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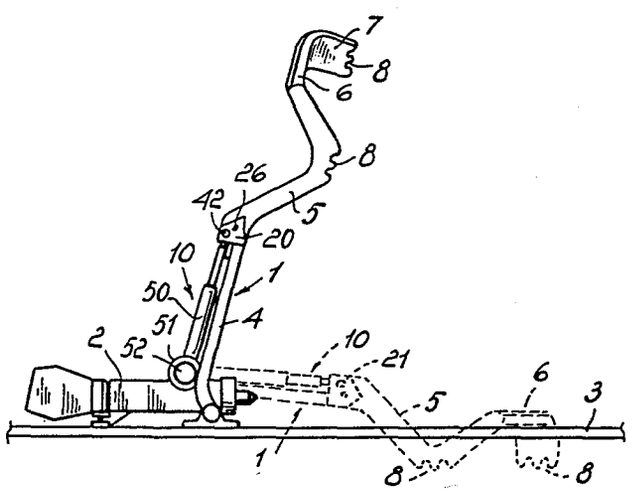
(54) Engagement assembly for ski binding application.

(57) The engagement assembly for ski binding application comprises a rod-like (1) element associable with a ski (3) for oscillation about an axis extending substantially parallel to the plane containing the ski (3) and substantially perpendicular to the ski length direction. The assembly comprises also means of engagement (5, 6, 7) with the skier's leg and elastic means (10) elastically helding the rod-like element (1) in contact with a back region of the skier's leg and having an elongate element of elastically changeable length. The elastic means (10) is removable and extends between a bracket (20) attached to the rod-like element (1) near the top end thereof and a pin (52) offset with respect to the oscillation axis of the rod-like element (1).



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"ENGAGEMENT ASSEMBLY FOR SKI BINDING APPLICATION"

This invention relates to an engagement assembly for ski binding application.

Prior patents by this same Applicant, and in particular U.S. Patent N. 4.353.574, incorporated hereto by reference, disclose a ski binding arrangement which includes a substantially rigid rod-like element connected with its bottom end to the ski for pivotal movement about a horizontal axis extending practically parallel to the plane containing the ski and perpendicular to the ski length direction.

Said prior rod-like element has a straight portion which is terminated at the top with a bent portion adapted to engage with the back and lateral regions of the skier's leg, substantially at the middle of the tibia region. This known binding arrangement further includes elastic means acting on said rod-like element to hold it constantly in contact with the leg back ; the elastic means preferably comprising a commercial type of gas spring which has a cylindrical body fastened at an edge thereof in a seat of a profiled small block rigid with the rod-like element, at the straight portion thereof; and a piston journalled with one end to a crosspin carried on the ski, or alternatively on a rear latching body.

A first disadvantage of this prior arrangement is that the user cannot replace the gas spring with other similar gas springs having different elastic properties to accommodate varying elastic thrust requirements.

Another disadvantage is that the assembly of said gas spring is comparatively complicated, and often requires the availability of special tools and considerable time.

It is a primary object of this invention to remove such prior disadvantages by providing an engagement assembly which incorporates readily replaceable elastic means to meet different contingent requirements of a skier.

A further object of the invention is to provide an engagement assembly which enables a gas spring forming said elastic means to be quickly and easily installed directly by the skier.

Another object of this invention is to provide such an engagement assembly which is quite safe and reliable to operate.

These and other objects, such as will be apparent hereinafter, are achieved by an engagement assembly for ski binding application, comprising a rod-like element associable with a ski for oscillation about an axis extending substantially parallel to the plane containing said ski and substantially perpendicular to said ski length direction, said rod-like element defining a means of engagement with the skier's leg, elastic means elastically helding said rod-like element in contact with a back region of the skier's leg and comprising an elongate

element of elastically changeable working length, characterized in that said elastic means is removable and extends between a bracket attached to said rod-like element near the top end thereof and a pin offset with respect to the oscillation axis of said rod-like element.

Further features and advantages will be more readily understood from the following detailed description of the engagement assembly for ski binding application, according to the invention, to be read in conjunction with the accompanying illustrative drawings, where:

Figure 1 shows diagramatically a perspective view of a ski binding with this engagement assembly in its operative position;

Figure 2 is a detail side view of this engagement assembly;

Figure 3 is a top plan view of this engagement assembly;

Figure 4 shows a side view of this engagement assembly, in the inoperative position thereof;

Figure 5 is an exploded perspective view of this engagement assembly;

Figure 6 is a sectional view taken along the broken line VI-VI of Figure 4;

Figure 7 is a rear perspective view of the connection bracket for connecting the elastic means to the rod-like element;

Figure 8 illustrates the rod-like element connection pin as sectioned along a plane; and

Figure 9 illustrates the rod-like element connection pin as sectioned along another plane, perpendicularly to Figure 8.

