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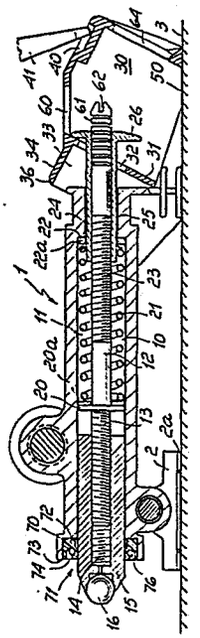
(54) Rear latching body structure for ski bindings.

(57) The rear latching body structure for ski bindings comprises an outer casing (1), a throughgoing cavity (10) defined in the casing for slidably accommodating a pressure element (11) therein which has a tip (15) projecting frontally out of the casing (1), an elastic means (21) acting between a middle portion of the pressure element and a rear wall portion of the cavity (10), as well as a bushing (24) with a flange (26) at an end thereof, the bushing being at least partially accommodated in the cavity and connected with a threaded portion of the pressure element (11) as well as slidably projecting out of a hole (25) in the rear wall portion of the cavity. For preventing any forcing of the pressure element during the disengagement from the shoe, the rear latching structure comprises a box-like body (30) having a front wall (31) engageable by the flange to hold the box-like body in engagement with the outer casing and presenting a hole (32) accommodating the bushing (24). Furthermore the box-like body defines frontal guiding walls (33, 34) arranged astride a rear end of the casing (1), guiding the oscillatory movement of the box-like body (30) and producing the translation of the pressure element (11) against the bias force of the elastic means (21).



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"REAR LATCHING BODY STRUCTURE FOR SKI BINDINGS"

This invention relates to a rear latching body structure for ski bindings.

Prior patents by this same Applicant, and in particular U.S. Patent N. 4.353.574, incorporated hereto by reference, disclose a ski binding which comprises essentially a front latching body and rear latching body which cooperate together in locking the sole of a ski shoe.

The rear latching body has an outer casing which is associated, at the front portion thereof, with a ski, and has a rear lug arranged to bear on the ski at a point away from the point of installation of the front portion connecting screws.

Provided inside said casing is a throughgoing seat which accommodates a pressure element having a tip end projecting frontally out of said cavity and being pivotally engaged with a threaded stem forming the front end of the pressure element rod. Provided on a middle portion of said stem is an annular boss on which there acts an elastic means including a coil spring which acts, with its other end, against the rear portion of said cavity.

The stem has at its rear end a threaded portion which engages rotatably with a bushing supported for axial sliding movement by an opening defined in the rear end of said casing. The bushing defines, at its end projecting out of the casing, a flange which contact engages with a crank lever plate having, in

the bottom leg thereof, a window wherethrough the bushing is passed such that the bushing flange holds said bottom leg pressed against the rear of the casing; furthermore, the bottom leg extends upwards to form a top leg having a recess for engagement with the tip of a ski pole or stick in order to move the pressure element rearwards against the elastic bias force of said spring and then moving the tip rearwards which disengages from the shoe. In practice, the free end of the bottom leg trips on the rear of said casing and causes the crank lever plate to pivot about that point, the lever plate by engaging with the cited bushing flange causing the stem to move rearwards and releasing the shoe.

This embodiment, which has shown to be quite useful in principle, is nevertheless susceptible to improvement especially as regards its construction, because it has been found that the provision of a simple crank lever plate can cause, in the event of the plate undergoing excessive pressure forces, flexing of, and consequent damage to, the stem or rod of the pressure element, while the crank lever plate is not adequately guided during its oscillation, so that undesired displacements may occur and resulting malfunctions.

It is a primary object of this invention, therefore, to obviate such prior shortcomings by providing a rear latching body structure incorporating means for producing translation of the pressure element,

as the shoe is being released, while giving full assurance of an appropriate positioning of said means for translation and preventing any forcing of the stem or rod.

A further object of the invention is to provide a rear latching body structure wherein a set calibration of the pressure element is at all times readily under control.

Another object of the invention is to provide a rear latching body structure whereby, owing to its peculiar construction, maximum safety and reliability in use can be achieved.

