the racks 92. The spring catch 96 is disposed in the spring catch recess 108 of the carrier 90. A valid key 160 is inserted into the keyway 52, the return spring 98 is
25 compressed into the return spring recess 112, and the carrier sub-assembly is placed adjacent the plug body 40, as illustrated in FIG. 3. The plug assembly 14 is placed in the lock cylinder body 12 and the retainer 16 is disposed in the slots 66 formed in the plug body 40 to retain the plug assembly 14 in the cylinder body 12. The lock cylinder 10 is now keyed to the valid key 160.

The properly keyed lock cylinder 10, without the key 160 inserted, is illustrated in FIGS. 4-7. The pins 113 are biased to the bottom of the channels 74 and, based on the cut of the key 160, the racks 92 are disposed at various positions in the slots 102 of the carrier 90. In this configuration, the locking bar 94 extends from the carrier 90 to engage the groove 29 in the cylinder body 12 to prevent the plug assembly 14 from rotating in the cylinder body 12 and the racks 92 engage the pins 113, as illustrated in FIG. 4. In addition, the bullet-shaped features 78 are misaligned with the recesses 111 in the racks 92 and therefore interfere with movement of the racks 92 parallel to the longitudinal axis of the lock cylinder 10, preventing the lock cylinder 10 from being rekeyed.

The internal configuration of a lock cylinder 10 with the valid key 160 inserted therein at the home position is illustrated in FIGS. 8-12. In this configuration, the locking bar 94 is free to cam out of the groove 29 in the cylinder body 12, as depicted in FIGS. 8, 9 and 12. The bits of the key 160 lift the pins 113 in the channels 74 and thereby re-position the racks 92 in the slots 102. When repositioned, the racks 92 are disposed to align the locking bar-engaging grooves 132 with the extended gear teeth 136 on the locking bar 94. The locking bar 94 is free to cam out of the groove 29 as the key 160 is rotated. At the same time, the bullet-shaped features 78 are aligned with the recesses 111 in the racks 92, as illustrated in FIG. 12, allowing the racks 92, and the carrier 90, to move parallel to the longitudinal axis of the lock cylinder 10.

To rekey the lock cylinder 10, the valid key 160 is inserted into the keyway 52, as illustrated in FIGS. 13-14 and rotated approximately 45° counterclockwise from the home position until the spring catch 96 moves into the second detent recess 32 formed in the cylinder body 12. A paperclip or other pointed device 162 is inserted into the tool opening 54 and pushed against the carrier 90 to move the carrier 90 parallel to the longitudinal axis of the lock cylinder 10 until the spring catch 96 moves into the first detent recess 30, and the pointed device 162 is removed. With the spring catch 96 disposed in the first detent recess 30, the racks 92 are disengaged from the pins 113, as illustrated in FIG. 14. The valid

key 160 is removed and a second valid key is inserted and rotated clockwise to release the spring catch 96. As the spring catch 96 leaves the first detent recess 30, the carrier 90 is biased toward the plug face 44 by the return spring 98, causing the racks 92 to re-engage the pins 113. At this point, the lock cylinder 10
5 is keyed to the second valid key and the first valid key 160 no longer operates the lock cylinder 10. The lock cylinder 10 can be rekeyed to fit a third valid key by replacing the first and second valid keys in the above procedures with the second and third valid keys, respectively.

10 An alternative embodiment 210 of an exemplary embodiment of the present invention is illustrated in FIGS. 23-29. The alternative embodiment includes the same components, as illustrated in FIG. 23, but several of the components have been modified. Functionally, both embodiments are the same.

The modified housing 212, illustrated in FIGS. 23 and 24, includes a plurality of apertures 214 running longitudinally along the bottom thereof and a
15 pair of vertical grooves 216, 218 formed in the housing sidewall. In addition, the sidewall includes a removable side panel 220. The rectangular holes 214 are positioned to allow the use of a manual override tool. The center groove 216 includes an aperture 222 extending through the housing sidewall. The aperture 222 allows a user to move the locking bar during a manual override operation.
20 The side panel 220 provides access for performing certain operations while changing the master key of the lock cylinder.

The modified pin biasing springs 226, illustrated in FIGS. 23 and 25, include a non-constant diameter, with the last few coils at each end of the springs 226 having a reduced diameter. The tapering allows for a greater spring force in
25 a smaller physical height.

The modified spring catch 228, illustrated in FIGS. 23 and 26, includes a central U-shaped portion 230 and a pair of arms 232 extending from the U-shaped portion 230.

The modified carrier 236, illustrated in FIGS. 23 and 27, includes means for retaining the spring catch 228 in the spring catch recess 238. In the illustrated embodiment, this includes a guide 240 projecting outwardly in the center of the spring catch recess 238 and a pair of anchors 242 radially offset from the guide 240. The guide 240 prevents the spring catch 228 from moving transversely in the recess 238 while permitting it to move radially outwardly to engage the housing 12, 212 as described above. The anchors 242 engage the arms 232 of the spring catch 228 and prevent the arms 232 from splaying outwardly, thereby directing the compressive force of the spring catch 228 to extend the U-shaped portion 230 outwardly to engage the housing 12, 212.

The modified pins 244, illustrated in FIGS. 23 and 28, include a single gear tooth 246 instead of the plurality of gear teeth of the pins 113 described above. The single gear tooth 246, which preferably includes beveled sides 248, provides for a smoother engagement with the racks during the rekeying process.

The modified racks 250, illustrated in FIGS. 23 and 29, include beveled gear teeth to improve the engagement with the pins during the rekeying process. In addition, the pair of locking bar-engaging grooves 132 in the racks 92 are replaced with a single locking bar-engaging groove 251.

The modified locking bar 252, illustrated in FIGS. 23 and 30, is thinner than locking bar 94 and replaces the pair of gear teeth 136 with a single gear tooth 256 and rounds out the triangular edge 134. The thinner design reduces any rocking of the locking bar 252 in the locking bar recess 106.

FIG. 31 is a perspective view of an exemplary embodiment of a manual override or rekeying tool 310, which can comprise a base 312 having, for example, a ~~elongated~~ approximately annular segment or elongated approximately toroidal segment shape. Attached to base 312 can be a plurality of prongs 314 each having, for example, an elongated approximately rectangular shape. Each of prongs 314 can be approximately perpendicularly attached to an inner surface 313 of base 312, and can have an end 316, that can have any

shape that engages the a corresponding one of the plurality of racks 340 (shown in FIG. 34) of plug assembly 320, such as for example, a concave shape. To an outer surface 315 of base 312 can be attached a handle 318, having, for example, an elongated approximately rectangular shape. A longitudinal axis of handle 318 can be approximately perpendicular to and/or approximately parallel to a longitudinal axis of base 312. In an alternative embodiment (not shown), base 312 can have an elongated approximately rectangular shape, or any other shape, provided that base 312 serves to limit an insertion depth of rekeying tool 310 into the lock cylinder. As yet another alternative, another feature of tool 310 can limit its insertion depth.

FIG. 32 is a front view, and FIG. 33 is a perspective view, of an exemplary embodiment of a rekeying tool 310 of the present invention engaged with an embodiment of a lock cylinder 350 of the present invention. Referring to FIGS. 32 and 33, rekeying tool 310 can be inserted into lock cylinder 350 along a direction, or such that handle 318 is, parallel to a keyway 323 defined through a plug face 322 of plug assembly 320. Base 312 can be configured to approximately conform to an outer surface of cylinder assembly 330.

FIG. 34 is a partially exploded view of an exemplary embodiment of a rekeying tool 310 of the present invention engaged with an embodiment of a lock cylinder 350 of the present invention. Note that prongs 314 can engage with, and/or align to a common level, racks 340.

FIG. 35 is a front perspective view, FIG. 36 is a rear view, FIG. 37 is a side view, FIG. 38 is a front view, FIG. 39 is a rear perspective view, of an exemplary embodiment of a cylinder body 330 of the present invention. Referring to FIGS. 34-39, cylinder body 330 can define a plurality of rekeying tool apertures 332 that can allow rekeying tool 310 to access the plurality of racks of plug assembly 320. Cylinder body 330 can also define a locking bar release tool aperture 335 via which a locking bar release tool 360 (shown in FIG. 40) can access and/or dislocate a locking bar 94 (shown at least in FIGS. 2, 3, 7, 8, 12, and 21A) from engaging with locking bar recess 337 of cylinder body 330.

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FIG. 40 is a perspective view of an exemplary embodiment of a locking bar release tool 360 of the present invention engaged with an exemplary embodiment of a lock cylinder 350 of the present invention. Locking bar engagement tool 360, which can be as simple as a paperclip, can be inserted through locking bar engagement tool aperture 335 defined in cylinder body 330, such that locking bar 94 (shown at least in FIGS. 2, 4, 7, 8, 12, and 21A) can engage with racks 92 to align, restrict, and/or limit travel of, pins 113.

FIG. 41 is a flow chart of an exemplary embodiment of rekeying method 410 of the present invention. At activity 412, a rekeying tool can be inserted through one or more apertures of the cylinder body, such that the prongs of the rekeying tool engage the racks of the plug assembly. The insertion depth of the rekeying tool can be limited by the geometry of the rekeying tool, such as a shape of the base of the rekeying tool or a prong length, and/or the geometry of the cylinder body and/or plug assembly. For example, if the cylinder body has an elongated circular exterior, an interior and/or contact surface of the base of the rekeying tool can be shaped as an elongated annular segment, the inner radius of that segment approximately matching an outer radius of the cylinder body.

At activity 413, the rekeying tool can relocate the plurality of racks, such that the racks are aligned at a common level. For example, each rack can have a reference point, and full insertion of the rekeying tool can cause each reference point to align along a line parallel to an axis of the cylinder body and/or the plug assembly. As another example, referring to FIG. 12, each of the bullet-shaped features 78 can be aligned with the recesses 111 in the racks 92, allowing the racks 92, and the carrier 90, to move parallel to the longitudinal axis of the lock cylinder 10. Referring to FIGS. 12 and 40, with the racks 92 aligned, a locking bar engagement tool 360 can be inserted into a locking-bar engagement tool aperture 335 in the cylinder body 330 to cause the locking bar 94 to engage with cut-outs in the racks 92, thereby preventing relative movement among the racks, and consequently, relative movement between the pins 113 engaged with the racks 92.

At activity 414, with the racks thus "locked" by the locking bar 94, the rekeying tool can be removed from the lock assembly. Then, the plug assembly can be rotated within the cylinder body to a learn position. This rotation can occur without requiring the use of a valid key, and preferably occurs with use of any key. Referring to FIGS. 13 and 14, as the plug assembly is rotated approximately 45 degrees to approximately 90 degrees counterclockwise the locking bar is retained in engagement with the racks.

At activity 415, with the plug assembly in the learn mode, the racks can be disengaged from the pins by pushing the racks away from the pins. Referring to FIGS. 13 and 14, a carrier relocation tool, such as a paperclip or other pointed device 162, can be inserted into the tool opening 54 and pushed against the carrier 90 to move the carrier 90 parallel to the longitudinal axis of the lock cylinder 10 until the spring catch 96 moves into the first detent recess 30, and the pointed device 162 is removed. With the spring catch 96 disposed in the first detent recess 30, carrier 90 is locked in place by the spring catch 96, the racks 92 are disengaged from the pins 113, and the racks 92 are locked in place by the bullet-shaped features 78 (shown in FIG. 6).

At activity 416, a new key can be inserted into the keyway of the plug assembly. As the new key is inserted, the pins can ride up and down the ramps of the key. Once the key is fully inserted, the pin heights can correlate to the new key.

At activity 417, the racks can be re-engaged with the pins. Referring to FIGS. 13 and 14, the new key can be rotated clockwise to release the spring catch 96. As the spring catch 96 leaves the first detent recess 30, the carrier 90 is biased toward the plug face 44 by the return spring 98, causing the racks 92 to re-engage the pins 113. At this point, the lock cylinder 10 is keyed to the new key (i.e., the "new" key) and any previously valid key 160 no longer operates the lock cylinder 10. Thus, the new key can be learned by rotating the plug assembly away from the learn position.

Thus, via the rekeying tool, without requiring a valid key, the lock assembly can be placed into a learn mode, in which it can read and conform to a profile of a new key, without removing the plug assembly from the cylinder body.

FIG. 42 is a partially exploded view of an exemplary embodiment of a
5 keying tool 420 of the present invention engaged with an exemplary embodiment of a lock cylinder 10 of the present invention. Keying tool 420 can be used to configure a lock cylinder to suit any appropriate key cut (occasionally a.k.a. "bit spacing"), including a competitor's key cut.

Keying tool 420 can be substantially identical to rekeying tool 310 (shown
10 in FIG. 31), except that keying tool 420 can comprise a carrier retainer 427, that is shaped and/or dimensioned to at least partially fill its corresponding tool aperture 332 in cylinder body 330 (shown in FIG. 39), for instance while longitudinal ends 426 of keying tool's prongs 424 are engaged in rack apertures 103 (shown in FIG. 17A) in a dislocated carrier assembly 42 (shown at least in
15 FIGS. 2, 4, 14).

Thereby, referring to FIGS. 2 and 42, keying tool 420 can prevent the dislocated carrier assembly 42 whose racks 92 are unengaged (possibly because they have not yet been inserted into carrier assembly 42) with their corresponding pins 113, from moving with respect to cylinder body 12 and/or from returning to
20 its original position. That is, via insertion of keying tool 420 into a lock cylinder 10, a carrier assembly 42 that has been moved from a "normal" position to a "dislocated" position can be retained in place with respect to the cylinder body 12, thereby allowing racks 92 that are inserted into the carrier assembly 42 to remain unengaged from pins 113 until the carrier retainer portion 427 of keying tool 420
25 is removed from, and/or no longer at least partially fills, its corresponding aperture in cylinder body 12, and/or until keying tool 420 is removed from the lock cylinder 10. Keying tool 420 can also align the inserted racks 92 and/or a feature on the inserted racks 92 to a predetermined level.

- Keying tool 420 can comprise a base 422 having, for example, an elongated annular segment or elongated toroidal segment shape. Attached to base 422 can be a plurality of prongs 424 each having, for example, an elongated approximately rectangular shape. Each of prongs 424 can be
- 5 approximately perpendicularly attached to an inner surface 423 of base 422, and can have, for example, a concavely shaped end 426. To an outer surface 425 of base 422 can be attached a handle 428, having, for example, an elongated rectangular shape. A longitudinal axis of handle 428 can be approximately perpendicular to and/or approximately parallel to a longitudinal axis of base 422.
- 10 In an alternative embodiment (not shown), base 422 can have an elongated rectangular shape, or any other shape, provided that base 422 serves to limit an insertion depth of keying tool 420 into the lock cylinder. As yet another alternative, another feature of tool 420, such as carrier retainer 427, can limit its insertion depth.
- 15 Each carrier retainer 427 can be adjacent, contiguous, and/or integral with a prong 424, and can have, for example, an elongated rectangular shape. The length of each carrier retainer 427 can be less than its corresponding prong 424. A combined width of each prong/carrier retainer, as measured in a direction parallel to the longitudinal axis of the plug body and/or along a line where the
- 20 prong and carrier retainer combination attach to base 422, can be greater than a width of the prong 424. Referring to FIGS. 34-39, the orientation and width of at least one prong and carrier retainer combination can be sufficient to substantially fill at least the width of its corresponding rekeying tool aperture 332 in cylinder body 330, thereby preventing a dislocated carrier assembly 42 (shown at least in
- 25 FIGS. 2, 4, 14) from returning to its original position.
- As shown in FIGS. 28A and 28B, pin 244 can comprise standardized dimensions and shape, and can comprise a single tooth 246, located in a standard position. As shown in FIGS. 29A and 29B, rack 250 can have a tooth profile that meshes with pin 246, and having a spacing that corresponds to depth
- 30 increments (occasionally a.k.a. "bit spacing") of the key cut. The tooth spacing of

rack 250 can be customized to a particular manufacturer, brand, or model of key and/or lock assembly. For example, Schlage keys and locksets tend to have an 11 mil key cut increment, while Kwikset tends to use a 15 mil key cut increment. Thus, a rack 250 that is intended for use with a Schlage key could have an 11 mil
5 tooth spacing, and a rack 250 that is intended for use with a Kwikset key could have a 15 mil tooth spacing.

Alternatively, either of two standard racks could be selected to correspond to a particular key cut depth. For example, assuming that Kwikset tends to use a 15 mil key cut increment, a first standard Kwikset rack A could have one or more
10 tooth engagements zones (e.g., valleys) at, for instance, 15 mils, 45 mils, and 75 mils, as measured from a convenient location, such as one end of the rack. A second standard Kwikset rack B could have valleys at 30 mils, 60 mils, and 90 mils. Depending on the depth of a particular key's cut for a given pin, the appropriate rack could be chosen. So if a key had a cut depth of 60 mils, a rack
15 B could be selected and used for the corresponding pin.

FIG. 43 is a flow chart of an exemplary embodiment of keying method 430 of the present invention.

At activity 432, the rack carrier can be pushed away from the pins, such that it moves from a "normal" position to a "dislocated" position. This can be
20 accomplished by inserting a carrier relocation tool, such as a paperclip, into a carrier relocation tool aperture found in a front face of the plug, such that the tool engages and pushes the carrier backward. With the carrier dislocated, a keying tool and/or rack alignment tool, such as that shown in FIG. 42, can be inserted into apertures in the cylinder body. Because the keying tool can retain the carrier
25 in the dislocated position, the carrier relocation tool can now be removed.

The insertion depth of the keying tool can be limited by the geometry of the keying tool, such as a shape of the base of the keying tool or a prong length, and/or the geometry of the cylinder body and/or plug assembly. For example, if the cylinder body has a elongated circular exterior, an interior and/or contact

surface of the base of the keying tool can be shaped as an elongated annular segment, the inner radius of that segment approximately matching an outer radius of the cylinder body.

5 At activity 433, the racks can be selected, potentially to correspond to a manufacturer, brand, and/or model of key and/or lock assembly, and/or to correspond to a key cut. The selected racks can be inserted into their respective slots of the carrier assembly. At activity 434, the keying tool can align the inserted racks.

10 At activity 435, a key can be inserted into the keyway of the plug assembly. As the key is inserted, the pins can ride up and down the ramps of the key to land and/or align with flats of the key. Once the key is fully inserted, the heights of the pins and/or the pin teeth can correlate to the profile of the key.

At activities 436 and 437, the racks can be engaged with the pins by removing the keying tool, such that the carrier spring biases and/or relocates the carrier back into its "normal" position.

15

At activity 438, the key can be learned by rotating the plug assembly away from the learn position.

Thus, via the keying tool, the lock assembly can be assembled to conform to a profile of a key, without removing the plug assembly from the cylinder body.

20 The above-described exemplary embodiments, of course, are not to be construed as limiting the breadth of the present invention. Modifications and other alternative constructions will be apparent that are within the spirit and scope of the invention as defined in the appended claims.

What is claimed is:**1. A lock keying system comprising:**

a lock cylinder comprising:

a cylinder body;

5

a plug assembly disposed in said cylinder body and comprising a plurality of pins and a one-to-one corresponding plurality of racks for relocating said plurality of pins; and

10

a rack alignment tool receiving aperture defined by said lock cylinder; and

a rack alignment tool comprising:

a base plate; and

15

a plurality of spaced elongated prongs, each prong from said plurality of prongs comprising a first longitudinal end adapted to engage a corresponding one of said plurality of racks, each prong from said plurality of prongs dimensioned lengthwise to relocate to a first predetermined position said corresponding one of said plurality of racks, said first predetermined position common to each of said plurality of racks, each prong from said plurality of prongs comprising a second longitudinal end connected to said base plate,

20

25

wherein said rack alignment tool is adapted to restrain a carrier assembly comprising said plurality of racks in an unengaged position wherein said plurality of racks are unengaged with said plurality of pins.

2. The lock keying system of claim 1, wherein each of said plurality of prongs has a substantially identical length.
3. The lock keying system of claim 1, wherein an insertion distance of said plurality of prongs constrained by a contact of said base plate with said lock cylinder.
4. The lock keying system of claim 1, wherein for each rack of said plurality of racks, a longitudinal axis of said rack is parallel to and non-coaxial with a longitudinal axis of said rack's corresponding pin.
5. The lock keying system of claim 1, wherein said plug assembly further comprises a carrier assembly moveable parallel to a longitudinal axis of the cylinder body, said carrier assembly comprising said plurality of racks.
6. The lock keying system of claim 1, wherein each pin comprises at least one tooth.
7. The lock keying system of claim 1, wherein each rack comprises at least one tooth.
8. The lock keying system of claim 1, wherein each rack comprises at least one tooth spaced a predetermined distance from an end of said rack.
9. The lock keying system of claim 1, wherein each rack comprises at least one tooth spaced a predetermined distance from an end of said rack, said distance dependent on a lock brand.
10. The lock keying system of claim 1, wherein each rack comprises at least one tooth spaced a predetermined distance from an end of said rack, said distance dependent on a manufacturer's key depth.
11. A lock keying tool for a lock cylinder comprising a cylinder body and a plug assembly disposed in the cylinder body and comprising a plurality of pins and a one-to-one corresponding plurality of racks for relocating the pins,

said lock cylinder defining a tool-receiving aperture, said lock keying tool comprising:

a base plate defining a first face and a second face, said first face opposing said second face;

5 a plurality of spaced elongated prongs, each prong from said plurality of prongs comprising a concave first longitudinal end disposed on a first portion of said prong and adapted to engage a corresponding one of the plurality of racks, each prong from said plurality of prongs defining a longitudinal axis and longitudinally dimensioned to relocate to a first
10 predetermined position the corresponding one of the plurality of racks, the first predetermined position common to each of the plurality of racks, each prong from said plurality of prongs comprising a second longitudinal end disposed on a second portion of said prong and connected to said base plate, said second portion having a wider axial cross-section than said first
15 portion; and

a handle connected to said second face of said base plate.

12. The lock keying tool of claim 11, wherein each of said prongs is perpendicularly connected to said first face.
13. The lock keying tool of claim 11, wherein each of said plurality of prongs
20 has a substantially identical length.
14. The lock keying tool of claim 11, wherein said first face is parallel to said second face.
15. The lock keying tool of claim 11, wherein said base plate defines a segment of an annulus.
- 25 16. The lock keying tool of claim 11, wherein said handle is perpendicularly connected to said second face of said base plate.

17. A method for keying a lock cylinder comprising a cylinder body and a plug assembly disposed in said cylinder body, said plug assembly comprising a plurality of pins and a one-to-one corresponding plurality of racks for relocating said pins, said lock cylinder defining a tool-receiving aperture, comprising the activities of:

while the plurality of racks are not engaged with the plurality of pins:

aligning the plurality of racks to a first predetermined level;
and

- 10 after aligning the plurality of racks to the first predetermined level, inserting a key into the plug assembly, the plurality of pins relocated by the key; and

after inserting the key into the plug assembly, engaging the plurality of racks with the plurality of pins.

18. The method for keying a lock cylinder of claim 17, further comprising the activity of:

inserting a carrier dislocation tool into an opening in a face of the plug assembly.

19. The method for keying a lock cylinder of claim 17, further comprising the activity of:

20 moving a carrier from a first position to a second position, the carrier adapted to engage the plurality of racks.

20. The method for keying a lock cylinder of claim 17, further comprising the activity of:

inserting a rack alignment tool into the tool-receiving aperture.

25

21. The method for keying a lock cylinder of claim 17, further comprising the activity of:

removing a carrier dislocation tool from an opening in a face of the plug assembly.

- 5 22. The method for keying a lock cylinder of claim 17¹⁵, further comprising the activity of:

placing each of the plurality of racks in a one-to-one corresponding slot from a plurality of slots defined by a carrier.

- 10 23. The method for keying a lock cylinder of claim 17¹⁵, further comprising the activity of:

removing a rack alignment tool from the tool-receiving aperture.

24. The method for keying a lock cylinder of claim 17¹⁵, further comprising the activity of:

15 aligning each pin from the plurality of pins with a corresponding flat of the key.

25. The method for keying a lock cylinder of claim 17, further comprising the activity of:

moving a carrier from a second position to a first position.

- 20 26. The method for keying a lock cylinder of claim 17, further comprising the activity of:

learning the key.

27. A method for keying a lock cylinder comprising a cylinder body and a plug assembly disposed in said cylinder body, said plug assembly comprising at least one pin and at least one corresponding rack for relocating said at

least one pin, said lock cylinder defining a tool-receiving aperture,
comprising the activities of:

moving a carrier comprised by said lock cylinder from a first position
to a second position, the carrier adapted to engage the at least one rack;

5 Inserting a rack alignment tool into the tool-receiving aperture;

receiving the at least one rack in at least one corresponding slot
defined by the carrier;

Inserting a key into the plug assembly;

10 moving the carrier assembly from the second position to the first
position; and

engaging the at least one rack with a corresponding pin from the
plurality of pins.

28. The method for keying a lock cylinder of claim 27, further comprising the
activity of:

15 learning the key.

29. The method for keying a lock cylinder of claim 27, further comprising the
activity of:

removing a rack alignment tool from the tool-receiving aperture.

20 30. The method for keying a lock cylinder of claim 27, wherein the rack
alignment tool comprises:

a base plate; and

a plurality of spaced elongated prongs, each prong from said
plurality of prongs comprising a first longitudinal end adapted to engage a
corresponding one of said plurality of racks, each prong from said plurality

5 of prongs dimensioned lengthwise to relocate to a first predetermined position said corresponding one of said plurality of racks, said first predetermined position common to each of said plurality of racks, each prong from said plurality of prongs comprising a second longitudinal end connected to said base plate.

31. The method for keying a lock cylinder of claim 27, wherein the rack alignment tool comprises:

a base plate; and

10 a plurality of spaced elongated prongs, each prong from said plurality of prongs comprising a first longitudinal end adapted to engage a corresponding one of said plurality of racks, each prong from said plurality of prongs dimensioned lengthwise to relocate to a first predetermined position said corresponding one of said plurality of racks, said first predetermined position common to each of said plurality of racks, each
15 prong from said plurality of prongs comprising a second longitudinal end connected to said base plate,

wherein said rack alignment tool is adapted to restrain a carrier engageable with said plurality of racks in an unengaged position.

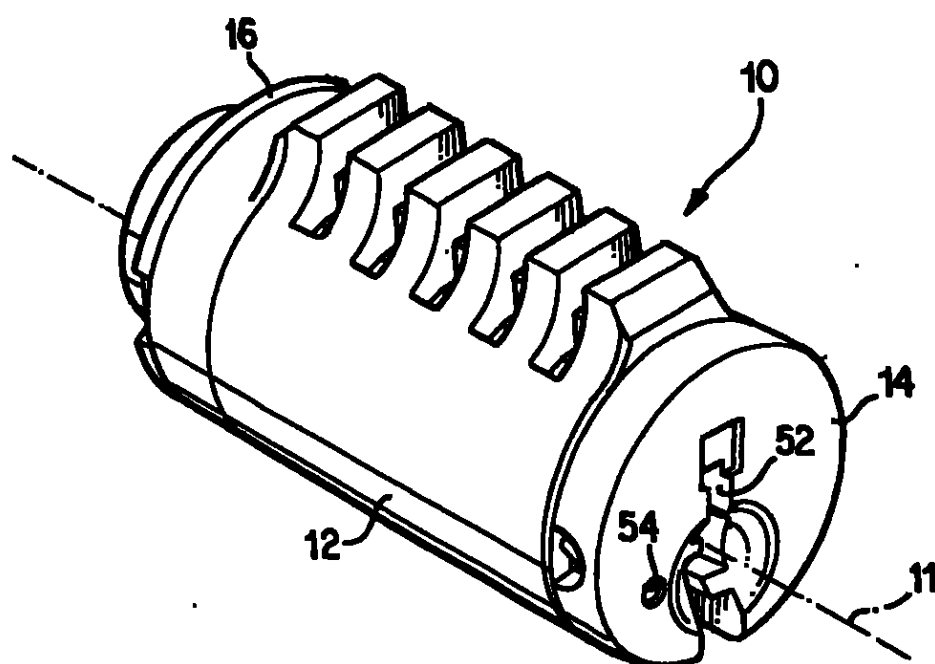


FIG. 1

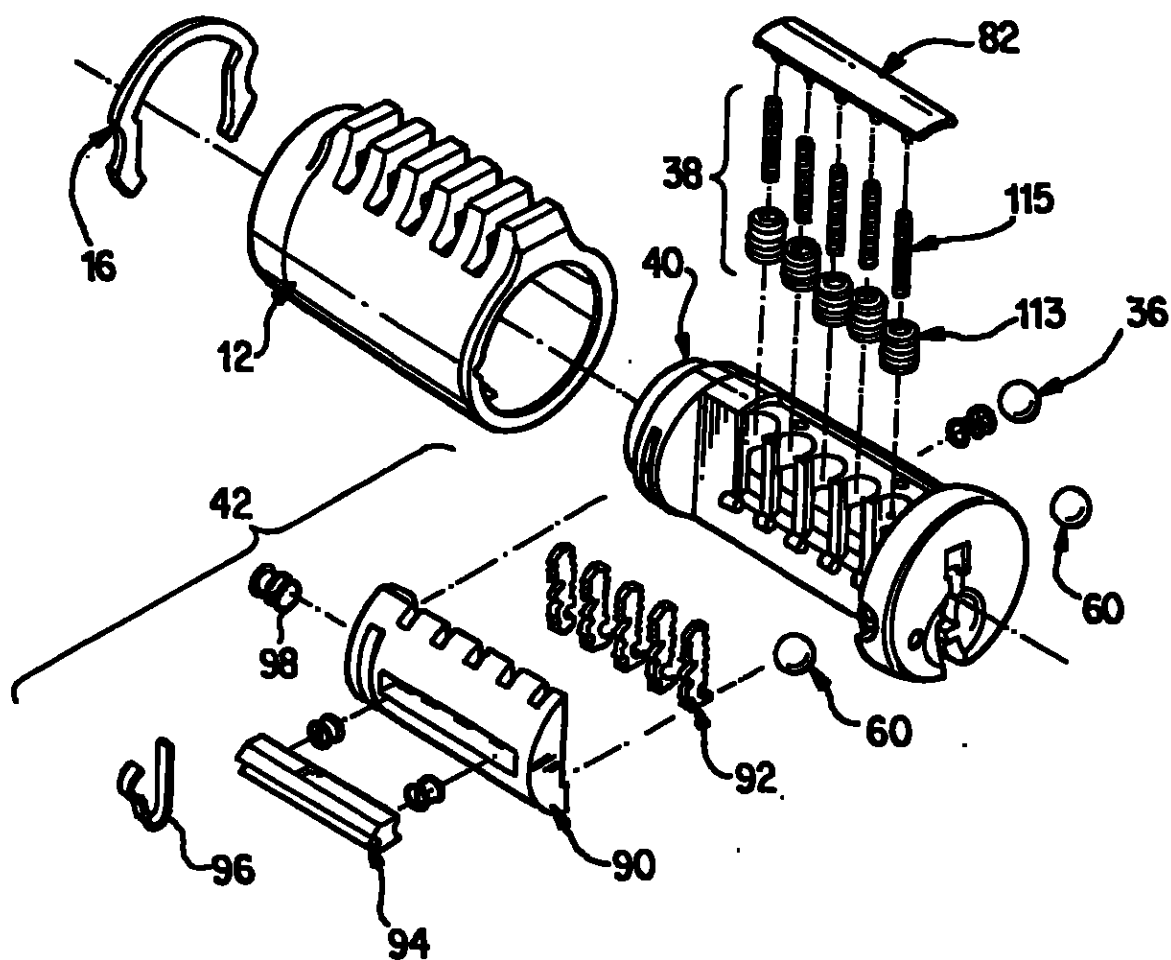


FIG. 2

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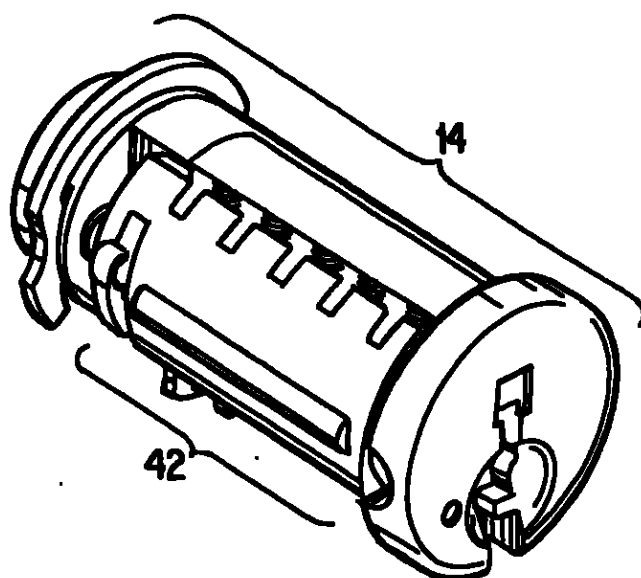


