(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) Publication number : **0 586 156 A1**

(12) EUROPEAN PATENT APPLICATION

(21) Application number : **93306629.2**

(22) Date of filing : **20.08.93**

(51) Int. Cl.[5] : **A44C 5/20**

(30) Priority : **27.08.92 JP 465811/92 U**
25.12.92 JP 492655/92 U
02.03.93 JP 513659/93 U

(43) Date of publication of application :
09.03.94 Bulletin 94/10

(84) Designated Contracting States :
CH GB LI

(71) Applicant : **Citizen Watch Co. Ltd.**
1-1, 2-chome, Nishi-Shinjuku
Shinjuku-ku Tokyo (JP)

(72) Inventor : **Yamagata, Hisao**
302 Matsunoki-haitsu, 12-15, 2-Chome,
Noguchido
Higashimurayama-shi, Tokyo (JP)

(74) Representative : **Ben-Nathan, Laurence Albert**
Urquhart-Dykes & Lord 91 Wimpole Street
London W1M 8AH (GB)

(54) Buckle for watch bands.

(57) A buckle for a watch band has a housing secured to a first link, a pair of push plates (18) provided in the housing so as to be moved in a lateral direction, and a spring (24) for urging the push plates. A stopper plate (10) is provided in the housing for stopping the push plates urged by the springs. A cover having a pair of engaging lugs (14) is pivotally connected to an end of the housing. The cover is provided such that the engaging lugs (14) are engaged with engaging projections (21a) of the push plates. An opening spring (27) is provided for urging the cover to an open position.

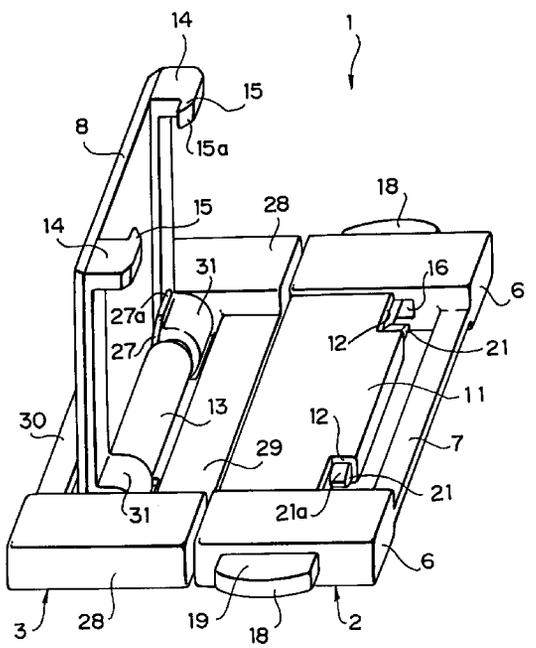

FIG. 1

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The present invention relates to a buckle for watch bands.

Japanese Utility Model Application Laid-open No. 4-54216 discloses a buckle for a watch band which has been filed by the applicant of the present invention. The buckle comprises an engaging member and a cover plate rotatably mounted on an end of the engaging member. The engaging member comprises a housing, a first push plate, and a second push plate. The cover plate has an engaging plate projecting from the underside thereof and having a hook, and a pressing-up plate having a downward slant. The first and second push plates are slidably mounted in the housing so as to be moved in the lateral direction with respect to the longitudinal direction of the band, and outwardly urged by a spring. Two stopper pins are provided in the housing, each of which is slidably engaged with a slit formed in the push plate so as to prevent the push plate from removing from the housing.

In such a buckle, the ends of the stopper pins are exposed on the surface of the housing, As a result, the appearance of the buckle is deteriorated. Furthermore, the assembling process of the push plates in the housing is complicated.

An object of the present invention is to provide a buckle for watch bands in which an end of a stopper pin does not expose, thereby providing a good appearance.

Another object of the invention is to provide a buckle in which the assembling process of the buckle is simplified at a low manufacturing cost.

According to the present invention, there is provided a buckle for a watch band having a first band member and a second band member, comprising a first link connected to the first band member, a second link having an engaging link and connected to the second band member, a base plate secured to the first link, a housing formed on a part of the base plate, a pair of push plates provided in the housing so as to be moved in a lateral direction with respect to a longitudinal direction of the watch band. Each of the push plates has an engaging projection and a slant formed on the engaging projection, and is urged by a spring in an outward direction. A stopper plate is provided in the housing for stopping each of the push plates urged by the spring means at a position where an outer end of the push plate is projected from the first link.

The buckle has a cover pivotally connected to an end of the base plate. The cover has a pair of engaging lugs provided on an underside thereof. The cover is provided such that the engaging lugs are engaged with the engaging projections of the push plates. An opening spring is provided between the base plate and the cover for urging the cover to an open position, whereby when the engaging lugs are released from the engaging projections of the push plates, the cover is automatically opened by the spring.

These and other objects and features of the present invention will become more apparent from the following detailed description with reference to the accompanying drawings.

Fig. 1 is a perspective view showing a buckle for a watch band as a first embodiment according to the present invention, which is in a coupling state;

Fig. 2 is a perspective view of the buckle in a first link;

Fig. 3 is a perspective view of a second link;

Fig. 4 is a sectional plan view of the buckle;

Fig. 5 is a sectional side view of the buckle taken along a line V-V of Fig. 2;

Fig. 6 is a sectional side view of the buckle taken along a line VI-VI of Fig. 2;

Fig. 7 is a perspective view showing a buckle of a second embodiment of the present invention;

Fig. 8 is a sectional plan view of the buckle of the second embodiment;

Fig. 9 is a sectional side view of the buckle taken along a line IX-IX of Fig. 8;

Fig. 10 is a sectional side view of the buckle taken along a line X-X of Fig. 8;

Fig. 11 is a perspective view showing a buckle of a third embodiment of the present invention;

Fig. 12 is an exploded perspective view showing a main part of the buckle of the third embodiment;

Fig. 13 is a sectional plan view of the buckle;

Fig. 14 is a longitudinal sectional view of the buckle; and

Fig. 15 is a lateral sectional view of the buckle.

Referring to Figs. 1 to 4, a buckle 1 of the present invention comprises a first link 2 connected to a first band member 32 of a watch band, a second link 3 connected to a second band member 33, a base plate 5 mounted on the first link 2, and a cover 8 pivotally mounted on the base plate 5.

The first link 2 comprises a pair of side frames 6 each of which has a rectangular opening 16, a connecting link 7 and a stopper plate 9 which are laterally provided between the side frames 6 and secured to the side frames.

The second link 3 comprises a pair of side frames 28, an engaging link 29 laterally provided between the side frames 28, and a connecting link 30 laterally provided between the side frames opposite to the engaging link 29.

As shown in Fig. 5, a housing 11 is formed at an end portion by bending the base plate 5, and a rounded portion 13 is formed at the other end portion. A pair of notches 12 are formed in the end sides of the housing 11 to be indented in the housing.

The cover 8 has a pair of engaging lugs 14 formed on an end portion thereof opposite to each other corresponding to the notches 12 of the housing 11 and a pair of connecting rounded portions 31 provided at the other end portion thereof. Each engaging lug 14 has a hook 15 inwardly projected there-from and a

downward slant 15a on the underside thereof. Each connecting portion 31 has a connecting hole 17. The inner diameter of the rounded portion 13 is larger than that of the hole 17.

A pair of push plates 18 are slidably mounted in the space of the housing 11 so as to be moved in the lateral direction of the band. The push plates 18 are the same in configuration and are symmetrically disposed in the housing 11. Each push plate 18 has a manipulating projection 19 projected from the opening 16 of the side frame 6, a notch 20 formed on one of the sides thereof corresponding to the notch 12 of the housing 11, an engaging projection 21 laterally projected from an inside wall of the notch 20 and having a downward slant 21a, a notch 22 formed on the other side opposite to the notch 20, and a notch 23 formed opposite to the manipulating projection 19. A return spring 24 is disposed between the notches 23 of the opposite push plates 18 so as to outwardly urge the push plates.

The stopper plate 9 is disposed adjacent to the push plates 18. The stopper plate 9 has a pair of projections 10 to be engaged with the notches 22 of the push plates.