These and other objects, such as will be apparent hereinafter, are achieved by a rear latching body structure for ski bindings, according to the invention, comprising an outer casing, a throughgoing cavity defined in said casing for slidably accommodating a pressure element therein, said pressure element having a tip projecting frontally out of said casing, an elastic means acting between a middle portion of said pressure element and a rear wall portion of said cavity, a bushing with a flange at an end thereof, said bushing being at least partially accommodated in said cavity and threadably connected with a threaded portion of said pressure element as well as slidably projecting out of a hole in said rear wall portion of said cavity, characterized in that it comprises a box-like body having a front wall portion engageable by said flange to hold said box-like body in engagement with said outer casing and presenting a hole accommodating said

bushing, said box-like body defining frontal guiding walls arrangedastride a rear end of said casing and guiding the oscillatory movement of said box-like body as well as producing translation of said pressure element against the bias force of said elastic means.

Further features and advantages will be more readily understood from the following detailed description of a rear latching body structure for ski bindings, according to the invention, with reference to the accompanying illustrative drawings, where:

Figure 1 is an exploded perspective view showing diagramatically this rear latching body;

Figures 2,2a and 2b show different embodiments of a detail of Figure 1;

Figure 3 is a detail view, in perspective, of the latching body for the rear end of the cited casing;

Figure 4 is a side view of the rear body;

Figure 5 is a bottom view of the rear body;

Figure 6 is a top view of the rear latching body;

Figure 7 shows diagramatically the positioning of the rear body as the shoe is being released;

Figure 8 is an enlarged sectional view of the rear body as the shoe is being released;

Figure 9 is an axial section view of the rear body; and

Figure 10 shows a ear having two holes.

Making reference to the drawing views, the

rear latching body structure for ski bindings of this invention includes an outer casing, generally designated with the reference numeral 1, which has advantageously an elongate configuration.

The cited casing 1, at the proximity of its front end, is pivotally connected to a pair of ears 2 attached to a ski 3 so as to rotate about a substantially horizontal axis extending transversely to a ski length direction.

The casing 1 defines at the front portion thereof a lug 4 forming a support for the casing 1 at a position away from that of the cited ears 2.

As shown in Figure 10, the ears 2 may have a pair of holes for changing the position of the casing 1. Furthermore, under the ears 2, there may be positioned replaceable shimming plates, indicated at 2a. The casing 1 defines on its interior a cavity 10 which accommodates a pressure element, generally indicated at 11, which comprises a stem or rod 12 having a front threaded portion 13 adapted for engagement with a threaded cavity 14 defined by a tip 15 which projects frontally out of the cavity 10. Said tip, as illustrated in the aforementioned Patent, is provided on its front end with a ball 16 adapted for reception in the cavity defined by the rear portion of the sole of a ski shoe generally indicated at 17.

The stem 12 has, at a middle portion thereof, an annular embossment 20 which, with the interposition of a

washer 20a, acts as an abutting surface for an end of an elastic means, formed by a coil spring 21 acting at the other end on the bottom 22, i.e. on the rear end of the cavity 10. Between the bottom 22 and the spring 21 a gasket 22a is provided which practically seals off the cavity 10.

Said stem or rod 12 has a threaded portion 23 which engages rotatably in a bushing 24 provided with an outer flange 26 and slidably engaging with a rear hole 25 defined in the outer casing.

The rear latching body includes means of translating said stem 12 against the bias of said spring 21, which means comprises a box-like body generally indicated at 30.

The box-like body 30 has a front wall 31 which engages with said flange 26 to hold the box-like body 30 elastically urged against the rear portion of said casing 1.

The wall 31 is formed with an elongate hole 32 wherethrough said bushing 24 is passed.

The box-like body 30 includes on the front guiding walls formed by sidewalls 33 and an upper wall 34 which engage astride depressions 35 correspondingly defined in the rear portion of the casing 1 to thereby provide a guiding fit for the oscillatory movement of the box-like body 30, as explained more fully hereinafter.

The box-like body 30 defines, in the upper portion thereof, a recess 40 wherein the tip 41 of a ski pole may be engaged to apply a pressure force effective to generate an oscillation of the box-like body 30

by trip engagement of the bottom end of the front wall 31 with the rear wall of the casing and thus producing translation of the stem 12, because the inclination assumed by the wall 31 by engagement with the flange 26 causes a translatory movement of the bushing, and hence of the stem 12.

It should also be pointed out that the guiding walls 33 and 34 have tapered portions 36 at the front which form in practice an icebreaker element adapted to prevent any deposits of snow in the depressions 35 from affecting the proper operation of the device.

In order to prevent forcing and attendant flexing of the stem, when a pressure is applied through the tip 41 of the ski pole on the box-like body 30, the box-like body 30 is provided, at the rear lower corner thereof, with a cutout 50 which is arranged to bear on the ski 3 and form a stop element for the oscillatory movement of the box-like body.