FIG. 3

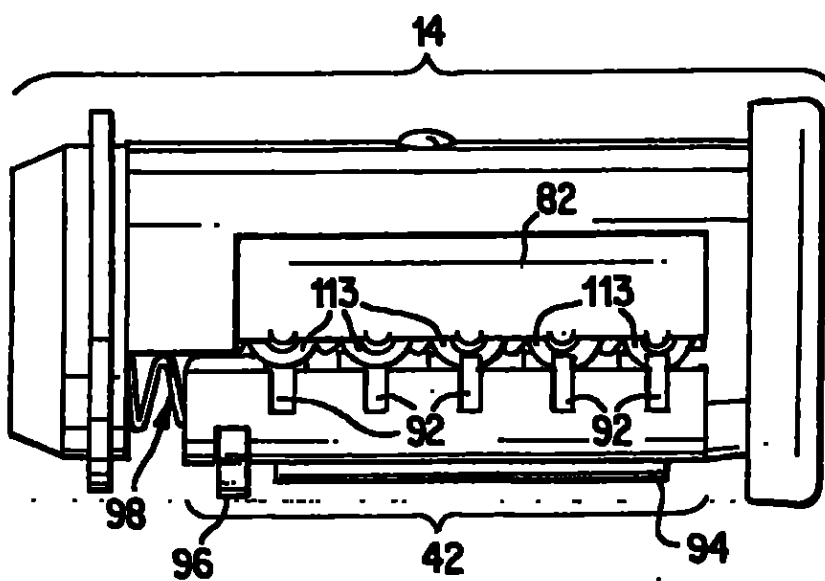


FIG. 4

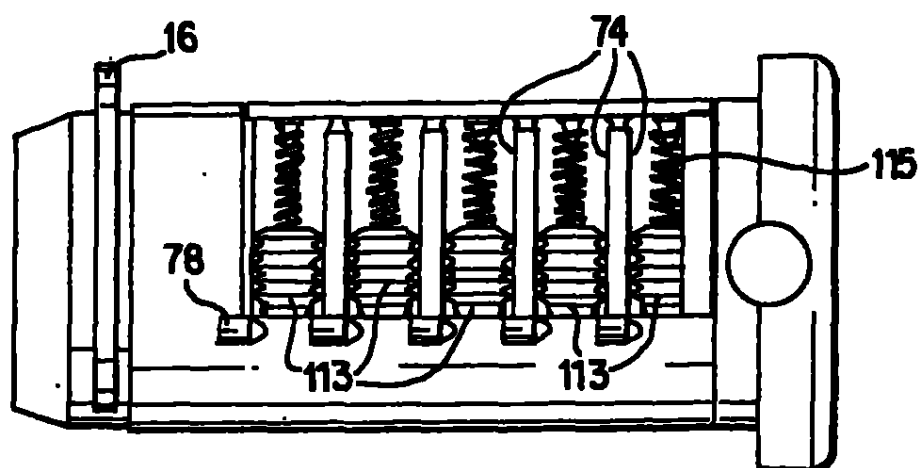


FIG. 5

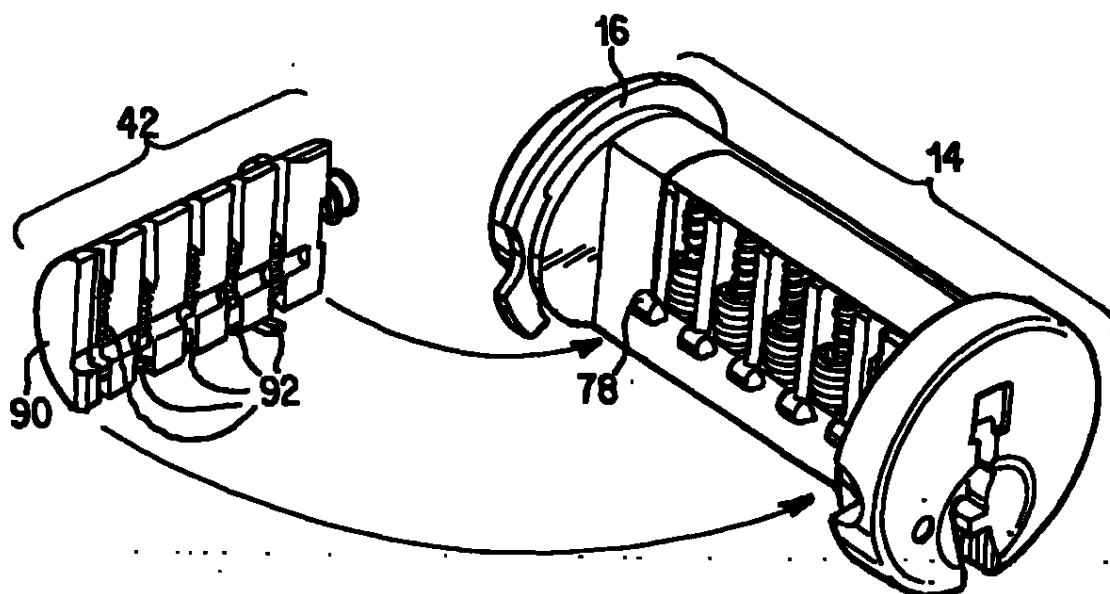


FIG. 6

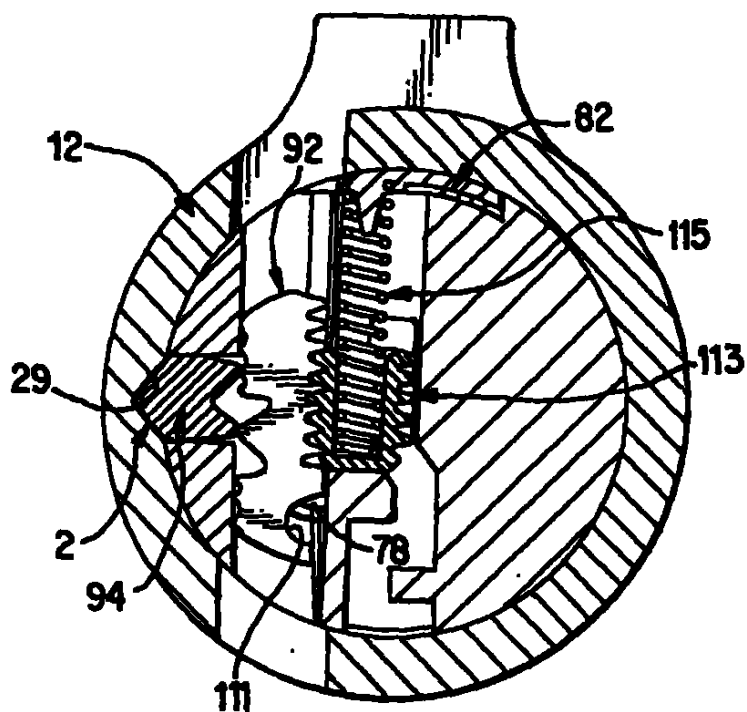


FIG. 7

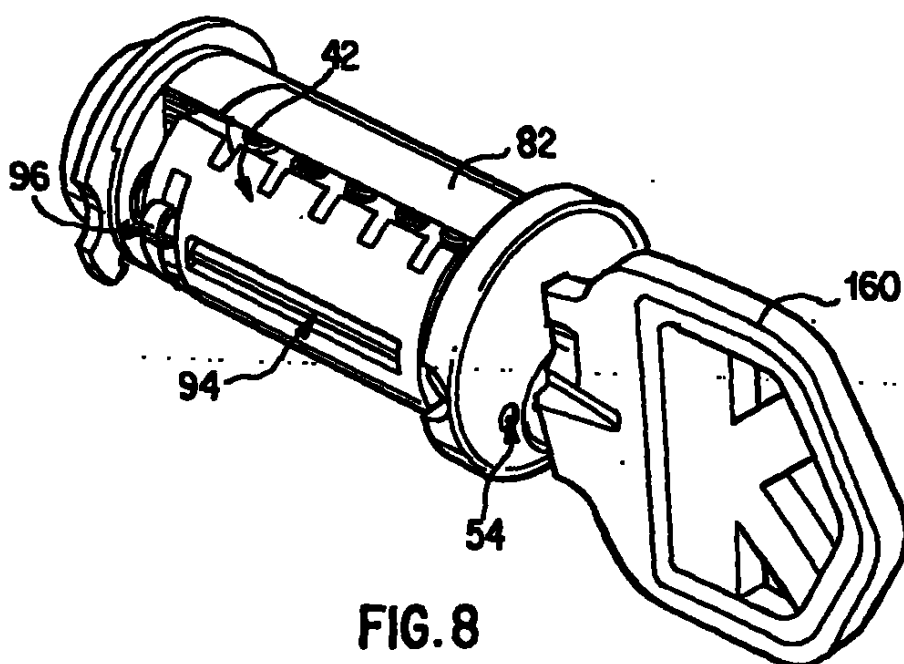


FIG. 8

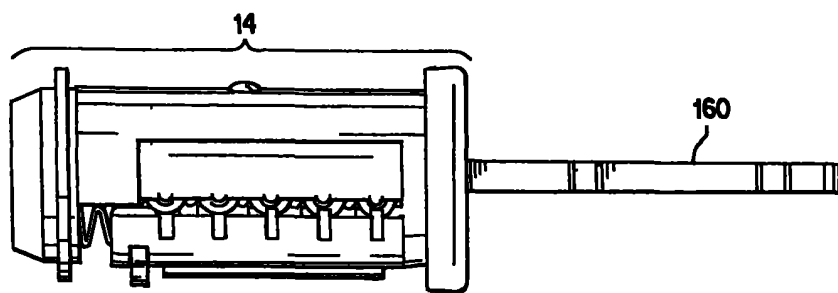


FIG. 9

Handwritten signature

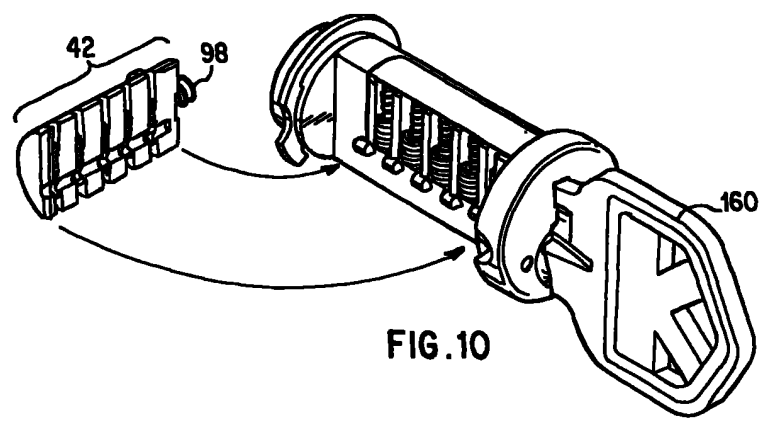


FIG. 10

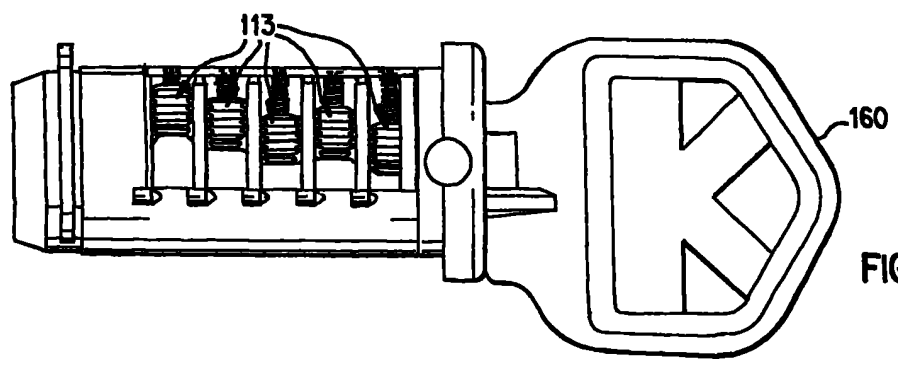


FIG 11

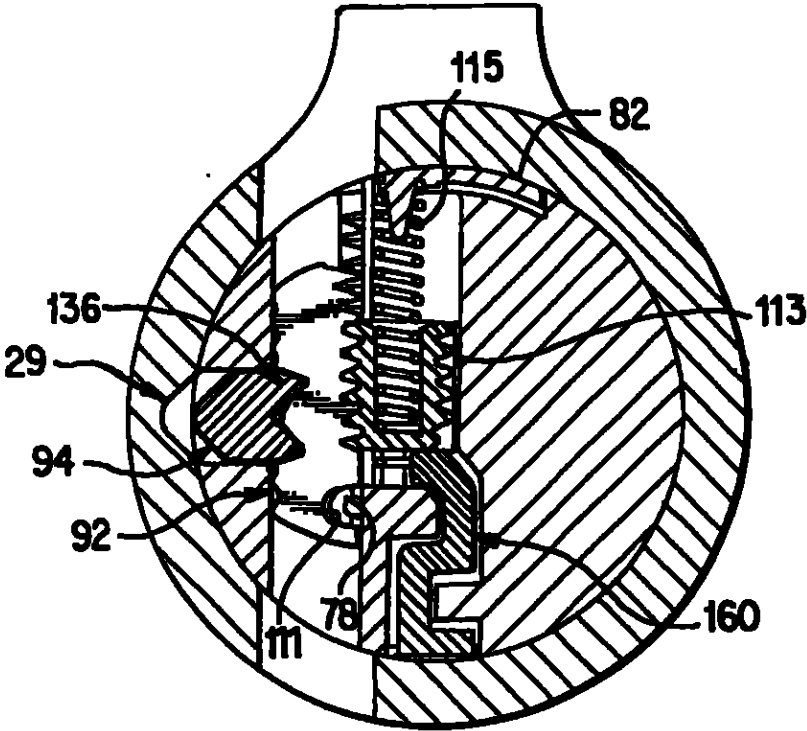


FIG. 12

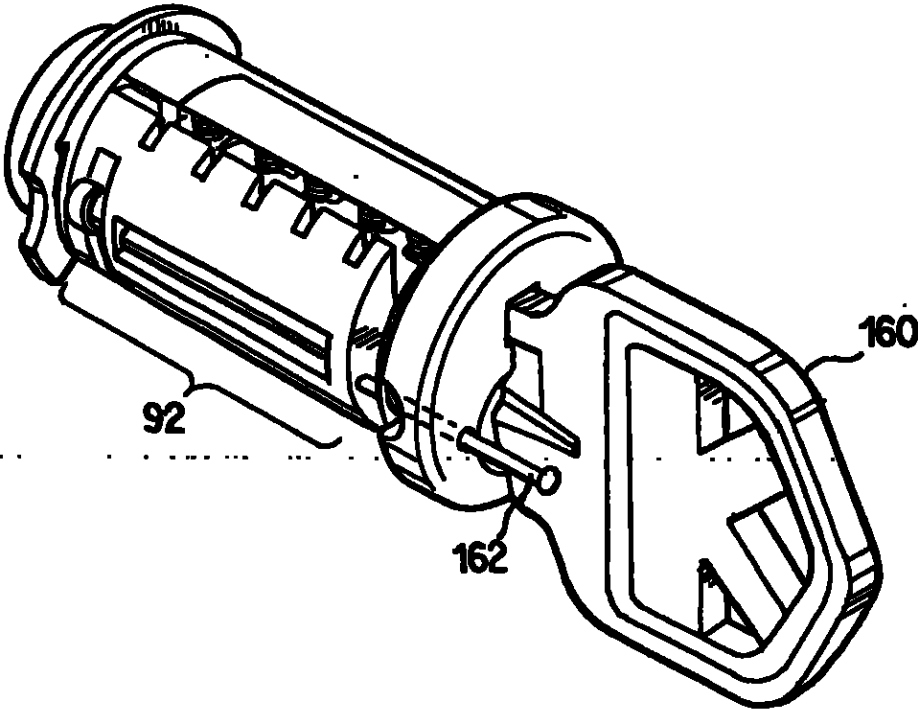


FIG. 13

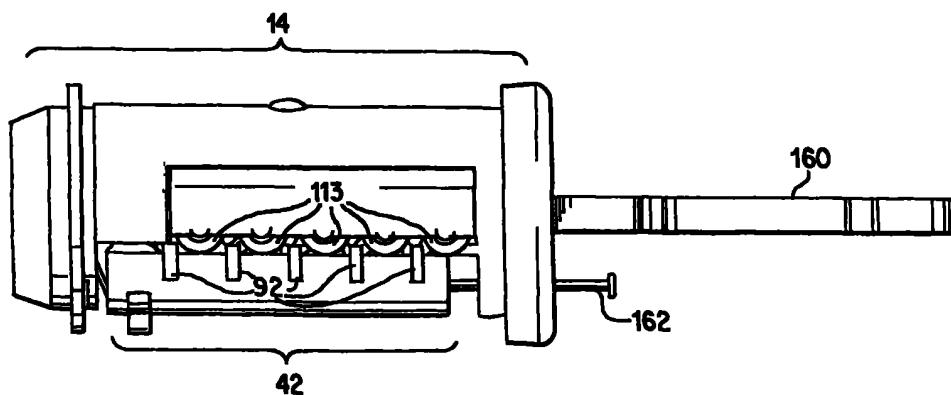


FIG. 14

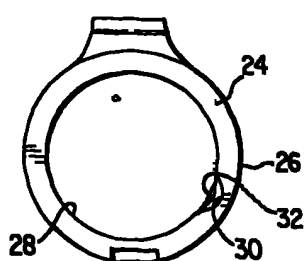


FIG. 15A

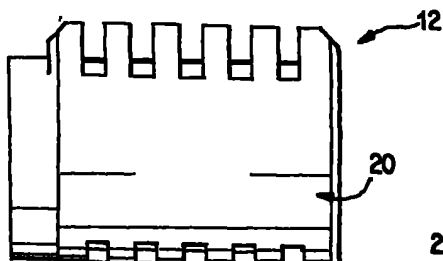


FIG 15B

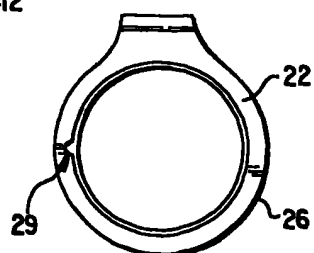


FIG. 15C

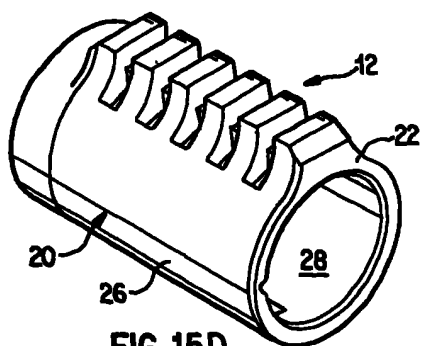


FIG. 15D

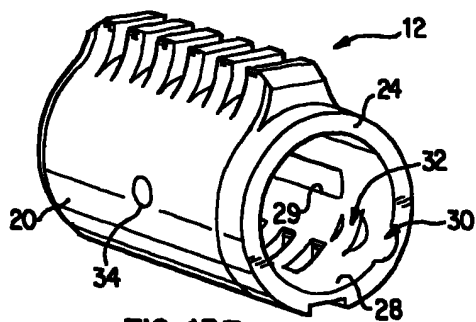
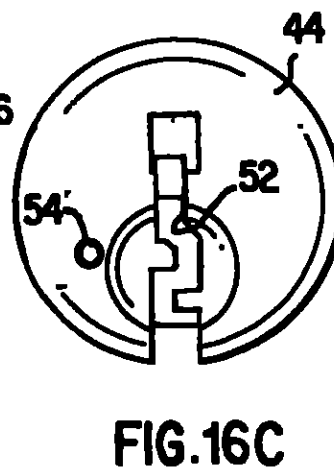
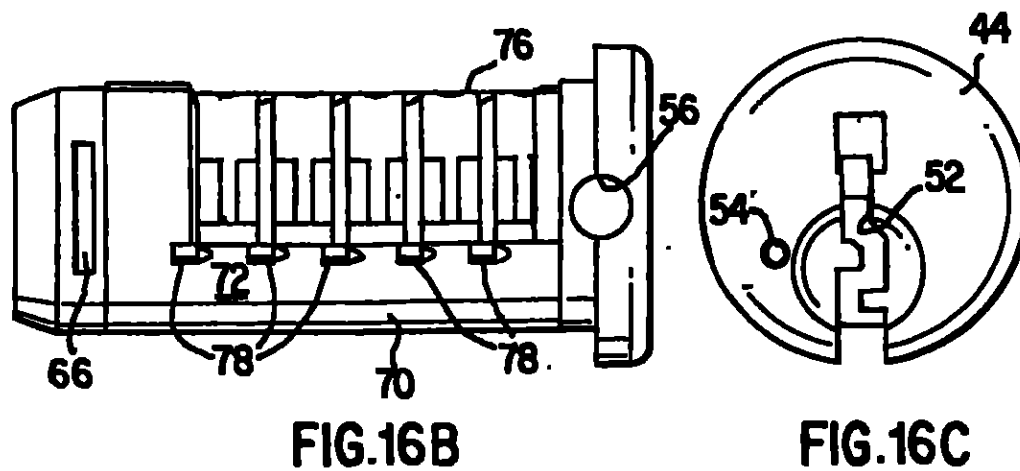
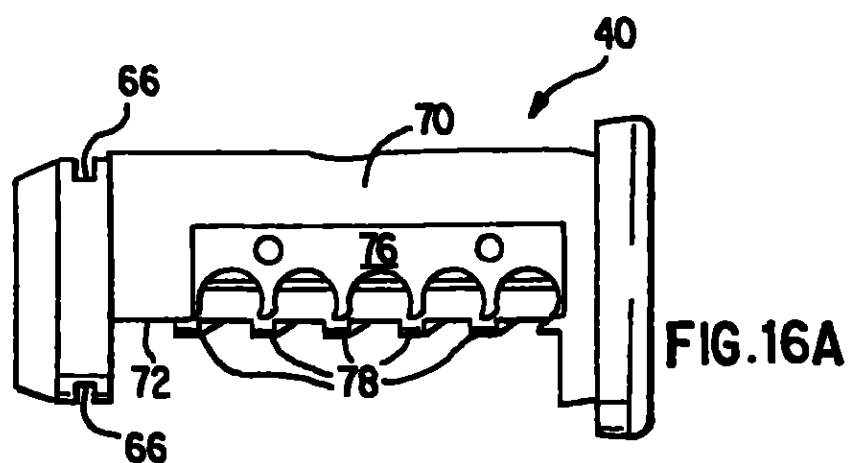


FIG. 15E



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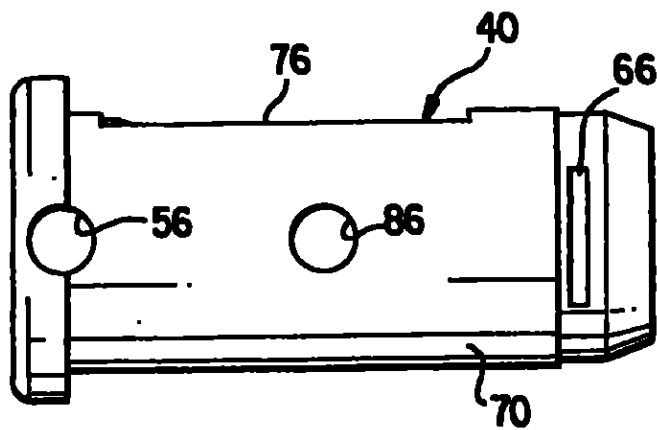


FIG. 16D

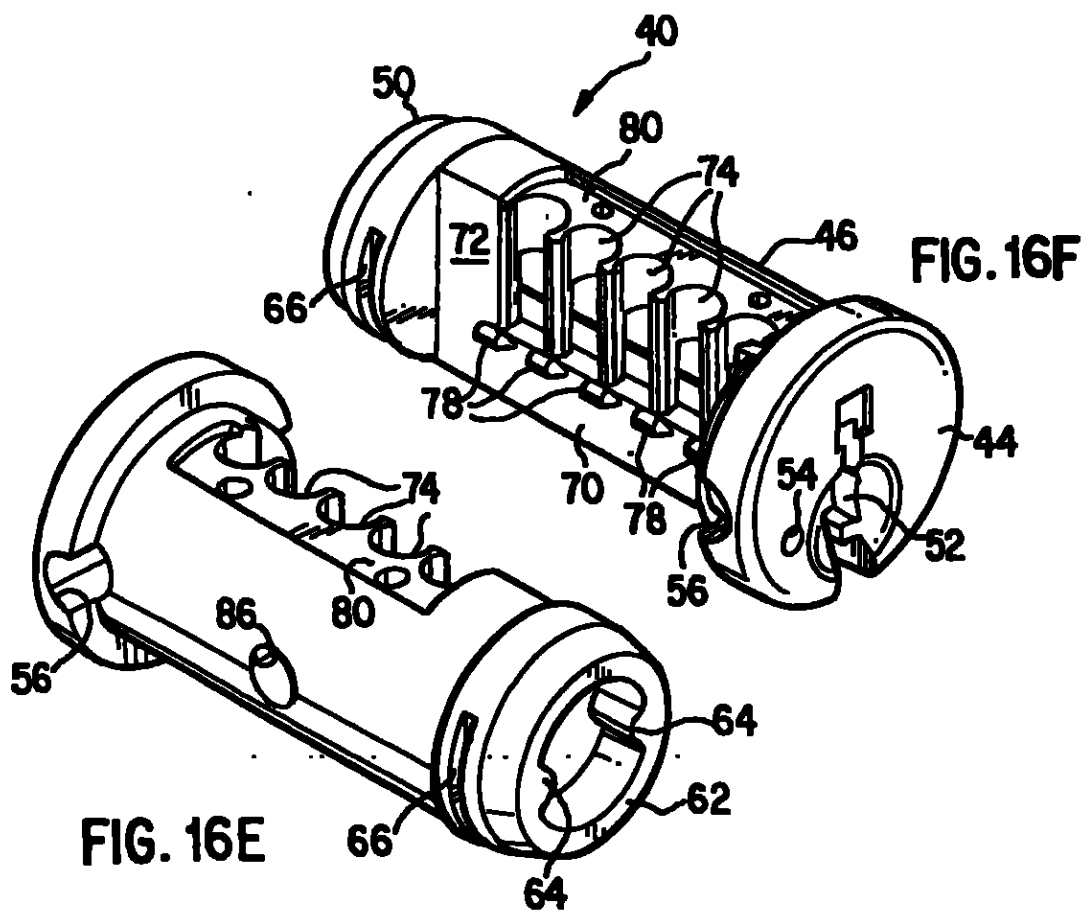


FIG. 16E

FIG. 16F

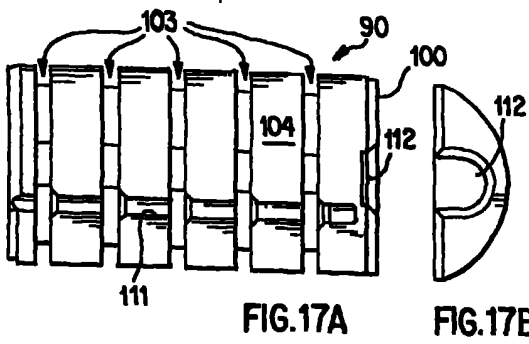


FIG. 17B

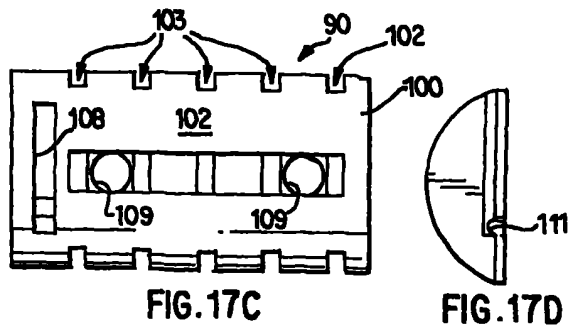
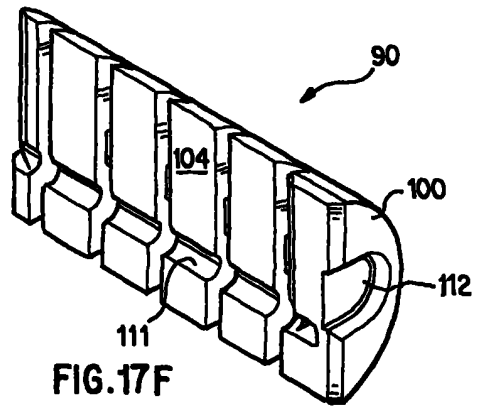
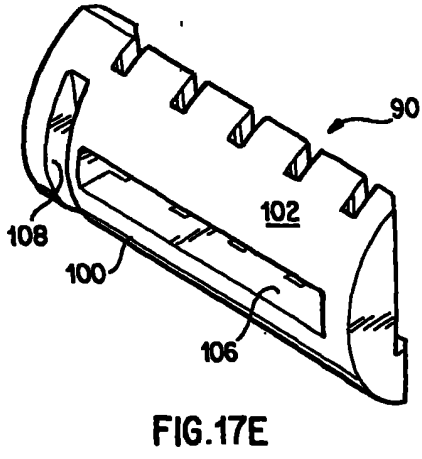


FIG. 17D



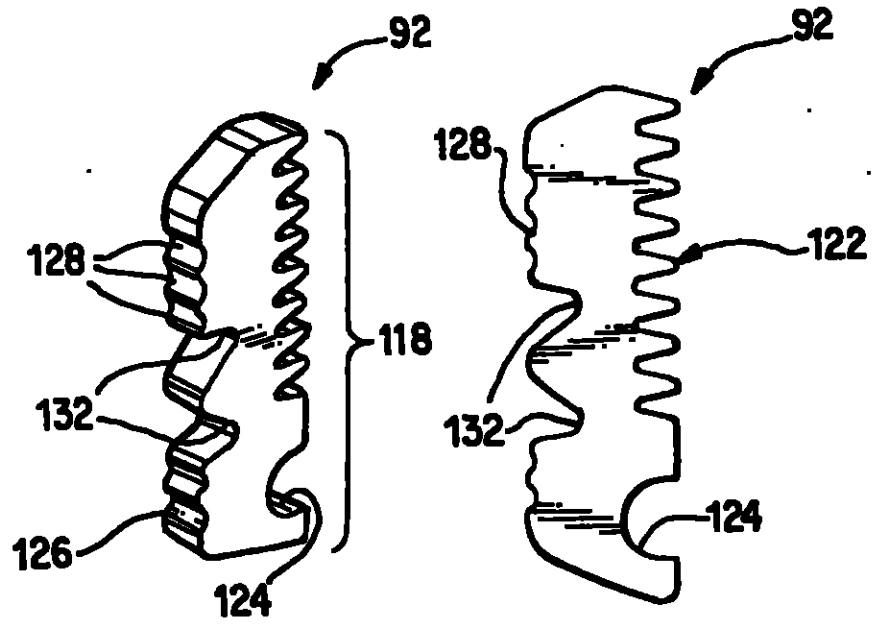


FIG. 18A

FIG. 18B

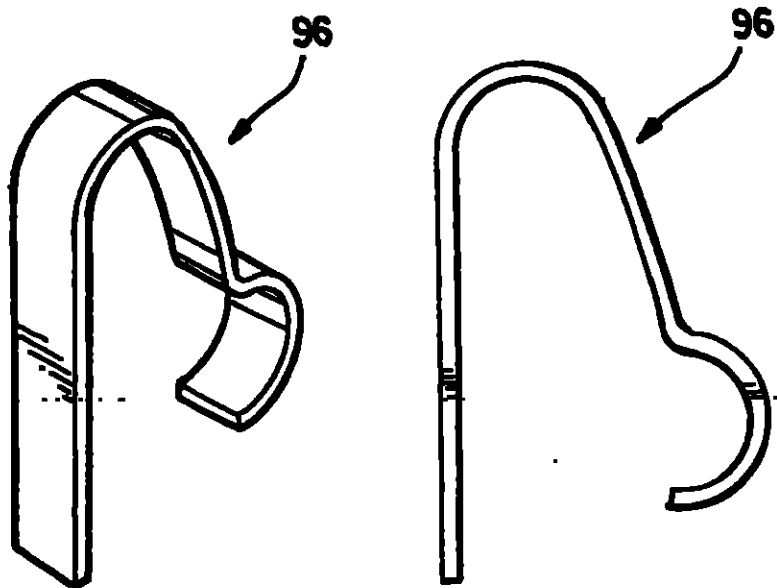


FIG. 19A

FIG. 19B

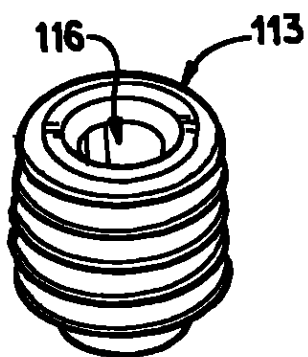


FIG. 20A

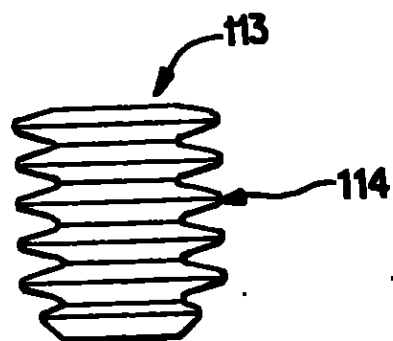


FIG. 20B

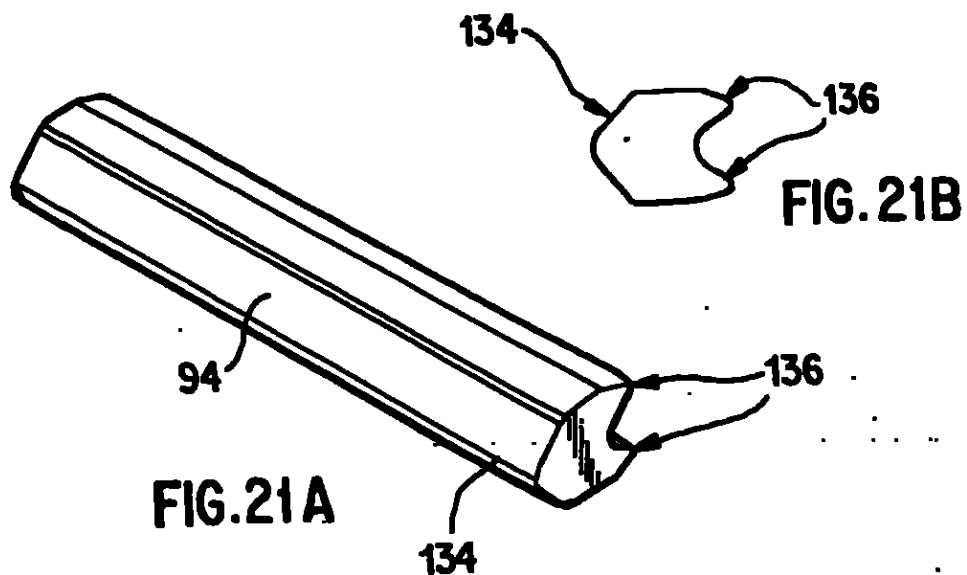


FIG. 21A

FIG. 21B

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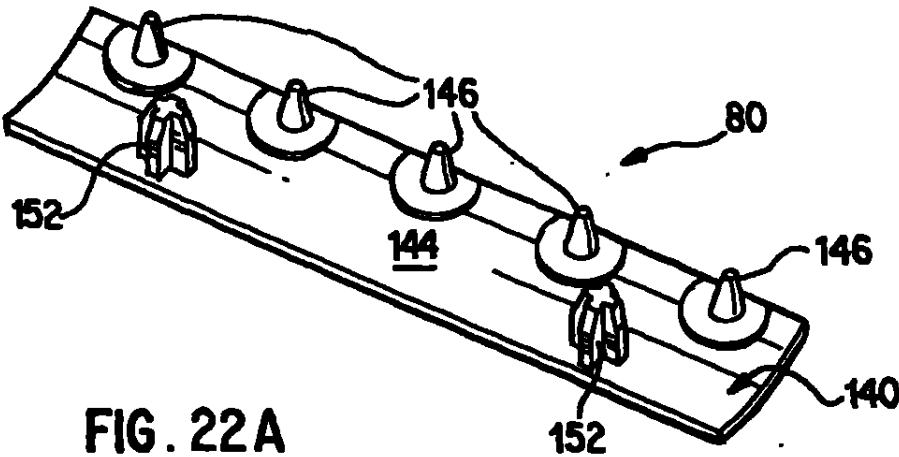