In assembling, the housing 11 is opened as shown by a dot-dash line in Fig. 5 before assembling. The both sides of the housing 11 is abutted on the side frames 6 of the first link 2 corresponding to the rectangular openings 16. The push plates 18 are inserted into the housing 11 from both openings 16 of the side frames 6. At that time, since the housing 11 is opened and a gap is formed between the push plates and the side wall of the housing, each push plate 18 can be inserted in the housing by riding over the projection 10 of the stopper plate 9. Thereafter, the spring 24 is disposed between the push plates. Each manipulating projection 19 of the push plate is projected from the opening 16 and each projection 10 engages with the notch 22 of the corresponding push plate 18. Thus, each of the push plates 18 is stopped by the projection 10 at a position where the manipulating projection 19 of the push plate 18 is projected from the side plate 6. Then, the upper portion of the housing 11 shown by the dot-dash line in Fig. 5 is pressed down by bending the lower corner to the solid line position of Fig. 5, so that the housing 11 is secured in the first link 2.

The stopper plate 9 may be inserted in the housing 11 at the assembling of the buckle together with the push plates.

The cover 8 is connected to the base plate 5 by a pin 25 as described hereinafter. A collar 26 is inserted in the rounded portion 13 so that the inner diameter of the rounded portion 13 is equal to the hole 17. An opening coil spring 27 is mounted in the rounded portion 13 adjacent to the collar 26. An inner end of the coil spring 27 is fixed to the rounded portion 13 and an outer end 27a of the spring 27 is projected from the rounded portion 13 through a slit. The connecting portions 31 of the cover 8 are engaged with the both sides of the rounded portion 13 and the pin 25 is inserted into the hole 17 of the connecting portion 31, spring 27, collar 26 and hole 17 of the other connecting portion 31 in order. Thus, the cover 8 is pivotally mounted on the base plate 5. The outer end 27a of the spring 27 is abutted on the underside of the cover 8 so that the cover 8 is outwardly urged by the spring 27 to be opened as shown in Fig. 1.

Method of coupling the buckle will be described hereinafter.

The cover 8 connected to the base plate 5 is inserted into an opening between the engaging link 29 and the connecting link 30 of the second link 3 from the underside thereof. The engaging link 29 is put on the base plate 5 and the cover 8 is rotated about the pin 25 over the engaging link 29 toward the housing 11, so that the engaging lugs 14 are inserted into the notches 12 of the housing. The downward slants 15a of the hooks 15 are engaged with the slants 21a of the engaging projections 21 of the respective push plates 18 to inwardly push the projections 21 and hence the push plates against the elastic force of the spring 24. When the slants 15a pass the slants 21a, the engaging projections 21 are returned by the spring 24 and engaged with the hooks 15. Thus, the cover 8 is locked to the housing 11 of the base plate 5 so that the first link 2 is coupled to the second link 3 as shown in Figs. 4 and 5.

In order to disengage the buckle 1, the manipulating projections 19 are pushed at the same time so that the engaging projections 21 are disengaged from the hooks 15 of the engaging lugs 14. Since the end of the spring 27 is abutted on the underside of the cover 8 so as to urge it in the upward direction, the cover 8 is automatically opened when the hooks 15 disengage from the projections 21. Thereafter, the engaging link 29 is removed from the cover 8. Thus, the second link 3 is disconnected from the first link 2.

Referring to Figs. 7 to 10 showing the second embodiment, a buckle 40 of the second embodiment comprises a first link 42 connected to a first band member of the watch band, a second link 43 connected to a second band member, a base plate 45 mounted on the first link 42, and a cover 44 pivotally mounted on the base plate 45.

The first link 42 has a pair of side frames 46, and a connecting link 47 laterally provided between the side frames 46. The second link 43 has a pair of side frames 68, a lateral engaging link 69 provided between the side frames, and a lateral connecting link 67 provided opposite to the engaging link 69.

Both links 42 and 43 are formed by sharing a metallic plate and by applying surface plates 48 to the surfaces of the frames 46 and 68. Consequently, an opening 49 is formed by the end of he frame 46 and the surface plate 48.

A housing 50 and a rounded portion 53 are formed on the base plate 45 in the same manners as those of the first embodiment. A pair of notches 52 are formed on the housing 50, and a pair of stopper plates 51 are formed by cutting the plate on the lateral side of the housing adjacent to the notches 52.

The cover 44 comprises a front plate 44a, a pair of side plates 44b, a pair of engaging lugs 54 formed on the side plates 44b at the end portion corresponding to the notches 52 of the housing 50, and a pair of rounded portions 56 and 56a. The rounded portion 56a has a smaller diameter than the rounded portion 56. Each engaging lug 54 has an engaging hole 55.

A pair of push plates 58 are slidably mounted in the housing 50. The push plates 18 are the same in configuration and are symmetrically disposed in the housing. Each push plate 58 has a manipulating projection 59 projected from the opening 49 of the side frame 46, a notch 60 formed on one of the sides thereof corresponding to the notch 52 of the housing 50, an engaging projection 61 laterally projected from an inside wall of the notch 60 and having a downward slant 61a, a notch 62 formed adjacent to the engaging projection 61, and a notch 63. A return spring 64 is disposed between the notches 63 of the opposite push plates.

In assembling, the push plates 58 and the spring 64 are inserted in the housing 50 from one of the openings 49. After inserting of the push plates 58 and the spring 64, each stopper plate 51 is bent toward the notch 62 to be inserted into the notch. Thus, the push plates 58 are prevented from removing from the housing 50.

The cover 44 is pivotally mounted on the base plate 45 by a pin 57 having a small diameter portion 57a. An opening coil spring 65 is mounted in the rounded portion 53 at an end portion adjacent to the rounded portion 56a. The rounded portions 56 and 56a of the cover 44 are engaged with the rounded portion 53. The pin 57 is inserted into the rounded potions 56, 53 and 56a so that the small diameter portion 57a of the pin 57 is inserted into the rounded portion 56a.

Describing the method of coupling the buckle, the cover 44 is inserted into an opening between the engaging link 69 and the connecting link 67 of the second link 43 and the engaging link 69 is put on the base plate 45. The cover 44 is rotated to the housing 50 so that the engaging lugs 54 of the cover are inserted into the notches 52 of the housing. The underside of the engaging lugs 54 are engaged with the slants 61a of the engaging projections 61 of the respective push plates 18 to inwardly push the projections 61 against the elastic force of the spring 64. When the lugs 54 pass the slants 61a, the engaging projections 61 are returned by the spring 64 and engaged with the engaging holes 55. Thus, the cover 44 is locked to the base plate 45 to couple the first and second links 42 and 43 as shown in Figs. 9 and 10.

In order to disengage the buckle 40, the manipulating projections 49 are pushed at the same time to disengage the engaging projections 61 from the engaging holes 55 of the engaging lugs 54. Similarly to the first embodiment, since an outer end of the spring 65 is abutted on the underside of the cover 44 so as to urge it in the upward direction, the cover 44 is automatically opened.

Referring to Fig. 11 showing the third embodiment, a buckle 70 of the third embodiment is for a lady's watch band having a small width. The buckle 70 comprises a first link 72 connected to a first band member of a watch band, a second link 73 connected to a second band member, a base plate 75 mounted on the first link 72, and a cover 74 pivotally mounted on the base plate 75.

The first link 72 and the second link 73 are the same in configuration formed into a Y-shape in plane. Each link comprises a pair of side frames and a connecting lug. The first link 72 has a hole 72a formed on the connecting lug to be engaged with a pin for connecting the band and rectangular openings 76 formed on the side frames. The second link 73 has a hole 73a on the connecting lug for a pin of the other band and a lateral engaging rod 100 provided between the side frames.

Referring to Figs. 12 and 13, the base plate 75 has a housing 77 and a rounded portion 79 which are formed in the same manners as the previous embodiments. A notch 78 is formed in a central portion of the housing 77.