It should be also added to the foregoing that the box-like body 30 has a window 60 formed at the top thereof for reaching notches 61 defined on the stem rear end and so located as to permit visual inspection of the calibration set for the pressure element 11.

For calibrating the pressure element 11 at the rear end of the stem 12 there is provided a notch 62 which is engageable by a tool, such as a screwdriver 63, which would be passed through an opening 64 in the rear portion of the box-like body 30.

Furthermore, the casing 1 forms, at its front

end, a seat 70 which is open on the front and accommodates a seal 71 preventing any seepage during the sliding movement of the tip 15.

Said seal 71 is of a type having an annular center body 72 with a radially outer lip 73 and a radially inner lip 74, respectively engageable with the sidewall of the seat 70 and tip 15.

The lips 73 and 74 bound an annular seat 75 wherein a small snap ring 76 may be introduced to maintain the sealed fit between the tip 15 and casing 1.

It may be appreciated from the foregoing description that the invention achieves its objects, and in particular that the box-like body has been configured to perform an oscillation on tripping with its front wall over the rear portion of the casing 1, without any possibility for side movements since the box-like body is guided in its oscillatory movement by the guiding walls 33 and 34 engaging with the depressions 35 provided on the rear portion of the casing 1.

Furthermore, the cutout 50 provides a stop for the oscillation of the box-like body 30, thus affording protection against any possible forcing of the pressure element due to the box-like body carrying out an excessive oscillatory movement.

The box-like body is also provided with a window 60 which permits visual inspection of the calibration set for the bindings even with a shoe secured in the bindings.

It should be also added for completeness that

the outer flange 26 may have an elongate configuration to prevent the bushing 25 from turning as the stem 12 is being rotated to adjust it (Figures 1 and 2); in another embodiment the bushing 24 has a polygonal bushing 26b (Figure 2a and 2b) contacting the inner walls of the box-like body and/or may include a lock plate 26a (Figure 2a).

In practicing the invention, the materials used, if compatible with the intended specific application, as well as the dimensions and contingent shapes, may be any selected ones to meet individual requirements.

CLAIMS

1. A rear latching body structure for ski bindings, comprising an outer casing (1), a throughgoing cavity (10) defined in said casing for slidably accommodating a pressure element (11) therein, said pressure element having a tip (15) projecting frontally out of said casing (1), an elastic means (21) acting between a middle portion of said pressure element (11) and a rear wall portion of said cavity (10), a bushing (24) with a flange (26,26b) at an end thereof, said bushing being at least partially accommodated in said cavity and threadably connected with a threaded portion (23) of said pressure element (11) as well as slidably projecting out of a hole (25) in said rear wall portion of said cavity (10), characterized in that it comprises a box-like body (30) having a front wall portion (31) engageable by said flange (26,26b) to hold said box-like body (30) in engagement with said outer casing (1) and preventing a hole (32) accommodating said bushing (24), said box-like body (30) defining frontal guiding walls (33,34) arranged astride a rear end of said casing (1) and guiding the oscillatory movement of said box-like body (30) as well as producing translation of said pressure element (11) against the bias force of said elastic means (21).

2. A rear latching body structure, according to Claim 1, characterized in that said guiding walls comprise sidewalls (33) and a center wall (34) arranged astride a depression (35) formed in said rear end of said casing (1).

3. A rear latching body structure, according to the preceding claims, characterized in that said guiding sidewalls (33) and center wall (34) present tapered portions (36) along the free ends thereof.

4. A rear latching body structure, according to one or more of the preceding claims, characterized in that said box-like body (30) engages, during the oscillation thereof, at a bottom portion of said front wall (31), with said rear end of said outer casing (1).

5. A rear latching body structure, according to one or more of the preceding claims, characterized in that said box-like body (30) has, at the bottom rear end thereof, a cutout (50) forming a stop for the oscillatory movement of said box-like body (30).

6. A rear latching body structure, according to one or more of the preceding claims, characterized in that a rear end of said pressure element (11) presents reference calibration notches (61) and said box-like body (30), at the top, has a sighting window (60) for said calibration notches.

7. A rear latching body structure, according to one or more of the preceding claims, characterized in that said box-like body (30) is formed at the top with a recess for engagement by a ski pole (41) or the like causing said box-like body to complete said oscillation.

8. A rear latching body structure, according to one or more of the preceding claims, characterized in that a rear end of said box-like body (30) has a throughgoing opening (64) for a pressure element adjusting tool.

