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Description

This invention relates to a slide fastener lock assembly for releasably locking a slider pull tab and a lock, said pull tab having an engaging pin at one end and an elongate aperture defined by said pin, said lock including a base plate attached to said garment article, a locking lug dimensioned to fit in the elongate aperture of said pull tab, a latch in the operative position in overlaying relation to said engaging pin, a lock tumbler operatively associated with and rotatable to releasably lock said latch with said engaging pin, and a lock release means adapted to unlock said latch from said engaging pin.

A slide fastener lock assembly similar to the type mentioned above is disclosed in US-A-1,680,652 which forms the basis of the preamble of independent claim 1 in which a slider pull tab has at its free end a bent portion provided with an engaging aperture. In the closed condition of the slide fastener, the bent portion of the pull tab may be inserted in an opening provided in an upper surface of a lock having a locking prong engageable in the engaging aperture of the pull tab. Such device has a drawback in that it is quite tedious to have to align the pull tab with the opening of the lock and therefore the user would often leave the pull tab disengaged from the lock when he thinks it unnecessary to completely lock the slide fastener on a bag or the like, in which instance the bag is apt to open up inadvertently while it is being carried. Another drawback in this prior art lock assembly is found in that the pull tab and the lock when joined together form a junction so stiff and hard as to prohibit their relative movement which is urged by bending stresses applied in different directions especially with the slide fastener attached to a flexible garment article such as bags or similar containers, with the results that engaging parts of the device receive localized strains and become susceptible to wear and damage.

The present invention seeks to provide an improved slide fastener lock assembly which will eliminate the foregoing difficulties of the prior art and which more specifically has such structural features as to enable the user to clearly view the engagement parts of both a slider pull tab member and a lock member and to ensure smooth and positive lock of both members substantially in any angularly tilted position and further to eliminate localized strains at the engagement parts.

A slide fastener lock assembly satisfying these requirements is characterized in Claim 1.

The above and other objects and features of the invention will become apparent from the following description taken in conjunction with the accompanying drawings which illustrate by way of example some preferred embodiments.

In the accompanying drawings in which like reference numerals refer to like or corresponding parts throughout the several views:

Figure 1 is a perspective segmentary view of a slide fastener having mounted thereon a lock assembly embodying the invention;

Figure 2 is a perspective view of the lock assembly shown in locked position;

Figure 3 is a perspective view of a handbag to which a slide fastener is attached with the lock assembly;

Figures 4 through 6 inclusive are longitudinal cross-sectional views of the lock assembly utilized to explain its operation;

Figure 7 is an exploded perspective view of the various parts forming the lock assembly;

Figure 8 is a diagrammatic side elevational view of the lock assembly shown subjected to upwardly directed bending stress;

Figure 9 is a perspective view of a modified lock part of the assembly; and

Figure 10 is a diagrammatic side elevational view of the lock assembly having the lock of Figure 9 and shown subjected to downwardly directed bending stress.

Referring now to the accompanying drawings and Figure 1 in particular, there is shown a slide fastener F which comprises a pair of oppositely disposed stringer tapes T, T, each carrying along their respective inner longitudinal edges a row of coupling elements E, and a slider S reciprocably movable to open and close the slide fastener F in a manner well known in the art. A support flapper 11 is secured at one of its ends to an end of the slide fastener F as by sewn seams 12 and has the other free end flappingly disposed. The flapper 11 may be alternatively attached in its entirety to a garment article such as a handbag B shown in Figure 3.

The slider S includes a pull tab 13 which constitutes one part of a slide fastener lock assembly generally designated 10 embodying the invention and which has one of its ends pivotally connected to a trunnion on the slider body.

The pull tab 13 is provided at the opposite end with an engaging pin 14 projecting from and defining with an extreme transverse edge of the pull tab 13 an oblong aperture 15. The engaging pin 14 is preferably circular in cross section for purposes later described.