FIG. 22A

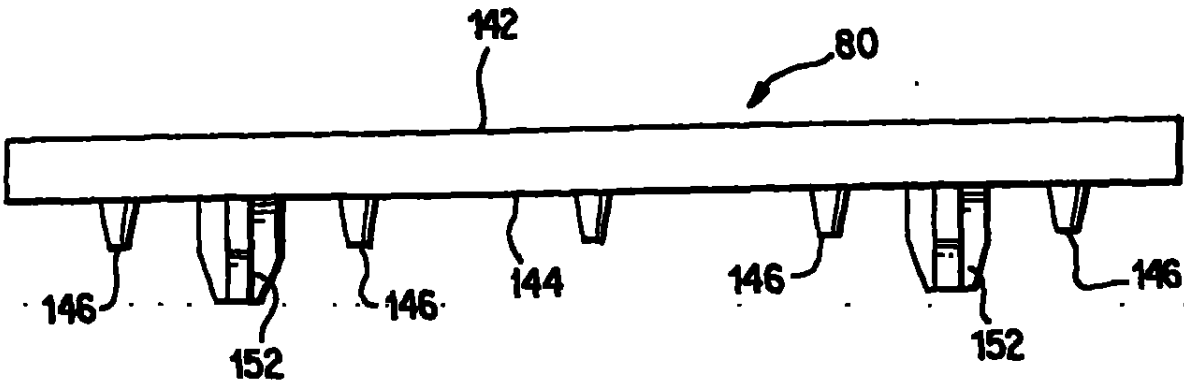


FIG. 22 B

55

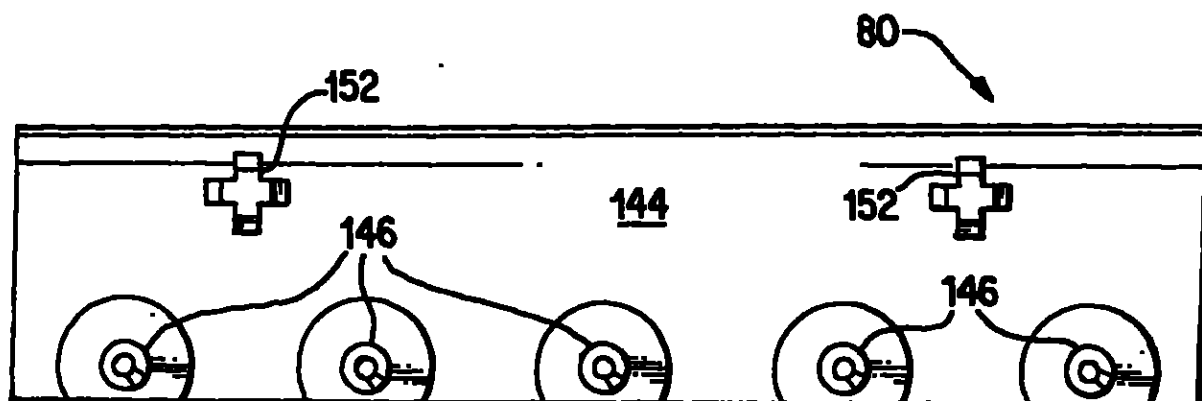


FIG. 22C

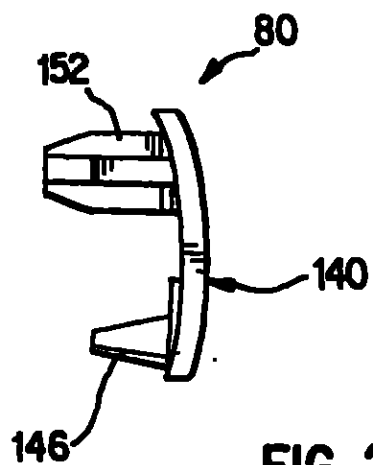


FIG. 22D

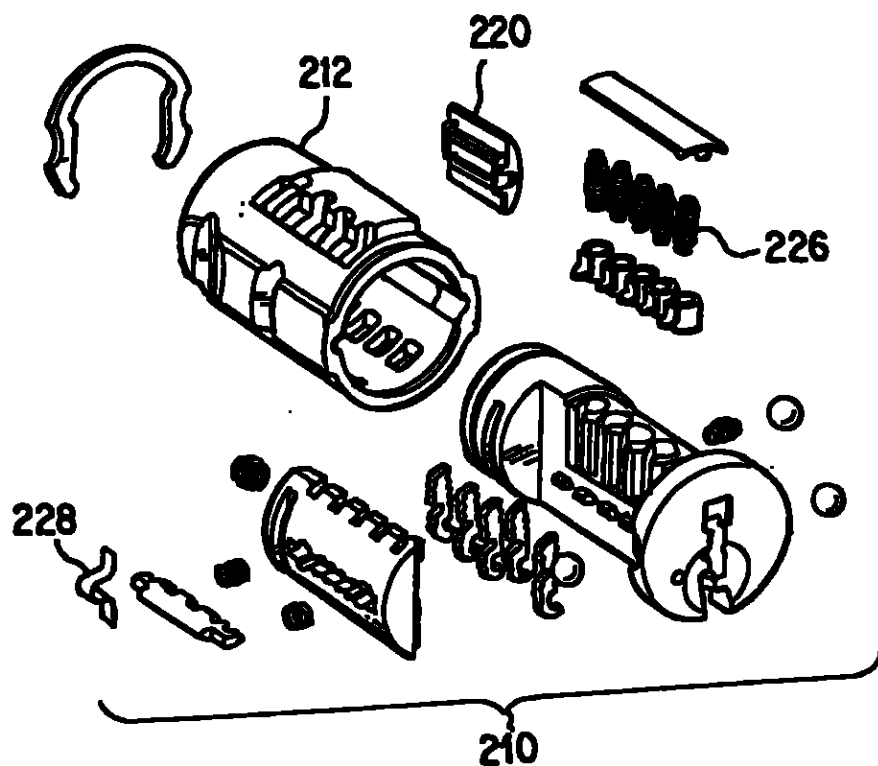


FIG. 23

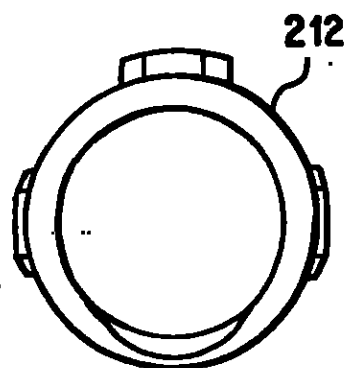


FIG. 24A

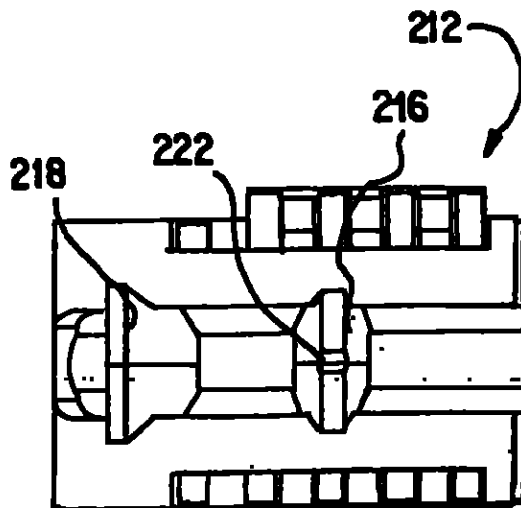


FIG. 24B

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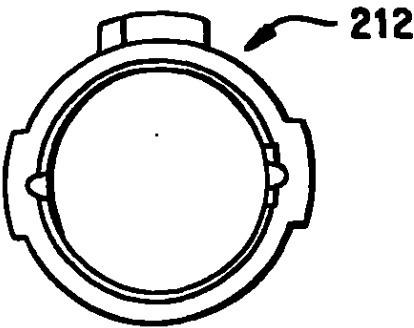


FIG. 24C

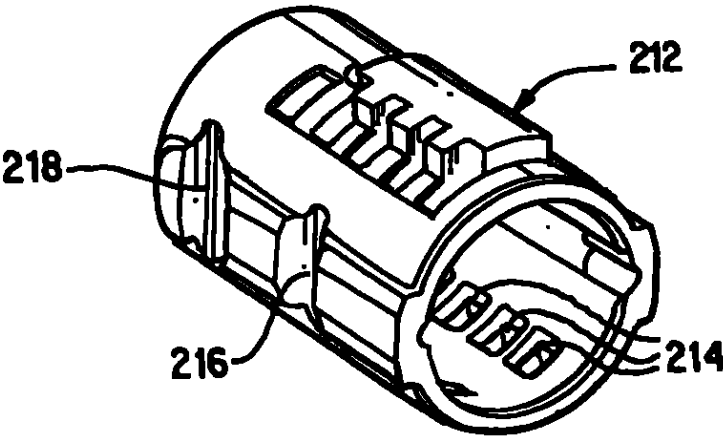


FIG. 24D

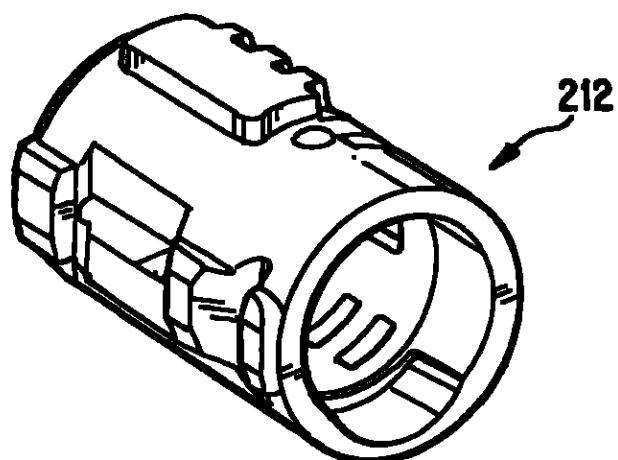


FIG. 24E

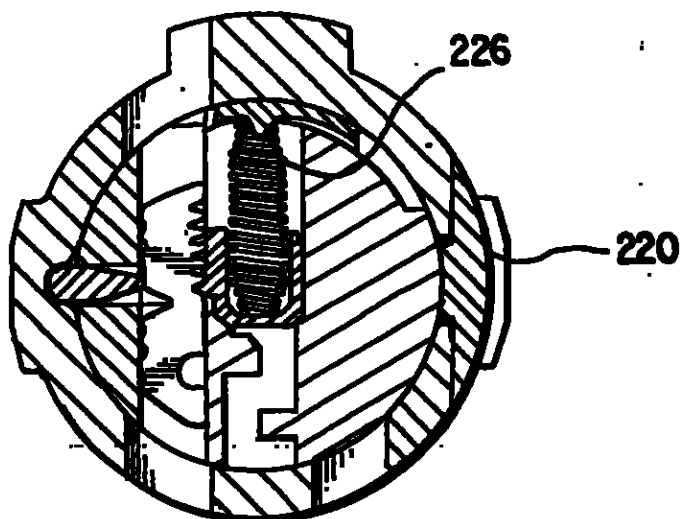


FIG. 25

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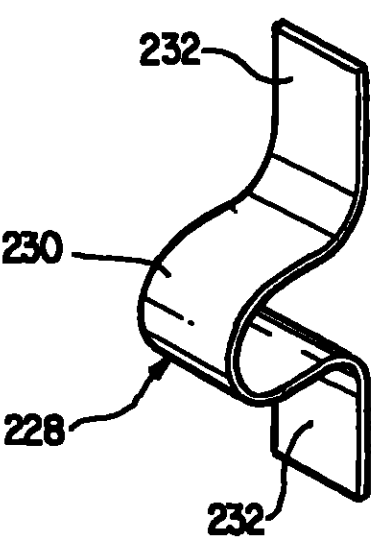


FIG. 26A

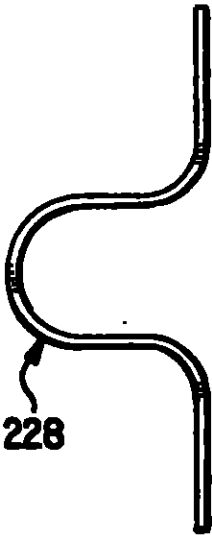


FIG. 26B

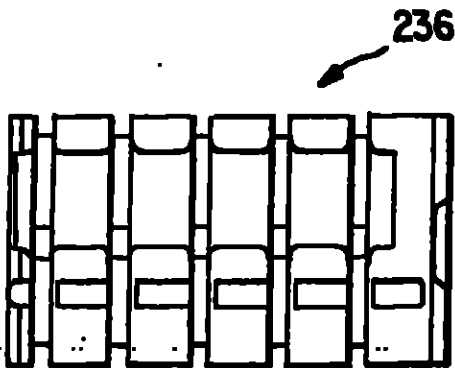


FIG. 27A

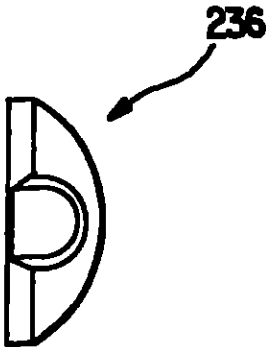


FIG. 27B

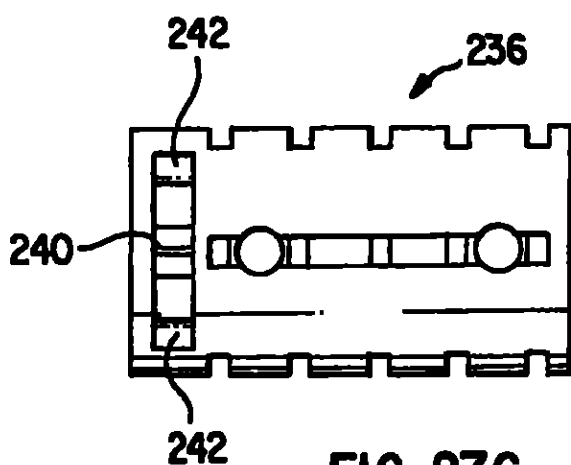


FIG. 27C

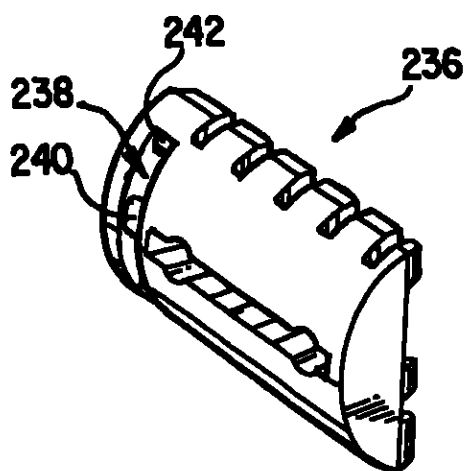


FIG. 27D

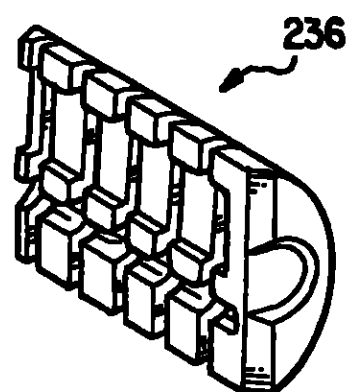


FIG. 27E

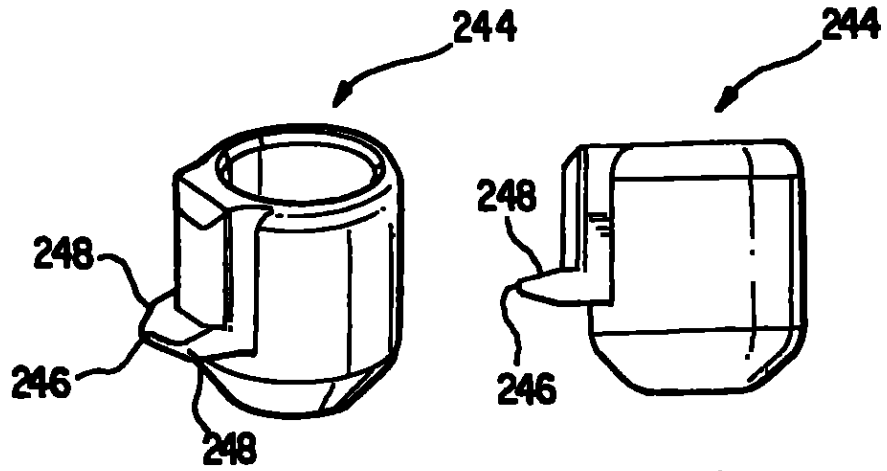


FIG. 28A

FIG. 28B

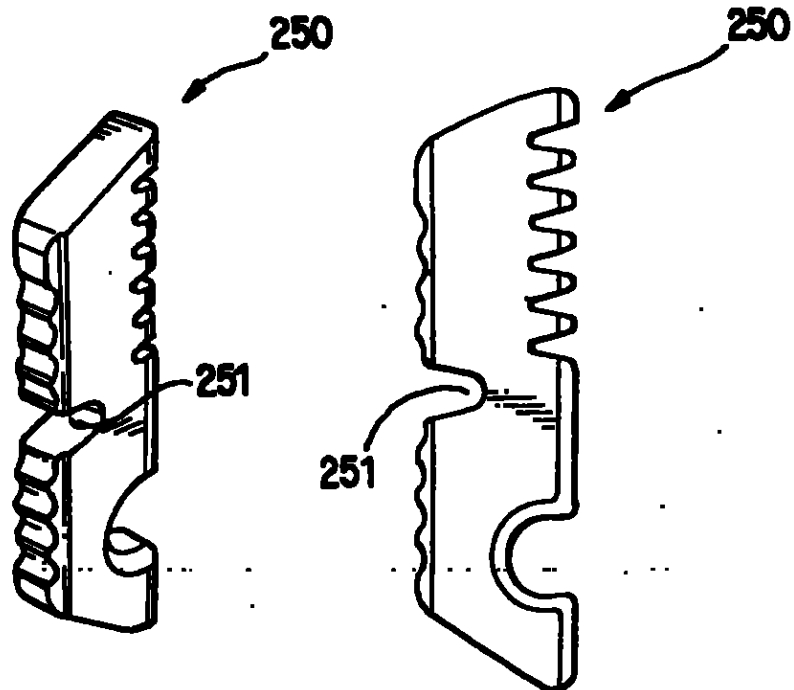


FIG. 29A

FIG. 29B

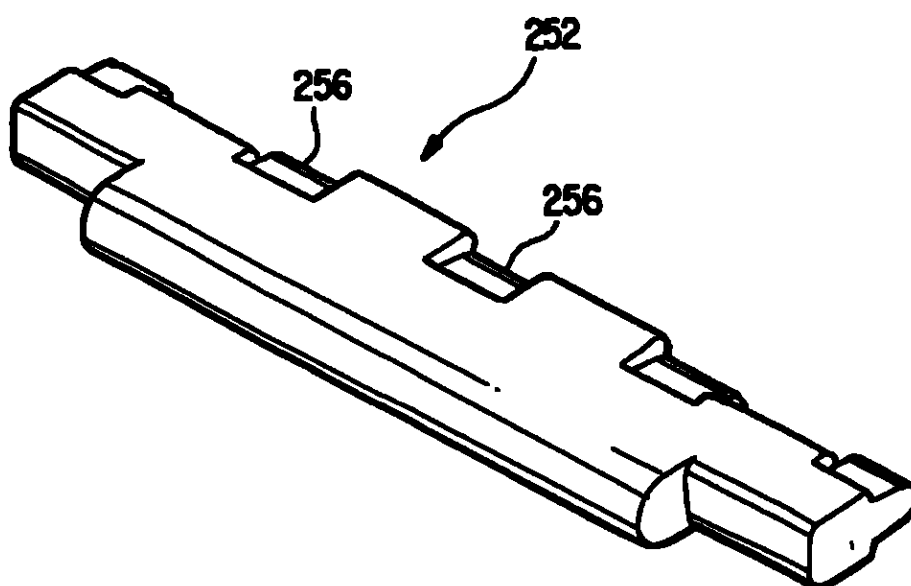


FIG. 30A

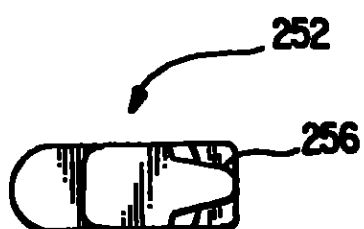


FIG. 30B

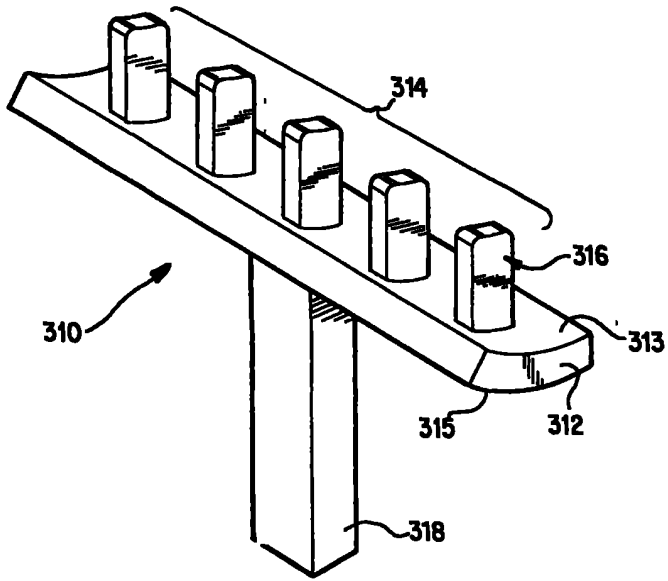


FIG. 31

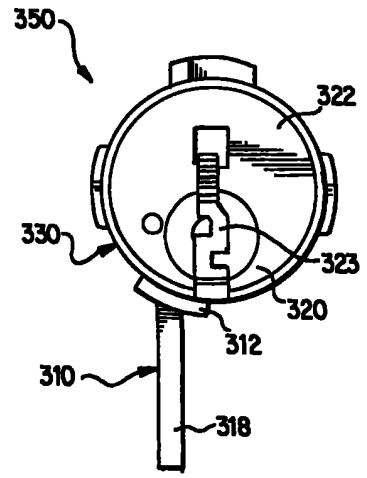


FIG. 32

[Signature]

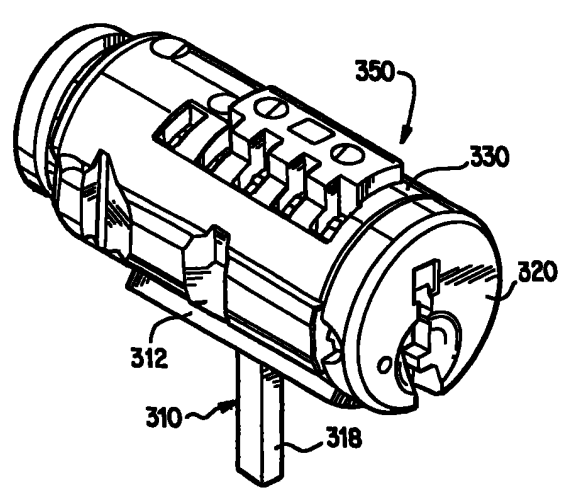


FIG. 33

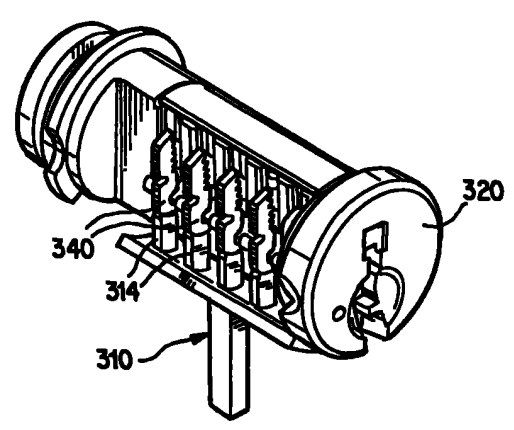


FIG. 34

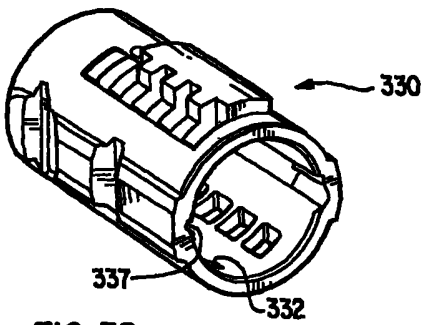


FIG. 35

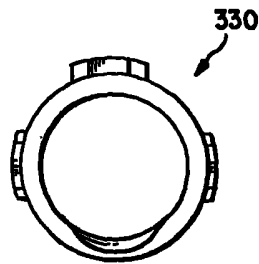


FIG. 36

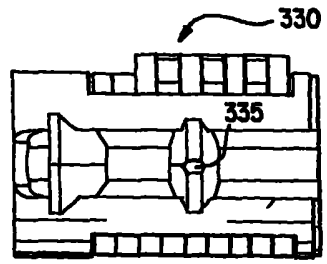


FIG. 37

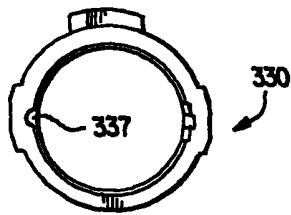


FIG. 38

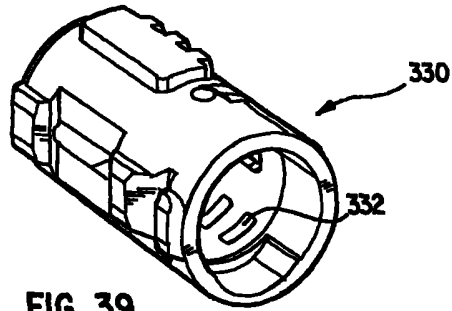


FIG. 39

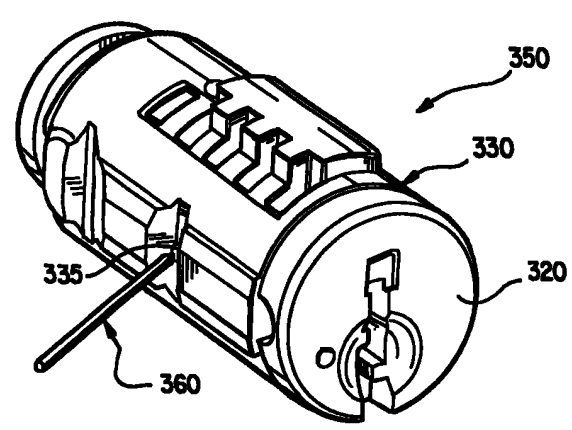


FIG. 40

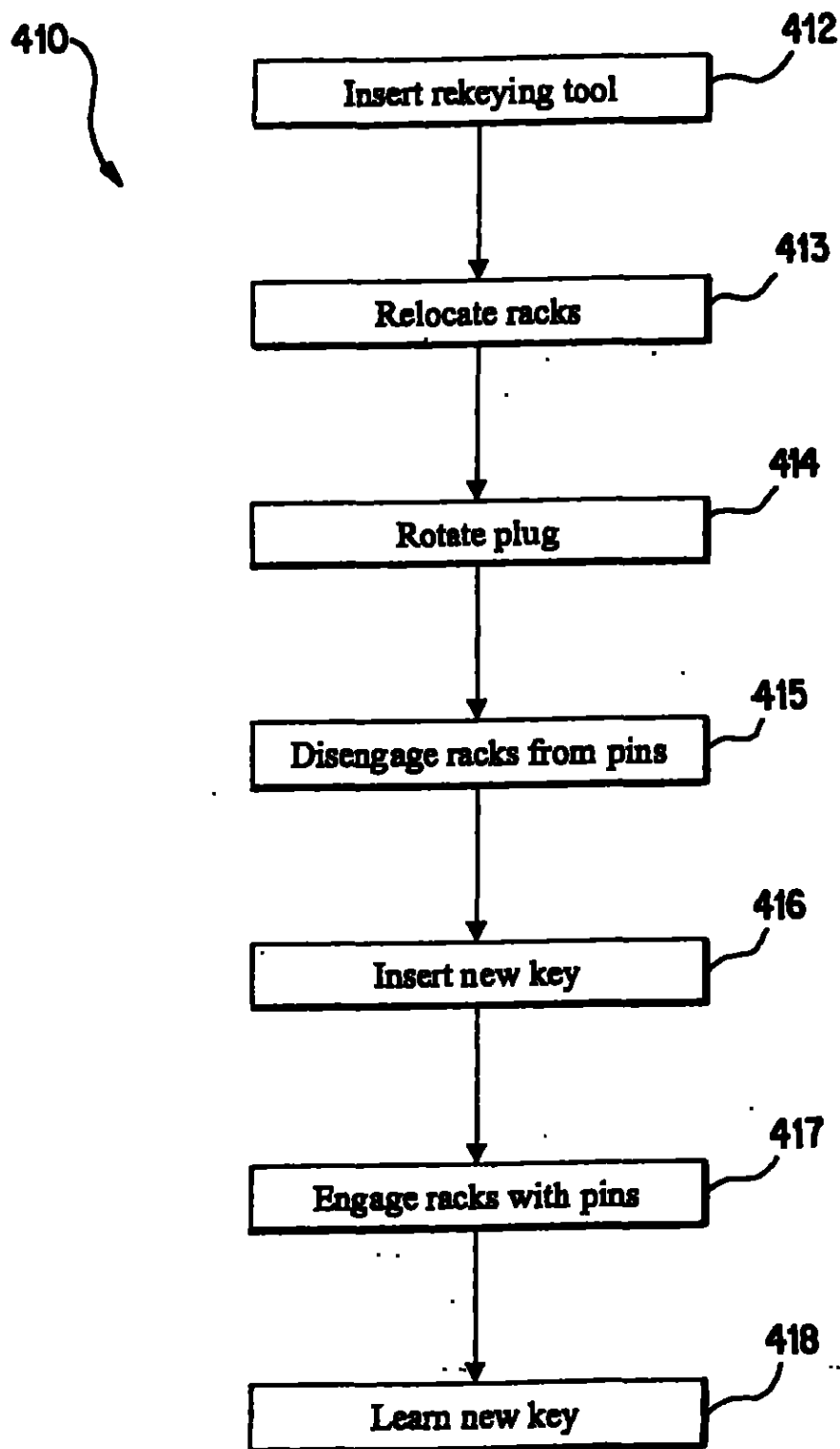


FIG. 41

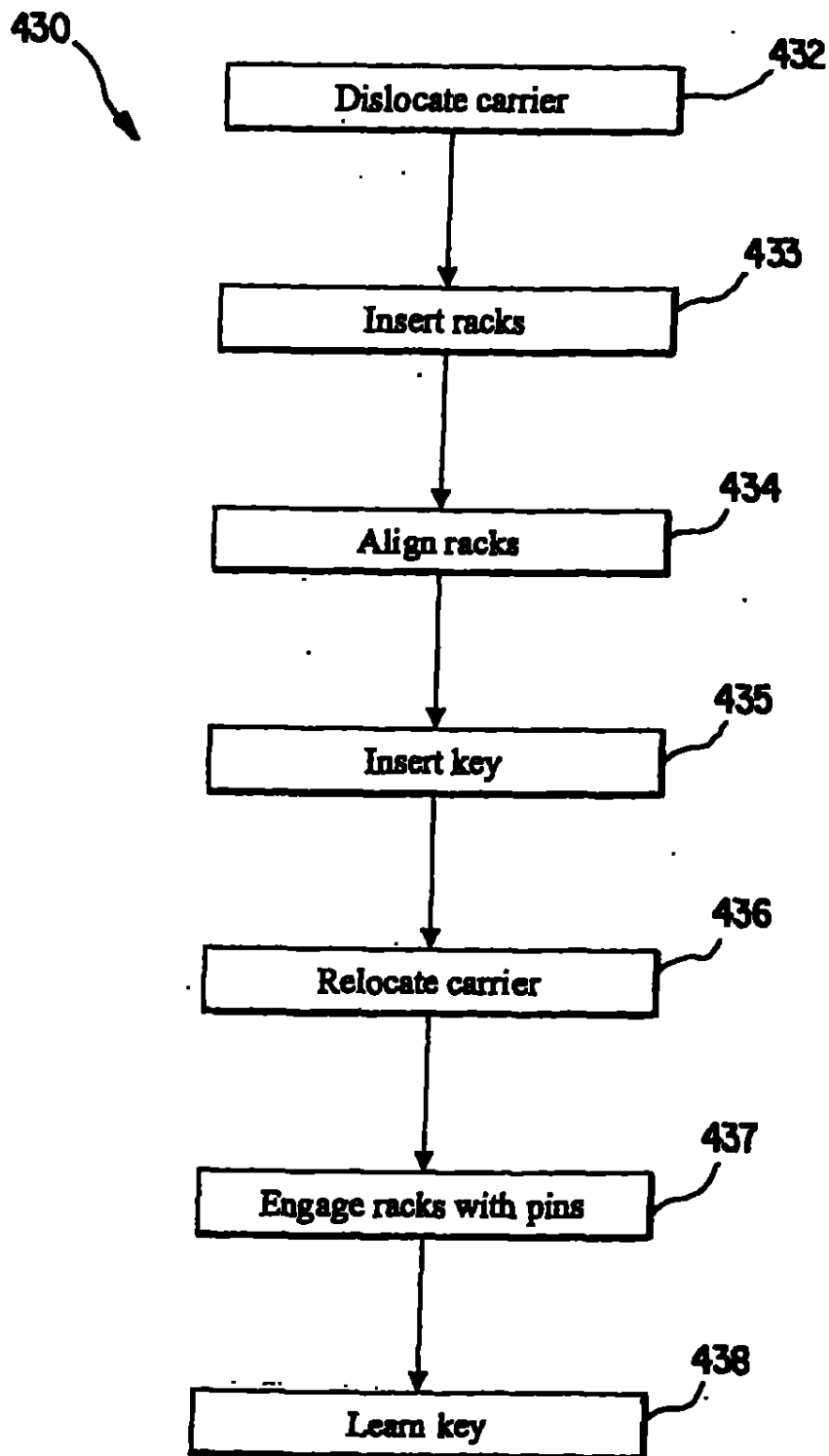


FIG. 43

**DISPOSITIVOS, MÉTODOS Y SISTEMAS DE CONFIGURACIÓN DE UN CONJUNTO DE
CERRADURA PARA LLAVES**

5

Referencia cruzada a solicitudes afines

Esta solicitud de patente es una continuación en parte de la siguiente solicitud pendiente:

No. de serie 10/256,066 (Acta de abogado No. 5645-03), presentada el 26 de
septiembre de 2002 y titulada "Rekeyable Lock Assembly and Method of Operation"
[Cerradura reconfigurable y método de operación].