9. A rear latching body structure, according to

one or more of the preceding claims, characterized in that a front end of said casing (1) presents a frontally open seat (70) accommodating a seal (71) interposed between said outer casing (1) and said tip (15) of said pressure element (11).

10. A rear latching body structure, according to one or more of the preceding claims, characterized in that said seal comprises a gasket (70) having a center body (72) provided with a radially outer lip (73) and a radially inner lip (74), respectively abutting against said tip (15) and a sidewall of said seat (70), a snap ring (76) being received in the area included between said outer lip (73) and said inner lip (74),

11. A rear latching body structure, according to one or more of the preceding claims, characterized in that said outer casing (1) is pivotally connected, at a front end thereof, to small ears (2) attached to a ski (3) for oscillation about an axis extending substantially horizontal and substantially perpendicular to the length direction of said ski (3).

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Fig. 10

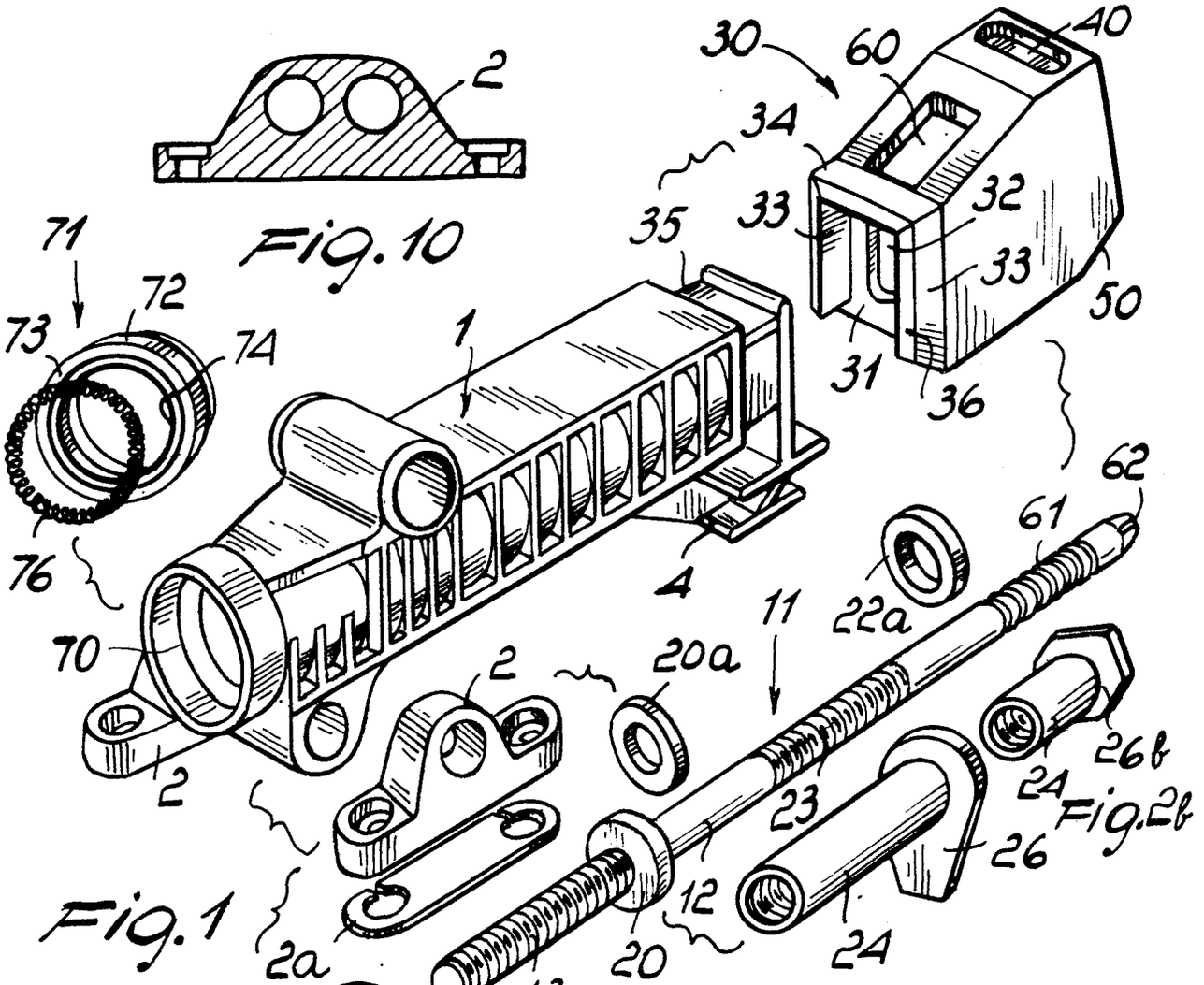
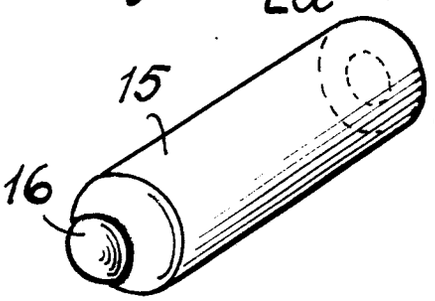