Making reference to the drawing views, the engagement assembly for ski binding application of this invention comprises a rod-like element 1 which is associated, with the bottom end thereof, to a rear latching body, generally indicated at 2 and no further decribed herein, which would be fastened to a ski 3.

The rod-like element 1 is allowed to oscillate about a pivot axis extending substantially parallel to the plane of lay of the ski 3 and substantially perpendicular to the length direction of the ski.

The rod-like element 1, moreover, has a straight portion 4, at the bottom thereof, which is followed by a looped portion 5 encircling the lateral region of the skier's leg, which portion 5 extends into a rear portion 6 which can be positioned at the leg back and is terminated with a lateral portion 7 spanning the other side of the skier's leg.

The looped portion 5 and lateral portion 7, which are expediently padded with some soft material, are at a mutual distance apart which is greater than the ski width, and have at their projecting ends serrations, indicated at 8, which enable the rod-like element to serve as ski lock when in the inoperative position, it being possible to provide such serrations with ice spikes to improve their grip on icy surfaces.

An elastic means, arranged to act on said rod-like element 1, is effective to hold the rod-like element 1, and more specifically the rear portion 6 thereof, in elastic engagement with the back region of the skier's leg and comprises a gas spring, generally designated with the reference numeral 10, which has a cylindrical body 11 accommodating a sliding rod 12 therein.

According to the invention the free end of the cylindrical body 11, which is provided with a small ear 13 through which a hole 14 extends, is connected to a bracket element 20 secured at a point close to the top end of said rod-like element.

The gas spring 10, by virtue of coupling arrangements to be described hereinafter, is made detachable and hence readily replaceable with other gas springs having different thrust, braking, and rates of extension, thereby the skier's varying requirements can be met.

The bracket element 20 has a substantially U-like configuration, with the side legs 21 of the "U" ending each in a spur 22 which engages laterally with the start section of the loop portion 5 and is inserted into the padding of the latter, thus providing an engagement element effective to prevent rotation of the bracket 20 about the rod-like element 1.

The bracket 20 is inserted to straddle the rod-like element, or alternatively over the element 1, and receive the straight portion of the rod-like element 1 in a seat 23 which is defined at the section 24 interconnecting the two legs 21; further, and as

mentioned in the foregoing, the spur sections 22 would be arranged laterally to the start section of the loop portion 5 to prevent relative rotation of the bracket 20 and rod-like element 1.

In order to provide a good connection and hold the legs 21 together, a pin 26 is arranged to interconnect the legs 21 and extend practically tangent to the surface of the rod-like element 1.

The bracket 20 also has a seat 30 on the front thereof for engagement with the end of the cylindrical body 11, which seat is followed by a slot 31 bound by the legs 21 and accommodating the ear 13.

For engaging the gas spring 10 with the bracket 20, there is provided a snap pin 40 which is inserted through a pair of cross holes 41 formed through the legs 21 to receive the pin 40, the stem 42 whereof engages in the hole 14.

In order to permit quick insertion of the snap pin 40, the latter is formed with a lug extension 43 which can be easily inserted through the cross holes 41 and hole 14 and provide a means of pulling the snap pin into position.

This form of coupling is specially advantageous in that it allows very quick mounting of the gas spring on the bracket 20 without using any special tools.

At the other end, the rod 12 can be introduced into a sleeve 50, preferably made of rubber, which would then cover the rod 12 and fit on the lower end of the cylindrical body 11. The sleeve 50 has at its other end a cross bushing 51 for coupling to a pin 52

formed with a cutout 53 for connection to the rod 12. Advantageously, the bushing 51 includes an engagement element 54 made integral with the bushing itself and adapted for insertion into the cutout 53 to thereby prevent the pin 52 from sliding out of the bushing 51.

The pin 52, with its end projecting out of the bushing 51, is received rotatably in a sleeve 55 defined by the rear latching body 2 at a location away from the oscillation axis of the rod-like element 1, and allowed to rotate about a parallel axis to said oscillation axis of the rod-like element 1.

It should be further added to the foregoing that the construction of the bracket 20 engaging with its legs the cylindrical body 11 of the gas spring 10, affords an elastic slack in the gas spring to bracket fit, which is also contributed by the snap pin, thereby it becomes possible to obtain elastically and without any efforts whatever relative position is sought between the gas spring and rod-like element, in view of that changes in the relative positions are achieved by the rod-like element and gas spring being journalled on the rear latching body at two points apart from each other.

It may be appreciated from the foregoing description that the invention fully achieves its objects, and in particular that the peculiar connection provided, additionally to permitting easy replacement of the gas spring, also allows elastic take-up of any slack between the gas spring and rod-like element by utilizing the inherent elasticity of

the legs 21 of the bracket 20.

In practicing the invention, the materisl used, if compatible with the intended use, and the dimensions and contingent shapes, may be any suitable ones to meet individual requirements.