10

Breve Descripción de los Dibujos

La invención y su amplia variedad de realizaciones posibles se entenderá fácilmente
mediante la siguiente descripción detallada de ciertas realizaciones ejemplares, con
referencia a los dibujos correspondientes en los cuales:

15

FIG. 1 ilustra un cilindro de cerradura según la presente invención.

FIG. 2 es una vista desplezada del cilindro de cerradura de FIG. 1.

FIG. 3 es una vista en perspectiva de un cilindro insertable que ilustra un subconjunto
portador con una barra de cerradura dispuesta en una posición de cierre a fin de trabar al
cilindro insertable en una caja de cilindro de cerradura.

20

FIG. 4 es una vista en planta del cilindro insertable de FIG. 3.

FIG. 5 es una vista lateral parcialmente quebrada del cilindro insertable de FIG. 3.

FIG. 6 es una vista parcialmente despiezada del cilindro insertable de FIG. 3.

FIG. 7 es una vista en corte del cilindro insertable de FIG. 3 y una caja de cilindro, el
corte se toma transversalmente en uno de los pernos e ilustra el posicionamiento del perno,
una cremallera, y la barra de cerradura en sus posiciones relativas y la caja del cilindro en
una configuración cerrada.

25

FIG. 8 es una vista en perspectiva del cilindro insertable de FIG. 3 con una llave
válida insertada en el mismo e ilustrando la barra de cerradura dispuesta en una posición no
cerrada para permitir que el cilindro insertable rote dentro de la caja del cilindro de cerradura.

30

FIG. 9 es una vista en planta del cilindro insertable de FIG. 8.

FIG. 10 es una vista lateral parcialmente quebrada del cilindro insertable de FIG. 8.

FIG. 11 es una vista parcialmente despiezada del cilindro insertable de FIG. 8.

FIG. 12 es una vista en corte del cilindro insertable de FIG. 8 y una caja de cilindro, el corte se toma transversalmente en uno de los pernos e ilustra el posicionamiento del perno, la cremallera, y la barra de cerradura en sus posiciones relativas y la caja del cilindro en una configuración no cerrada.

FIG. 13 es una vista en perspectiva similar a FIG. 8 pero con el conjunto portador desplazado axialmente a una posición de reconfiguración para llave nueva.

FIG. 14 es una vista en planta del cilindro insertable de FIG. 13.

FIGS. 15a-15e son vistas varias de una caja de cilindro de cerradura que se usa en la presente invención.

FIGS. 16a-16f son vistas varias de la caja del cilindro insertable que se usa en la presente invención.

FIGS. 17a-17f son vistas varias de la caja del portador que se usa en la presente invención.

FIGS. 18a-18b son vistas de una cremallera que se usa en la presente invención.

FIGS. 19a-19b son vistas de un fiador de resorte que se usa en la presente invención.

FIGS. 20a-20b son vistas de un perno que se usa en la presente invención.

FIGS. 21a-21b son vistas de una barra de cerradura que se usa en la presente invención.

FIGS. 22a-22d son vistas de un capote de retén por resorte que se usa en la presente invención.

FIG. 23 es una vista despiezada en perspectiva de una realización alternativa de la invención.

FIGS. 24a-24e son vistas de una realización alternativa de la caja del cilindro de cerradura.

FIG. 25 es una vista en sección transversal de una realización alternativa de la presente invención.

FIGS. 26a-26b son vistas de una realización alternativa del fiador de resorte.

FIGS. 27a-27b son vistas de una realización alternativa del portador.

FIGS. 28a-28b son vistas de una realización alternativa del perno.

FIGS. 29a-29b son vistas de una realización alternativa de la cremallera.

FIGS. 30a-30b son vistas de una realización alternativa de la barra de cerradura.

5 FIG. 31 es una vista en perspectiva de una realización ejemplar de una herramienta de reconfiguración para llave nueva de la presente invención.

FIG. 32 es una vista frontal de una realización ejemplar de una herramienta de reconfiguración para llave nueva de la presente invención engranada con una realización ejemplar de un cilindro de cerradura de la presente invención.

10 FIG. 33 es una vista en perspectiva de una realización ejemplar de una herramienta de reconfiguración para llave nueva de la presente invención engranada con una realización ejemplar de un cilindro de cerradura de la presente invención.

15 FIG. 34 es una vista parcialmente despiezada de una realización ejemplar de una herramienta de reconfiguración para llave nueva de la presente invención engranada con una realización ejemplar de un cilindro de cerradura de la presente invención.

FIG. 35 es una vista frontal en perspectiva de una realización ejemplar de un a caja de cilindro de cerradura de la presente invención.

FIG. 36 es una vista posterior de una realización ejemplar de una caja de cilindro de cerradura de la presente invención.

20 FIG. 37 es una vista en planta de una realización ejemplar de una caja de cilindro de cerradura de la presente invención.

FIG. 38 es una vista frontal de una realización ejemplar de una caja de cilindro de cerradura de la presente invención.

25 FIG. 39 es una vista trasera en perspectiva de una realización ejemplar de una caja de cilindro de cerradura de la presente invención.

FIG. 40 es una vista en perspectiva de una realización ejemplar de una herramienta de dislocación de portador de la presente invención engranada con una realización ejemplar de un cilindro de cerradura de la presente invención.

30 FIG. 41 es un flujograma de una realización ejemplar de una herramienta de reconfiguración para llave nueva de la presente invención.

FIG. 42 es una vista parcialmente desplazada de una realización ejemplar de una herramienta de reconfiguración para llave nueva de la presente invención engranada con una realización ejemplar de un cilindro de cerradura de la presente invención.

FIG. 43 es un flujograma de una realización ejemplar de un método de reconfiguración para llave nueva de la presente invención.

Descripción Detallada

Cuando se reconfigura una cerradura a una llave nueva usando un diseño de cilindro tradicional, el usuario tiene que extraer el cilindro interno insertable de la caja del cilindro y reemplazar los pernos correspondientes de modo que se pueda usar una llave nueva para abrir el cilindro de la cerradura. Esto normalmente requiere que el usuario extraiga el mecanismo del cilindro de la cerradura y después desarme el cilindro hasta cierto grado a fin de extraer el cilindro insertable y reemplazar los pernos. Esto requiere un conocimiento práctico del mecanismo de la cerradura y el cilindro y en general es una tarea que realizan cerrajeros o técnicos profesionales debidamente capacitados. Asimismo, el proceso normalmente emplea herramientas especiales y requiere que el usuario tenga acceso a equipos de sujeción para intercambiar pernos y reemplazar componentes que pudieran perderse o dañarse en el proceso de reconfiguración para llave nueva. Por último, técnicos profesionales que usen las herramientas adecuadas pueden abrir fácilmente los cilindros tradicionales.

Ciertas realizaciones ejemplares de la presente invención proporcionan un sistema de reconfiguración para llave nueva que comprende: un cilindro de cerradura reconfigurable que comprende: una caja de cilindro; un cilindro insertable dispuesto en dicha caja de cilindro y comprendiendo una pluralidad de pernos y una pluralidad de cremalleras que se corresponden individualmente con cada perno para reubicar dicha pluralidad de pernos; y una abertura receptora de herramienta de reconfiguración para llave nueva definida por dicho cilindro de cerradura reconfigurable; y una herramienta de reconfiguración para llave nueva que comprende: una placa base; y una pluralidad de dientes, cada diente de dicha pluralidad de dientes comprende un primer extremo longitudinal adaptado para engranarse con una cremallera correspondiente de dicha pluralidad de cremalleras, cada diente de dicha pluralidad de dientes dimensionado en sentido longitudinal para reubicar en una primera posición predeterminada dicha cremallera correspondiente de una pluralidad de cremalleras, cada diente de dicha pluralidad de dientes comprende un segundo extremo longitudinal conectado a dicha placa base.

Ciertas realizaciones ejemplares de la presente invención proporcionan una herramienta de reconfiguración para llave nueva un cilindro de cerradura reconfigurable que comprende una caja de cilindro y un conjunto de cilindro insertable dispuesto en la caja del

cilindro y comprende una pluralidad de pernos y una pluralidad de cremalleras que se corresponden individualmente para reubicar los pernos, dicho cilindro de cerradura define una abertura receptora de herramienta, dicha herramienta de reconfiguración para llave nueva comprende: una placa base que define una primera cara y una segunda cara, dicha primera cara opuesta a dicha segunda cara; una pluralidad de dientes alargados espaciados, cada diente de dicha pluralidad de dientes comprende un primer extremo longitudinal cóncavo adaptado para engranarse con una parte correspondiente de la pluralidad de cremalleras, la primera posición predeterminada común a cada una de la pluralidad de cremalleras, cada diente de dicha pluralidad de dientes comprende un segundo extremo longitudinal conectado a dicha placa base; y un picaporte conectado a dicha segunda cara de dicha placa base.

Ciertas realizaciones ejemplares de la presente invención proporcionan una herramienta de reconfiguración para llave nueva para un cilindro de cerradura reconfigurable que comprende una caja de cilindro y un conjunto de cilindro insertable dispuesto en la caja del cilindro y comprende una pluralidad de pernos y una pluralidad de cremalleras que se corresponden individualmente para reubicar los pernos, dicho cilindro de cerradura define una abertura receptora de herramienta, comprende las actividades de: Insertar una herramienta de reconfiguración para llave nueva en la abertura receptora de herramienta, reubicar la pluralidad de cremalleras en un primer nivel predeterminado; hacer rotar el conjunto del cilindro insertable con respecto a la caja del cilindro de cerradura desde una primera posición hasta una segunda posición; y desengranar la pluralidad de cremalleras de la pluralidad de pernos.

Ciertas realizaciones ejemplares de la presente invención proporcionan un sistema de reconfiguración para llave nueva que comprende: un cilindro de cerradura que comprende: una caja de cilindro; un cilindro insertable dispuesto en dicha caja de cilindro y comprendiendo una pluralidad de pernos y una pluralidad de cremalleras que se corresponden individualmente con cada perno para reubicar dicha pluralidad de pernos; y una abertura receptora de herramienta de alineamiento de cremallera definida por dicho cilindro de cerradura; y una herramienta de alineamiento de cremallera que comprende: una placa base; y una pluralidad de dientes alargados espaciados, cada diente de dicha pluralidad de dientes comprende un primer extremo longitudinal adaptado para engranarse con una cremallera correspondiente de dicha pluralidad de cremalleras, cada diente de dicha pluralidad de dientes dimensionado en sentido longitudinal para reubicar dicha cremallera correspondiente de una pluralidad de cremalleras en una primera posición predeterminada, cada diente de dicha pluralidad de dientes comprende un segundo extremo longitudinal conectado a dicha placa base, donde dicha herramienta de alineamiento de cremalleras está adaptada para retener un conjunto portador que comprende dicha pluralidad de cremalleras en una posición desengranada donde dicha pluralidad de cremalleras está desengranada de dicha pluralidad de pernos.

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Ciertas realizaciones ejemplares de la presente invención proporcionan una herramienta de reconfiguración para llave nueva para un cilindro de cerradura que comprende una caja de cilindro y un conjunto de cilindro insertable dispuesto en la caja del cilindro y comprende una pluralidad de pernos y una pluralidad de cremalleras que se corresponden individualmente para reubicar los pernos, dicho cilindro de cerradura define una abertura receptora de herramienta, dicha herramienta de reconfiguración para llave nueva comprende: una placa base que define una primera cara y una segunda cara, dicha primera cara opuesta a dicha segunda cara; una pluralidad de dientes alargados espaciados, cada diente de dicha pluralidad de dientes comprende un primer extremo longitudinal cóncavo adaptado para engranarse con una parte correspondiente de la pluralidad de cremalleras, la primera posición predeterminada común a cada una de la pluralidad de cremalleras, cada diente de dicha pluralidad de dientes define un eje longitudinal y está dimensionado longitudinalmente para reubicar en una primera posición predeterminada la que corresponda de la pluralidad de cremalleras, cada diente de dicha pluralidad de dientes comprende un segundo extremo longitudinal dispuesto en una segunda parte de dicho diente y conectado a dicha placa base, dicha segunda parte tiene una sección transversal axial más ancha que dicha primera porción; y un picaporte conectado a dicha segunda cara de dicha placa base.

Ciertas realizaciones ejemplares de la presente invención proporcionan un método para reconfigurar para llave nueva un cilindro de cerradura que comprende una caja de cilindro y un conjunto de cilindro insertable dispuesto en la caja del cilindro, dicho conjunto de cilindro insertable comprende una pluralidad de pernos y una pluralidad de cremalleras que se corresponden individualmente para reubicar dichos pernos, dicho cilindro de cerradura define una abertura receptora de herramienta, que comprenden las actividades de: cuando la pluralidad de cremalleras no está engranada con la pluralidad de pernos: alinear la pluralidad de cremalleras con un primer nivel predeterminado; y después de alinear la pluralidad de cremalleras con el primer nivel predeterminado, insertar una llave en el conjunto de cilindro insertable, la pluralidad de pernos reubicada por la llave; y después de insertar la llave en el conjunto de cilindro insertable, engranar la pluralidad de cremalleras con la pluralidad de pernos.

FIGS. 1-2 ilustran un cilindro de cerradura 10 según una realización ejemplar de la presente invención. El cilindro de cerradura 10 incluye un eje longitudinal 11, una caja de cilindro de cerradura 12, un conjunto de cilindro insertable 14 y un fiador 16. En FIG. 1, el conjunto de cilindro insertable 14 está en la posición inicial en relación con la caja de cilindro 12.

La caja de cilindro de cerradura 12, como se ve en las FIGS. 15a-15e, incluye una caja generalmente cilíndrica 20 que tiene un extremo frontal 22, y un extremo posterior 24 y una pared del cilindro 26 que define una superficie interior 28. La pared del cilindro 26 incluye una ranura 29 interior de engranaje de la barra de cerradura y un par de cavidades

para fiador 30, 32. La ranura 29 de forma general en V para engranar la barra de cerradura, se extiende longitudinalmente a lo largo de una porción de la caja del cilindro 12 desde el extremo frontal 22. La primera cavidad para fiador 30 está dispuesto en el extremo posterior 24 y se extiende hasta una primera profundidad. La segunda cavidad para fiador 32 está
5 dispuesta adyacente a la primera cavidad para fiador 30 y llega a una profundidad menor. Una abertura para fiador 34 se extiende radialmente a través de la pared del cilindro 26 para recibir una esfera de fiador 36 (FIG. 2).

El conjunto de cilindro insertable 14 incluye una caja de cilindro insertable 40, un subconjunto de portador 42 y una pluralidad de pernos cargados por resorte 38 (FIGS. 2 y
10 20a-20b). La caja del cilindro insertable 40, ilustrada en FIGS. 16a-16f, incluye una caja de cilindro insertable 44, una porción intermedia 46 y una porción impulsora 50. La cara del cilindro insertable 44 define una abertura de ojo de llave 52, una abertura para herramienta de reconfiguración para llave nueva 54 y un par de canales 56 que se extienden radialmente hacia fuera para recibir cojinetes antiperforables 60 (FIG. 2). La porción impulsora 50 incluye
15 una pared anular 62 con un par de proyecciones opuestas 64 que se extienden radialmente hacia adentro para impulsar un eje o una hoja de torsión (ninguno de los cuales se ve en la figura). La porción impulsora 50 incluye además un par de ranuras 66 formadas en su perímetro para recibir el retén 16 para retener la caja del cilindro Insertable 40 en la caja del cilindro 12.

La porción intermedia 46 incluye una porción principal 70 formada como sección de cilindro y teniendo una primera superficie plana longitudinal 72 y una pluralidad de canales 74 para recibir los pernos cargados por resorte 38. Los canales 74 se extienden transversalmente al eje longitudinal de la caja Insertable 40 y paralelos a la superficie plana 72. Una segunda superficie plana 76 se extiende perpendicular a la primera superficie plana
25 72 y define una cavidad 80 para recibir un capatete de retén 82 (FIGS. 2 y 22a-22d). Los canales 74 se extienden desde la segunda superficie plana 76 parcialmente a través de la caja del cilindro insertable 40, con las paredes laterales de los canales abiertas a la primera superficie plana 72. La primera superficie plana 72 incluye además una pluralidad de partes en forma de bala 78 destinadas a engranar en la cremallera. Una abertura 86 para recibir
30 una esfera de fiador 36 cargada por resortes (FIG. 2) se extiende radialmente hacia adentro desde la primera superficie plana opuesta 72.

El subconjunto portador 42 (FIGS. 2, 6 y 10) incluye un portador 90 (FIGS. 17a-17e), una pluralidad de cremalleras 92 (FIGS. 18a-18b), un fiador de resorte 96 (FIGS. 19a-19b), una barra de cerradura cargada por resortes 94 (FIGS. 21a-21b), y un resorte reactivo 98
35 (FIG. 2). El portador 90 incluye una caja 100 en forma de sección de cilindro que es complementaria a la porción principal 70 de la caja del cilindro insertable 40, de modo que el portador 90 y la porción principal 70 se combinan para formar un cilindro que encaja dentro de la caja del cilindro de cerradura 12. El portador 90 incluye una superficie curva 102 y una superficie plana 104. La superficie curva 102 incluye una cavidad para barra de cerradura

106 y una cavidad para fiador de resorte 108. La cavidad 106 para barra de cerradura incluye además un par de aberturas receptoras de resorte reactivo 109 (FIG. 17c) para recibir los resortes reactivos de la barra de cerradura. La superficie plana 104 incluye una pluralidad de ranuras receptoras de cremallera paralela 102 que se extienden perpendicularmente al eje longitudinal del portador. Una ranura semicircular 111 se extiende a lo largo de la superficie plana 104 paralela al eje longitudinal del portador 90. El extremo posterior del portador 90 incluye una cavidad 112 para recibir el resorte reactivo 98.

Cada perno cargado por resorte 38 incluye un perno 113 y un resorte orientador 115. Los pernos 113, ilustrados en FIGS. 20a-20b, son generalmente cilíndricos con dientes de engranaje anulares 114 y una abertura longitudinal central 116 para recibir resortes orientadores 115 (FIG. 2). Las cremalleras 92, ilustradas en FIGS. 18a-18b, incluyen una superficie de engranaje de pernos 118 que tiene una pluralidad de dientes de engranaje 122 configurados para engranar los dientes de engranaje anulares 114 en los pernos 113, como se ilustra en las FIGS. 7 y 12, y una cavidad semicircular 124 para engranar las partes en forma de bala 78 destinadas a engranar en la superficie plana 72, como se ilustra en la FIG. 12. Las cremalleras 92 incluyen además una segunda superficie 126 que incluye una pluralidad de ranuras contra ganzúas 128 y un par de ranuras 132 para engranar la barra de cerradura.

La barra de cerradura cargada por resorte 94, ilustrada en FIGS. 21a-22b, está dimensionada y configurada para encajar en la cavidad 106 para la barra de cerradura en el portador 90 e incluye un borde triangular 134 configurado para encajar en la ranura 29 en V para engranar la barra de cerradura. Opuesta al borde triangular 134, la barra de cerradura 94 incluye un par de dientes de engranaje 136 que se extienden longitudinalmente configurados para engranar las ranuras 132 destinadas a engranar la barra de cerradura en las cremalleras 92, como se ilustra en FIG. 12.

El capacete de retén cargado por resorte 82, ilustrado en FIGS. 22a-22d, incluye una porción curvilínea 140 que tiene una superficie superior 142 y una superficie inferior 144. El espesor de la porción curvilínea 140 se ha fijado para permitir que la porción curvilínea 140 encaje en la cavidad 80 con la superficie superior 142 a ras de la porción intermedia 46 de la caja del cilindro insertable 40, como se ilustra en FIGS. 7 y 12. Una pluralidad de puntas de alineamiento por resorte 146 se extienden desde la superficie inferior 144 para engranar los resortes 148. Asimismo, un par de puntas retenedoras de capacete 152 se extienden desde la superficie inferior 144 para engranar las aberturas de alineamiento 154 formadas en la caja del cilindro insertable 40 (FIGS. 16e-16f).

Para armar el cilindro de cerradura 10, los pernos 113 y el resorte 115 se disponen en los canales 74 de la caja del cilindro insertable 40. El capacete del retén cargado por resorte 82 se coloca en la cavidad 80, con las puntas de retención del capacete 152 dispuestas en las aberturas de alineamiento 154 y las puntas de alineamiento con el resorte

146 engranadas con los resortes 115. El subconjunto del portador 42 se arma colocando las cremalleras 92 en las ranuras 102 y la barra de cerradura cargada por resortes 94 en la cavidad para la barra de cerradura 106, con los dientes de engranaje 136 para engranar las ranuras de la barra de cerradura 132 formadas en las cremalleras 92. El fiador de resorte 96 se dispone en la cavidad para fiador de resorte 108 del portador 90. Se inserta una llave válida 106 en el ojo de llave 52, el resorte reactivo 98 se comprime en la cavidad para resorte reactivo 112, y el subconjunto portador se coloca adyacente a la caja del cilindro insertable 40, como se ilustra en la FIG. 3. El conjunto del cilindro insertable 14 se coloca en la caja de cilindro insertable 12 y el retén 16 se dispone en las ranuras 66 formadas en la caja del cilindro insertable 40 para retener el conjunto de cilindro insertable 14 en la caja de cilindro 12. El cilindro de cerradura 10 queda así confirmado para la llave válida 160.

El cilindro de cerradura 10 debidamente configurado para llave, sin la llave 160 insertada, se ilustra en las FIGS. 4-7. Los pernos 113 están orientados en la base de los canales 74 y, basado en el corte de la llave 160, las cremalleras 92 están dispuestas en varias posiciones en las ranuras 102 del portador 90. En esta configuración, la barra de cerradura 94 se extiende desde el portador 90 para engranar la ranura 29 en la caja de cilindro 12 para prevenir que el conjunto del cilindro insertable 14 rote en la caja del cilindro 12 y las cremalleras 92 engranen los pernos 113, como se ilustra en la FIG. 4. Además las partes en forma de bala 78 están mal alineadas con las cavidades 111 en las cremalleras 92 y por lo tanto interfieren en el movimiento de las cremalleras 92 paralelas al eje longitudinal del cilindro de cerradura 10, impidiendo que el cilindro de cerradura 10 se vuelva a configurar para llave.

La configuración interna de un cilindro de cerradura 10 con la llave válida 160 insertada en el mismo en la posición inicial se ilustra en FIGS. 8-12. En esta configuración, la barra de cerradura 94 está libre para levantarse de la ranura 29 de la caja del cilindro 12, como se ilustra en FIGS. 8, 9 y 12. Los paletones de la llave 160 levantan los pernos 113 en los canales 74 y de ese modo reubican las cremalleras 92 en las ranuras 102. Una vez reubicadas, las cremalleras 92 se disponen para alinear las ranuras que engranan la barra de cerradura 132 con los dientes de engranaje extendidos 136 en la barra de cerradura 94. La barra de cerradura 94 está libre para levantarse de la ranura 29 cuando se hace girar la llave 160. Al mismo tiempo, las partes en forma de bala 78 están alineadas con las cavidades 111 en las cremalleras 92, como se ilustra en FIG. 12, lo que permite que las cremalleras 92, y el portador 90, se desplacen paralelamente al eje longitudinal del cilindro de cerradura 10.

Para reconfigurar la llave del cilindro de cerradura 10, la llave válida 160 se inserta en el ojo de llave 52, como se ilustra en FIGS. 13-14 y se hace girar aproximadamente 45° en sentido contrario a las agujas del reloj desde la posición inicial hasta que el fiador de resorte 96 entre en la segunda cavidad para retén 32 formada en la caja de cilindro 12. Se inserta un sujetapapeles u otro dispositivo puntlagudo 162 en la abertura para herramienta 54 y se

empuja contra el portador 90 para desplazar el portador 90 paralelamente al eje longitudinal de la caja de cilindro 10 hasta que el fiador de retén 96 entre en la primera cavidad para fiador 30, y el dispositivo puntlagudo 162 se retira. Con el fiador de resorte 96 dispuesto en la primera cavidad para fiador 30, las cremalleras 92 se desengranan de los pernos 113, como se ilustra en FIG. 14. La llave válida 160 se retira y se inserta una segunda llave válida y se hace girar en sentido contrario a las agujas del reloj para liberar el fiador de resorte 96. Cuando el fiador de resorte 96 se retira de la primera cavidad para fiador 30, el portador 90 se orienta hacia la cara del cilindro insertable 44 mediante el resorte reactivo 98, haciendo que las cremalleras 92 vuelvan a engranar los pernos 113. En este punto, el cilindro de cerradura 10 se configura para la segunda llave válida y la primera llave válida 160 ya no opera en el cilindro de cerradura 10. El cilindro de cerradura 10 puede reconfigurarse para recibir una tercera llave válida reemplazando la primera y la segunda llave válida de los procedimientos precedentes con la segunda y la tercera llave válida, respectivamente.

Una realización alternativa 210 de una realización ejemplar de la presente invención se ilustra en FIGS. 23-29. La realización alternativa incluye los mismos componentes, como se ilustra en la FIG. 23, pero varios de los componentes se han modificado. Funcionalmente, ambas realizaciones son iguales.

La caja modificada 212, ilustrada en FIGS. 23 y 24, incluye una pluralidad de aberturas 214 que están longitudinalmente a lo largo de la parte inferior y un par de ranuras verticales 216, 218 formadas en la pared lateral de la caja. Además, la pared lateral incluye un panel lateral amovible 220. Los orificios rectangulares 214 están ubicados para permitir el uso de una herramienta manual de suplantación. La ranura central 216 incluye una abertura 222 que se extiende a través de la pared lateral de la caja. La abertura 222 permite que un usuario desplace la barra de cerradura durante una operación manual de suplantación. El panel lateral 220 proporciona acceso para realizar ciertas operaciones mientras se cambia la llave maestra del cilindro de cerradura.

Los resortes orientadores de pernos modificados 226, ilustrados en FIGS. 23 y 25, incluyen un diámetro no constante, las últimas espirales en cada extremo de los resortes 226 tienen un diámetro reducido. El ahusamiento permite mayor fuerza de resorte en una altura física menor.

El fiador de resorte modificado 228, ilustrado en FIGS. 23 y 26, incluye una porción central en forma de U 230 y un par de brazos 232 que se extienden desde la porción en forma de U 230.

El portador modificado 236, ilustrado en FIGS. 23 y 27, incluye medios para retener el fiador de resorte 228 en la cavidad del fiador de resorte 238. En la realización ilustrada, esto incluye una guía 240 que se proyecta hacia el exterior en el centro de la cavidad del fiador de resorte 238 y un par de anclas 242 descentradas radialmente de la guía 240. Esta guía 240 impide que el fiador de resorte 228 se desplace transversalmente en la cavidad 238 al

mismo tiempo que le permite desplazarse radialmente hacia el exterior para engranar la caja 12, 212 como se describió anteriormente. Las anclas 242 engranan los brazos 232 del fiador de resorte 228 e impiden que los brazos 232 se abran hacia fuera, dirigiendo así la fuerza compresora del fiador de resorte 228 para extender la porción en forma de U 230 hacia el exterior para engranar la caja 12, 212.

Los pernos modificados 244, ilustrados en FIGS. 23 y 28, incluyen un solo diente de engranaje 246 en lugar de la pluralidad de dientes de engranaje de los pernos 113 descritos anteriormente. El único diente de engranaje 246, que preferiblemente incluye lados biselados 248, proporciona un engranaje más suave con las cremalleras durante el procedimiento de reconfiguración para llave nueva.

Las cremalleras modificadas 250, ilustradas en FIGS. 23 y 29, incluyen dientes de engranaje biselados para mejorar el engranaje con los pernos durante el procedimiento de reconfiguración para llave nueva. Además, el par de ranuras para engranar la barra de cerradura 132 en las cremalleras 92 son reemplazadas por una sola ranura para engranar la barra de cerradura 251.

La barra de cerradura modificada 252, ilustrada en FIGS. 23 y 30, es más delgada que la barra de cerradura 94 y reemplaza al par de dientes de engranaje 136 con un solo diente de engranaje 256 y redondea el borde triangular 134. El diseño más delgado reduce todo posible sacudimiento de la barra de cerradura 252 en la cavidad para barra de cerradura 106.

FIG. 31 es una vista en perspectiva de una realización ejemplar de una herramienta de suplantación manual o de reconfiguración para llave nueva 310, que puede comprender una base 312 que tenga, por ejemplo, un segmento alargado aproximadamente anular o un segmento alargado de forma aproximadamente toroidal. Unidos a la base 312 puede haber una pluralidad de dientes 314 cada uno teniendo, por ejemplo, una forma alargada aproximadamente rectangular. Cada uno de los dientes 314 puede estar unido en forma aproximadamente perpendicular a una superficie interior 313 de base 312, y puede tener un extremo 316, que puede tener cualquier forma que engrane una cremallera correspondiente de la pluralidad de cremalleras 340 (ilustrada en FIG. 34) del conjunto del cilindro insertable 320, tal como, por ejemplo, una forma cóncava. A una superficie exterior 315 de base 312 puede unirse un picaporte 318, que tenga, por ejemplo, una forma alargada aproximadamente rectangular. Un eje longitudinal del picaporte 318 puede ser aproximadamente perpendicular y/o aproximadamente paralelo a un eje longitudinal de la base 312. En una realización alternativa (no ilustrada), la base 312 puede tener una forma alargada aproximadamente rectangular, o cualquier otra forma, siempre que la base 312 sirva para limitar una profundidad de inserción de la herramienta de reconfiguración para llave nueva 310 en el cilindro de cerradura. Como otra alternativa adicional, otra característica de la herramienta 310 puede limitar la profundidad de su inserción.

FIG. 32 es una vista frontal, y FIG. 33 es una vista en perspectiva, de una realización ejemplar de una herramienta de reconfiguración para llave nueva 310 de la presente invención engranada con una realización ejemplar de un cilindro de cerradura 350 de la presente invención. Haciendo referencia a FIGS. 32 y 33, la herramienta de reconfiguración para llave nueva 310 puede insertarse en el cilindro de cerradura 350 a lo largo de una dirección, o de la dirección del picaporte 318, paralela a un ojo de llave 323 definido a través de una cara del cilindro insertable 322 del conjunto de cilindro insertable 320. La base 312 puede configurarse para conformarse aproximadamente a una superficie exterior del conjunto del cilindro 330.

FIG. 34 es una vista parcialmente despiezada de una realización ejemplar de una herramienta de reconfiguración para llave nueva 310 de la presente invención engranada con una realización ejemplar de un cilindro de cerradura 350 de la presente invención. Obsérvese que los dientes 314 pueden engranarse con las cremalleras 340, y/o alinearse a un nivel común con éstas.

FIG. 35 es una vista frontal en perspectiva, FIG. 36 es una vista posterior, FIG. 37 es una vista lateral, FIG. 38 es una vista frontal, FIG. 39 es una vista posterior en perspectiva, de una realización ejemplar de una caja de cilindro 330 de la presente invención. Haciendo referencia a FIGS. 34-39, la caja de cilindro 330 puede definir una pluralidad de aberturas 332 para herramienta de reconfiguración para llave nueva que puede permitir que la herramienta de reconfiguración para llave nueva 310 acceda a la pluralidad de cremalleras del conjunto de cilindro insertable 320. La caja del cilindro 330 también puede definir una abertura 335 de herramienta de liberación de barra de cerradura mediante la cual una herramienta de liberación de barra de cerradura 360 (ilustrada en FIG. 40) puede acceder y/o dislocar una barra de cerradura 94 (ilustrada al menos en FIGS. 2, 3, 7, 8, 12 y 21A) de su engrane con la cavidad 337 para barra de cerradura de la caja del cilindro 330.

FIG. 40 es una vista en perspectiva de una realización ejemplar de una herramienta de liberación 360 de la presente invención engranada con una realización ejemplar de un cilindro de cerradura 350 de la presente invención. La herramienta de engrane de la barra de cerradura 360, que puede ser tan simple como un sujetapapeles, puede insertarse a través de la abertura para herramienta de engrane 335 definida en la caja de cilindro 330, de modo que la barra de cerradura 94 (ilustrada al menos en FIGS. 2, 4, 7, 8, 12, y 21A) pueda engranar con las cremalleras 92 para alinear, restringir y/o limitar el desplazamiento de los pernos 113.

FIG. 41 es un flujograma de una realización ejemplar de un método de reconfiguración para llave nueva 410 de la presente invención. En la actividad 412, puede insertarse una herramienta de reconfiguración para llave nueva a través de una o más aberturas de la caja del cilindro, tal como los dientes de la herramienta de reconfiguración para llave nueva engranan las cremalleras del conjunto del cilindro insertable. La

profundidad de inserción de la herramienta de reconfiguración para llave nueva puede estar limitada por la geometría de la herramienta, tal como una forma de la base de la herramienta de reconfiguración o la longitud de un diente, y/o la geometría del cuerpo del cilindro y/o del conjunto del cilindro insertable. Por ejemplo, si la caja del cilindro tiene un exterior circular

5 alargado, una superficie interior y/o de contacto de la base de la herramienta de reconfiguración para llave nueva puede formarse como segmento anular alargado, cuyo radio interior se corresponda aproximadamente a un radio exterior de la caja del cilindro.

En la actividad 413, la herramienta de reconfiguración para llave nueva puede reubicar la pluralidad de cremallera de modo que éstas queden alineadas a un nivel común.