Fig. 1

Fig. 2b



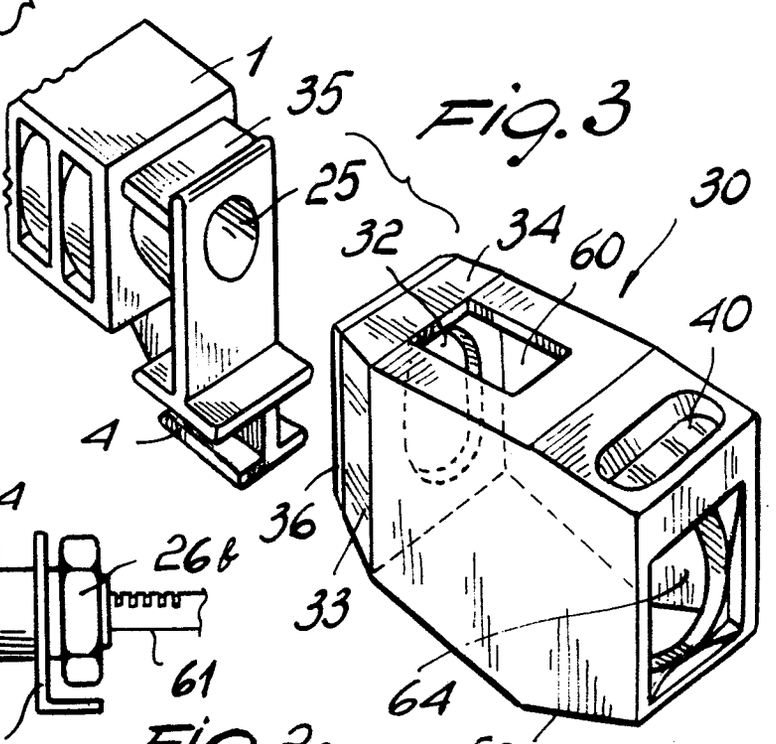


Fig. 3

Fig. 2

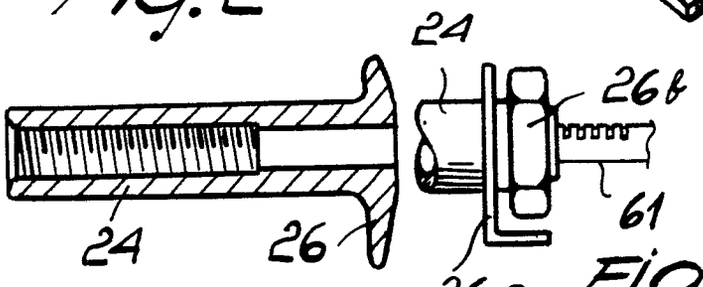


Fig. 2a

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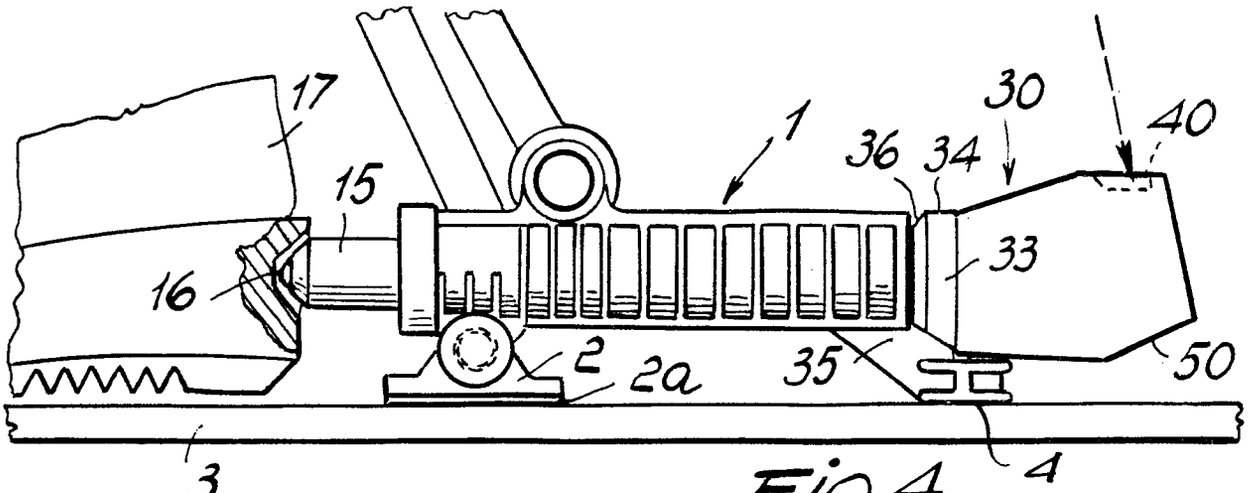