A pair of push plates 80 and 81 are slidably mounted in the housing 77. As shown in Fig. 12, the push plate 80 comprises a manipulating projection 80a, a step portion 80b, a lower plate portion 82 extending from the step portion 80b, a notch 82a formed on a side of the lower plate portion 82, an engaging projection 84 provided in the notch 82 having a downward slant 84a. The push plate 81 comprises a manipulating projection 81a, a notch 81b, an upper plate portion 83, a notch 83a formed on a side of the upper plate portion 83, and an engaging projection 85 having a downward slant 85a.

In assembling, as shown in Fig. 13, the upper plate portion 83 of the push plates 81 is mounted on the lower plate portion 82 of the push plate 80 to be slidably engaged with each other. The notches 82a and 83a are provided corresponding to each other. The engaging projections 84 and 85 are engaged with each other and disposed corresponding to the notch 78 of the housing 77 at the slants 84a and 85a. A return spring 86 is disposed between the step portion 80b of the push plate 80 and the notch 81b of the push plate 81. A stopper pin 88 is inserted into the housing 77 through a hole 89 (Fig. 14) formed in the base plate 75 and inserted in a space between the notches 82a and 83a of the respective push plates.

The stopper pin 88 is secured to the base plate 75 at the hole 89 by staking the pin. Thus, the push plates 80 and 81 are prevented from removing from the housing 77.

The cover 74 comprises an engaging lug 90 formed on an end portion thereof corresponding to the notch 78 of the housing 77 and a pair of connecting lugs 92 each having a hole 92a. The engaging lug 90 has a hook 91 and a pair of slants 91a formed on opposite sides of the lug 90.

The cover 74 is pivotally mounted on the base plate 75 by a pin 94. A collar 93 and a coil spring 95 are mounted in the rounded portion 79 in the same manner as the first embodiment. The connecting lugs 92 of the cover 74 are engaged with the rounded portion 79 and the pin 94 is inserted into the hole 92a of the connecting lug 92, spring 95, collar 93 and the other lug 92 in order. The cover 74 is outwardly urged by the spring 95 to be opened.

In use of the buckle, the cover 74 is inserted into an opening behind the engaging rod 100 of the second link 73. The engaging rod 100 is put on the base plate 75 and the cover 74 is rotated to the housing 77 so that the engaging lug 90 of the cover is inserted into the notch 78 of the housing. The slants 91a of the hook 91 are engaged with the slants 84a and 85a of the engaging projections 84 and 85 of the respective push plates 80 and 81 to outwardly push the projections 84 and 85 against the elastic force of the spring 86. When the hook 91 passes the slants 84a and 85a, the engaging projections 84 and 85 are returned by the spring 86 and engaged with the hook 91. Thus, the cover 74 is locked to the base plate 75 as shown in Figs. 14 and 15.

The buckle 70 is disengaged in the same manner as the previous embodiments. Namely, the manipulating projections 82 and 83 are pushed to disengage the engaging projections 84 and 85 from the hook 91. Since the end of the spring 95 is abutted on the underside of the cover 74 so as to urge it in the upward direction, the cover 74 is automatically opened.

In accordance with the present invention, stopping means for the push plates are not exposed, the appearance of the buckle is improved. Since the housing is formed integral with the base plate, the thickness of the buckle is reduced.

In the third embodiment, the push plates are partially overlapped with each other and the engaging projections are provided on the overlapped portions. Thus, the width of the buckle is reduced to be available for the lady's watch having a small width.

Claims

1. A buckle for a watch band having a first band member (32) and a second band member (33), the buckle having a first link (2) connected to the first band member, a second link (3) having an engaging link and connected to the second band member, a base plate (5) secured to said first link, a housing (11) formed on a part of said base plate, a pair of push plates (18) provided in the housing so as to be moved in a lateral direction with respect to a longitudinal direction of said watch band, each of said push plates having an engaging projection (21) and a slant (21a) formed on the engaging projection, spring means (24) for urging each of said push plates in an outward direction, stopping means (10) provided for stopping each of said push plates urged by said spring means at a position where an outer end of the push plate is projected from the first link, a cover (8) pivotally connected to an end of said base plate, characterized in that

   the stopping means (10) is provided in the housing,

   engaging lug means (14) is provided on an underside of said cover;

   said cover is provided such that said engaging lug means is engaged with said engaging projections of said push plates;

   an opening spring (27) is provided between said base plate and said cover for urging the cover to an open position.

2. The buckle according to claim 1 wherein said housing is formed by bending the base plate.

3. The buckle according to claim 1 wherein

   said engaging lug means of said cover comprises a pair of lugs, each of the lugs has a slant to be engaged with said slant of the engaging projection of the push plate.

4. The buckle according to claim 1 wherein

   said engaging lug means comprises a pair of lugs, each of the lugs has an engaging hole to be engaged with said engaging projection of said push plate.

5. The buckle according to claim 1 wherein

   said engaging lug means comprises an engaging lug having a hook and a pair of slants formed on opposite sides thereof.

6. The buckle according to claim 1 wherein

   said stopping means comprises a stopper plate having a pair of projections to be engaged with said push plates.

7. The buckle according to claim 1 wherein

   said stopping means comprises a pair of stopper plates formed by cutting the plate of the housing.

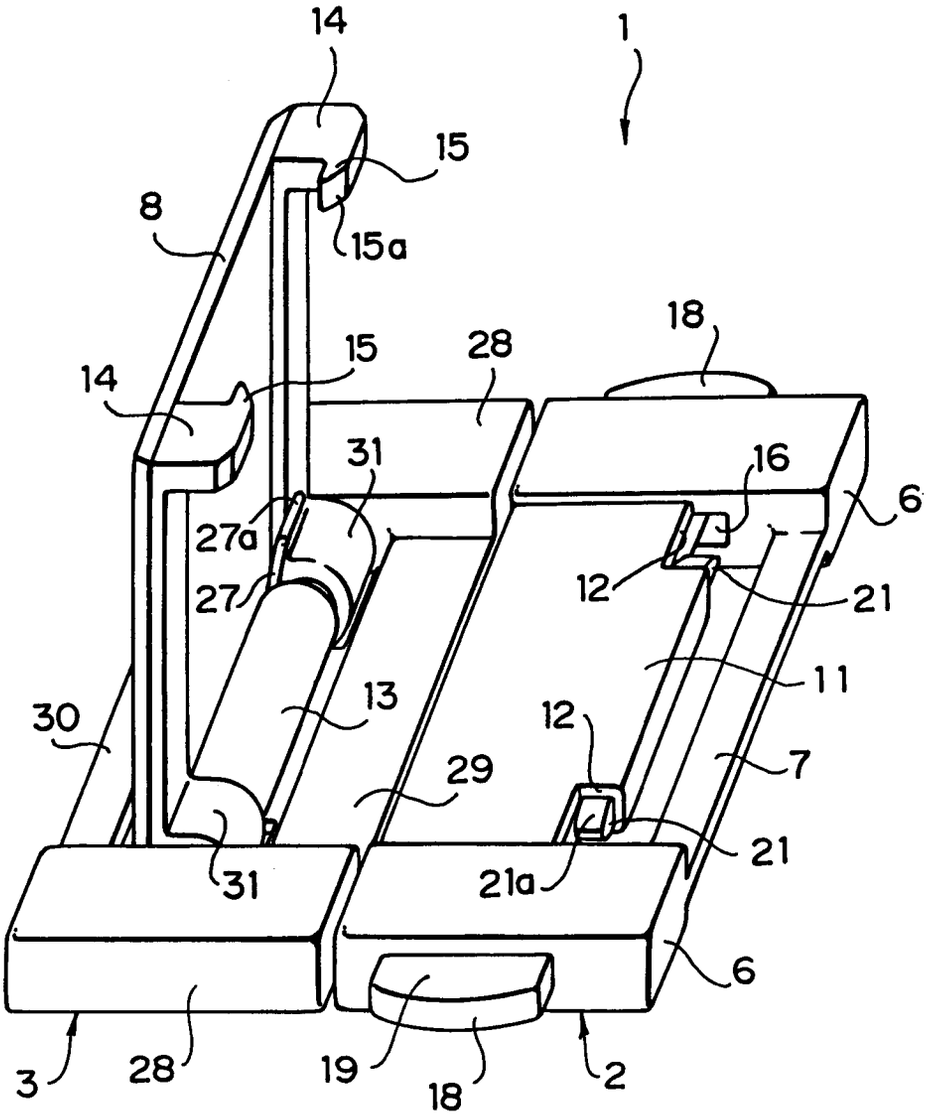
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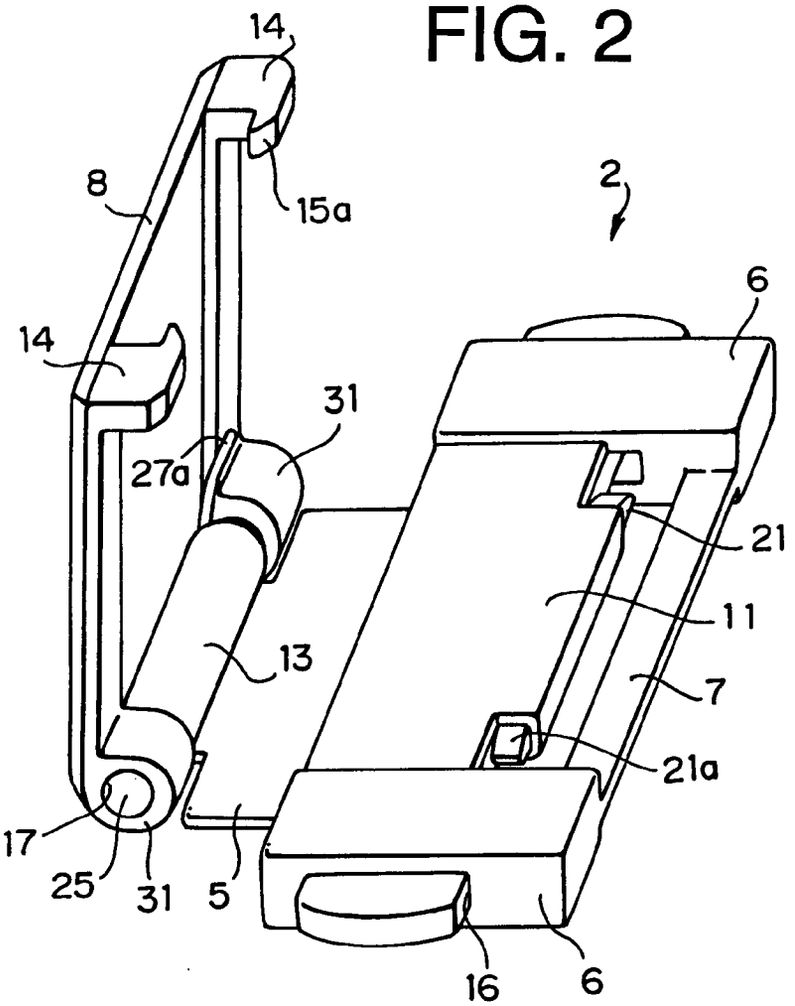
FIG. 1