A lock 16, which constitutes the other part of the slide fastener lock assembly 10, is secured to the upper surface of the flapper 11, and comprises various component parts, better shown in Figure 7, including a casing 17 having an opening 17a directed toward the slider S, a rectangular base plate 18 disposed on the upper surface of the flapper 11 and having a coextensive extension 18a protruding

beyond an end of the casing 17 confronting the slider S, and a cylindrical backing plate 19 secured to the lower surface of the flapper 11. Interposed between the base plate 18 and the backing plate 19 is a connecting plate 20 having a plurality of rivets 20a. When mounting the lock 16, the rivets 20a are thrusted through the flapper 11 and passed through holes 19a into the backing plate 19, in which instance the plate 19 serves as an anvil to bend the rivets 20a in place. The connecting plate 20 has engaging holes 20b for receiving engaging pins 18b downwardly projecting from the bottom of the base plate 18. At an end of the base plate extension 18a exposed out of the casing 17, there is provided an upwardly extending locking lug 18c dimensioned to fit in the aperture 15 of the pull tab 13.

A resilient member 21 such as in the form of a leaf spring is mounted on the base plate 18 and has bifurcated arms 21a, 21a converging toward and joined together by a neck 21b as better shown in Figure 7, the neck 21b being located adjacent to the locking lug 18c and engageable with the engaging pin 14 of the pull tab 13 as shown in Figures 4 and 6.

A slide member 22 is slidably mounted within the casing 17 over the resilient member 21 and normally biased toward the locking lug 18c by means of a spring 23 connected to one or rear end of the slide member 22. At the opposite or front end of the slide member 22 is a latch 24 integral therewith and having an arcuately shaped transverse end surface 24a at one end and a vertical abutment 24b as shown in Figures 4 - 6 for purposes later described.

A lock tumbler 25 in the form of a polygonal disc is rotatably mounted in the casing 17 in overlying relation to the slide member 22. The lock tumbler 25 has a small-diameter circular bottom 25a received in an elongate longitudinal slot 22a formed centrally in the slide member 22 and a large-diameter circular top surface 25b fitted snugly in a circular cavity 17b formed in the casing 17. A spring 26 is adapted to bias the lock tumbler 25 toward the casing 17. The lock tumbler 25 further includes a semi-circular peripheral first cam surface 25c and an off-set vertical flat second cam surface 25d, the first and second cam surfaces 25c, 25d being disposed in diammetrically opposed relation to each other as shown in Figures 4 - 6. On the top surface 25b of the lock tumbler 25 are formed a plurality of projections 25e engageable in corresponding recesses 17c formed in the cavity 17b of the casing 17. Also formed in the cavity 17b is a through-opening 17d for receiving therethrough a key 27 which is in turn received in a key hole 25f formed in the top surface 25b of the lock tumbler 25.

Designated at 28 is a lock release button having a cap portion 28a exposed above the casing 17 and a stem portion 28b connected through an elongate opening 17e in the casing 17 to a rear end portion of the slide member 22 remote from the latch 24.

The lock release button 28 is movable in and along the elongate opening 17e to release or unlock the latch 24 from the engaging pin 14 of the pull tab 13.

With this construction, the slide fastener lock assembly 10 operates as follows:

The slide fastener F is fully closed by bringing the slider S into abutting engagement with the flapper 11, whereupon the pull tab 13 is simply flipped down (from the phantom line position in Figure 4) with its aperture 15 fitted over the locking lug 18c of the lock 16. In this instance, the engaging pin 14 being cross-sectionally circular or rounded off can slide down the arcuate surface 24a of the latch 24, urging the latter (and the slide member 22) to retract against the tension of the spring 23 and depressing the resilient member 21. Immediately this is done, the latch 24 advances by the action of the spring 23 toward the locking lug 18c and retains the engaging pin 14, hence the pull tab 13 in locked position with respect to the lock 16. This locked condition is provisional. To make and maintain the slider S fully and completely locked, the key 27 is turned 180° to bring the first cam surface 25c of the lock tumbler 25 into registered contact with the vertical abutment 24b of the latch 24 so that the latch 24 remains in overlying relation to the engaging pin 14 of the pull tab 13 as shown in Figure 6. Turning the key 27 another 180° will bring the second cam 25d of the lock tumbler 25 into registry with the vertical abutment 24b of the latch 24 to resume a provisional lock condition of the lock assembly 10. The lock release button 28 is then moved backward or toward the right as viewed on the drawings to retract the slide member 22, hence the latch 24 against the tension of the spring 23 so as to release the engaging pin 10 of the pull tab 13, whereupon the resilient member 21 springs back and tosses the engaging pin 14 upwardly out of the lock 16 as illustrated in Figure 5.