Fig.4

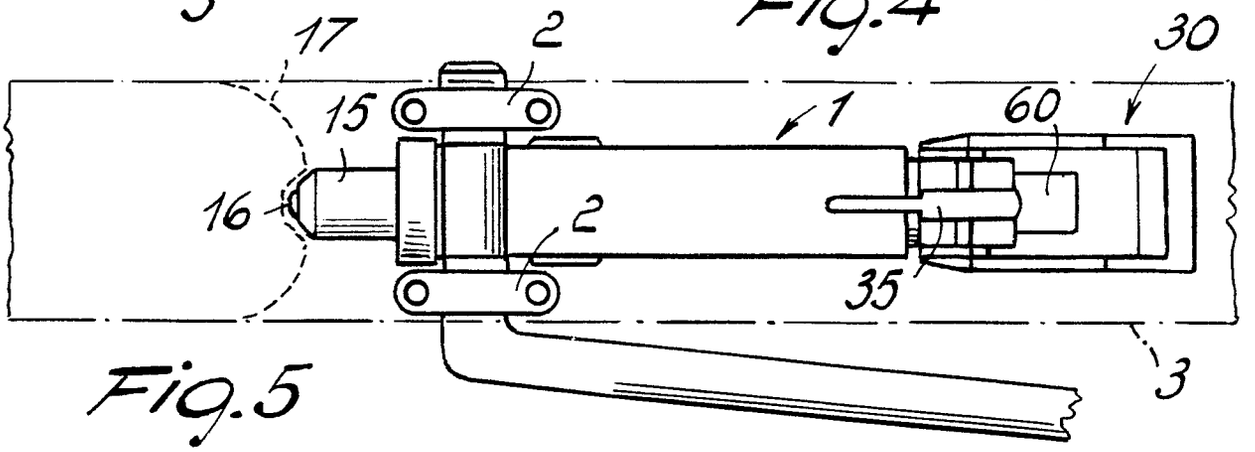

Fig.5

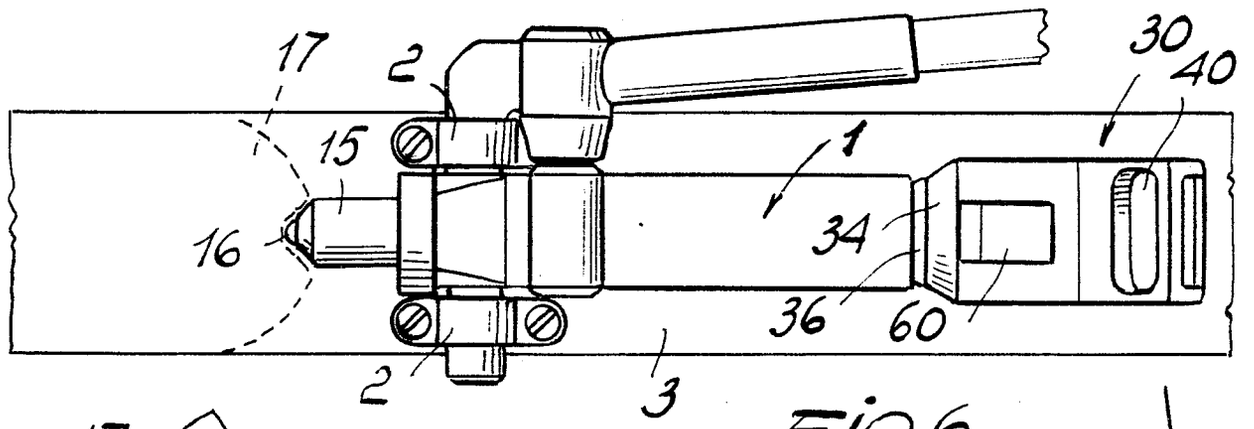

Fig.6