10 Por ejemplo, cada cremallera puede tener un punto de referencia, y la inserción a fondo de la herramienta de reconfiguración para llave nueva puede hacer que cada punto de referencia se alinee a lo largo de una línea paralela a un eje de la caja del cilindro y/o del conjunto del cilindro insertable. Como otro ejemplo, haciendo referencia a FIG. 12, cada una de las partes en forma de bala 78 puede alinearse con las cavidades 111 de las cremalleras 92,

15 permitiendo que las cremalleras 92, y el portador 90, se desplacen en forma paralela al eje longitudinal de la caja de cilindro 10. Haciendo referencia a FIGS. 12 y 40, con las cremalleras 92 alineadas, una herramienta de engrane de barra de cerradura 360 puede insertarse en una abertura para herramienta de barra de cerradura 335 en la caja de cilindro 330 para hacer que la barra de cerradura 94 se engrane con cortes de las cremalleras 92,

20 evitando así el movimiento relativo entre las cremalleras y, consecuentemente, el movimiento relativo entre los pernos 113 engranados con las cremalleras 92.

En la actividad 414, con las cremalleras "cerradas" por la barra de cerradura 94, la herramienta de reconfiguración para llave nueva puede retirarse del conjunto de la cerradura. Entonces, el conjunto del cilindro insertable puede hacerse girar dentro de la caja del cilindro

25 hasta una posición de aprendizaje. Esta rotación puede ocurrir sin necesidad de usar una llave válida, y preferiblemente ocurre con el uso de cualquier llave. Haciendo referencia a FIGS. 13 y 14, cuando el conjunto del cilindro insertable se hace girar de aproximadamente 45 grados a aproximadamente 90 grados en sentido contrario a la agujas del reloj, la barra de cerradura es retenida en su engrane con las cremalleras.

30 En la actividad 415, con el conjunto del cilindro insertable en la modalidad de aprendizaje, las cremalleras pueden desengranarse de los pernos empujándolas hacia fuera de éstos. Haciendo referencia a FIGS. 13 y 14, una herramienta de reubicación del portador, tal como un sujetapapeles u otro dispositivo puntiagudo 162, puede insertarse en la abertura para herramienta 54 y empujarse contra el portador 90 para desplazar el portador 90 en

35 forma paralela al eje longitudinal del cilindro de cerradura 10 hasta que el fiador de resorte 96 entre en la primera cavidad para fiador 30, y el dispositivo puntiagudo 162 se retire. Con el fiador de resorte 96 dispuesto en la primera cavidad para fiador 30, el portador 90 es trabado en su lugar por el fiador de resorte 96, las cremalleras 92 se desengranan de los

pernos 113, y las cremalleras 92 son trabadas en su lugar por las partes parecidas a balas 78 (ilustradas en FIG. 6).

En la actividad 416 puede insertarse una llave nueva en el ojo de llave del conjunto del cilindro insertable. Al insertarse la llave nueva, los pernos pueden subir y bajar por las rampas de la llave. Una vez que la llave esté completamente insertada, las alturas de los pernos pueden correlacionarse con la nueva llave.

En la actividad 417, las cremalleras pueden volver a engranarse con los pernos. Haciendo referencia a FIGS. 13 y 14, la nueva llave puede hacerse rotar en el sentido de las agujas del reloj para liberar el fiador de resorte 96. Cuando el fiador de resorte 96 deja la primera cavidad para fiador 30, el portador 90 es orientado hacia la cara del cilindro insertable 44 por el resorte reactivo 98, lo que hace que las cremalleras 92 vuelvan a engranar los pernos 113. En este punto, el cilindro de cerradura 10 es reconfigurado para la llave nueva (es decir, la llave "nueva") y toda llave previamente válida 160 deja de operar el cilindro de cerradura 10. De este modo, la nueva llave se puede aprender hacienda rotar el conjunto del cilindro insertable fuera de la posición de aprendizaje.

De este modo, con la herramienta de reconfiguración para llave nueva, sin necesidad de una llave válida, el conjunto de cerradura puede colocarse en una modalidad de aprendizaje, en la cual pueda leer y conformarse a un perfil de una llave nueva, sin retirar el conjunto del cilindro insertable de la caja del cilindro.

FIG. 42 es una vista parcialmente despiezada de una realización ejemplar de una herramienta de reconfiguración para llave nueva 420 de la presente invención engranada con una realización ejemplar de un cilindro de cerradura 10 de la presente invención. La herramienta de reconfiguración para llave nueva 420 puede utilizarse para configurar un cilindro de cerradura que se adapte a cualquier corte de llave apropiado (a veces se le llama también "espaciador de paletones"), incluido el corte de llave de un competidor.

La herramienta de reconfiguración para llave nueva 420 puede ser esencialmente idéntica a la herramienta 310 (ilustrada en FIG. 31), excepto que la herramienta de reconfiguración para llave nueva 420 puede comprender un retén de portador 427, que está formado y/o dimensionado para llenar al menos parcialmente su abertura de herramienta correspondiente 332 en la caja de cilindro 330 (ilustrada en FIG. 39), por ejemplo, mientras que los extremos longitudinales 426 de los dientes 424 de la herramienta de reconfiguración para llave nueva estén engranados en las aberturas de cremalleras 103 (ilustradas en FIG. 17A) en un conjunto de portador dislocado 42 (ilustrado al menos en FIGS. 2, 4, 14).

Haciendo referencia a FIGS. 2 y 42, la herramienta de reconfiguración para llave nueva 420 puede impedir que el conjunto del portador dislocado 42 cuyas cremalleras 92 estén desengranadas (posiblemente debido a que todavía no se han insertado en el conjunto del portador 42) con sus pernos correspondientes 113, se desplace con respecto a la caja

del cilindro 12 y/o que vuelva a su posición original. Es decir, mediante la inserción de la herramienta de reconfiguración para llave nueva 420 en un cilindro de cerradura 10, un conjunto de portador 42 que se haya desplazado desde una posición "normal" hasta una posición "dislocada" puede ser retenido en su lugar con respecto a la caja de cilindro 12, permitiendo así que las cremalleras 92 que se hayan insertado en el conjunto de portador 42 permanezcan desengranadas de los pernos 113 hasta que la porción retén 427 del portador de la herramienta de reconfiguración para llave nueva 420 se quite de su abertura correspondiente en la caja de cilindro 12, y/o ya no la llene al menos parcialmente, y/o hasta que la herramienta de reconfiguración para llave nueva 420 se retire del cilindro de cerradura 10. La herramienta de reconfiguración para llave nueva 420 también puede alinear a un nivel determinado las cremalleras insertadas 92 y/o una parte de las cremalleras 92 insertadas.

La herramienta de reconfiguración para llave nueva 420 puede comprender una base 422 que tenga, por ejemplo, un segmento alargado anular o una forma de segmento alargado toroidal. Unidos a la base 422 puede haber una pluralidad de dientes 424 cada uno teniendo, por ejemplo, una forma alargada aproximadamente rectangular. Cada uno de los dientes 424 puede estar aproximadamente perpendicularmente unido a una superficie interior 423 de la base 422, y puede tener, por ejemplo, un extremo formado cóncavamente 426. A una superficie exterior 425 de la base 422 se le puede unir un picaporte 428 que tenga, por ejemplo, una forma rectangular alargada. Un eje longitudinal del picaporte 428 puede ser aproximadamente perpendicular y/o aproximadamente paralelo a un eje longitudinal de la base 422. En una realización alternativa (no ilustrada), la base 422 puede tener una forma alargada aproximadamente rectangular, o cualquier otra forma, siempre que la base 422 sirva para limitar una profundidad de inserción de la herramienta de reconfiguración para llave nueva 420 en el cilindro de cerradura. Como otra alternativa adicional, otra característica de la herramienta 420, tal como el retén 427 del portador, puede limitar la profundidad de su inserción.

Cada retén 427 del portador puede ser adyacente, contiguo y/o integral con un diente 424, y puede tener, por ejemplo, una forma rectangular alargada. La longitud de cada retén portador 427 puede ser menor que la de su diente correspondiente 424. Un ancho combinado de cada retén de diente/portador, como se mide en una dirección paralela al eje longitudinal de la caja del cilindro insertable y/o a lo largo de una línea donde la combinación del diente y retén del portador se une a la base 422, puede ser mayor que un ancho del diente 424. Haciendo referencia a las FIGS. 34-39, la orientación y el ancho de al menos una combinación de diente y retén de portador puede ser suficiente para llenar esencialmente al menos el ancho de su abertura para herramienta de reconfiguración para llave nueva correspondiente 332 en la caja de cilindro 330, evitando así que un conjunto de portador dislocado 42 (ilustrado al menos en FIGS. 2, 4, 14) regrese a su posición original.

Como se ilustra en FIGS. 28A y 28B, el perno 244 puede comprender dimensiones y forma estandarizadas, y puede comprender un solo diente 246, ubicado en una posición estándar. Como se ilustra en FIGS. 29A y 29B, la cremallera 250 puede tener un perfil de dientes que engranen con los pernos 246, y un espaciador que corresponda a los incrementos de profundidad (a veces denominado un "espaciador de paletones") del corte de la llave. El espaciador de dientes de la cremallera 250 puede adaptarse específicamente a las características de un fabricante, marca o modelo de llave y/o de conjunto de cerradura. Por ejemplo, las llaves y cerraduras Schlage tienden a tener un corte de llave con incrementos de 11 mil, mientras que Kwikset tiende a usar incrementos de corte de llave de 15 mil. Entonces, una cremallera 250 destinada a usar con una llave Schlage podría tener un espaciamiento de dientes de 11 mil, y una cremallera 250 destinada a usar con una llave Kwikset podría tener un espaciamiento de dientes de 15 mil.

Alternativamente, puede seleccionarse una cualquiera de dos cremalleras estándar para corresponder a una profundidad de corte de llave particular. Por ejemplo, suponiendo que Kwikset tienda a usar un incremento de corte de llave de 15 mil, una primera cremallera A estándar Kwikset podría tener una o más zonas de engrane de dientes (es decir valles) a, por ejemplo, 15 mils, 45 mils y 75 mils, según se la mida desde una posición conveniente, tal como un extremo de la cremallera. Una segunda cremallera B estándar Kwikset podría tener valles a 30 mils, 60 mils y 90 mils. De acuerdo con la profundidad del corte de una llave participar para un perno dado, podría elegirse la cremallera adecuada. Entonces, si una llave tenía una profundidad de corte de 60 mils, podría seleccionarse una cremallera B y usarse para el perno correspondiente.

FIG. 43 es un flujograma de una realización ejemplar de un método de reconfiguración para llave 430 de la presente invención.

En la actividad 432, el portador de cremallera puede empujarse fuera de los pernos, de modo que se desplace desde una posición "normal" hasta una posición "dislocada". Esto puede lograrse al insertar una herramienta de reubicación de portador, tal como un sujetapapel, en una abertura para herramienta de reubicación de portador que se encuentre en una cara frontal del cilindro insertable, de manera tal que la herramienta se engrane y empuje el portador hacia atrás. Con el portador dislocado, puede insertarse en aberturas en la caja del cilindro una herramienta de reconfiguración para llave nueva y/o una herramienta de alineamiento de cremalleras, tal como la que se ilustra en FIG. 42. Debido a que la herramienta de reconfiguración para llave nueva puede retener el portador en la posición dislocada, ahora se puede quitar la herramienta de reubicación del portador.

La profundidad de inserción de la herramienta de reconfiguración para llave nueva puede estar limitada por la geometría de la herramienta, tal como una forma de la base de la herramienta de reconfiguración o la longitud de un diente, y/o la geometría del cuerpo del cilindro y/o del conjunto del cilindro insertable. Por ejemplo, si la caja del cilindro tiene un

exterior circular alargado, una superficie interior y/o de contacto de la base de la herramienta de reconfiguración para llave nueva puede formarse como segmento anular alargado, cuyo radio interior se corresponda aproximadamente a un radio exterior de la caja del cilindro.

5 En la actividad 433, las cremalleras pueden seleccionarse para corresponder potencialmente a una llave y/o conjunto de cerradura de un fabricante, marca y/o modelo, y/o a un corte de llave correspondiente. Las cremalleras seleccionadas pueden insertarse en sus respectivas ranuras del conjunto portador. En la actividad 434, la herramienta de reconfiguración para llave nueva puede alinearse en las cremalleras insertadas.

10 En la actividad 435 puede insertarse una llave nueva en el ojo de llave del conjunto del cilindro insertable. Al insertarse la llave, los pernos pueden subir y bajar las rampas de la llave para aterrizar y/o alinearse con las partes planas de la llave. Una vez que la llave esté completamente insertada, las alturas de los pernos y/o los dientes de los pernos pueden correlacionarse con el perfil de la llave.

15 En las actividades 436 y 437, las cremalleras pueden engranarse con los pernos quitando la herramienta de reconfiguración para llave nueva, de modo que el resorte del portador oriente y/o reubique al portador de vuelta a su posición "normal".

En la actividad 438, la llave puede aprenderse rotando el conjunto del cilindro insertable fuera de la posición de aprendizaje.

20 Entonces, mediante la herramienta de reconfiguración para llave nueva, el conjunto de cerradura puede amarse para conformarse al perfil de una llave, sin retirar el conjunto del cilindro insertable de la caja del cilindro.

25 Las realizaciones ejemplares descritas anteriormente no deben interpretarse en sentido limitativo del alcance de la presente invención. Modificaciones y otras interpretaciones alternativas que se encuentren dentro del espíritu y alcance de la invención como se define en las reivindicaciones adjuntas resultarán evidentes.

Reivindicaciones:

1. Un sistema de reconfiguración de cerradura para llave nueva que comprende:

un cilindro de cerradura que comprende:

5 una caja del cilindro;

un conjunto de cilindro insertable dispuesto en dicha caja del cilindro y que comprende una pluralidad de pernos y una pluralidad de cremalleras que se corresponden individualmente para reubicar dicha pluralidad de pernos; y

10 una abertura receptora de herramienta de alineamiento de cremalleras definida por dicho cilindro de cerradura; y

una herramienta de alineamiento de cremalleras que comprende:

una placa base; y

15 una pluralidad de dientes alargados espaciados, cada diente de dicha pluralidad de dientes comprende un primer extremo longitudinal adaptado para engranarse con una cremallera correspondiente de dicha pluralidad de cremalleras, cada diente de dicha pluralidad de dientes dimensionado en sentido longitudinal para reubicar en una primera posición predeterminada dicha cremallera correspondiente de una pluralidad de cremalleras, cada diente de dicha pluralidad de dientes comprende un
20 segundo extremo longitudinal conectado a dicha placa base.

25 donde dicha herramienta de alineamiento de cremalleras está adaptada para retener un conjunto portador que comprende dicha pluralidad de cremalleras en una posición desengranada donde dicha pluralidad de cremalleras está desengranada de dicha pluralidad de pernos.

2. El sistema de reconfiguración de cerradura para llave nueva de la reivindicación 1, donde cada una de dicha pluralidad de dientes tiene una longitud esencialmente
30 idéntica.

3. El sistema de reconfiguración de cerradura para llave nueva de la reivindicación 1, donde una distancia de inserción de dicha pluralidad de dientes está restringida por un contacto de dicha placa base con dicho cilindro de cerradura.

4. El sistema de reconfiguración de cerradura para llave nueva de la reivindicación 1, donde para cada cremallera de dicha pluralidad de cremalleras, un eje longitudinal de dicha cremallera es paralelo y no coaxial con respecto a un eje longitudinal del perno correspondiente a dicha cremallera.
- 5 5. El sistema de reconfiguración de cerradura para llave nueva de la reivindicación donde dicho conjunto de cilindro insertable comprende además un conjunto portador desplazable paralelo a un eje longitudinal de la caja del cilindro, y dicho conjunto portador comprende dicha pluralidad de cremalleras.
6. El sistema de reconfiguración de cerradura para llave nueva de la reivindicación 1, donde cada perno comprende al menos un diente.
- 10 7. El sistema de reconfiguración de cerradura para llave nueva de la reivindicación 1, donde cada cremallera comprende al menos un diente.
8. El sistema de reconfiguración de cerradura para llave nueva de la reivindicación 1, donde cada cremallera comprende al menos un diente espaciado a una distancia determinada de un extremo de dicha cremallera.
- 15 9. El sistema de reconfiguración de cerradura para llave nueva de la reivindicación 1, donde cada cremallera comprende al menos un diente espaciado a una distancia determinada de un extremo de dicha cremallera, y dicha distancia depende de la marca de la cerradura.
- 20 10. El sistema de reconfiguración de cerradura para llave nueva de la reivindicación 1, donde cada cremallera comprende al menos un diente espaciado a una distancia determinada de un extremo de dicha cremallera, y dicha distancia depende de la profundidad de la llave de un fabricante.
- 25 11. Una herramienta de reconfiguración para un cilindro de cerradura que comprende una caja de cilindro y un conjunto de cilindro insertable dispuesto en la caja del cilindro y comprende una pluralidad de pernos y una pluralidad de cremalleras que se corresponden individualmente para reubicar los pernos, dicho cilindro de cerradura define una abertura receptora de herramienta, y dicha herramienta de reconfiguración de llave comprende:

30 una placa base que define una primera cara y una segunda cara, dicha primera cara opuesta a dicha segunda cara;

una pluralidad de dientes alargados espaciados, cada diente de dicha pluralidad de dientes comprende un primer extremo longitudinal cóncavo dispuesto en una primera porción de dicho diente y adaptado para engranarse con una parte correspondiente de la pluralidad de cremalleras, cada diente de dicha pluralidad de
- 35

dientes define un eje longitudinal y está dimensionado longitudinalmente para reubicar la que corresponda de la pluralidad de cremalleras en una primera posición predeterminada, cada diente de dicha pluralidad de dientes comprende un segundo extremo longitudinal dispuesto en una segunda parte de dicho diente y conectado a dicha placa base, dicha segunda parte tiene una sección transversal axial más ancha que dicha primera porción; y

un picaporte conectado a dicha segunda fase de dicha placa base.

12. La herramienta de reconfiguración de cerradura para llave nueva de la reivindicación 11, donde cada uno de dichos dientes está perpendicularmente conectado a dicha primera cara.

13. La herramienta de reconfiguración de cerradura para llave nueva de la reivindicación 11, donde cada una de dicha pluralidad de dientes tiene una longitud esencialmente idéntica.

14. La herramienta de reconfiguración de cerradura para llave nueva de la reivindicación 11, donde dicha primera cara es paralela a dicha segunda cara.

15. La herramienta de reconfiguración de cerradura para llave nueva de la reivindicación 11, donde dicha placa base define un segmento de un anillo.

16. La herramienta de reconfiguración de cerradura para llave nueva de la reivindicación 11, donde dicho picaporte está perpendicularmente conectado a dicha segunda cara de dicha placa base.

17. Un método para reconfigurar un cilindro de cerradura para llave nueva que comprende una caja de cilindro y un conjunto de cilindro insertable dispuesto en la caja del cilindro, dicho conjunto de cilindro insertable comprende una pluralidad de pernos y una pluralidad de cremalleras que se corresponden individualmente para reubicar dichos pernos, dicho cilindro de cerradura define una abertura receptora de herramienta, que comprenden las actividades de:

cuando la pluralidad de cremalleras no está engranada con la pluralidad de pernos:

alinear la pluralidad de cremalleras a un primer nivel predeterminado; y

después de alinear la llave en el conjunto del cilindro insertable, engranar la pluralidad de cremalleras con la pluralidad de pernos.

después de insertar la llave en el conjunto de cilindro insertable, engranar la pluralidad de cremalleras con la pluralidad de pernos.

18. El método para reconfigurar un cilindro de cerradura para llave nueva de la reivindicación 17, que comprende además la actividad de:
- insertar una herramienta de dislocación de portador en una abertura de una cara del conjunto de cilindro insertable.
- 5 19. El método para reconfigurar un cilindro de cerradura para llave nueva de la reivindicación 17, que comprende además la actividad de:
- desplazar un portador de una primera posición a una segunda posición, el portador adaptado para engranar la pluralidad de cremalleras.
- 10 20. El método para reconfigurar un cilindro de cerradura para llave nueva de la reivindicación 17, que comprende además la actividad de:
- insertar una herramienta de alineamiento de cremallera en la abertura receptora de herramienta.
21. El método para reconfigurar un cilindro de cerradura para llave nueva de la reivindicación 17, que comprende además la actividad de:
- 15 22. El método para reconfigurar un cilindro de cerradura para llave nueva de la reivindicación 17, que comprende además la actividad de:
- colocar cada una de la pluralidad de cremalleras en una ranura de una pluralidad de cremalleras que se corresponde individualmente definida por un portador.
- 20 23. El método para reconfigurar un cilindro de cerradura para llave nueva de la reivindicación 17, que comprende además la actividad de:
- quitar una herramienta de alineamiento de cremallera de la abertura receptora de herramienta.
- 25 24. El método para reconfigurar un cilindro de cerradura para llave nueva de la reivindicación 17, que comprende además la actividad de:
- alinear cada perno de la pluralidad de pernos con una cara plana correspondiente de la llave.
- 30 25. El método para reconfigurar un cilindro de cerradura para llave nueva de la reivindicación 17, que comprende además la actividad de:
- desplazar un portador de una segunda posición a una primera posición.

26. El método para reconfigurar un cilindro de cerradura para llave nueva de la reivindicación 17, que comprende además la actividad de:

aprender la llave.

5 27. Un método para reconfigurar un cilindro de cerradura para llave nueva que comprende una caja de cilindro y un conjunto de cilindro insertable dispuesto en la caja del cilindro, dicho conjunto de cilindro insertable comprende una pluralidad de pernos y una pluralidad de cremalleras que se corresponden individualmente para reubicar dichos pernos, dicho cilindro de cerradura define una abertura receptora de herramienta, que comprenden las actividades de:

10 desplazar un portador comprendido por dicho cilindro de cerradura de una primera posición a una segunda posición, el portador adaptado para engranar al menos una cremallera;

insertar una herramienta de alineamiento de cremallera en la abertura receptora de herramienta.

15 recibir al menos una cremallera en al menos una ranura correspondiente definida por el portador;

insertar una llave en el conjunto del cilindro insertable;

desplazar el conjunto del portador de la segunda posición a la primera posición; y

20 engranar al menos una cremallera con un perno correspondiente de la pluralidad de pernos;

28. El método para reconfigurar un cilindro de cerradura para llave nueva de la reivindicación 27, que comprende además la actividad de:

aprender la llave.

25 29. El método para reconfigurar un cilindro de cerradura para llave nueva de la reivindicación 27, que comprende además la actividad de:

quitar una herramienta de alineamiento de cremallera de la abertura receptora de herramienta.

30 30. El método para reconfigurar un cilindro de cerradura para llave nueva de la reivindicación 27, donde la herramienta de alineamiento de cremalleras comprende:

una placa base; y

una pluralidad de dientes alargados espaciados, cada diente de dicha

pluralidad de dientes comprende un primer extremo longitudinal adaptado para engranarse con una cremallera correspondiente de dicha pluralidad de cremalleras, cada diente de dicha pluralidad de dientes dimensionado en sentido longitudinal para reubicar en una primera posición predeterminada dicha cremallera correspondiente de una pluralidad de cremalleras, cada diente de dicha pluralidad de dientes comprende un segundo extremo longitudinal conectado a dicha placa base.

5

31. El método para reconfigurar un cilindro de cerradura para llave nueva de la reivindicación 27, donde la herramienta de alineamiento de cremalleras comprende:

una placa base; y

10

una pluralidad de dientes alargados espaciados, cada diente de dicha pluralidad de dientes comprende un primer extremo longitudinal adaptado para engranarse con una cremallera correspondiente de dicha pluralidad de cremalleras, cada diente de dicha pluralidad de dientes dimensionado en sentido longitudinal para reubicar en una primera posición predeterminada dicha cremallera correspondiente de una pluralidad de cremalleras, cada diente de dicha pluralidad de dientes comprende un segundo extremo longitudinal conectado a dicha placa base.

15

donde dicha herramienta de alineamiento de cremallera está adaptada para retener un portador engranable con dicha pluralidad de cremalleras en una posición desengranada.

20

RESUMEN

5 Ciertas realizaciones ejemplares de la presente invención proporcionan un sistema de reconfiguración de cerradura para llave nueva que comprende: un cilindro de cerradura que comprende: una caja de cilindro; un cilindro insertable dispuesto en dicha caja de cilindro y comprendiendo una pluralidad de pernos y una pluralidad de cremalleras que se corresponden individualmente con cada perno para reubicar dicha pluralidad de pernos; y una herramienta de alineamiento de cremallera que recibe una abertura definida por dicho cilindro de cerradura; y una herramienta de alineamiento de cremallera que comprende: una placa base; y una pluralidad de dientes alargados espaciados,
 10 cada diente de dicha pluralidad de dientes comprende un primer extremo longitudinal adaptado para engranarse con una cremallera correspondiente de dicha pluralidad de cremalleras, cada diente de dicha pluralidad de dientes dimensionado en sentido longitudinal para reubicarse en una primera posición predeterminada dicha cremallera correspondiente de una pluralidad de cremalleras, cada diente de dicha pluralidad de
 15 dientes comprende un segundo extremo longitudinal conectado a dicha placa base, donde dicha herramienta de alineamiento de cremalleras está adaptada para restringir un conjunto portador que comprende dicha pluralidad de cremalleras en una posición desengranada donde dicha pluralidad de cremalleras está desengranada de dicha pluralidad de pernos. Se hace notar que este resumen se presenta a fin de cumplir con
 20 las reglas que requieren un resumen que permita que un investigador u otro lector determine rápidamente el asunto de la memoria técnica. Este resumen se presenta con el entendimiento de que no se utilizará para interpretar ni limitar el alcance o el significado de las reivindicaciones. 37 CFR 1,72(b).

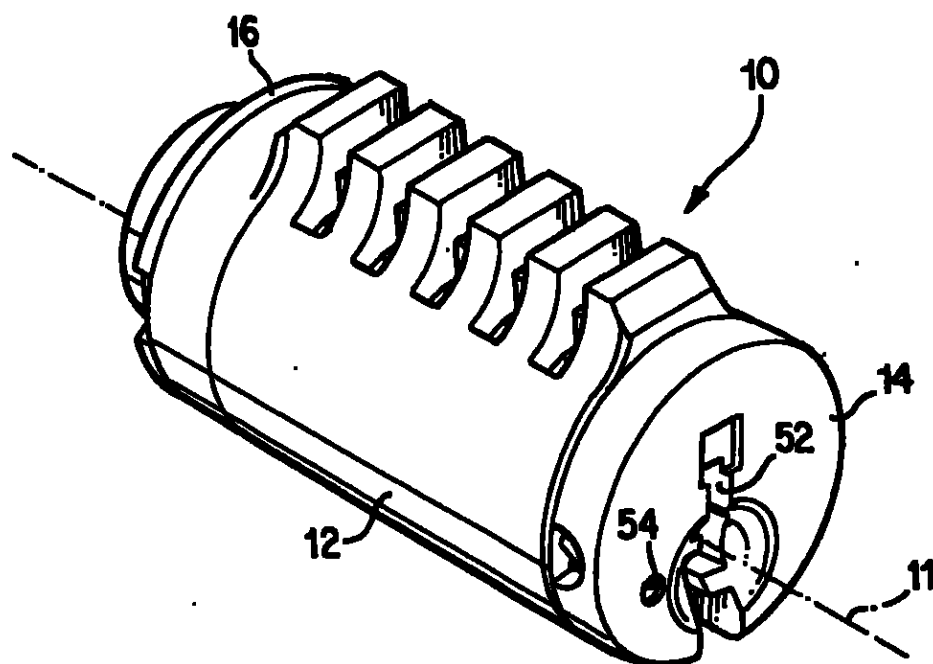


FIG. 1

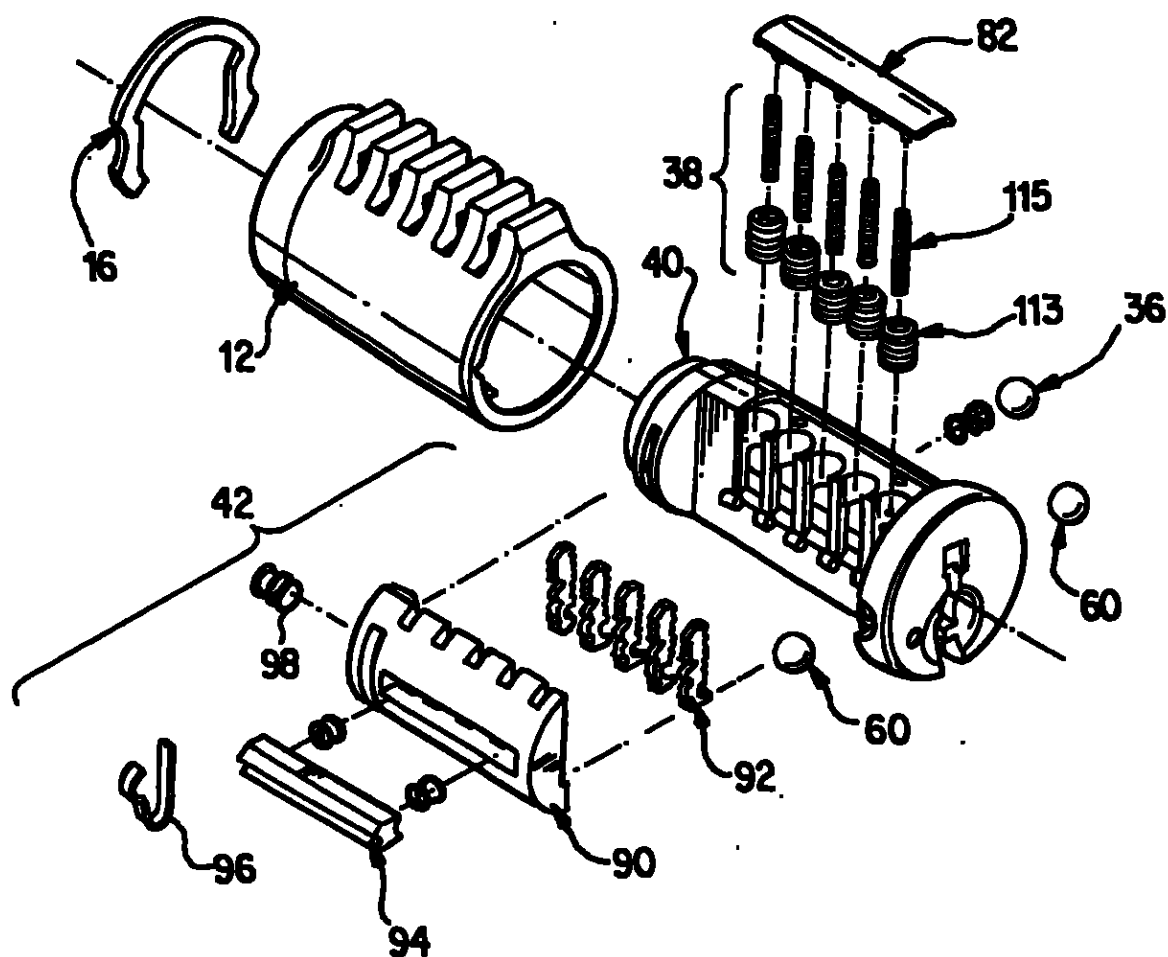


FIG. 2

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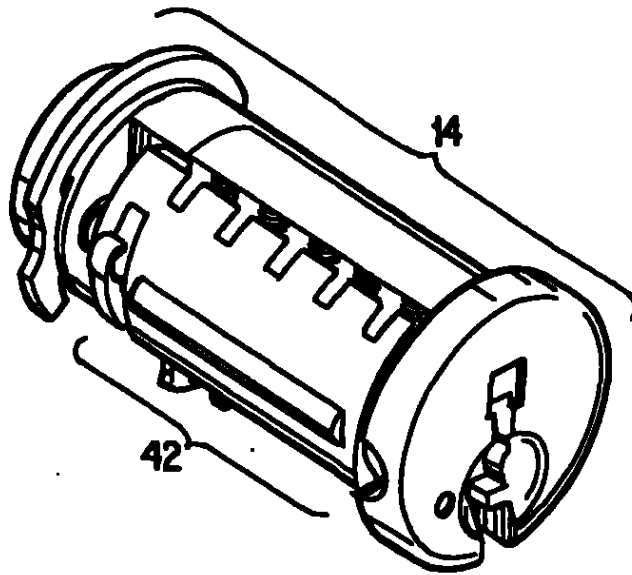