The slide fastener lock assembly 10 in its locked position on the bag B is often subjected to external stresses tending to flex the flapper 11 up or down. Upwardly directed stresses can be dealt with by relative movement of the pull tab 13 and the lock 16 as shown in Figure 8. Downwardly directed stresses can also be overcome if the flapper 11 carrying the lock 16 is attached in whole to the bag B as shown in Figure 3, because such stresses are blocked by the bag B itself without impairing the lock assembly 10. However, the slide fastener F is sometimes left unsewn and free at

one end confronting the flapper 11, in which instance the flapper 11 is susceptible to both upward and downward flexing. To solve this problem, the width of the base plate extension 18a may be reduced to be equal to that of the locking lug 18c or smaller than the length of the engaging pin 14 as shown in Figure 9, so that the flapper 11 can flex downwardly at the junction between the locking lug 18c and the engaging pin 14 in response to downwardly directed stresses as shown in Figure 10 thereby to eliminate possible damage to the lock assembly 10.

Claims

1. A slide fastener lock assembly (10) for releasably locking a slider pull tab (13) and a lock (16), said pull tab (13) having an engaging pin (14) at one end and an elongate aperture (15) defined by said pin (14), said lock (16) including a base plate (18) attached to said garment article (11), a locking lug (18c) dimensioned to fit in the elongate aperture (15) of said pull tab (13), a latch (24) in the operative position in overlaying relation to said engaging pin (14), a lock tumbler (25) operatively associated with and rotatable to releasably lock said latch (24) with said engaging pin (14), and a lock release means (28) adapted to unlock said latch (24) from said engaging pin (14), characterized in that said locking lug (18c) is provided by an upwardly extending projection of said base plate (18), that said engaging pin (14) is cross-sectionally circular or otherwise rounded off and that said latch (24) has an arcuately shaped end surface (24a).

2. A slide fastener lock assembly (10) according to claim 1 characterized in that said lock tumbler (25) has a first cam surface (25c) and a second cam surface (25d) in diammetrically opposed relation to each other, said first cam surface (25c) being engageable with said latch (24) to lock the latter with said engaging pin (14), and said second cam surface (25d) being engageable with said latch (24) when the latter is released from said engaging pin (14) by said lock release means (28).

3. A slide fastener lock assembly (10) according to claim 2 characterized in that it further includes a key (27) adapted to turn said lock tumbler (25) 180° to register said first cam surface (25c) with said latch (24) and another 180° to register said second cam surface (25d) with said latch (24).

4. A slide fastener lock assembly (10) according to claim 1 characterized in that said lock (16) has an extension (18a) equal in width to said locking lug (18c).

5. A slide fastener lock assembly (10) according to claim 1 characterized in that it further includes a resilient member (21) normally biasing said engaging pin (14) upwardly toward said latch (24).

Patentansprüche

1. Reißverschluß-Verriegelungsvorrichtung (10) zum lösbaren Verriegeln eines Schiebergriffs (13) mit einem Schloß (16), wobei der Griff (13) an einem Ende einen Eingriffszapfen (14) und ein von diesem Eingriffszapfen (14) begrenztes Langloch (15) aufweist, wobei das Schloß (16) eine an dem Bekleidungsstück (11) befestigte Basisplatte (18), eine Sperrnase (17), die zum Einsetzen in das Langloch (15) des Griffs (13) dimensioniert ist, eine Falle (24), die in der wirksamen Stellung den Eingriffszapfen (14) übergreift, einen Zuhaltungsnocken (25), der mit der Falle zusammenwirkt und verdrehbar ist, um die Falle (24) mit dem Eingriffszapfen (14) lösbar zu verriegeln, und eine Auslöseeinrichtung (28) aufweist, um den Sperreingriff der Falle (24) mit dem Eingriffszapfen (14) zu lösen, dadurch **gekennzeichnet**, daß die Sperrnase (18c) von einem nach oben ragenden Vorsprung der Basisplatte (18) gebildet ist, daß der Eingriffszapfen (14) im Querschnitt kreisförmig oder anderweitig abgerundet ist und daß die Falle (24) eine bogenförmige Endfläche (24a) hat.