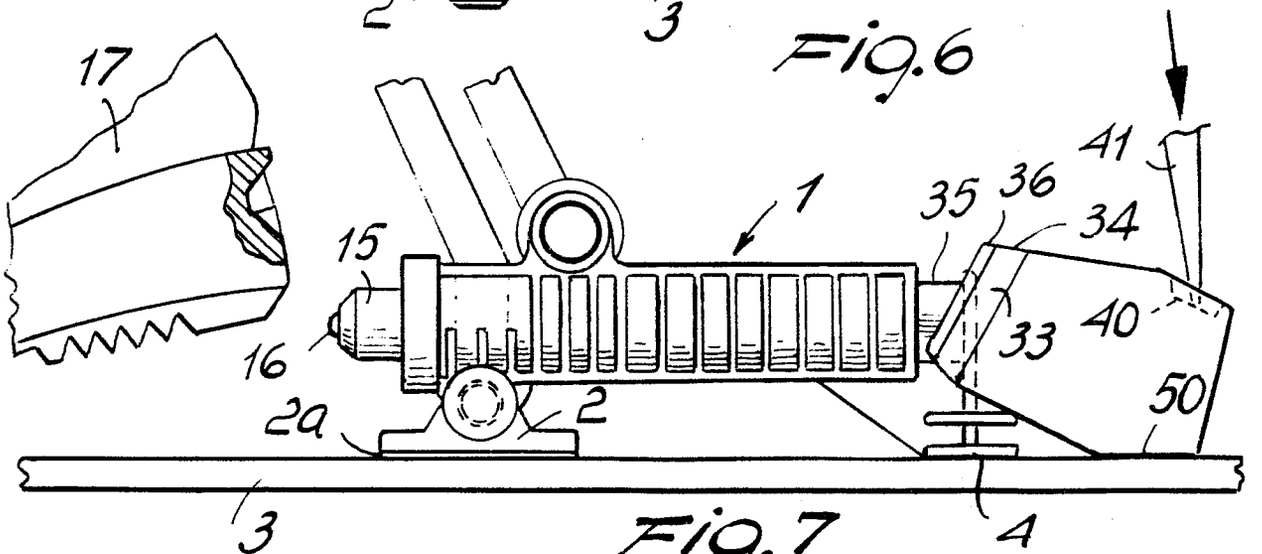

Fig.7

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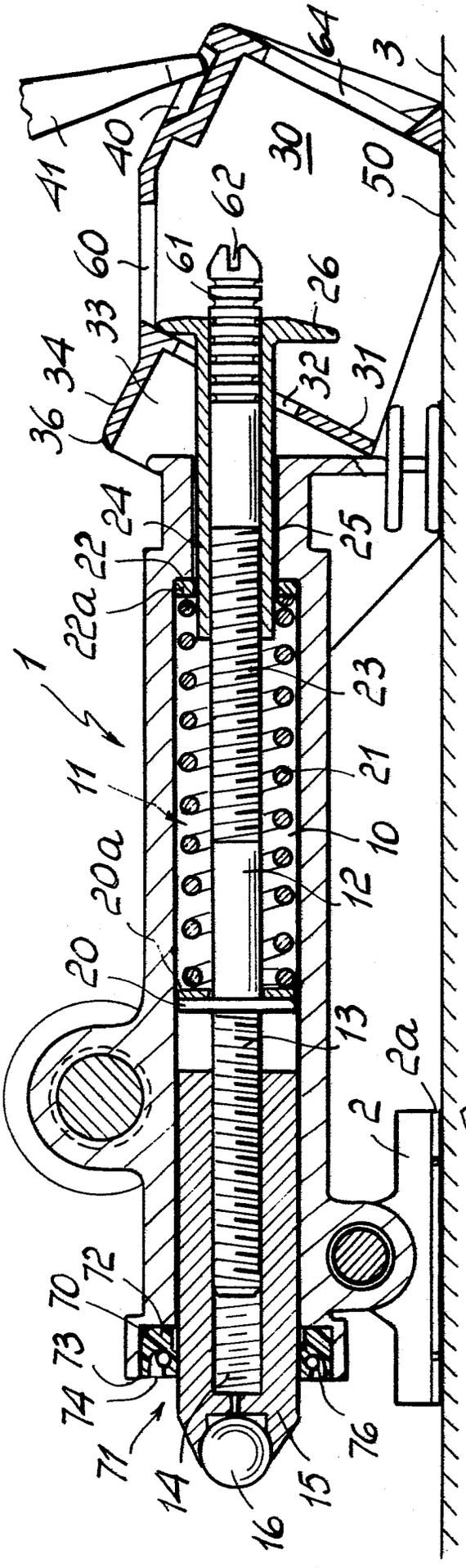