FIG. 2



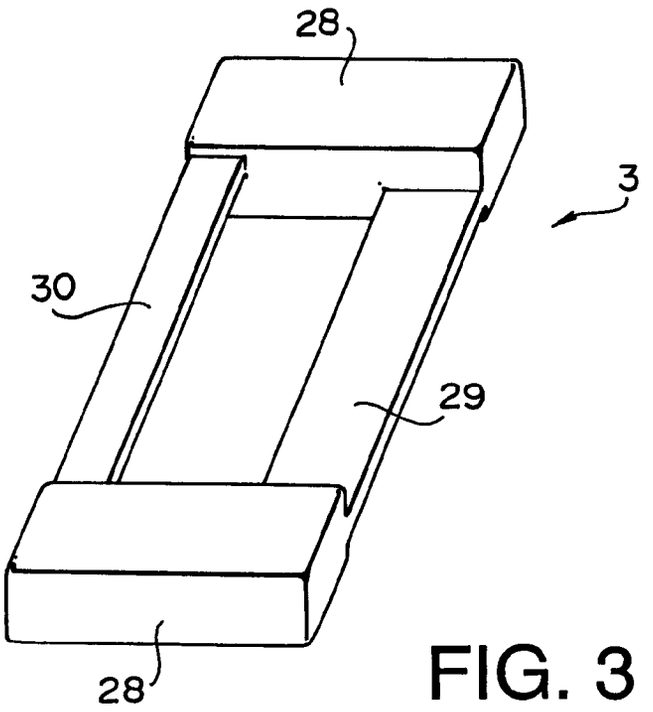


FIG. 3

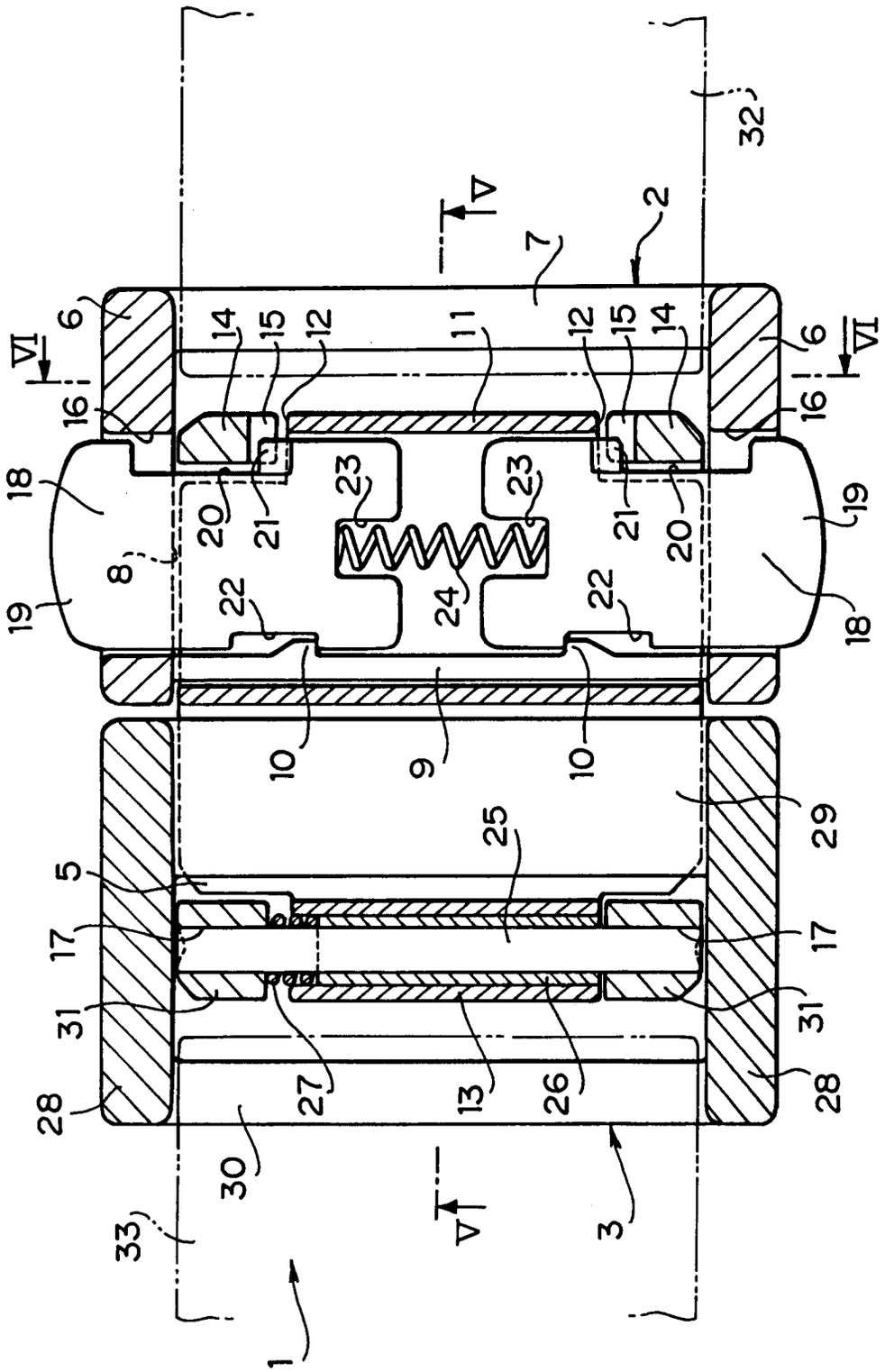

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FIG. 4

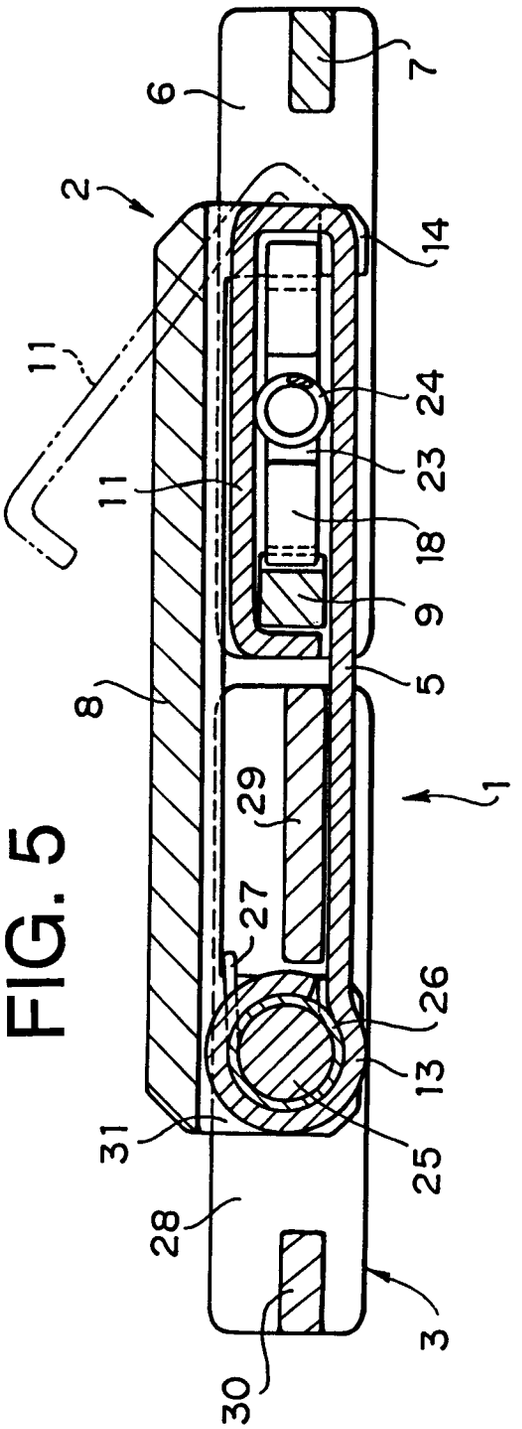