2. Reißverschluß-Verriegelungsvorrichtung (10) nach Anspruch 1, dadurch **gekennzeichnet**, daß der Zuhaltungsnocken (25) eine erste Nokkenfläche (25c) und eine zweite Nockenfläche (25d) hat, die einander diametral gegenüberliegen, wobei die erste Nockenfläche (25c) mit der Falle (24) in Eingriff bringbar ist, um diese mit dem Eingriffszapfen (14) zu verriegeln, und wobei die zweite Nockenfläche (25d) mit der Falle (24) in Eingriff bringbar ist, wenn diese mit der Auslöseeinrichtung (28) von dem Eingriffszapfen (14) getrennt ist.

3. Reißverschluß-Verriegelungsvorrichtung (10) nach Anspruch 2, dadurch **gekennzeichnet**, daß sie ferner einen Schlüssel (27) umfaßt, mit dem der Zuhaltungsnocken (25) um 180° verdrehbar ist, damit die erste Nockenfläche (25c) mit der Falle (24) fluchtet, und um weitere 180° verdrehbar ist, damit die zweite Nocken-

fläche (25d) mit der Falle (24) fluchtet.

4. Reißverschluß-Verriegelungsvorrichtung (10) nach Anspruch 1, dadurch **gekennzeichnet**, daß das Schloß (16) eine Verlängerung (18a) hat, die die gleiche Breite wie die Sperrnase (18c) aufweist.

5. Reißverschluß-Verriegelungsvorrichtung (10) nach Anspruch 1, dadurch **gekennzeichnet**, daß sie ferner ein federndes Teil (21) umfaßt, das den Eingriffszapfen (14) normalerweise nach oben gegen die Falle (24) vorspannt.

Revendications

1. Dispositif de verrouillage (10) de fermeture à glissière pour verrouiller de façon libérable une tirette (13) de curseur et une serrure (16), ladite tirette (13) ayant un axe de mise en prise (14) en une extrémité et une ouverture allongée (15) définie par ledit axe (14) ladite serrure (16) comprenant une plaque de base (18) fixée à l'article de vêtement (11), une patte de verrouillage (18c) dimensionnée pour s'emboîter dans l'ouverture allongée (15) de ladite tirette (13), un pêne (24) qui en position active chevauche ledit axe de mise en prise (14), une serrure à gorge (25) associée de façon opérationnelle avec ledit pêne (24) et pouvant tourner pour verrouiller de façon libérable ledit pêne (24) avec ledit axe de mise en prise (14), et un moyen (28) de libération du verrouillage apte à déverrouiller ledit pêne (24) dudit axe de mise en prise (14), caractérisé en ce que ladite patte de verrouillage (18c) est fournie par une saillie de ladite plaque de base (18) qui s'étend vers le haut, en ce que ledit axe de mise en prise (14) a une section circulaire ou est arrondi de quelque autre manière et en ce que ledit pêne (24) a une surface d'extrémité (24a) de forme courbe.

2. Dispositif de verrouillage (10) de fermeture à glissière selon la revendication 1, caractérisé en ce que ladite serrure à gorge (25) comprend une première surface formant came (25c) et une seconde surface formant came (25d) diamétralement opposées l'une à l'autre, ladite première surface formant came (25c) pouvant être mise en contact avec ledit pêne (24) afin de verrouiller ce dernier avec ledit axe de mise en prise (14) et ladite seconde surface formant came (25d) pouvant être mise en contact avec ledit pêne (24) quand ce dernier est libéré dudit axe de mise en prise (14) par ledit moyen (28) de libération du verrouillage.

3. Dispositif de verrouillage (10) de fermeture à glissière selon la revendication 2, caractérisé en ce qu'il comprend en outre une clé (27) qui peut faire tourner ladite serrure à gorge (25) de 180° afin de mettre en correspondance ladite première surface formant came (25c) avec ledit pêne (24) et encore de 180° pour mettre en correspondance ladite seconde surface formant came (25d) avec ledit pêne (24).