FIG. 3

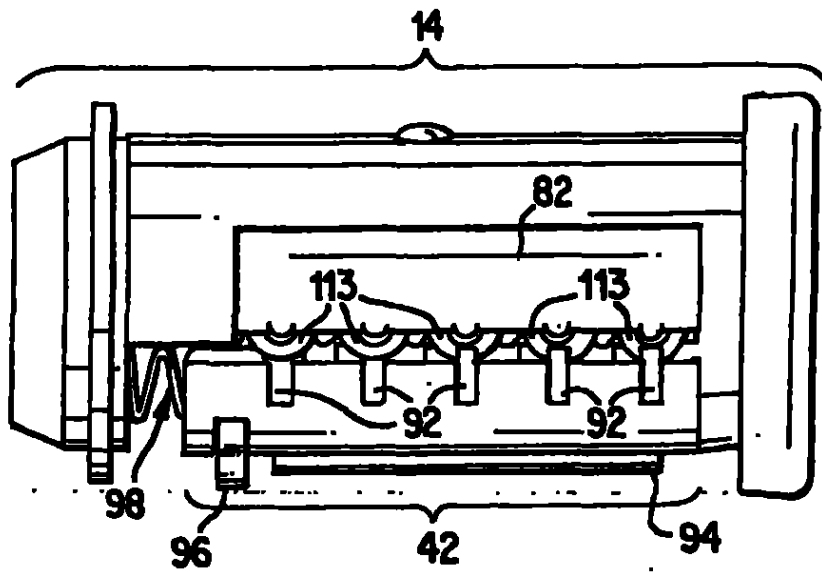


FIG. 4

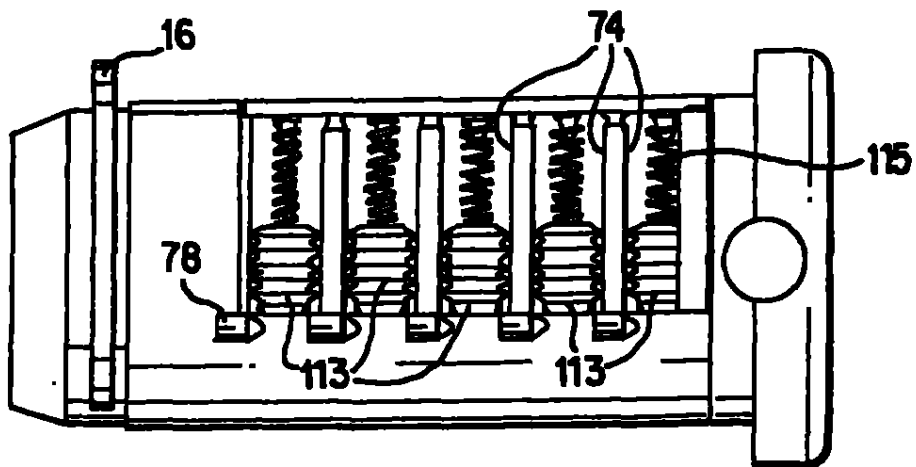


FIG. 5

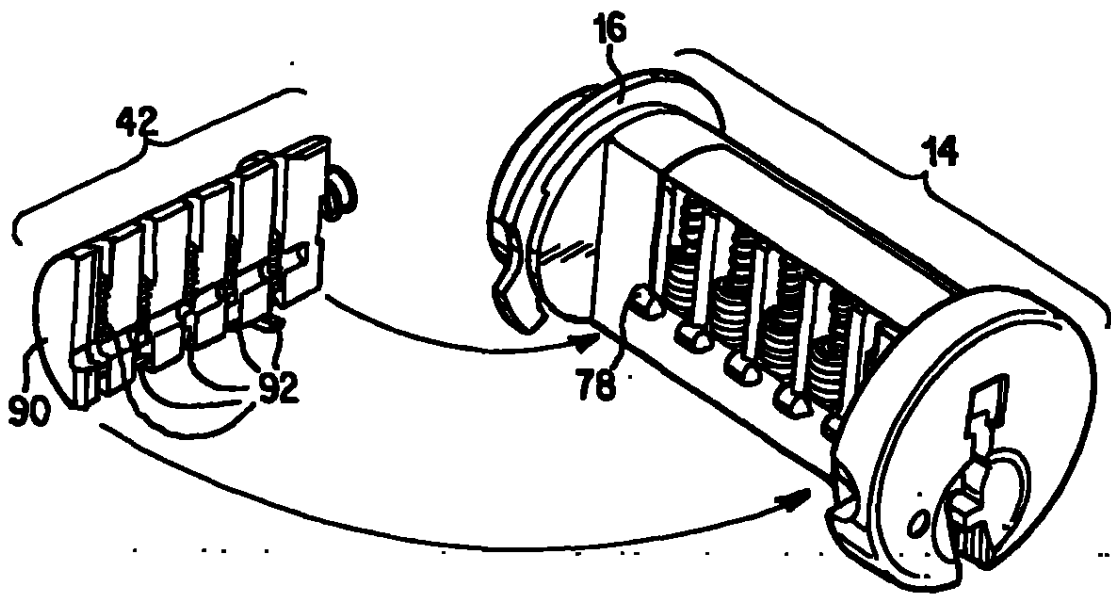


FIG. 6

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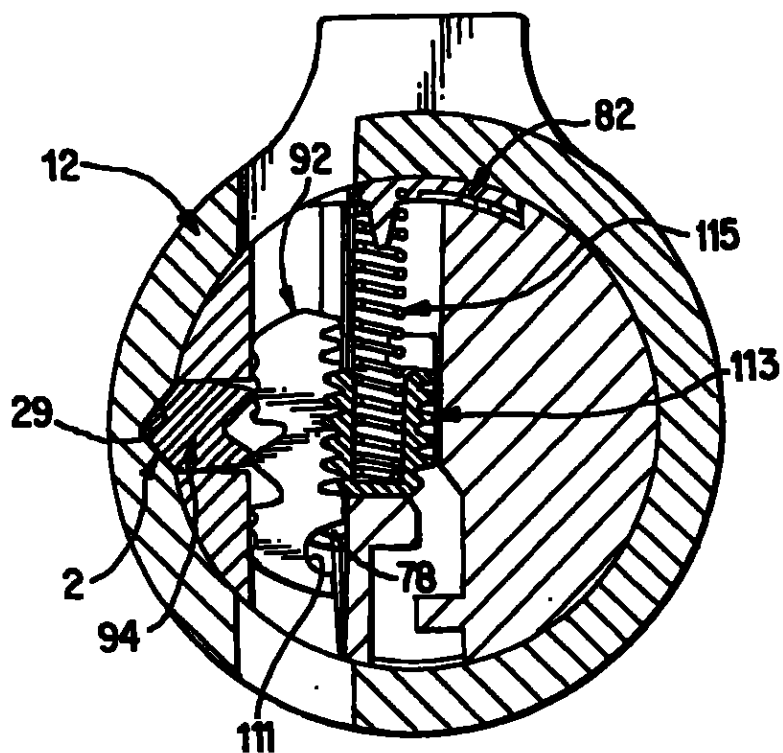


FIG. 7

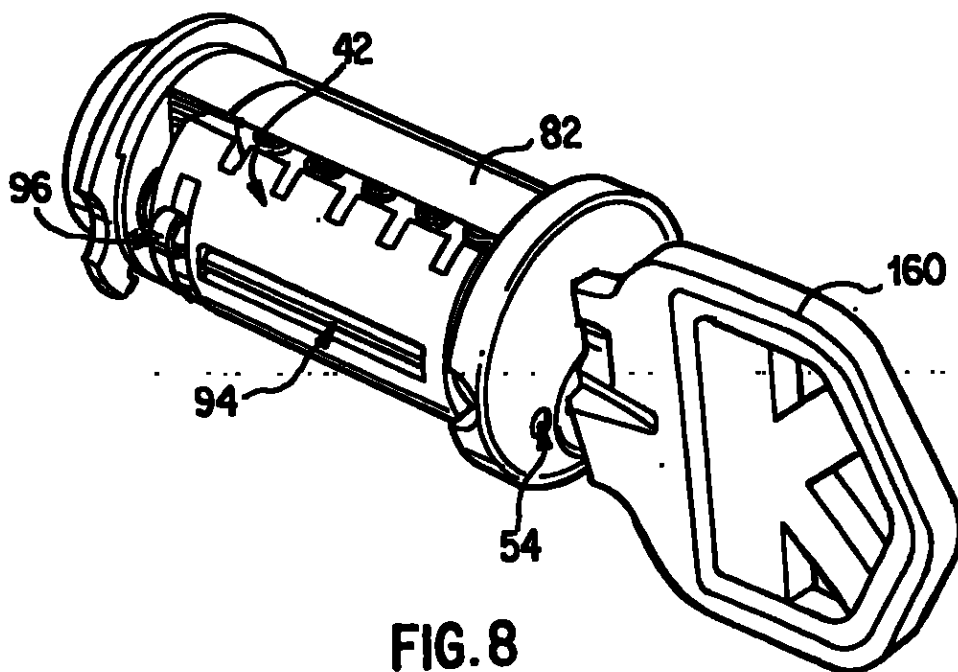


FIG. 8

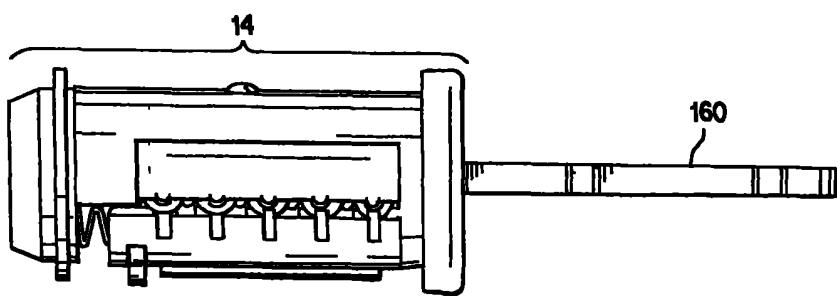
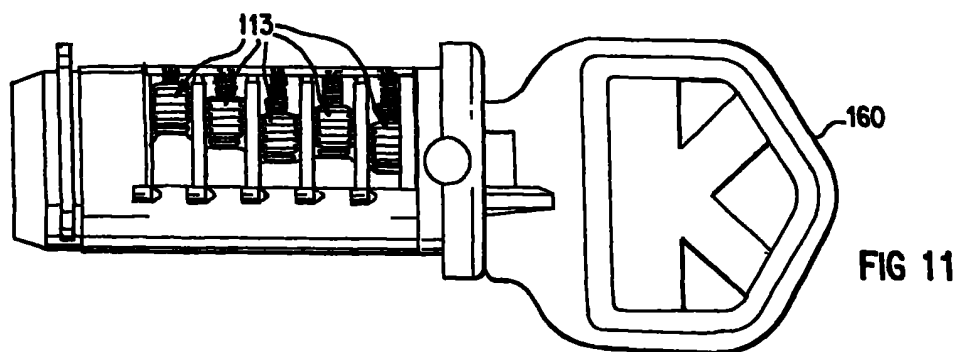
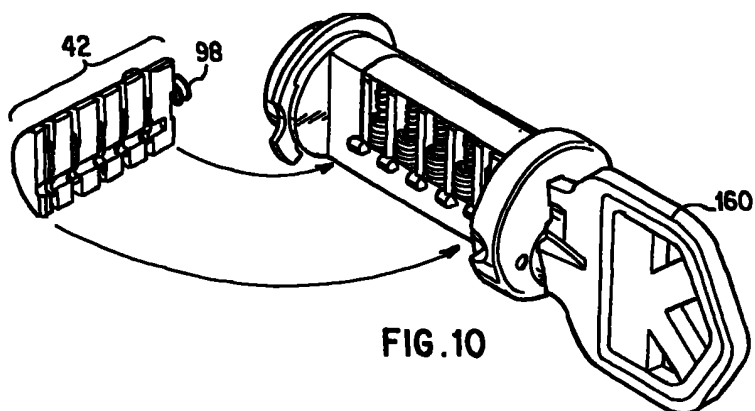


FIG. 9



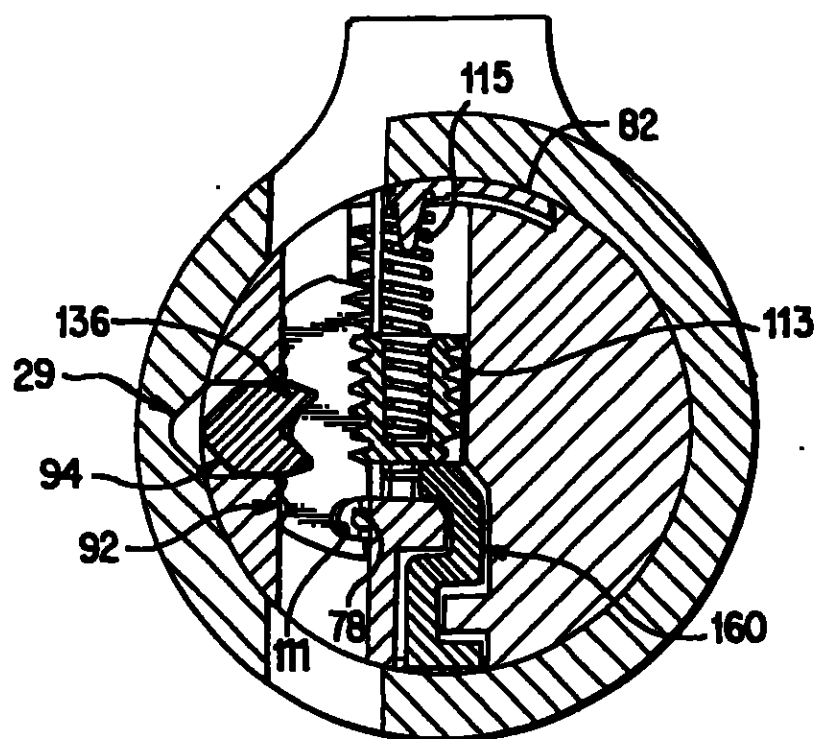


FIG. 12

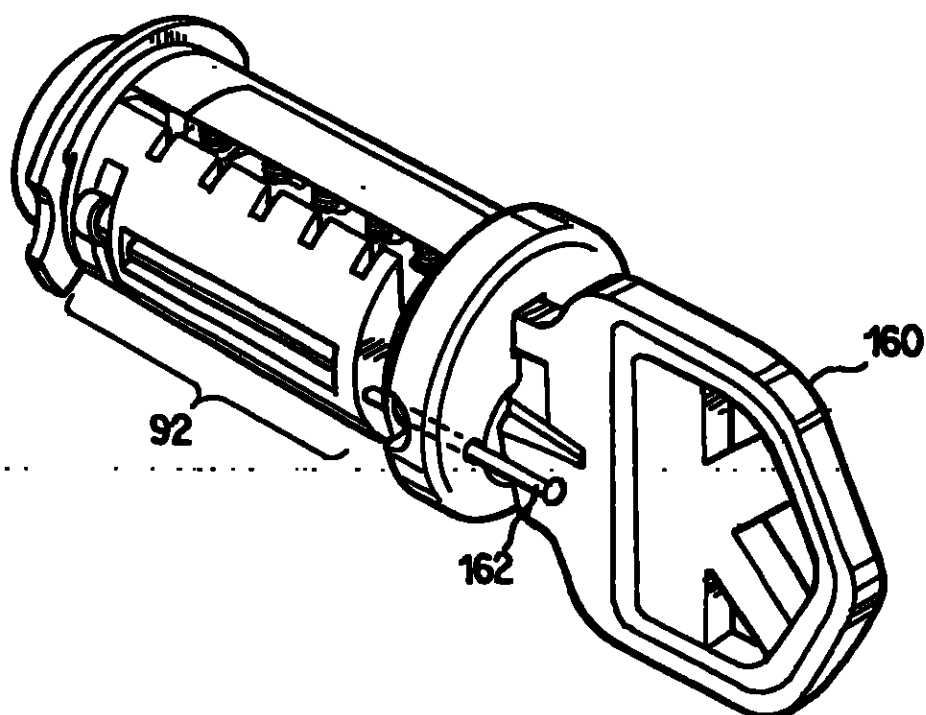


FIG. 13

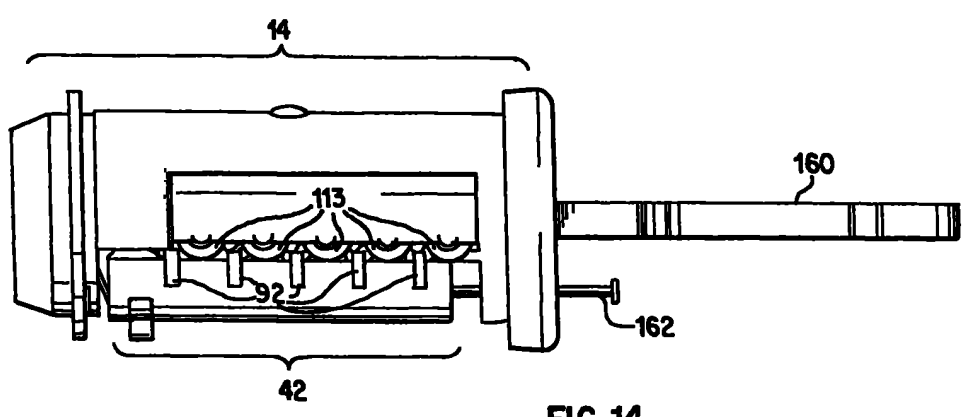
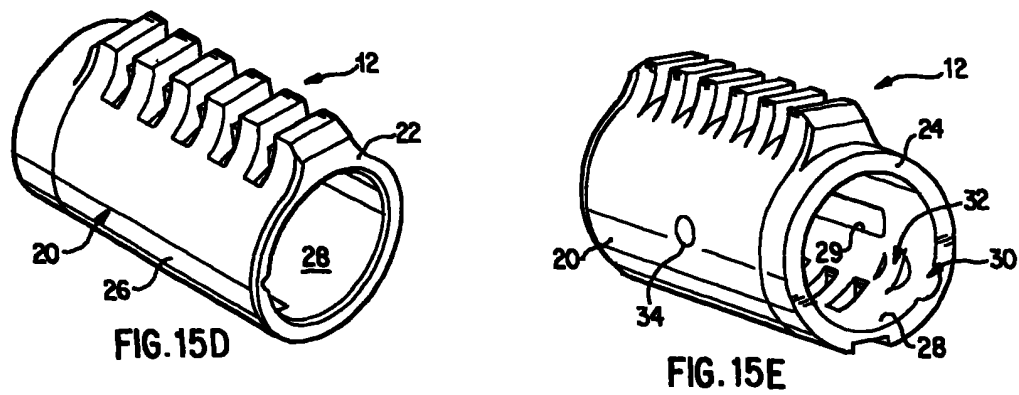
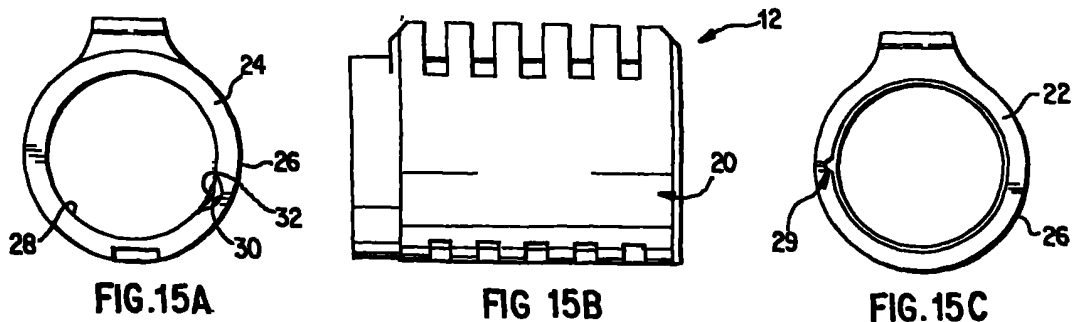
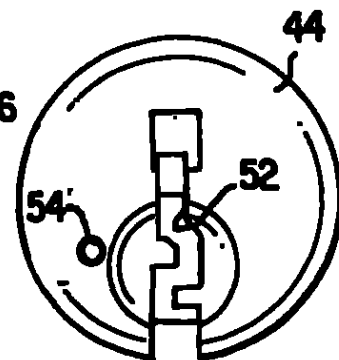
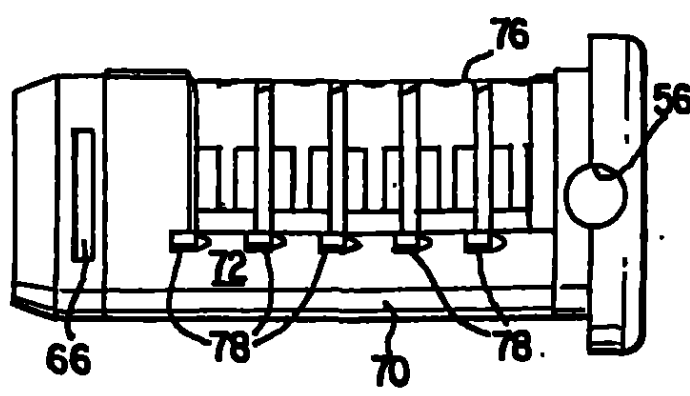
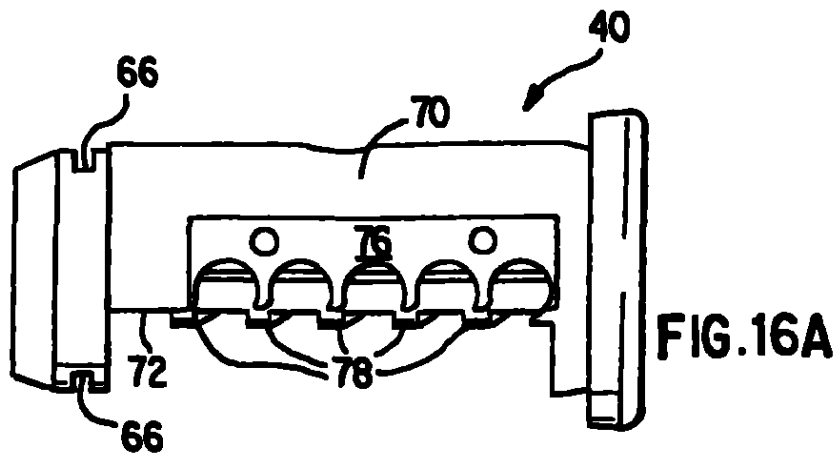


FIG. 14





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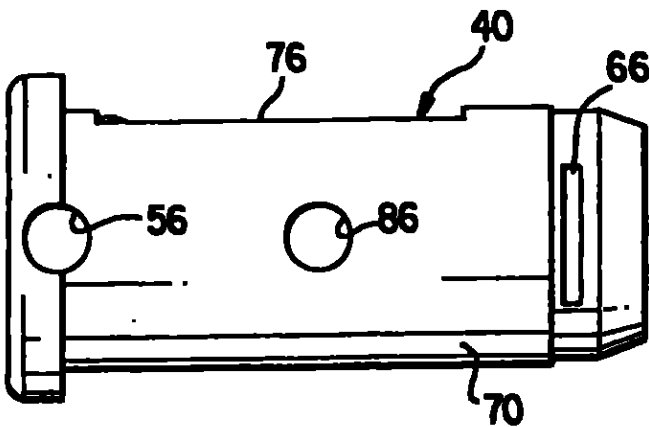
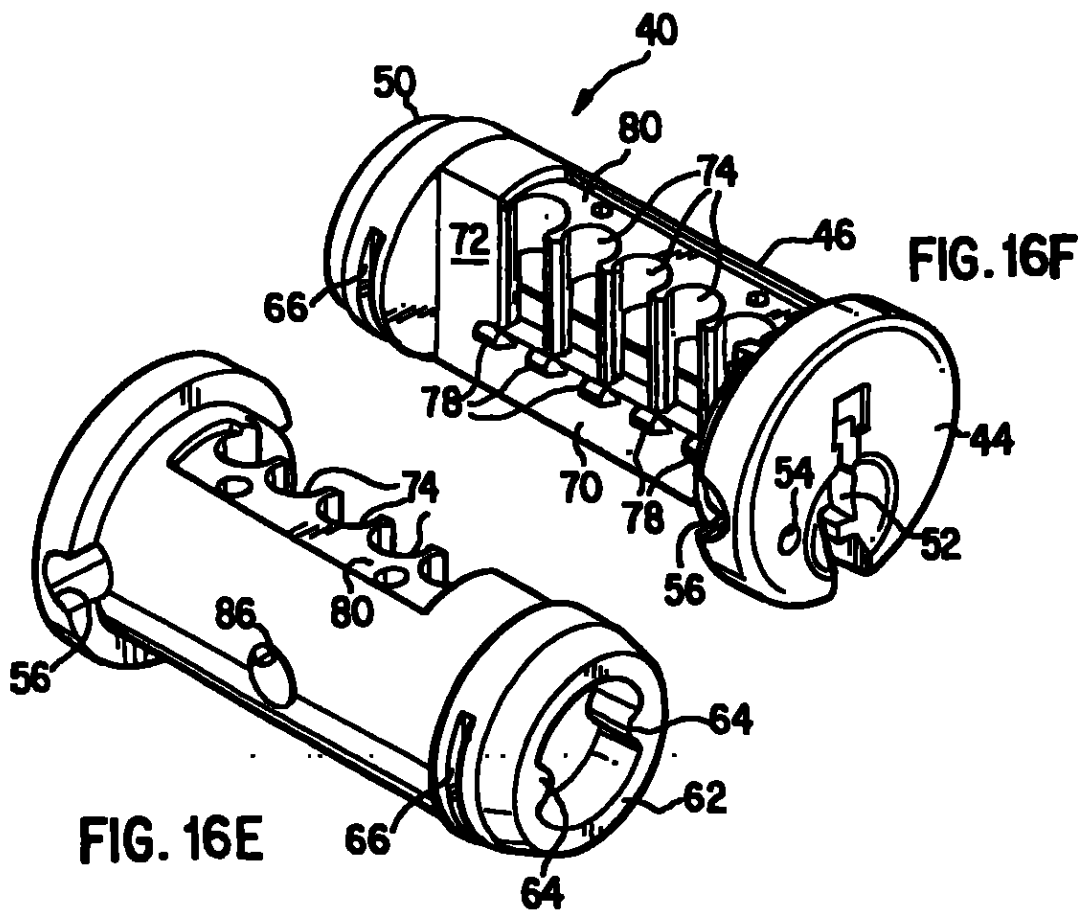


FIG. 16D



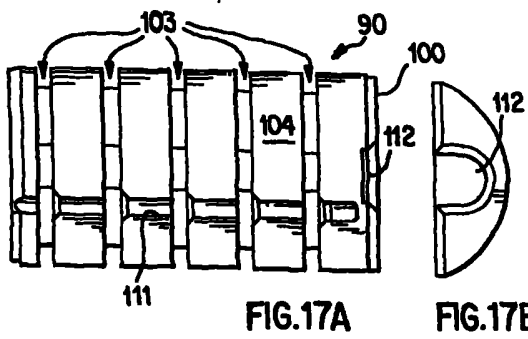


FIG. 17B

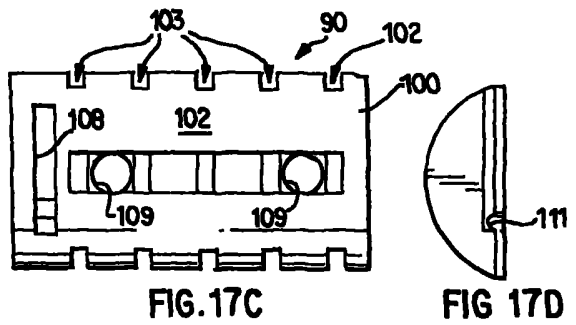
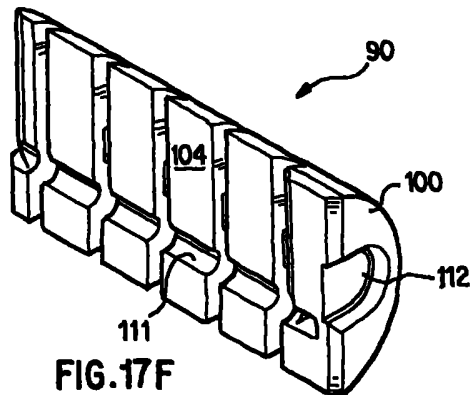
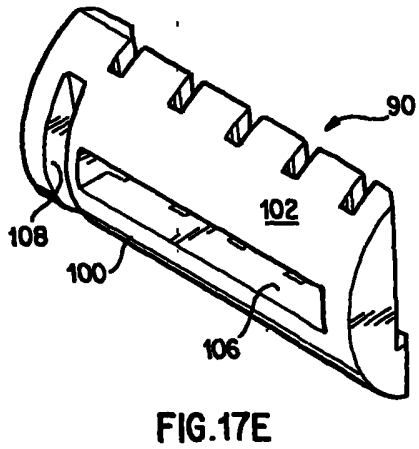


FIG. 17D



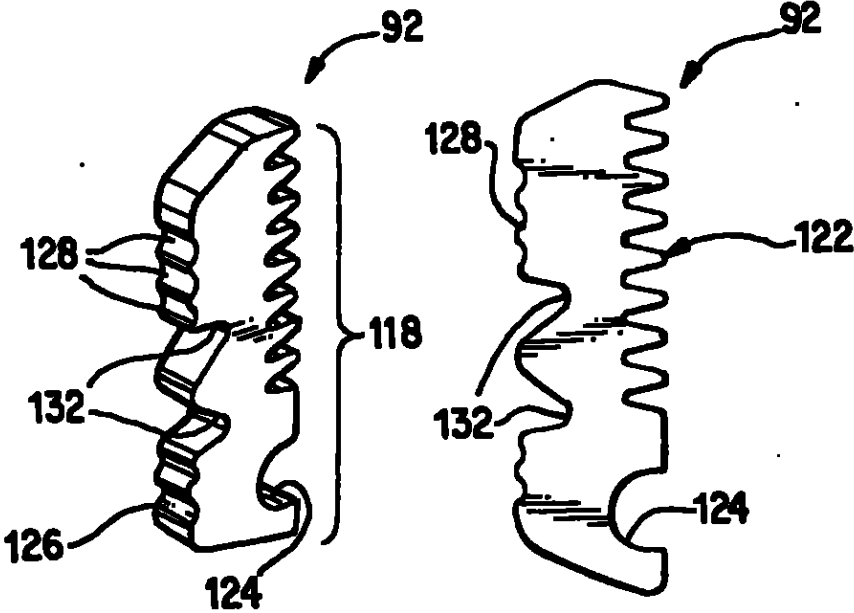


FIG. 18A

FIG. 18B

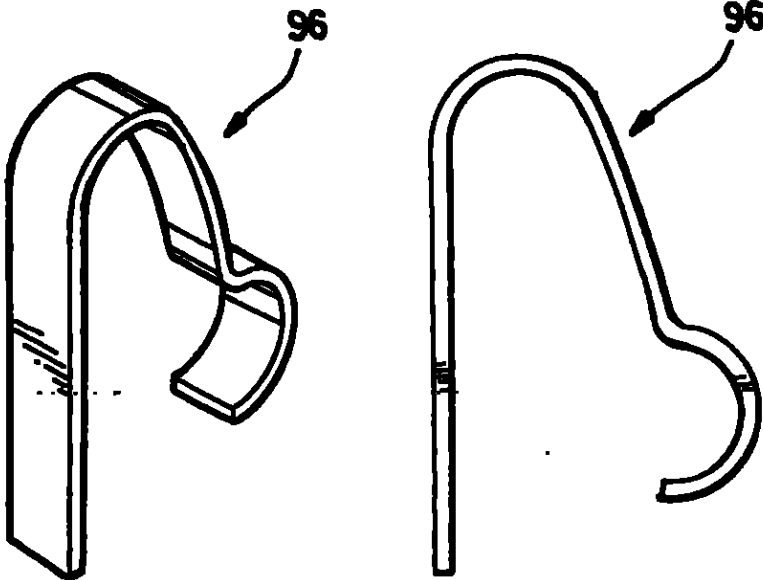


FIG. 19A

FIG. 19B

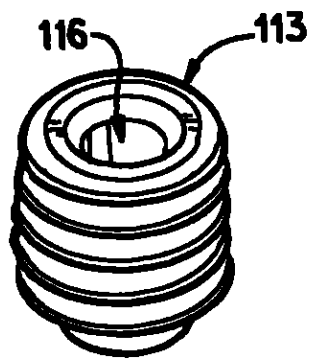


FIG. 20A

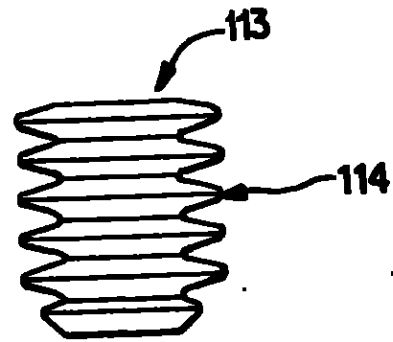


FIG. 20B

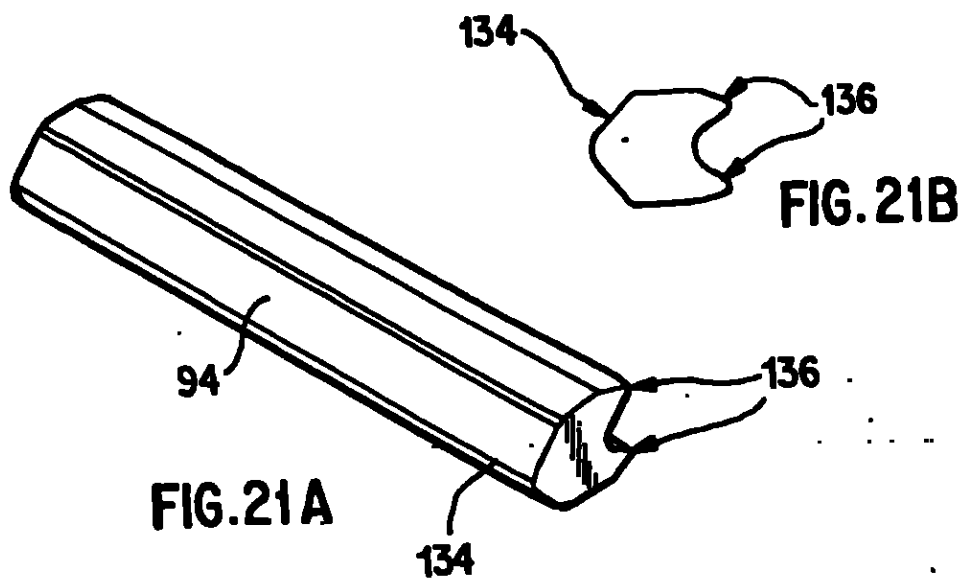
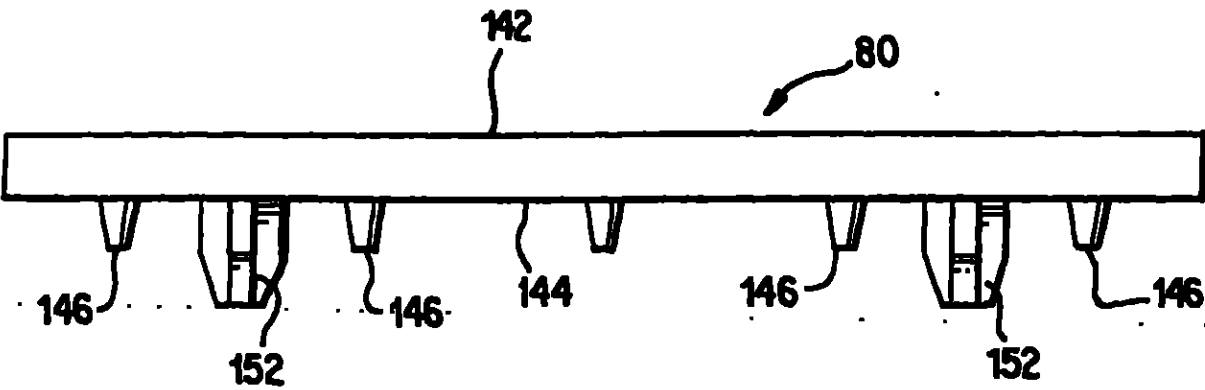
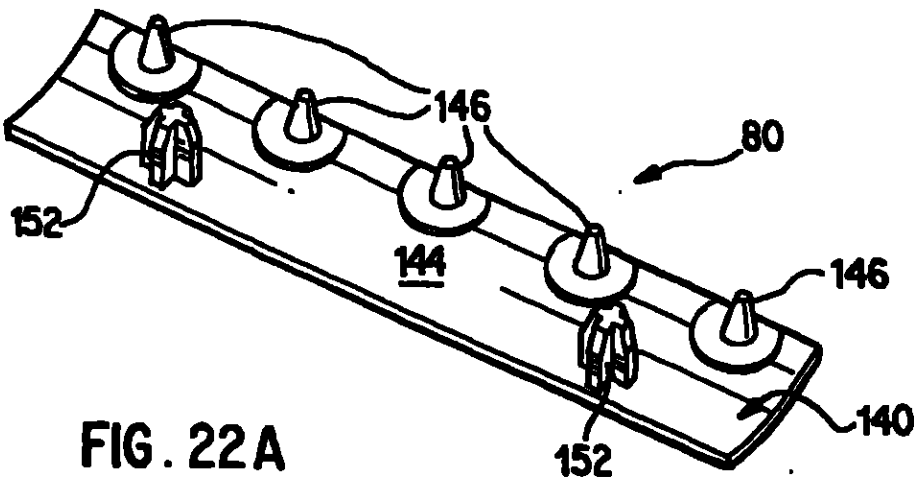