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FIG. 5

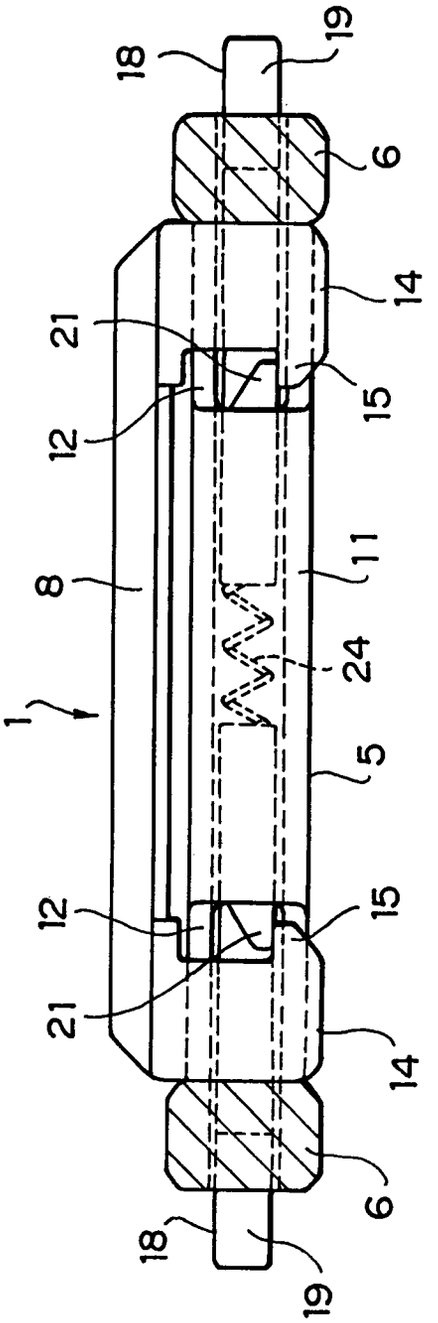
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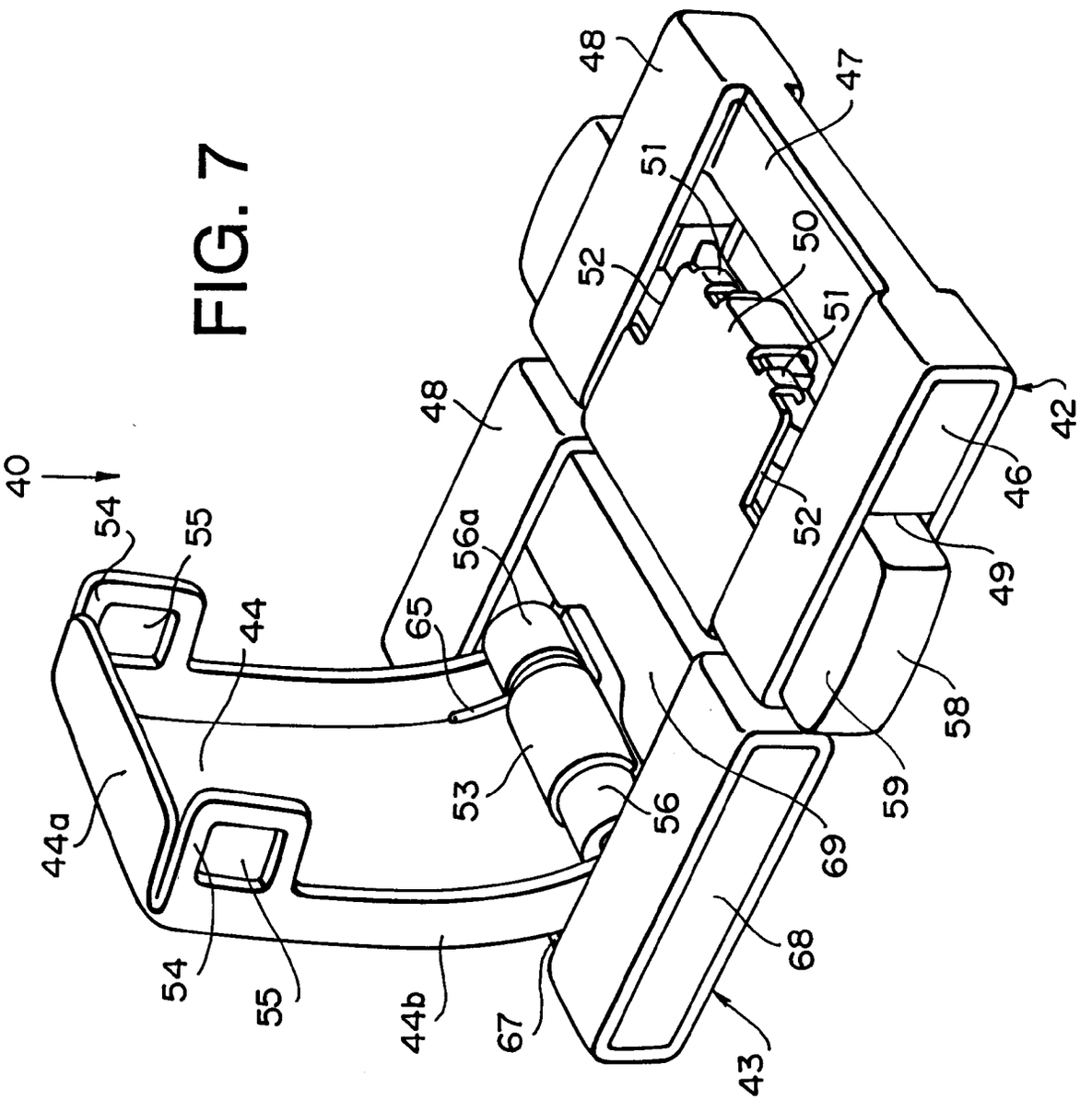
FIG. 6