4. Ensemble de verrouillage (10) de fermeture à glissière selon la revendication 1, caractérisé en ce que ladite serrure (16) a un prolongement (18a) dont la largeur est égale à celle de ladite patte de verrouillage (18c).

5. Ensemble de verrouillage (10) de fermeture à glissière selon la revendication 1, caractérisé en ce qu'il comprend en outre un élément élastique (21) qui pousse normalement ledit axe de mise en prise (14) vers le haut en direction dudit pêne (24).

FIG.1

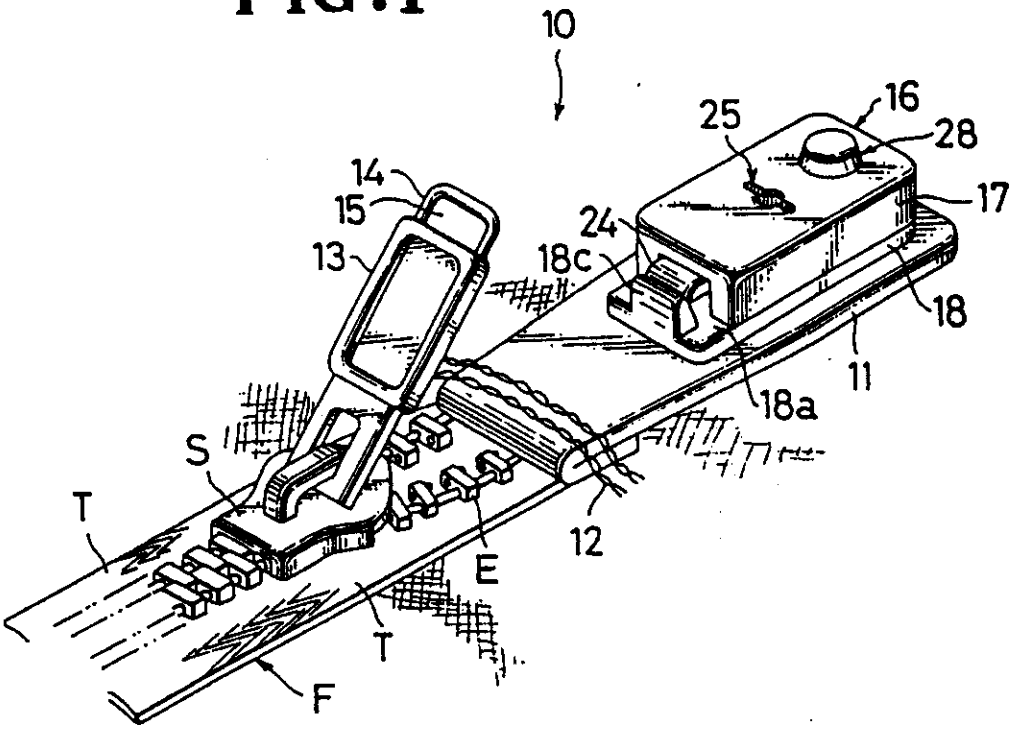


FIG.2

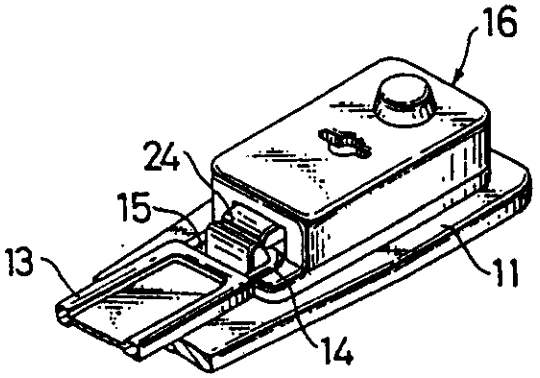


FIG. 3

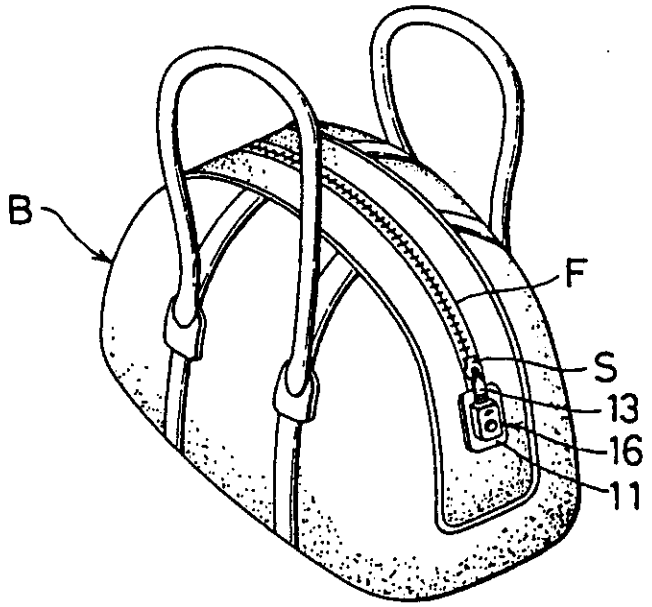

B
F
S
13
16
11

FIG. 4

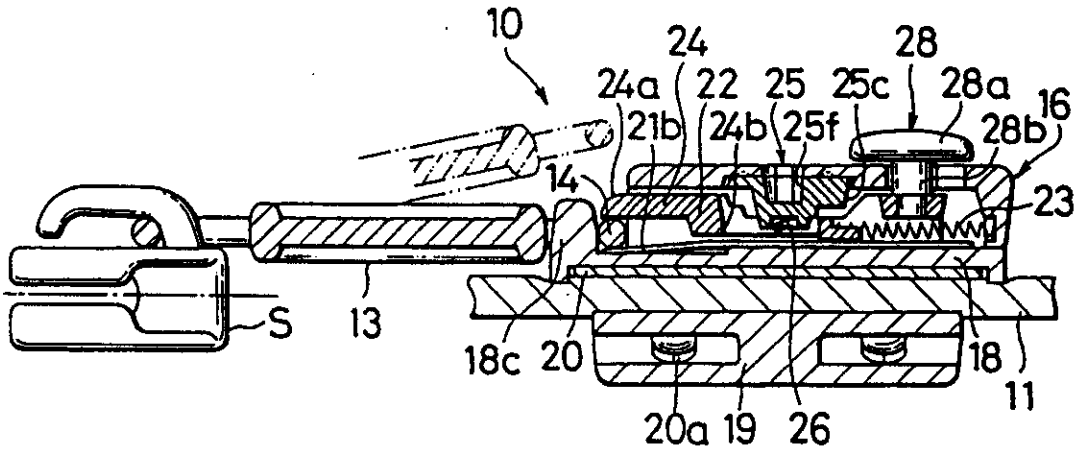
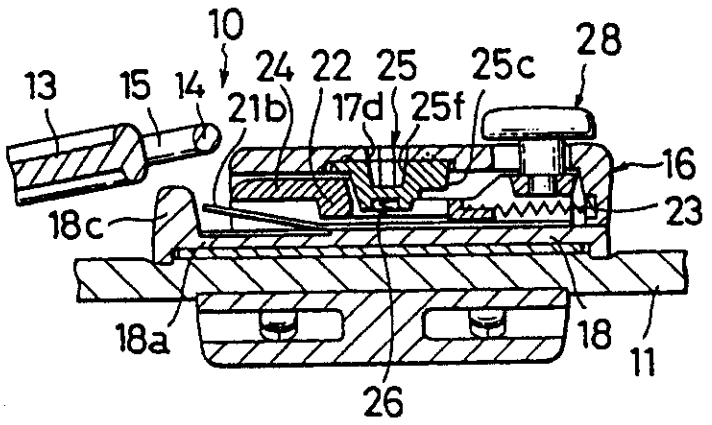