FIG. 21A

FIG. 21B

~~16~~
b8



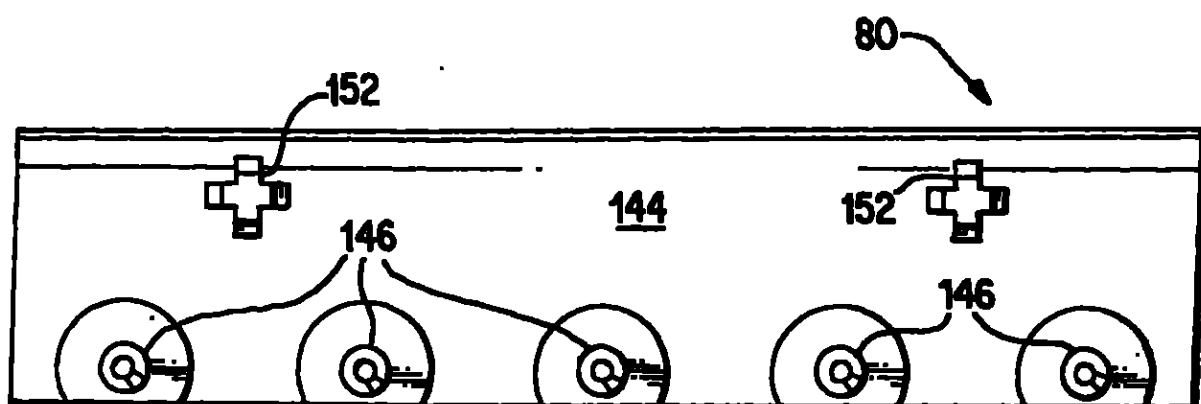


FIG. 22C

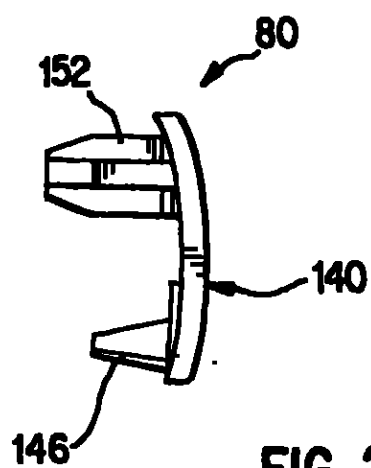


FIG. 22D

10

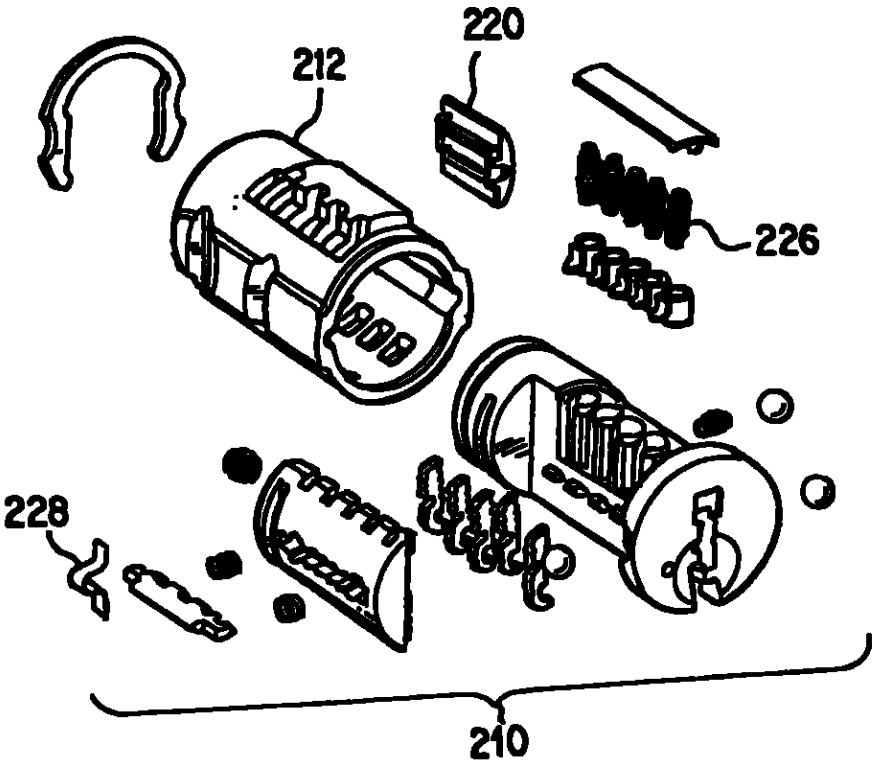


FIG. 23

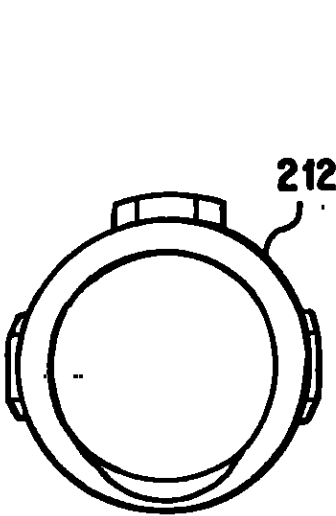


FIG. 24A

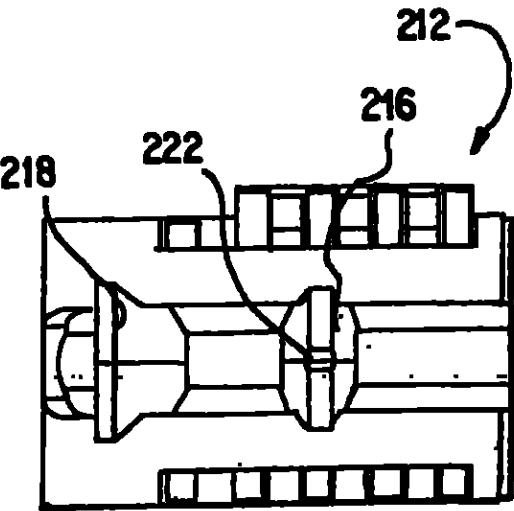


FIG. 24B

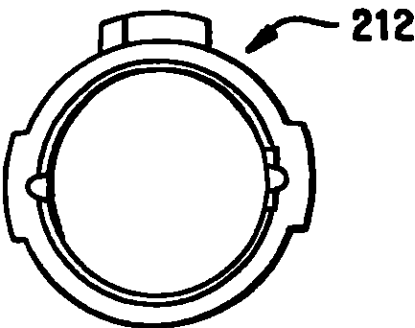


FIG. 24C

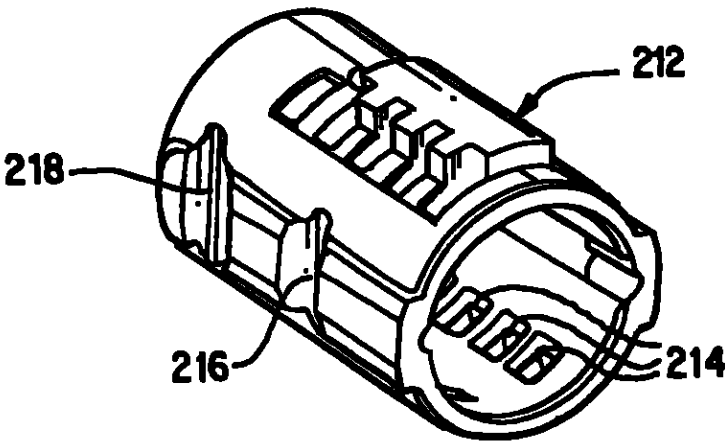


FIG. 24D

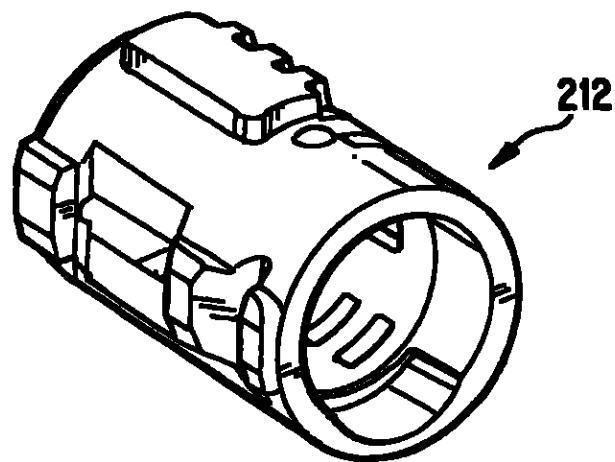


FIG. 24E

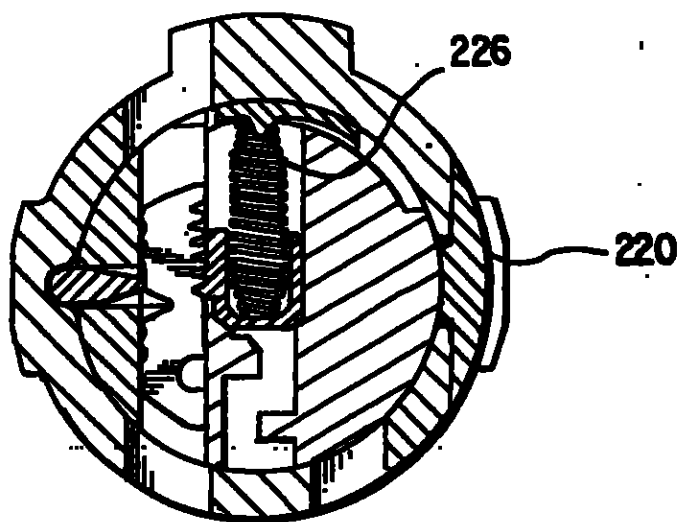


FIG. 25

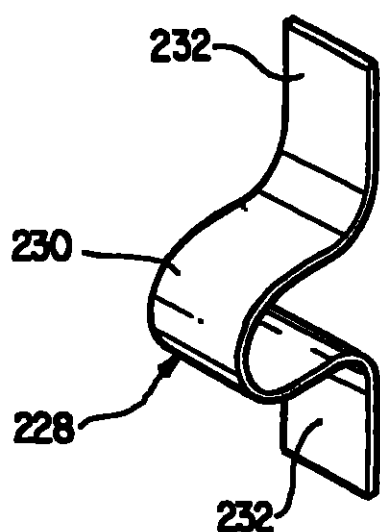


FIG. 26A

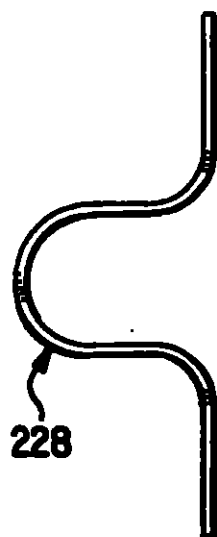


FIG. 26B

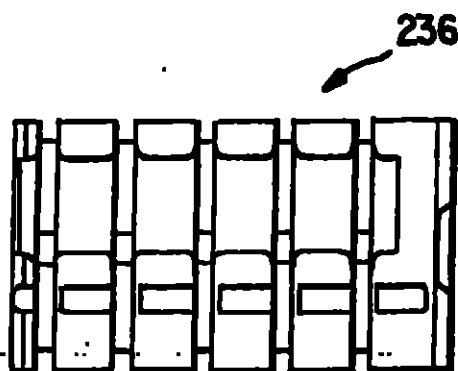


FIG. 27A

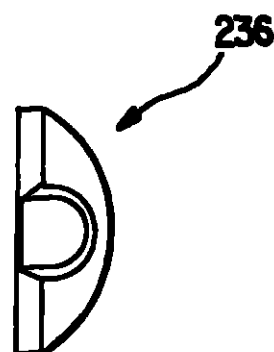


FIG. 27B

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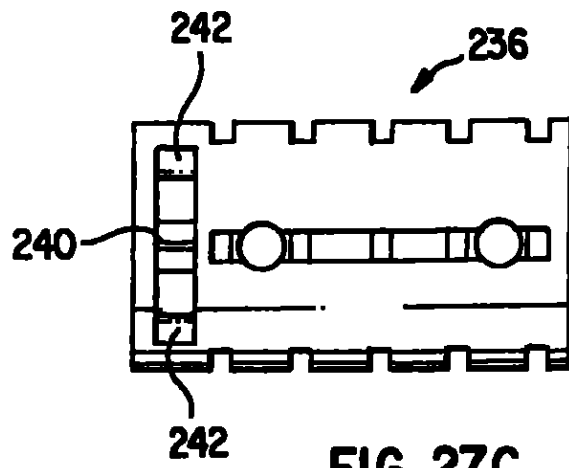


FIG. 27C

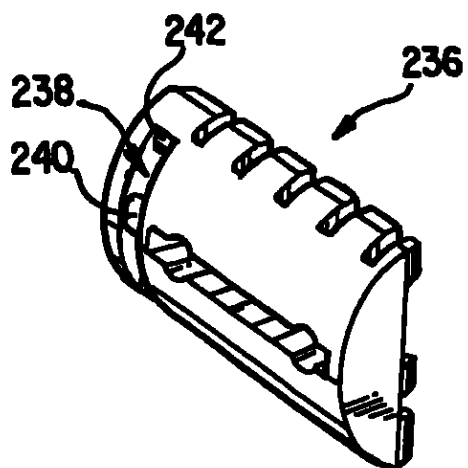


FIG. 27D

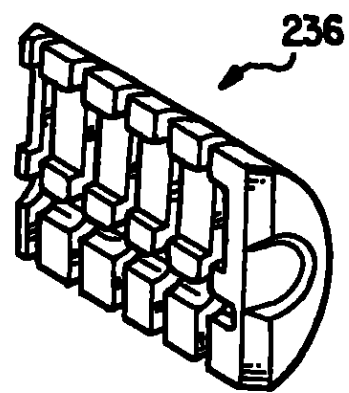


FIG. 27E

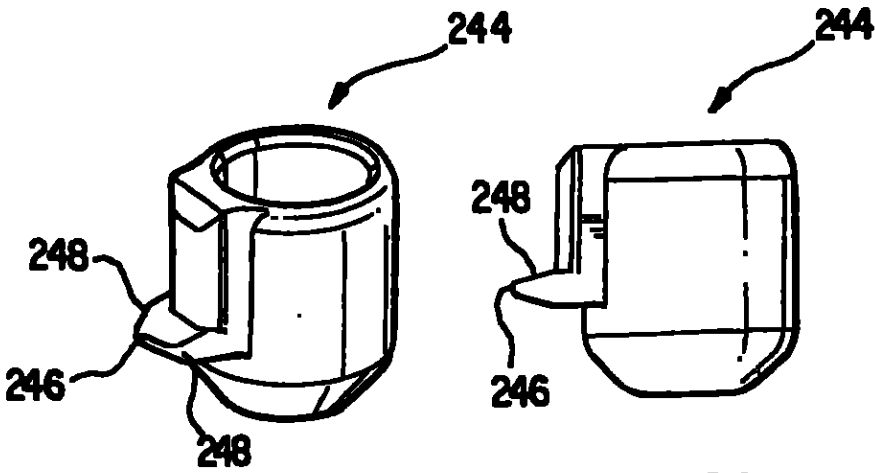
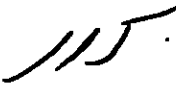


FIG. 28A

FIG. 28B

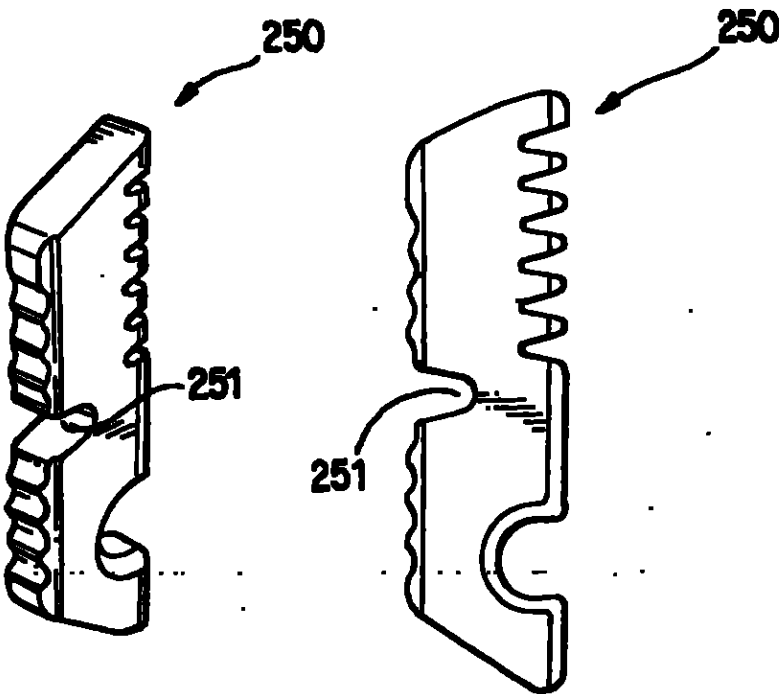


FIG. 29A

FIG. 29B

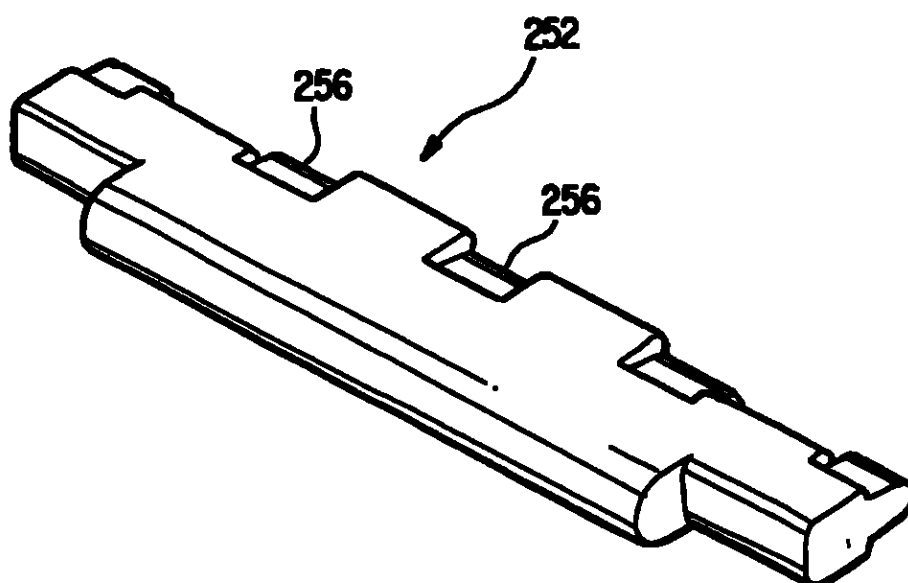


FIG. 30A

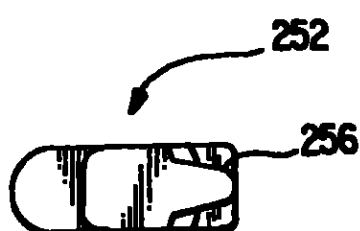
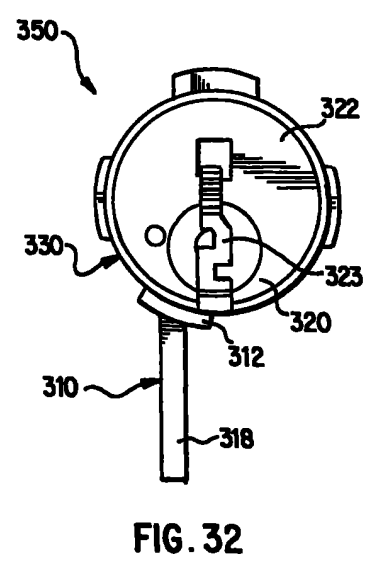
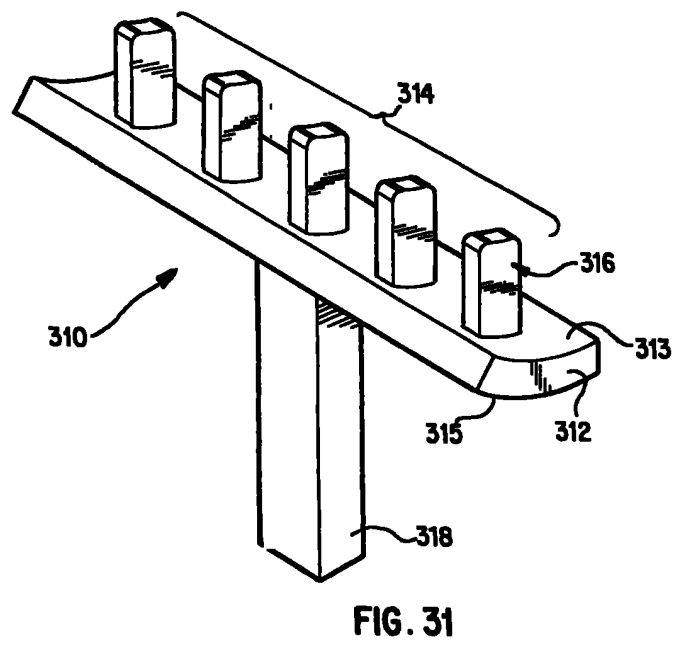


FIG. 30B



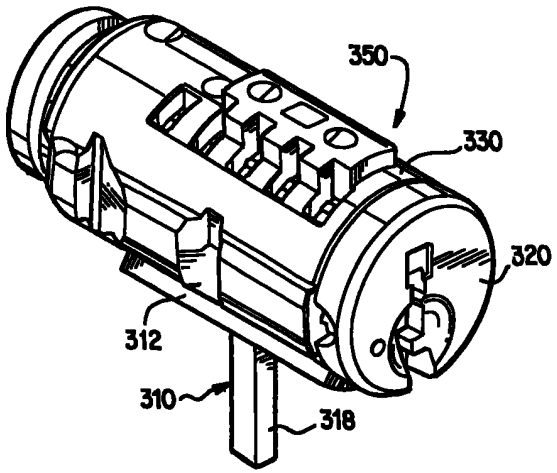


FIG. 33

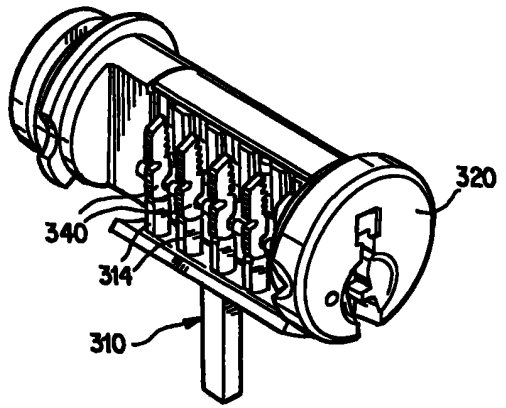


FIG. 34

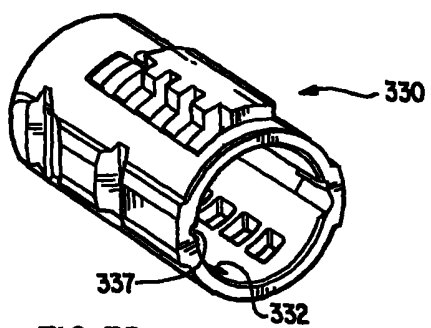


FIG. 35

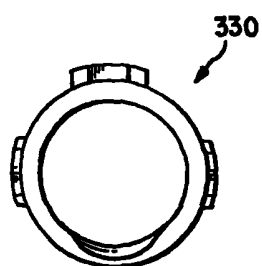


FIG. 36

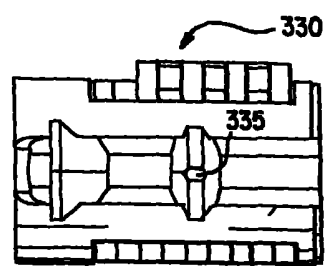


FIG. 37

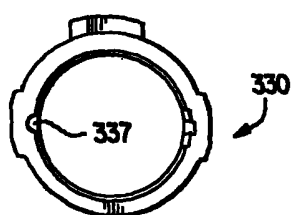


FIG. 38

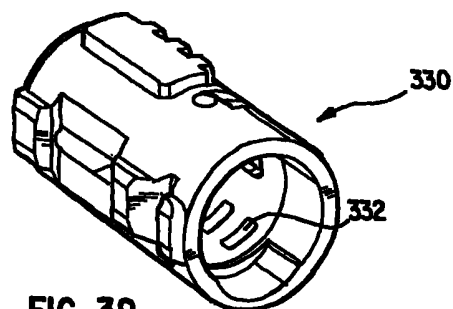


FIG. 39

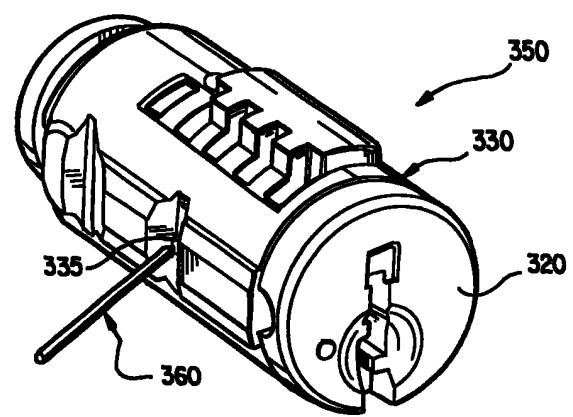


FIG. 40

[Text on flowchart in Fig. 41]

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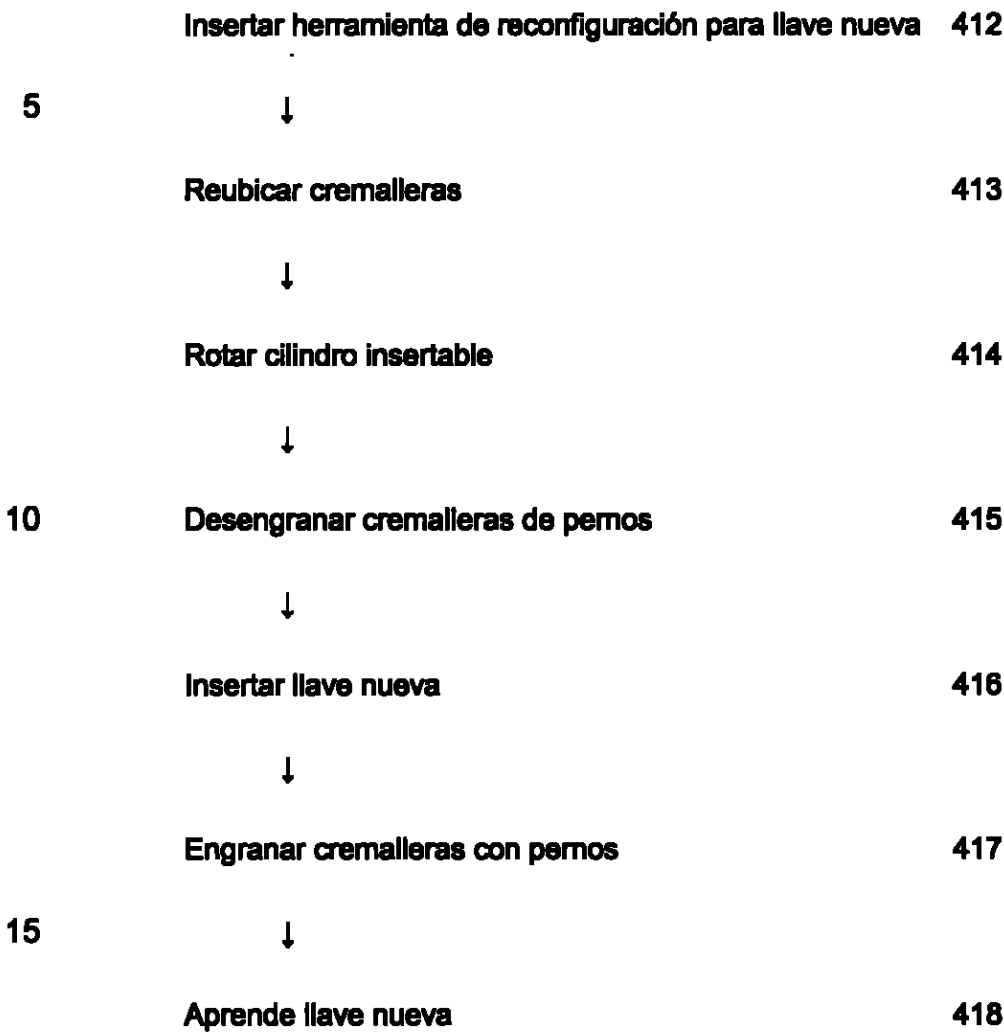


FIG. 41

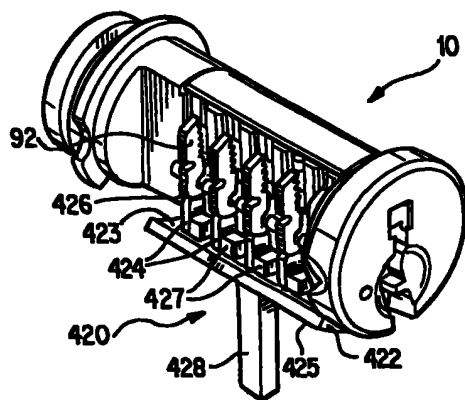


FIG. 42

[Text on flowchart in Fig. 43]

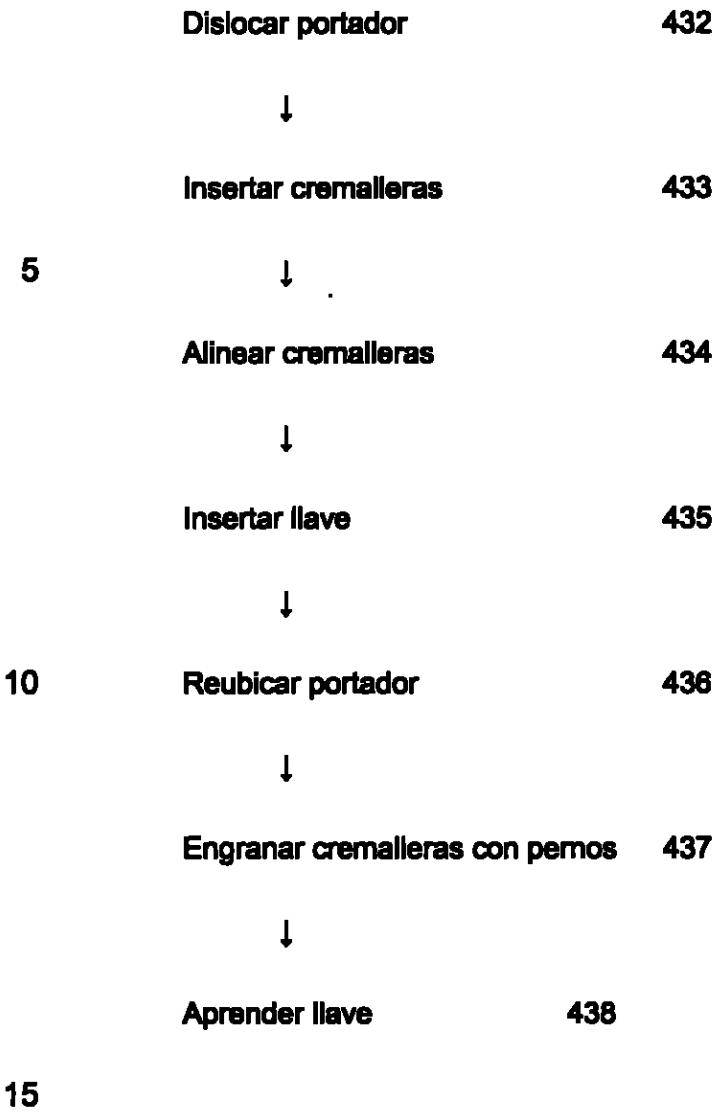


FIG. 43

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US04/06945

A. CLASSIFICATION OF SUBJECT MATTER IPC(7) : B05B 27/04 US CL : 70/493,495,383,384 According to International Patent Classification (IPC) or to both national classification and IPC		
B. FIELDS SEARCHED Minimum documentation searched (classification system followed by classification symbols) U.S. : 70/337-343,382-385,368,491,492,493,495 Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 3,667,262 A (HILL) 06 June 1972 (06.06.1972), see figure 3.	17-26
Y	US 4,996,856 A (LIN et al) 05 March 1991 (05.03.1991), see figure 2.	11-16
Y	US 4,069,696 A (STEINBACH) 24 January 1978 (24.01.1978), see figure 2.	11-16
A	US 5,791,181 A (SPERBER et al) 11 August 1998 (11.08.1998), see figure 1.	1-31
A	US 5,921,122 A (LIN) 13 July 1999 (13.07.1999), see figure 1.	1-31
☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.		
* Special categories of cited documents: "A" document defining the general state of the art which is not considered to be of particular relevance "B" earlier application or patent published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another claim or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed "T" document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art "A" document member of the same patent family		
Date of the actual completion of the international search 08 December 2004 (08.12.2004)		Date of mailing of the international search report 16 FEB 2005
Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (703)305-3230		Authorized officer Lloyd A. Gall Telephone No. 703-308-0828

PATENT COOPERATION TREATY

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From the
INTERNATIONAL SEARCHING AUTHORITY

PCT

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

To: RICHARD J. VELTMAN BLACK & DECKER CORPORATION 701 E. JOPPA ROAD TW-199 TOWSON, MD 21286			PCT WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY (PCT Rule 43bis.1)		
Date of mailing (day/month/year)			16 FEB 2005		
Applicant's or agent's file reference 5789-03			FOR FURTHER ACTION See paragraph 2 below		
International application No. PCT/USD4/06945	International filing date (day/month/year) 05 March 2004 (05.03.2004)	Priority date (day/month/year) 07 March 2003 (07.03.2003)			
International Patent Classification (IPC) or both national classification and IPC IPC(7): E05B 27/04 and US Cl.: 70/493,495,383,384					
Applicant NEWFREY LLC					

1. This opinion contains indications relating to the following items:

- ☒ **Box No. I** **Basis of the opinion**
- ☐ **Box No. II** **Priority**
- ☐ **Box No. III** **Non-establishment of opinion with regard to novelty, inventive step and industrial applicability**
- ☐ **Box No. IV** **Lack of unity of invention**
- ☒ **Box No. V** **Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**
- ☐ **Box No. VI** **Certain documents cited**
- ☐ **Box No. VII** **Certain defects in the international application**
- ☒ **Box No. VIII** **Certain observations on the international application**

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/ US Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1430 Alexandria, Virginia 22313-1430 Facsimile No. (703)305-3230	Authorized officer Lloyd A. Gall Telephone No. 703-308-0828
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**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.