FIG. 7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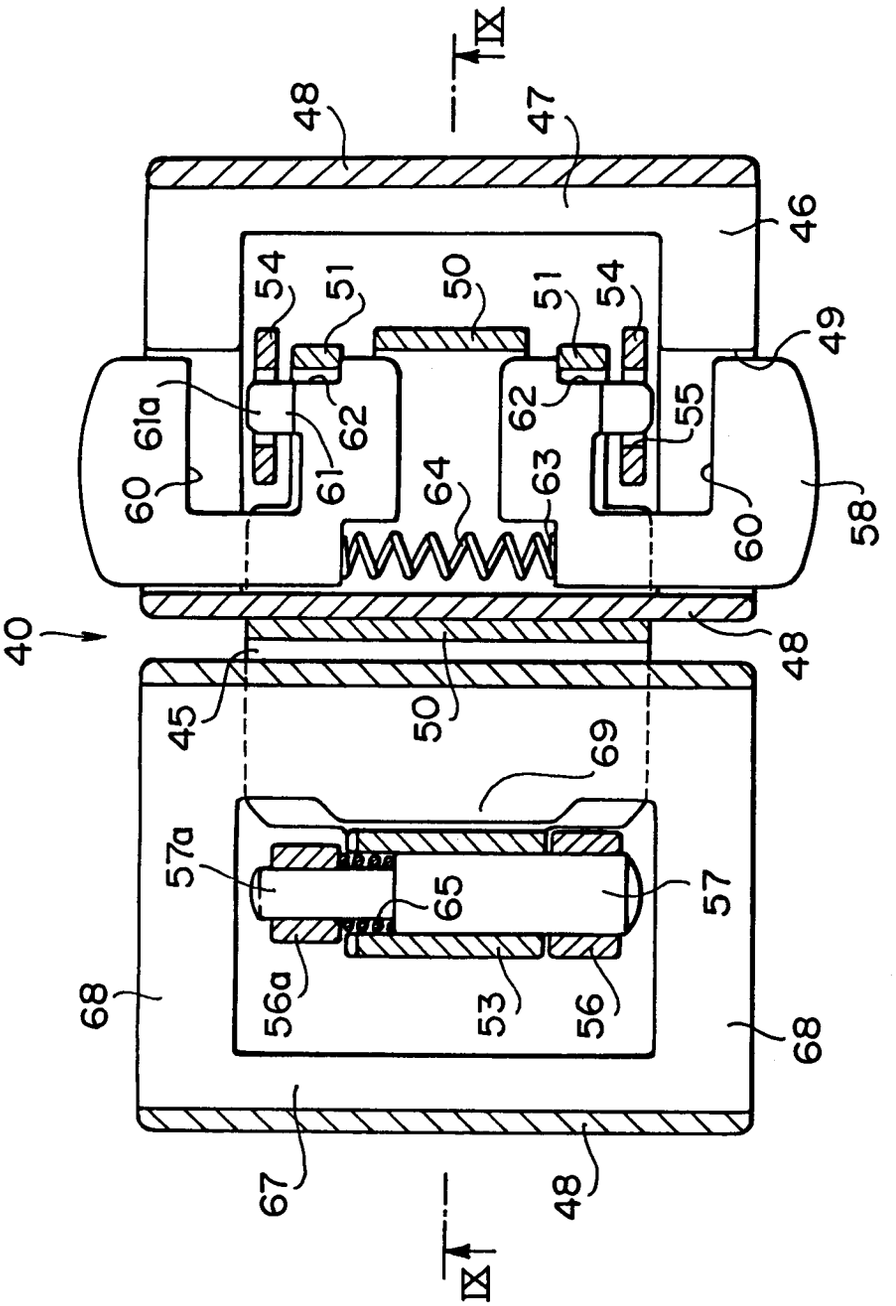
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FIG. 8

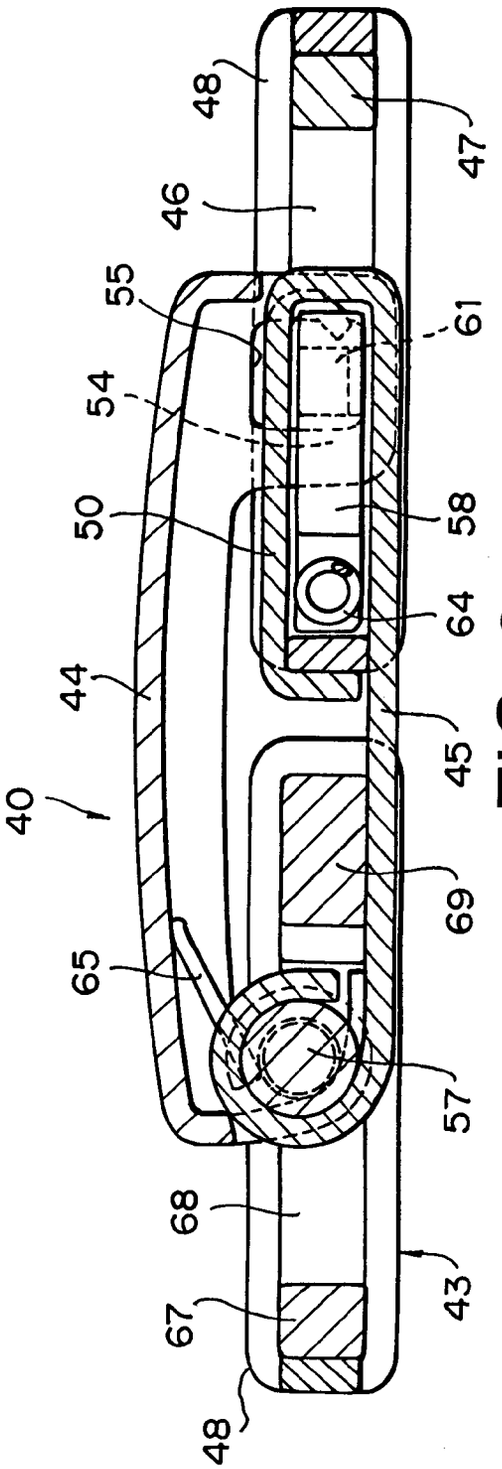
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FIG. 9

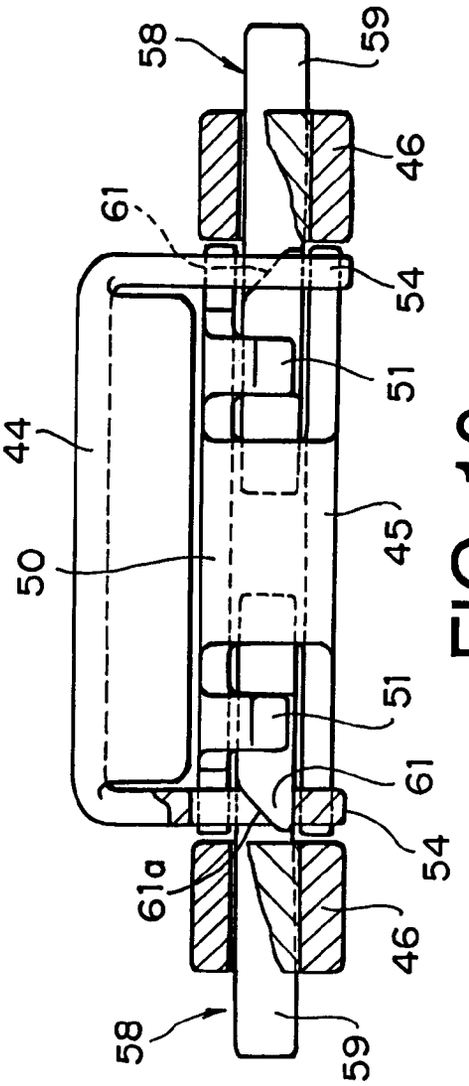
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FIG. 10