10
24
28
24a
22
25
25c
28a
16
21b
24b
25f
28b
14
23
S
13
18c
20
18
11
20a
19
26

FIG. 5


10
13
15
14
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25
25c
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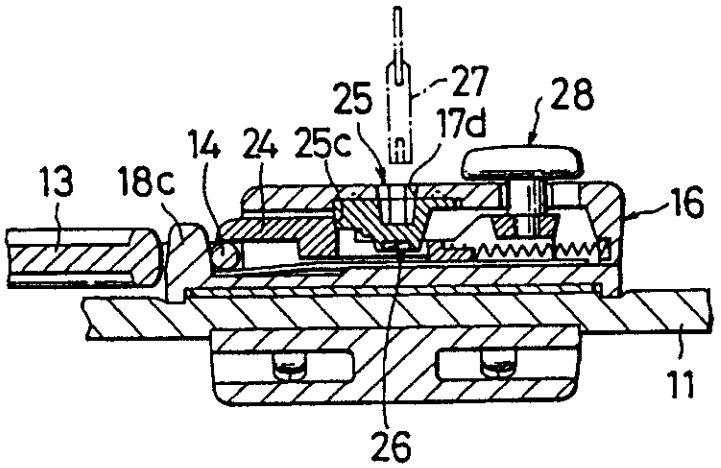
21b
17d
25f
16
23
18c
18a
18
11
26

FIG. 6


25
27
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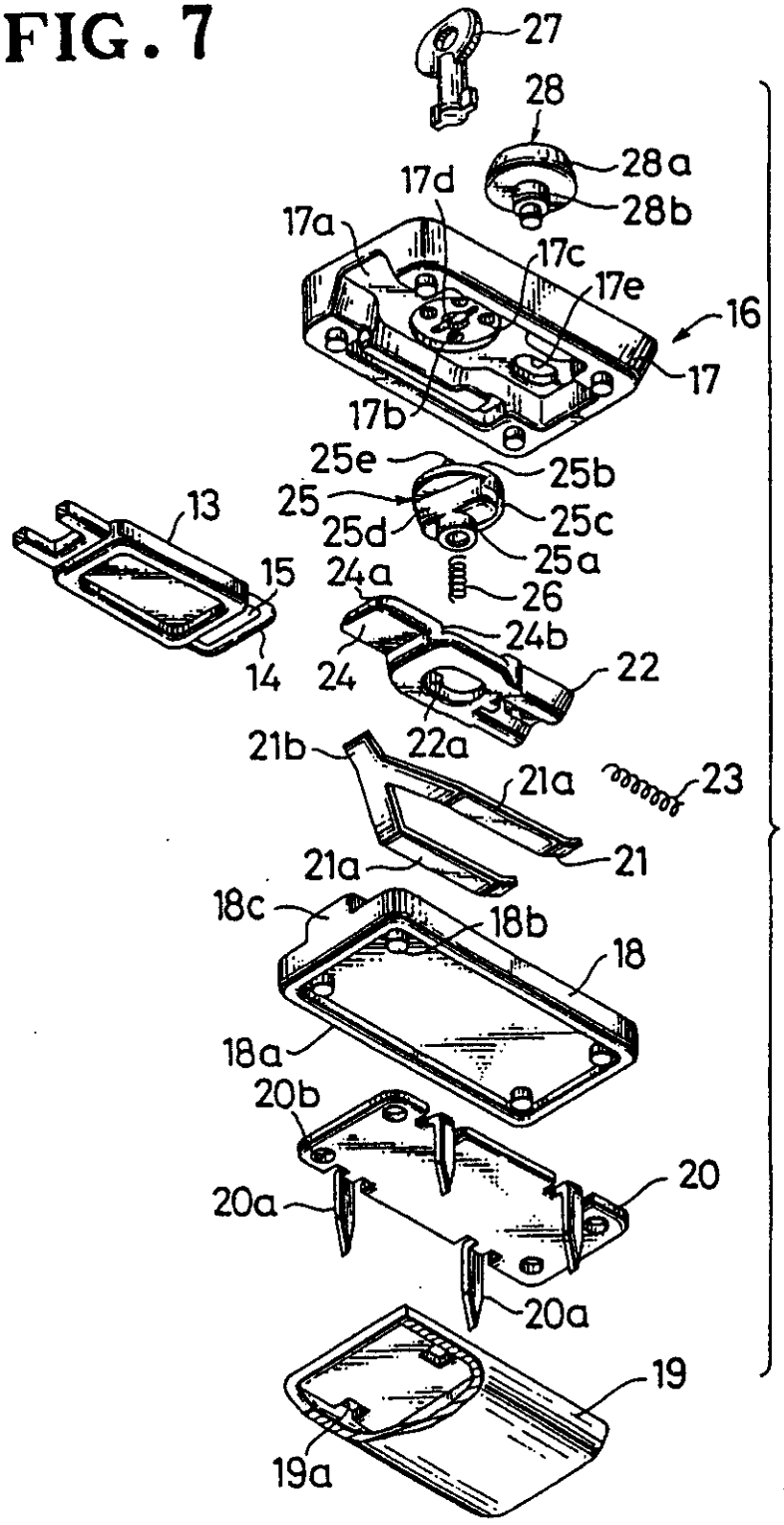
17d
14
24
25c
13
18c
16
11
26