PCT/US04/06945

Box No. I Basis of this opinion

1. With regard to the language, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ This opinion has been established on the basis of a translation from the original language into the following language _____, which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).

2. With regard to any nucleotide and/or amino acid sequence disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:

a. type of material

☐ a sequence listing

☐ table(s) related to the sequence listing

b. format of material

☐ in written format

☐ in computer readable form

c. time of filing/furnishing

☐ contained in international application as filed.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority for the purposes of search.

3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

4. Additional comments:

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

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International application No.

PCT/US04/06945

Box No. II Priority

1. ☐ The following document has not yet been furnished:

☐ copy of the earlier application whose priority has been claimed (Rules 43bis.1 and 66.7(a)).

☐ translation of the earlier application whose priority has been claimed (Rules 43bis.1 and 66.7(b)).

Consequently it has not been possible to consider the validity of the priority claim. This opinion has nevertheless been established on the assumption that the relevant date is the claimed priority date.

2. ☐ This opinion has been established as if no priority has been claimed due to the fact that the priority claim has been found invalid (Rules 43bis.1 and 64.1). Thus for the purposes of this opinion, the international filing date indicated above is considered to be the relevant date.

3. Additional observations, if necessary:

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/US04/06945

Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

1. The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non-obvious), or to be industrially applicable have not been examined in respect of:

☐ the entire international application

☐ claims Nos. ____

because:

☐ the said international application, or the said claim Nos. ____ relate to the following subject matter which does not require an international preliminary examination (specify):

☐ the description, claims or drawings (indicate particular elements below) or said claims Nos. ____ are so unclear that no meaningful opinion could be formed (specify):

☐ the claims, or said claims Nos. ____ are so inadequately supported by the description that no meaningful opinion could be formed.

☐ no international search report has been established for said claims Nos. ____

☐ the nucleotide and/or amino acid sequence listing does not comply with the standard provided for in Annex C of the Administrative Instructions in that:

the written form

☐ has not been furnished

☐ does not comply with the standard

the computer readable form

☐ has not been furnished

☐ does not comply with the standard

☐ the tables related to the nucleotide and/or amino acid sequence listing, if in computer readable form only, do not comply with the technical requirements provided for in Annex C-bis of the Administrative Instructions.

☐ See Supplemental Box for further details.

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.

PCT/US04/06945

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Box No. IV Lack of unity of invention

1. ☐ In response to the invitation (Form PCT/ISA/206) to pay additional fees the applicant has:
☐ paid additional fees
☐ paid additional fees under protest
☐ not paid additional fees
2. ☐ This Authority found that the requirement of unity of invention is not complied with and chose not to invite the applicant to pay additional fees.
3. This Authority considers that the requirement of unity of invention in accordance with Rule 13.1, 13.2 and 13.3 is
☐ complied with
☐ not complied with for the following reasons:

4. Consequently, this opinion has been established in respect of the following parts of the international application:

- ☐ all parts.
☐ the parts relating to claims Nos. ____

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US04/06945

Box No. V Reasoned statement under Rule 43 bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims 1-16,27-31	YES
	Claims 17-26	NO
Inventive step (IS)	Claims 1-10,27-31	YES
	Claims 11-26	NO
Industrial applicability (IA)	Claims 1-31	YES
	Claims NONE	NO

2. Citations and explanations:

Claims 17-26 lack novelty under PCT Article 33 (2) as being anticipated by Hill (262). Hill (262) teaches a method of keying a lock including a cylinder body 12, a plug 18, plural racks 76,78, plural pins 68, a carrier 90, an opening 86 to receive a rack alignment tool 88 and a carrier dislocation tool 88, the method including aligning the racks 76,78 to a first level in fig. 3, inserting a key 150 to relocate pins 68, and engaging the racks 76,78 with the pins. The rack alignment tool 88 and carrier dislocation tool 88 may then be removed.

Claims 11-16 lack an inventive step under PCT Article 33 (3) as being obvious over Lin et al (856) in view of Steinbach (696). Lin et al teaches a lock keying tool including a base plate 93, prongs 91, and a handle 9. The lock including pins and racks is not being positively claimed. Steinbach teaches prongs 119, 122 having a concave first end to engage pin tumblers. It would have been obvious to provide a concave end on the prongs of Lin et al in view of the teaching of Steinbach, to render tool duplication difficult. It would have been obvious to provide all prongs of Lin et al with the same length, as a design choice of one keying the lock.

Claims 1-10 and 27-31 meet the criteria of PCT Article 33 (2)-(4) because the prior art does not teach the claimed rack alignment tool used in combination with a lock having pins and racks, or the claimed method including moving a carrier to engage at least one rack. The invention has industrial applicability to allow a lock to be re-keyed.

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.

PCT/US04/06945

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Box No. VI Certain documents cited

1. Certain published documents (Rules 43bis.1 and 70.10)

Application No.
Patent No.

Publication date
(day/month/year)

Filing date
(day/month/year)

Priority date (valid claim)
(day/month/year)

2. Non-written disclosures (Rules 43bis.1 and 70.9)

Kind of non-written disclosure

Date of non-written disclosure
(day/month/year)

Date of written disclosure referring to
non-written disclosure
(day/month/year)

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.

PCT/US04/06945

Box No. VII Certain defects in the international application

The following defects in the form or contents of the international application have been noted:

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.

PCT/US04/06945

Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the questions whether the claims are fully supported by the description, are made:

Claims 27, 30 and 31 are objected to under PCT Rule 66.2(a)(v) as lacking clarity under PCT Article 6 because claims are indefinite for the following reason(s): In claim 27, the last two lines, there is no antecedent basis for "the pls rality of pls". Throughout claims 30 and 31, there is no antecedent basis for "said plurality of racks".

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**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/US04/06945

Supplemental Box

In case the space in any of the preceding boxes is not sufficient.

PCT

REQUEST

The undersigned requests that the present international application be processed according to the Patent Cooperation Treaty.

For receiving Office use only

International Application No.

International Filing Date

Name of receiving Office and "PCT International Application"

Applicant's or agent's file reference
(if desired) (12 characters maximum) 5789-03

Box No. I TITLE OF INVENTION

DEVICES, METHODS, AND SYSTEMS FOR KEYING A LOCK ASSEMBLY

Box No. II APPLICANT

☐ This person is also inventor

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)

NEWFREY LLC
1207 Drummond Plaza
Newark, Delaware 19711
US

Telephone No.
410-716-3900

Facsimile No.
410-716-2810

Teleprinter No.

Applicant's registration No. with the Office

State (that is, country) of nationality:

US

State (that is, country) of residence:

US

This person is applicant for the purposes of:

☐ all designated States

☒ all designated States except the United States of America

☐ the United States of America only

☐ the States indicated in the Supplemental Box

Box No. III FURTHER APPLICANT(S) AND/OR (FURTHER) INVENTOR(S)

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)

ARMSTRONG, Steve
901 Sedona Lane
Anshelm Hills, California 92808
US

This person is:

☐ applicant only

☒ applicant and inventor

☐ inventor only (if this check-box is marked, do not fill in below.)

Applicant's registration No. with the Office

State (that is, country) of nationality:

US

State (that is, country) of residence:

US

This person is applicant for the purposes of:

☐ all designated States

☐ all designated States except the United States of America

☒ the United States of America only

☐ the States indicated in the Supplemental Box

☒ Further applicants and/or (further) inventors are indicated on a continuation sheet.

Box No. IV AGENT OR COMMON REPRESENTATIVE; OR ADDRESS FOR CORRESPONDENCE

The person identified below is hereby/has been appointed to act on behalf of the applicant(s) before the competent International Authorities as:

☒ agent

☐ common representative

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.)

VELTMAN, Richard J.
c/o Black & Decker Corporation
701 E. Joppa Road TW-199
Towson, Maryland 21286
US

Telephone No.
410-716-3503

Facsimile No.
410-716-2810

Teleprinter No.

Agent's registration No. with the Office
36,957

☐ Address for correspondence: Mark this check-box where no agent or common representative is/has been appointed and the space above is used instead to indicate a special address to which correspondence should be sent.

Continuation of Box No. III FURTHER APPLICANT(S) AND/OR (FURTHER) INVENTOR(S)	
<i>If none of the following sub-boxes is used, this sheet should not be included in the request.</i>	
Name and address: <i>(Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this box is the applicant's State (that is, country) of residence (if no State of residence is indicated below.)</i> CHONG, Gerald B. 18805 Leesbury Way Rowland Heights, California 91748 US	This person is: ☐ applicant only ☒ applicant and inventor ☐ inventor only <i>(If this check-box is marked, do not fill in below.)</i> Applicant's registration No. with the Office
State (that is, country) of nationality: US	State (that is, country) of residence: US
This person is applicant for the purposes of: ☐ all designated States ☐ all designated States except the United States of America ☒ the United States of America only ☐ the States indicated in the Supplemental Box	
Name and address: <i>(Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this box is the applicant's State (that is, country) of residence (if no State of residence is indicated below.)</i>	This person is: ☐ applicant only ☐ applicant and inventor ☐ inventor only <i>(If this check-box is marked, do not fill in below.)</i> Applicant's registration No. with the Office
State (that is, country) of nationality:	State (that is, country) of residence:
This person is applicant for the purposes of: ☐ all designated States ☐ all designated States except the United States of America ☐ the United States of America only ☐ the States indicated in the Supplemental Box	
Name and address: <i>(Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this box is the applicant's State (that is, country) of residence (if no State of residence is indicated below.)</i>	This person is: ☐ applicant only ☐ applicant and inventor ☐ inventor only <i>(If this check-box is marked, do not fill in below.)</i> Applicant's registration No. with the Office
State (that is, country) of nationality:	State (that is, country) of residence:
This person is applicant for the purposes of: ☐ all designated States ☐ all designated States except the United States of America ☐ the United States of America only ☐ the States indicated in the Supplemental Box	
Name and address: <i>(Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this box is the applicant's State (that is, country) of residence (if no State of residence is indicated below.)</i>	This person is: ☐ applicant only ☐ applicant and inventor ☐ inventor only <i>(If this check-box is marked, do not fill in below.)</i> Applicant's registration No. with the Office
State (that is, country) of nationality:	State (that is, country) of residence:
This person is applicant for the purposes of: ☐ all designated States ☐ all designated States except the United States of America ☐ the United States of America only ☐ the States indicated in the Supplemental Box	
☐ Further applicants and/or (further) inventors are indicated on another continuation sheet.	

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Supplemental Box

If the Supplemental Box is not used, this sheet should not be included in the request.

1. If, in any of the Boxes, except Boxes Nos. VII(i) to (v) for which a special continuation box is provided, the space is insufficient to furnish all the information: in such case, write "Continuation of Box No. ..." (indicate the number of the Box) and furnish the information in the same manner as required according to the captions of the Box in which the space was insufficient, in particular:

(i) If more than two persons are to be indicated as applicants and/or inventors and no "continuation sheet" is available: in such case, write "Continuation of Box No. III" and indicate for each additional person the same type of information as required in Box No. III. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below;

(ii) If, in Box No. II or in any of the sub-boxes of Box No. III, the indication "the States indicated in the Supplemental Box" is checked: in such case, write "Continuation of Box No. II" or "Continuation of Box No. III" or "Continuation of Boxes No. II and No. III" (as the case may be), indicate the name of the applicant(s) involved and, next to (each) such name, the State(s) (and/or, where applicable, ARIPO, Eurasian, European or OAPI patent) for the purposes of which the named person is applicant;

(iii) If, in Box No. II or in any of the sub-boxes of Box No. III, the inventor or the inventor-applicant is not inventor for the purposes of all designated States or for the purposes of the United States of America: in such case, write "Continuation of Box No. II" or "Continuation of Box No. III" or "Continuation of Boxes No. II and No. III" (as the case may be), indicate the name of the inventor(s) and, next to (each) such name, the State(s) (and/or, where applicable, ARIPO, Eurasian, European or OAPI patent) for the purposes of which the named person is inventor;

(iv) If, in addition to the agent(s) indicated in Box No. IV, there are further agents: in such case, write "Continuation of Box No. IV" and indicate for each further agent the same type of information as required in Box No. IV;

(v) If, in Box No. VI, there are more than three earlier applications whose priority is claimed: in such case, write "Continuation of Box No. VI" and indicate for each additional earlier application the same type of information as required in Box No. VI.

2. If the applicant intends to make an indication of the wish that the international application be treated, in certain designated States, as an application for a patent of addition, certificate of addition, inventor's certificate of addition or utility certificate of addition: in such a case, write the name or two-letter code of each designated State concerned and the indication "patent of addition," "certificate of addition," "inventor's certificate of addition" or "utility certificate of addition," the number of the parent application or parent patent or other parent grant and the date of grant of the parent patent or other patent grant and the date of filing of the parent application (Rules 4.11(a)(iii) and 49bis.1(a) or (b)).

3. If the applicant intends to make an indication of the wish that the international application be treated, in the United States of America, as a continuation or continuation-in-part of an earlier application: in such a case, write "United States of America" or "US" and the indication "continuation" or "continuation-in-part" and the number and the filing date of the parent application (Rules 4.11(a)(iv) and 49bis.1(d)).

Continuation of Box No. IV:

Agents (continued)

Reg. No.

John D. Del Ponti	24,258
Edward D. Murphy	20,825
Charles E. Yocum	30,121
Aden Ayala	38,373
Bruce S. Shapiro	33,120
Michael P. Leary	41,144
Paul L. Ratcliffe	45,290
J. Bruce Hooftagle	20,973
Harold Weinstein	20,813

All of the above are registered patent attorneys for the following:

Black & Decker Corporation
701 E. Joppa Road
Towson, Maryland 21286
USA
410-718-3800

Continuation of Box V (Designation of States)

As to the designation of the US, this application is a continuation of US Application 10/384,294, filed 07 March 2003 (07.03.2003).

Box No. V DESIGNATIONS

The filing of this request constitutes under Rule 4.9(a), the designation of all Contracting States bound by the PCT on the international filing date, for the grant of every kind of protection available and, where applicable, for the grant of both regional and national patents.

However,

- ☐ DE Germany is not designated for any kind of national protection
- ☐ KR Republic of Korea is not designated for any kind of national protection
- ☐ RU Russian Federation is not designated for any kind of national protection

(The check-boxes above may be used to exclude (irrevocably) the designations concerned in order to avoid the costing of the effect, under the national law, of an earlier national application from which priority is claimed. See the Notes to Box No. V as to the consequences of such national law provisions in these and certain other States.)

Box No. VI PRIORITY CLAIM

The priority of the following earlier application(s) is hereby claimed:

Filing date of earlier application (day/month/year)	Number of earlier application	Where earlier application is:		
		national application: country or Member of WTO	regional application: regional Office	international application: receiving Office
item (1) 07 March 2003 (07.03.2003)	10/384,294	US		
item (2)				
item (3)				

☐ Further priority claims are indicated in the Supplemental Box.

The receiving Office is requested to prepare and transmit to the International Bureau a certified copy of the earlier application(s) (only if the earlier application was filed with the Office which for the purposes of this international application is the receiving Office) identified above as:

☐ all items ☒ item (1) ☐ item (2) ☐ item (3) ☐ other, see Supplemental Box

* Where the earlier application is an ARIPO application, indicate at least one country party to the Paris Convention for the Protection of Industrial Property or one Member of the World Trade Organization for which that earlier application was filed (Rule 4.10(b)(ii)):

Box No. VII INTERNATIONAL SEARCHING AUTHORITY

Choice of International Searching Authority (ISA) (if two or more International Searching Authorities are competent to carry out the international search, indicate the Authority chosen; the two-letter code may be used):

ISA / US

Request to use results of earlier search; reference to that search (if an earlier search has been carried out by or requested from the International Searching Authority):

Date (day/month/year) Number Country (or regional Office)
07 March 2003 (07.03.2003) 10/384,294 US

Box No. VIII DECLARATIONS

The following declarations are contained in Boxes Nos. VIII (i) to (v) (mark the applicable check-boxes below and indicate in the right column the number of each type of declaration):

		Number of declarations
☐ Box No. VIII (i)	Declaration as to the identity of the inventor	:
☒ Box No. VIII (ii)	Declaration as to the applicant's entitlement, as at the international filing date, to apply for and be granted a patent	: 1
☒ Box No. VIII (iii)	Declaration as to the applicant's entitlement, as at the international filing date, to claim the priority of the earlier application	: 1
☐ Box No. VIII (iv)	Declaration of inventorship (only for the purposes of the designation of the United States of America)	:
☐ Box No. VIII (v)	Declaration as to non-prejudicial disclosures or exceptions to lack of novelty	:

Box No. VIII (U) DECLARATION: ENTITLEMENT TO APPLY FOR AND BE GRANTED A PATENT

The declaration must conform to the standardized wording provided for in Section 212; see Notes to Boxes Nos. VIII, VIII (i) to (v) (in general) and the specific Notes to Box No. VIII (U). If this Box is not used, this sheet should not be included in the request.

Declaration as to the applicant's entitlement, as at the international filing date, to apply for and be granted a patent (Rules 4.17(ii) and 51bis.1(a)(ii)), in a case where the declaration under Rule 4.17(iv) is not appropriate:

In relation to this international application, NEWFREY LLC is entitled to apply for and be granted a patent by virtue of an Assignment from ARMSTRONG, Steve, of 901 Sedona Lane, Anaheim Hills, California 92808 US, and CHONG, Gerald B., of 18805 Leesbury Way, Rowland Heights, California 91748 US, to NEWFREY LLC, dated 26 February, 2003 (26.02.2003).

This declaration is made for the purposes of all designations, except the designation of the United States of America.

☐ This declaration is continued on the following sheet, "Continuation of Box No. VIII (U)".

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140**Box No. VIII (iii) DECLARATION: ENTITLEMENT TO CLAIM PRIORITY**

The declaration must conform to the standardized wording provided for in Section 213; see Notes to Boxes Nos. VIII, VIII (i) to (v) (in general) and the specific Notes to Box No. VIII (iii). If this Box is not used, this sheet should not be included in the request.

Declaration as to the applicant's entitlement, as at the international filing date, to claim the priority of the earlier application specified below, where the applicant is not the applicant who filed the earlier application or where the applicant's name has changed since the filing of the earlier application (Rules 4.17(iii) and 51bis.1(a)(iii)):

In relation to this international application, NEWFREY LLC is entitled to claim priority of earlier Application No. 10/379,143 by virtue of an Assignment from ARMSTRONG, Steve, of 901 Sedona Lane, Anaheim Hills, California 92808 US, and CHONG, Gerald B., of 18805 Leesbury Way, Rowland Heights, California 91748 US, to NEWFREY LLC, dated 26 February, 2003 (26.02.2003).

This declaration is made for the purposes of all designations.

☐ This declaration is continued on the following sheet, "Continuation of Box No. VIII (iii)".

Box No. IX CHECK LIST, LANGUAGE OF FILING

This international application contains:		This international application is accompanied by the following item(s) (mark the applicable check-boxes below and indicate in right column the number of each item):		Number of items
(a) In paper form, the following number of sheets:				
request (including declaration sheets)	7	1. ☒ fee calculation sheet		1
description (excluding sequence listing and/or tables related thereto)	20	2. ☒ original separate power of attorney		1
claims	7	3. ☐ original general power of attorney		
abstract	1	4. ☐ copy of general power of attorney; reference number, if any:		
drawings	31	5. ☐ statement explaining lack of signature		
Sub-total number of sheets	66	6. ☐ priority document(s) identified in Box No. VI as item(s):		
sequence listing		7. ☐ translation of international application into (language):		
tables related thereto		8. ☐ separate indications concerning deposited microorganism or other biological material		
(for each, actual number of sheets if filed in paper form, whether or not also filed in computer readable form; see (c) below)		9. ☐ sequence listing in computer readable form (indicate type and number of carriers)		
Total number of sheets	66	(i) ☐ copy submitted for the purposes of international search under Rule 13ter only (and not as part of the international application)		
		(ii) ☐ (only where check-box (b)(i) or (c)(i) is marked in left column) additional copies including, where applicable, the copy for the purposes of international search under Rule 13ter		
		(iii) ☐ together with relevant statement as to the identity of the copy or copies with the sequence listing mentioned in left column		
(b) ☐ only in computer readable form (Section 801(a)(i))		10. ☐ tables in computer readable form related to sequence listing (indicate type and number of carriers)		
(i) ☐ sequence listing		(i) ☐ copy submitted for the purposes of international search under Section 802(b-quater) only (and not as part of the international application)		
(ii) ☐ tables related thereto		(ii) ☐ (only where check-box (b)(i) or (c)(i) is marked in left column) additional copies including, where applicable, the copy for the purposes of international search under Section 802(b-quater)		
(c) ☐ also in computer readable form (Section 801(a)(ii))		(iii) ☐ together with relevant statement as to the identity of the copy or copies with the tables mentioned in left column		
(i) ☐ sequence listing		11. ☒ other (specify): Transmittal Letter, Return Postcard		2
(ii) ☐ tables related thereto				
Type and number of carriers (diskette, CD-ROM, CD-R or other) on which are contained the				
☐ sequence listing:				
☐ tables related thereto:				
(additional copies to be indicated under items 9(ii) and/or 10(ii), in right column)				

Figure of the drawings which should accompany the abstract: 1

Language of filing of the international application: English

Box No. X SIGNATURE OF APPLICANT, AGENT OR COMMON REPRESENTATIVE

Next to each signature, indicate the name of the person signing and the capacity in which the person signs (if such capacity is not obvious from reading the request).


 Richard J. Veitman, Agent for Applicants

For receiving Office use only		2. Drawings: ☐ received: ☐ not received:
1. Date of actual receipt of the purported international application:		
3. Corrected date of actual receipt due to later but timely received papers or drawings completing the purported international application:		
4. Date of timely receipt of the required corrections under PCT Article 11(2):		
5. International Searching Authority (if two or more are competent): ISA /	6. ☐ Transmittal of search copy delayed until search fee is paid	

Date of receipt of the record copy by the International Bureau:

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PCT

FEE CALCULATION SHEET Annex to the Request

For receiving Office use only

International Application No.

Applicant's or agent's
file reference

5789-03

Date stamp of the receiving Office

Applicant

NEWFREY LLC

CALCULATION OF PRESCRIBED FEES

1. TRANSMITTAL FEE

300 T

2. SEARCH FEE

300 S

International search to be carried out by

US

(If two or more International Searching Authorities are competent to carry out the international search, indicate the name of the Authority which is chosen to carry out the international search.)

3. INTERNATIONAL FILING FEE

Where items (b) and/or (c) of Box No. IX apply, enter Sub-total number of sheets } 30
Where items (b) and (c) of Box No. IX do not apply, enter Total number of sheets }

i1 first 30 sheets 1035 i1

i2 36 x 11 = 396 i2
number of sheets in excess of 30 fee per sheet

i3 additional component (only if sequence listing and/or tables related thereto are filed in computer readable form under Section 801(a)(i), or both in that form and on paper, under Section 801(a)(ii):

400 x = i3
fee per sheet

Add amounts entered at i1, i2 and i3 and enter total at I 1431 I

(Applicants from certain States are entitled to a reduction of 75% of the international filing fee. Where the applicant is (or all applicants are) so entitled, the total to be entered at I is 25% of the international filing fee.)

4. FEE FOR PRIORITY DOCUMENT (if applicable)

20 P

5. TOTAL FEES PAYABLE

2051

Add amounts entered at T, S, I and P, and enter total in the TOTAL box

TOTAL

MODE OF PAYMENT

☒ authorization to charge deposit account (see below)

☐ postal money order

☐ cash

☐ coupons

☐ cheque

☐ bank draft

☐ revenue stamps

☐ other (specify):

AUTHORIZATION TO CHARGE (OR CREDIT) DEPOSIT ACCOUNT

(This mode of payment may not be available at all receiving Offices)

☒ Authorization to charge the total fees indicated above.

☒ (This check-box may be marked only if the conditions for deposit accounts of the receiving Office so permit) Authorization to charge any deficiency or credit any overpayment in the total fees indicated above.

☒ Authorization to charge the fee for priority document.

Receiving Office: RO/ US

Deposit Account No.: 022550

Date: March 4, 2004

Name: Richard J. Veltman

Signature: 

PATENT COOPERATION TREATY

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PCT

From the INTERNATIONAL BUREAU

NOTIFICATION CONCERNING
SUBMISSION OR TRANSMITTAL
OF PRIORITY DOCUMENT

(PCT Administrative Instructions, Section 411)

To:

VELTMAN, Richard, J.
c/o Black & Decker Corporation
701 E. Joppa Road TW-199
Towson, MD 21286
United States of America

Date of mailing (day/month/year) 17 June 2004 (17.06.2004)	IMPORTANT NOTIFICATION
Applicant's or agent's file reference 5789-03	
International application No. PCT/US2004/006945	International filing date (day/month/year) 05 March 2004 (05.03.2004)
International publication date (day/month/year) Not yet published	Priority date (day/month/year) 07 March 2003 (07.03.2003)
Applicant NEWFREY LLC et al	

- By means of this Form, which replaces any previously issued notification concerning submission or transmittal of priority documents, the applicant is hereby notified of the date of receipt by the International Bureau of the priority document(s) relating to all earlier application(s) whose priority is claimed. Unless otherwise indicated by the letters "NR", in the right-hand column or by an asterisk appearing next to a date of receipt, the priority document concerned was submitted or transmitted to the International Bureau in compliance with Rule 17.1(a) or (b).
- (If applicable) The letters "NR" appearing in the right-hand column denote a priority document which, on the date of mailing of this Form, had not yet been received by the International Bureau under Rule 17.1(a) or (b). Where, under Rule 17.1(a), the priority document must be submitted by the applicant to the receiving Office or the International Bureau, but the applicant fails to submit the priority document within the applicable time limit under that Rule, the attention of the applicant is directed to Rule 17.1(c) which provides that no designated Office may disregard the priority claim concerned before giving the applicant an opportunity, upon entry into the national phase, to furnish the priority document within a time limit which is reasonable under the circumstances.
- (If applicable) An asterisk (*) appearing next to a date of receipt, in the right-hand column, denotes a priority document submitted or transmitted to the International Bureau but not in compliance with Rule 17.1(a) or (b) (the priority document was received after the time limit prescribed in Rule 17.1(a) or the request to prepare and transmit the priority document was submitted to the receiving Office after the applicable time limit under Rule 17.1(b)). Even though the priority document was not furnished in compliance with Rule 17.1(a) or (b), the International Bureau will nevertheless transmit a copy of the document to the designated Offices, for their consideration. In case such a copy is not accepted by the designated Office as priority document, Rule 17.1(c) provides that no designated Office may disregard the priority claim concerned before giving the applicant an opportunity, upon entry into the national phase, to furnish the priority document within a time limit which is reasonable under the circumstances.

<u>Priority date</u>	<u>Priority application No.</u>	<u>Country or regional Office or PCT receiving Office</u>	<u>Date of receipt of priority document</u>
07 Marc 2003 (07.03.2003)	10/384,294	US	01 June 2004 (01.06.2004)

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No. (41-22) 338.90.90	Authorized officer Rémy CALCAGNO (Fax 338 9090) Telephone No. (41-22) 338 9018
--	--

PCT

POWER OF ATTORNEY

(for an international application filed under the Patent Cooperation Treaty)

(PCT Rule 90.4)

The undersigned applicant(s) (Names should be indicated as they appear in the request):

NEWFREY LLC
1207 Drummond Plaza
Newark, Delaware 19711
US

hereby appoints (appoint) the following person as:

☒ agent

☐ common representative

Name and address

(Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.)

VELTMAN, Richard J.
Black & Decker Corporation
701 E. Joppa Road
Towson, Maryland 21206 US

and any other agent listed in Box IV of the PCT Request filed herewith

to represent the undersigned before

☒ all the competent International Authorities

☐ the International Searching Authority only

☐ the International Preliminary Examining Authority only

in connection with the international application identified below:

Title of the invention: **DEVICES, METHODS, AND SYSTEMS FOR KEYING A LOCK ASSEMBLY**

Applicant's or agent's file reference: 5789-03

International application number (if already available):

Filed with the following Office US Patent & Trademark Office as receiving Office
and to make or receive payments on behalf of the undersigned.

Signature of the applicant(s) (where there are several applicants, each of them must sign; next to each signature, indicate the name of the person signing and the capacity in which the person signs, if such capacity is not obvious from reading the request or this power):

NEWFREY LLC

By:



Richard J. Veltman
Senior Group Patent Counsel

Date:

3/7/2004

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NEWFREY LLC

ACTION OF DIRECTORS BY UNANIMOUS WRITTEN CONSENT

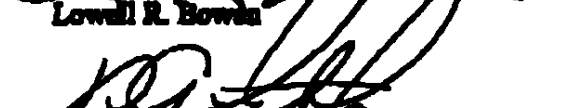
THE UNDERSIGNED, being all the directors of Newfrey LLC, a Delaware limited liability company (the "Company"), consent to the adoption of the following resolutions and the recording of the resolutions among the minutes of the proceedings of the Board of Directors.

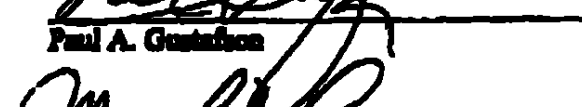
RESOLVED, that each person holding the title of (a) General Patent Counsel, (b) Senior Group Patent Counsel, (c) Trademark Counsel, (d) Director of Patents, (e) European Patents Manager, (f) Group Patent Counsel, (g) Senior Patent Attorney, or (h) Patent Attorney, and employed by The Black & Decker Corporation or its subsidiaries, is authorized and empowered to execute all documents, including but not limited to Powers of Attorney, Application Forms and Declarations, Affidavits, Assignments and similar documents that may be required by the United States or any foreign Patent and Trademark Offices for the purpose of filing, prosecuting, appealing and obtaining all forms of Patents, Designs, Trademarks, and Copyrights on behalf of, and in the name of, Newfrey LLC and for the purpose of entering opposition or revocation proceedings in any such Patent and Trademark Office in the name of Newfrey LLC against any Patent, Design, Trademark, Copyright or application thereof of a third party.

RESOLVED, that the foregoing resolution shall supersede any prior resolutions adopted by this Board of Directors relating to the same subject that shall hereafter be no longer effective.

Dated and effective as of November 11, 2002.


Lowell R. Bowen


Paul A. Gustafson


Morris F. DeFen

Expediente No		No de Follo
05102640		
No de Unidades		✓
Item		
1.	CD	
2	DVD	
3	REVISTA	
4	LIBRO	
5	PERIODICO	
6	DISQUETES	
7	SOBRE DE MANILA	
8	SOBRE BLANCO TAMAÑO CARTA	
9	SOBRE BLANCO TAMAÑO OFICIO	1.
10	OTROS:	
Observaciones: Un sobre que contiene Arte final.		

147.

SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO

NIT : 800176089-2

RECIBO OFICIAL DE CAJA : 05 - 75.989
FECHA : OCTUBRE 3 DE 2005

SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO
Indicacion: 05102540 02000000 Folios: 142
Fecha (PMO): 2025-10-27 17:30:12
Tramite : 011 PCI-PATENT 370 FASE NUC1 411 PATENT
Dependencia: 2025 CIVIL/JUN DE RESOLUCIONES

***** CONSIGNACION *****

DEPOSITANTE	TIPO PAGO	BANCO	CUENTA	No. PAGO	FECHA PGO	Vr. PAGO
CAVELIER ABOGADOS	CONSIGNACION	BANCO POPULAR	050-00110-6	31556028	03/10/2005	58,956.360.00

***** CONCEPTO *****

CANT.	RENTISTICO	CONCEPTO	TOTAL CONCEPTO
1	50005-01-01	SOLICITUDES	
		1 TRAMITES DE SOL. DE PATENTE DE IN	443,000.00
		TOTAL :	\$ 443,000.00

SON: CUATROCIENTOS CUARENTA Y TRES MIL PESOS

RESPONSABLE : _____

RECIBO DE CAJA APLICADO AL EXPEDIENTE No. _____

Abb 13698-841-002-5

2020
Bogotá DC

Doctor
EMILIO FERRERO
Apoderado
NEWFREY LLC

REFERENCIA:	Radicación No.	05-102640
	Solicitud Internacional	PCT/US2004/006945
	Fecha inicio fase nacional	07-10-2005
	Trámite	011
	Evento	378
	Actuación	416
	Oficio No.	872
	Folios	001

Teniendo en cuenta que la solicitud de privilegio de patente que se tramita bajo el expediente indicado en la referencia, reúne los requisitos de forma establecidos en la Decisión 486 de la Comisión de la Comunidad Andina, el Tratado de Cooperación en Materia de Patentes (PCT), el Reglamento y la Circular Única de la Superintendencia de Industria y Comercio, se envía el extracto de la solicitud a la Oficina de Comunicaciones para efecto de su publicación en la Gaceta de Propiedad Industrial.

Cúmplase
Dado en Bogotá DC

03 NOV. 2005


ALIX CARMENZA CÉSPEDES DE VERGEL
Jefe de la División de Nuevas Creaciones

202030