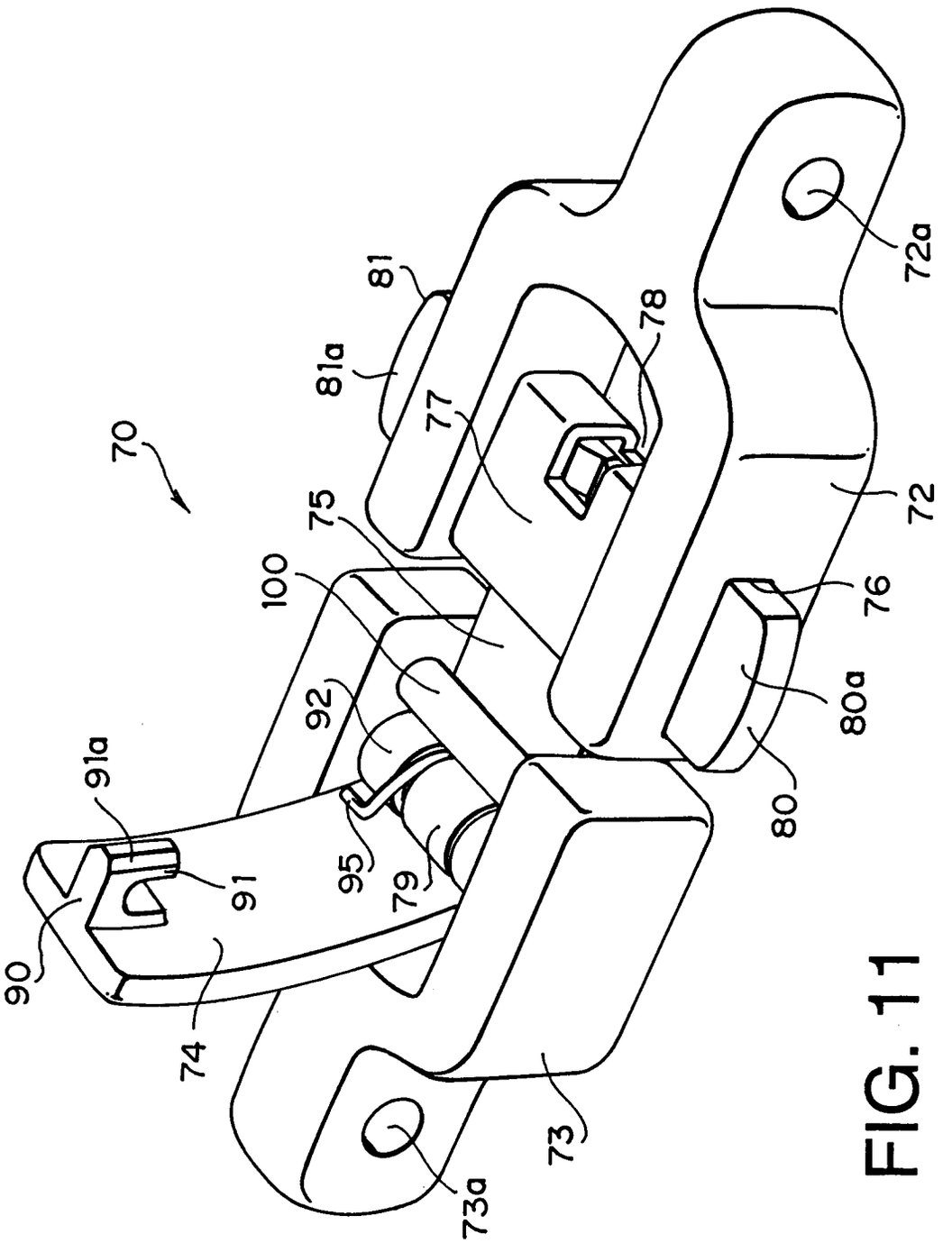

FIG. 11

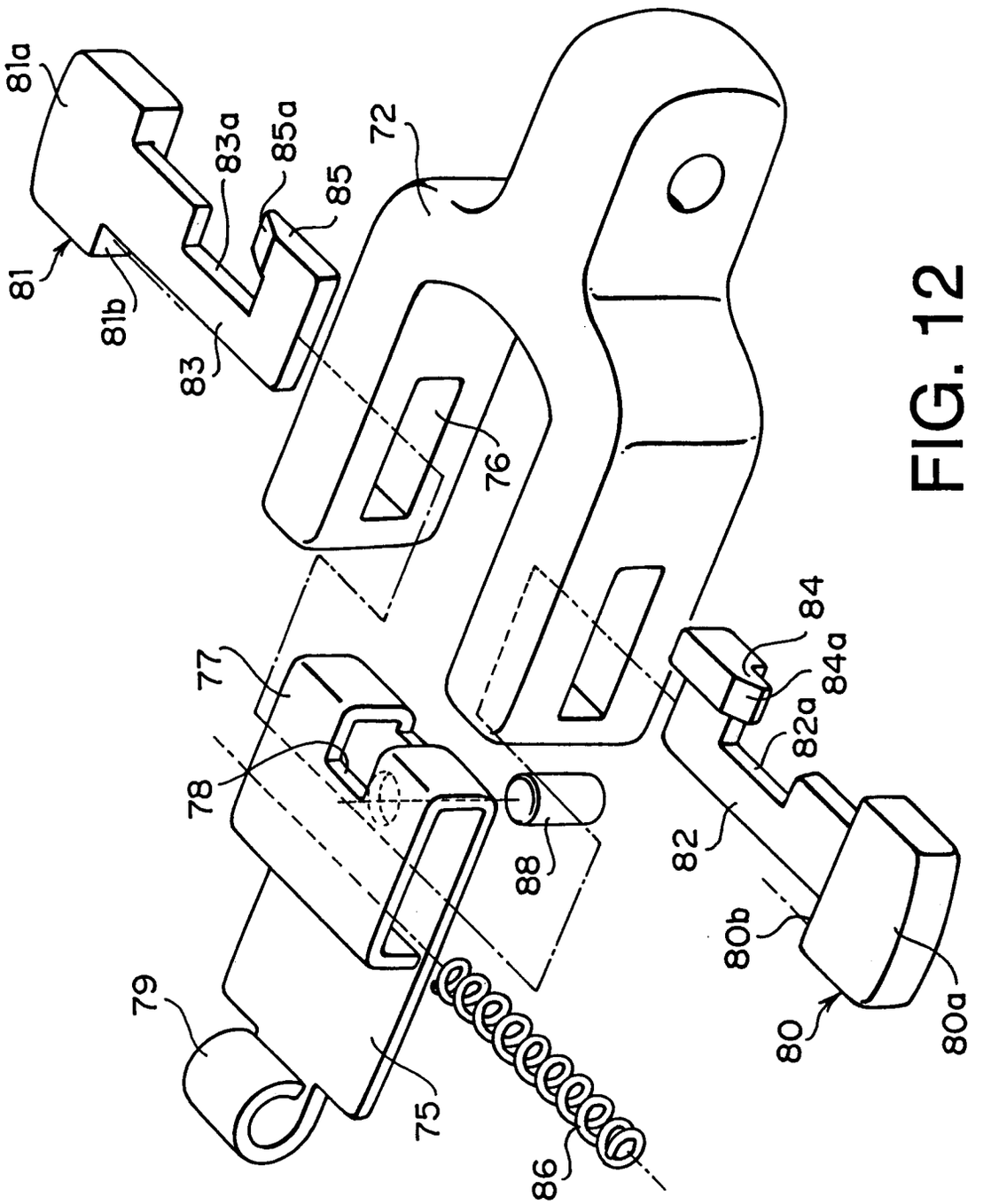
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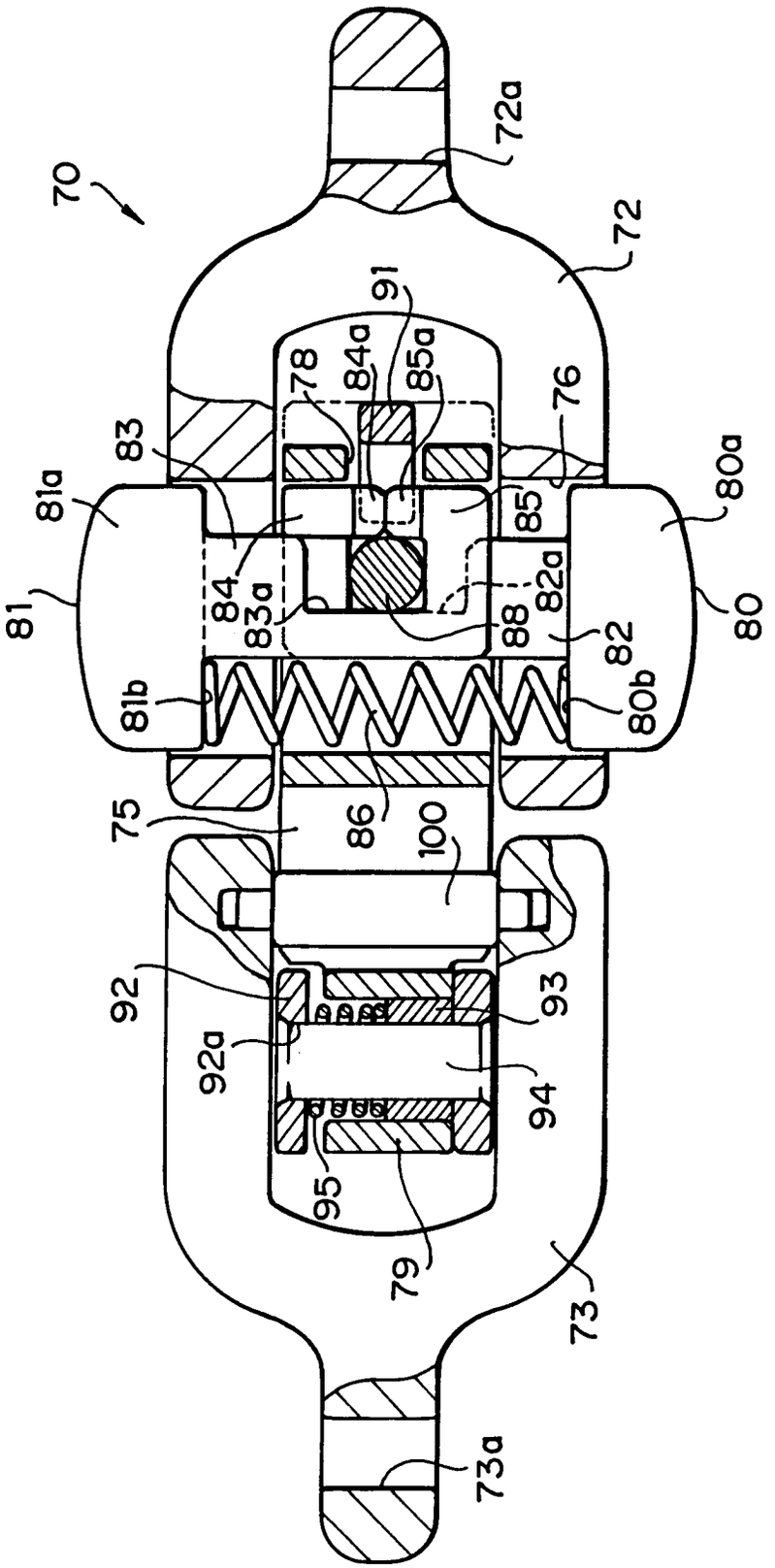
FIG. 12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73a