Fig. 8

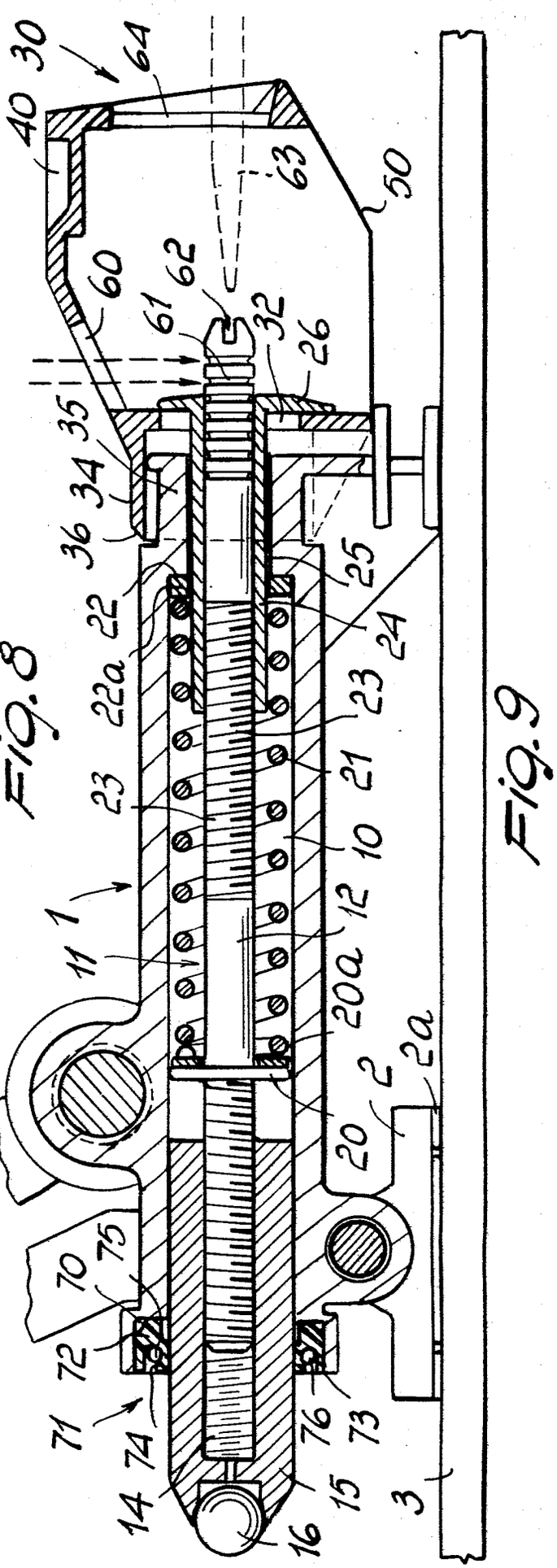

Fig. 9

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EUROPEAN SEARCH REPORT

0126274
Application number

EP 84 10 4092

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. ³)
A	EP-A-0 014 892 (A. FAULIN) * Whole document, in particular page 9, lines 19-29 and page 15, lines 20-26 * & US-A-4 353 574 (Cat. D, A)	1,11	A 63 C 9/00 A 63 C 9/086
A	US-A-2 793 869 (E. BRAUN) * Claim 1; figures 1-3 *	1	
A	FR-A-2 087 723 (R. LAUZIER) * Figures 9, 10, 12 *	5,7,8	
A	DE-A-2 511 571 (E.B. WULF) * Page 10, lines 22-25; figure 4, references 97, 94 *	9	

TECHNICAL FIELDS SEARCHED (Int. Cl. ³)

A 43 B 5/04
A 63 C 9/00

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
BERLIN	12-07-1984	CLOT P.F.J.

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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