FIG. 7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17d
17a
17c
17e
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17b
25e
25b
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13
15
24a
26
24b
14
24
22
22a
21b
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23
21
21a
18c
18b
18
18a
20b
20
20a
20a
19
19a

FIG. 8

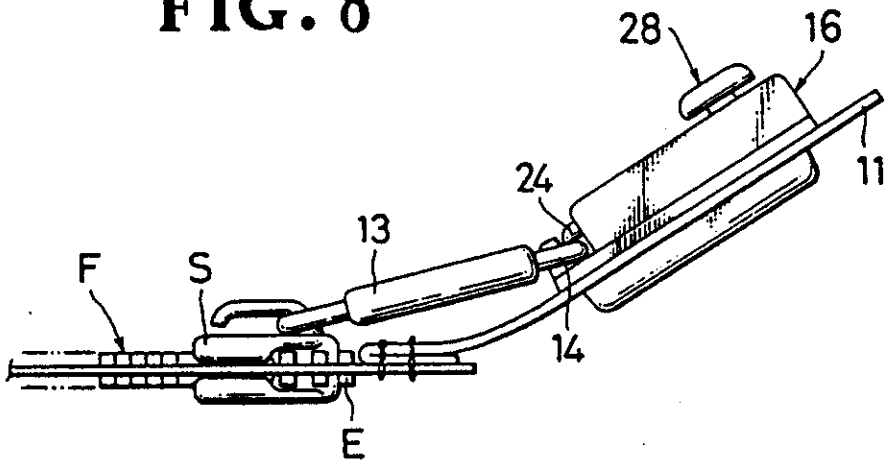


FIG. 9

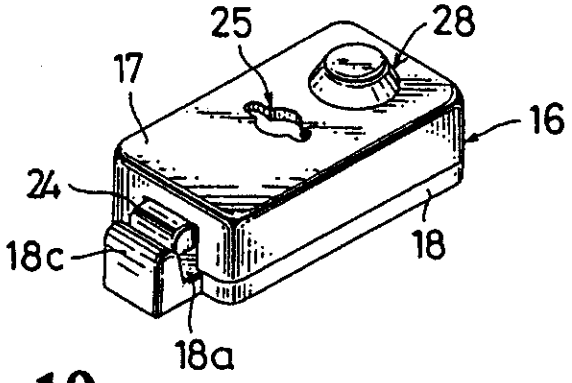
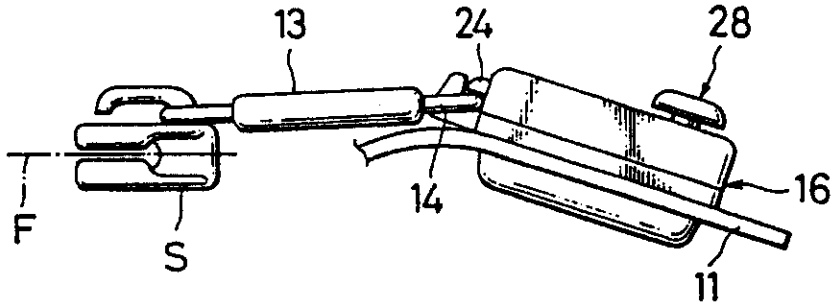


FIG. 10



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Entry Type 8.1 Staff ID. PH Auth ID. F20

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