FIG. 13

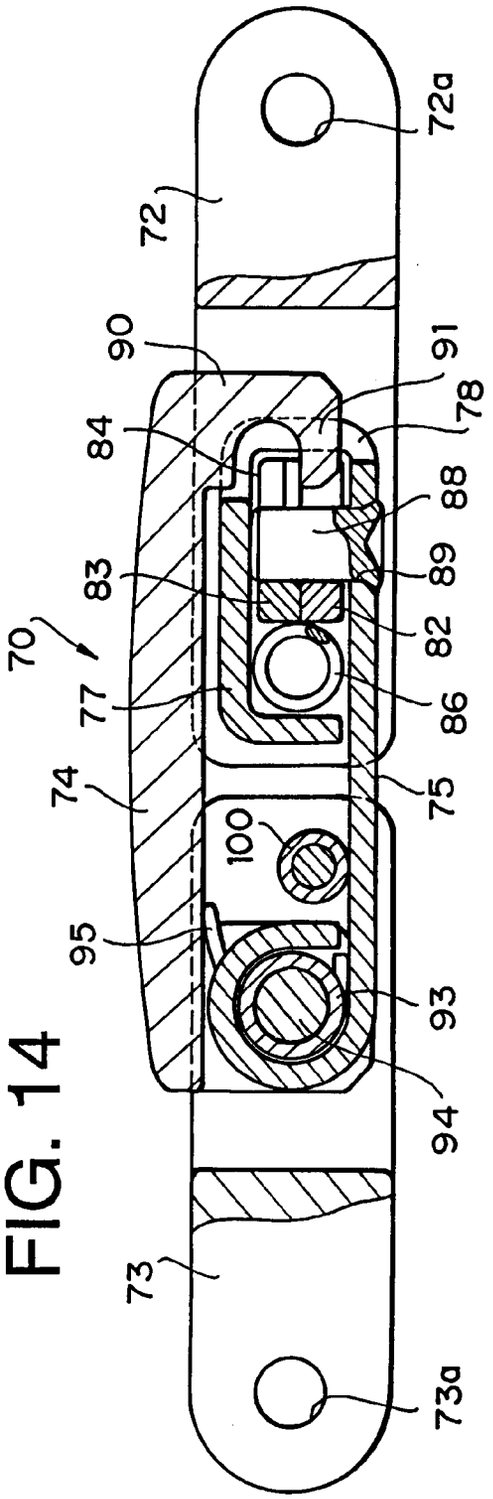
72a
72
90
91
78
84
88
89
83
82
70
77
86
74
75
100
95
93
94
73
73a

FIG. 14

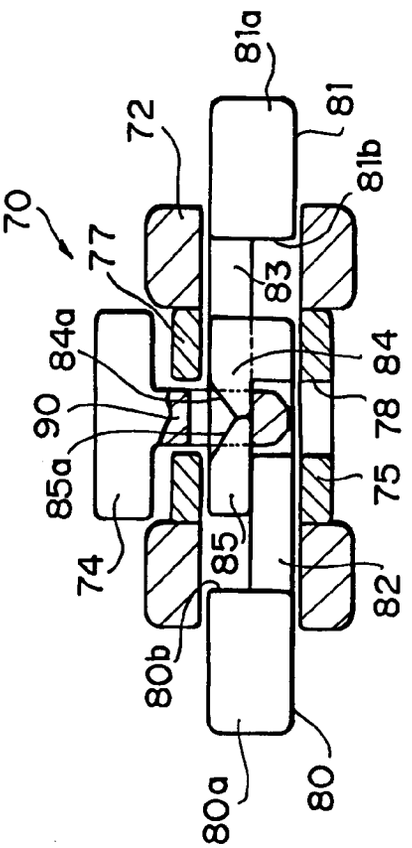
81a
81
72
81b
70
77
83
84a
84
90
78
85a
75
74
85
82
80b
80a
80

FIG. 15

European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 93 30 6629

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.5)
Y,D	JP-U-454 216 (...) * figures 1-6 *	1	A44C5/20
Y	FR-A-648 607 (H. A. HEUGAS) * page 1, line 45 - page 2, line 23; figures 1-9 *	1	
A	US-A-2 532 840 (H. M. GAUN) * column 2, line 50 - column 5, line 47; figures 1-14 *	1,3	
A	FR-E-89 687 (A. BALLET & FILS) * the whole document *	1	
A	CH-A-646 314 (G. ET F. CHÂTELAIN S. A.) * the whole document *	1,4	

TECHNICAL FIELDS SEARCHED (Int.Cl.5)
A44C

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	3 December 1993	Garnier, F

CATEGORY OF CITED DOCUMENTS

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