CLAIMS

1. An engagement assembly for ski binding application, comprising a rod-like element (1) associable with a ski (3) for oscillation about an axis extending substantially parallel to a plane containing said ski (3) and substantially perpendicular to the ski length direction, said rod-like element (1) defining a means of engagement (5,6 and 7) with a skier's leg, elastic means (10) elastically holding said rod-like element (1) in contact with a back region of the skier's leg and comprising an elongate element of elastically changeable working length, characterized in that said elastic means (10) is removable and extends between a bracket (20) attached to said rod-like element (1) near the top end thereof and a pin (52) offset with respect to said oscillation axis of said rod-like element (1).

2. An engagement assembly, according to Claim 1, characterized in that said means of engagement defined by said rod-like element (1) comprises a loop bent portion (5) located at an end of a straight start section (4) of said rod-like element (1) and engageable with one side of the skier's leg, said loop bent portion (5) merging into a rear portion (6) engageable with the back region of the skier's leg and, in turn, terminated with a lateral portion (7) engageable with another side of the skier's leg, said loop bent, rear and lateral portions (5,6,7) being covered with a substantially soft padding.

3. An engagement assembly, according to the preceding claims, characterized in that said loop

bent portion (5) and said lateral portion (7) are located at greater mutual distance than the ski width and have projecting portions with serrations (8) forming ski locks with said rod-like element (1) extending substantially parallel to the ski length direction.

4. An engagement assembly, according to one or more of the preceding claims, characterized in that said bracket (20) has a substantially U-like configuration with legs (21) straddling said rod-like element (1) and being terminated with spur portions (22) for insertion into the padding of said loop bent portion, said spur portions forming an element preventing said bracket (20) from rotating relatively to said rod-like element (1) by engagement with said loop bent portion (5).

5. An engagement assembly, according to one or more of the preceding claims, characterized in that it comprises a pin (26) holding said legs (21) together and extending substantially tangent to the straight portion of said rod-like element (1).

6. An engagement assembly, according to one or more of the preceding claims, characterized in that said bracket (20) has on a front portion thereof a connection seat (30) for a cylindrical body (11) of said elastic means formed by a gas spring (10).

7. An engagement assembly, according to one or more of the preceding claims, characterized in that said legs (21) of said bracket (20) comprise cross holes (41) accommodating a snap pin (40) which also

engages in a through hole (14) formed in one small ear (13) located at one end of said cylindrical body (11) and accommodated between said legs (21).

8. An engagement assembly, according to one or more of the preceding claims, characterized in that said snap pin (40) has a center stem (42) engaging in said through hole (14).

9. An engagement assembly, according to one or more of the preceding claims, characterized in that said snap pin (40) has at one end a lug extension (43) adapted for insertion through said cross holes (41) and through hole (14) for inserting said snap pin through said bracket by application of a pull force.

10. An engagement assembly, according to one or more of the preceding claims, characterized in that a rod (12) of said elastic means in form of a gas spring (10) is accommodated within a sleeve (50) surrounding one end of said cylindrical body (11), said sleeve (50) having, at a free end thereof, a bushing (51) extending perpendicularly to said sleeve (50) and at least partially surrounding said pin (52).

11. An engagement assembly, according to one or more of the preceding claims, characterized in that said pin (52), at the area thereof surrounded by said bushing (51), has a cutout (53) for connection to said rod (12), said cutout accommodating an engagement element (54) defined on said bushing, accommodating said rod (12), and preventing said pin (52) from sliding axially out of said bushing (51).

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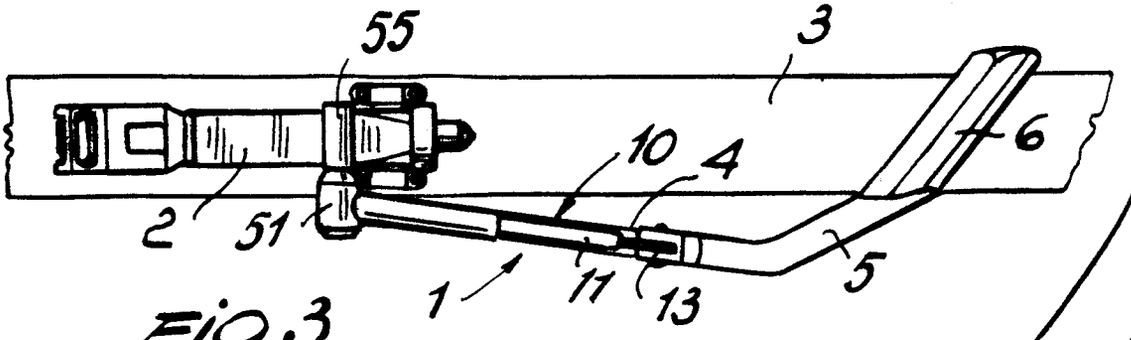

Fig.3

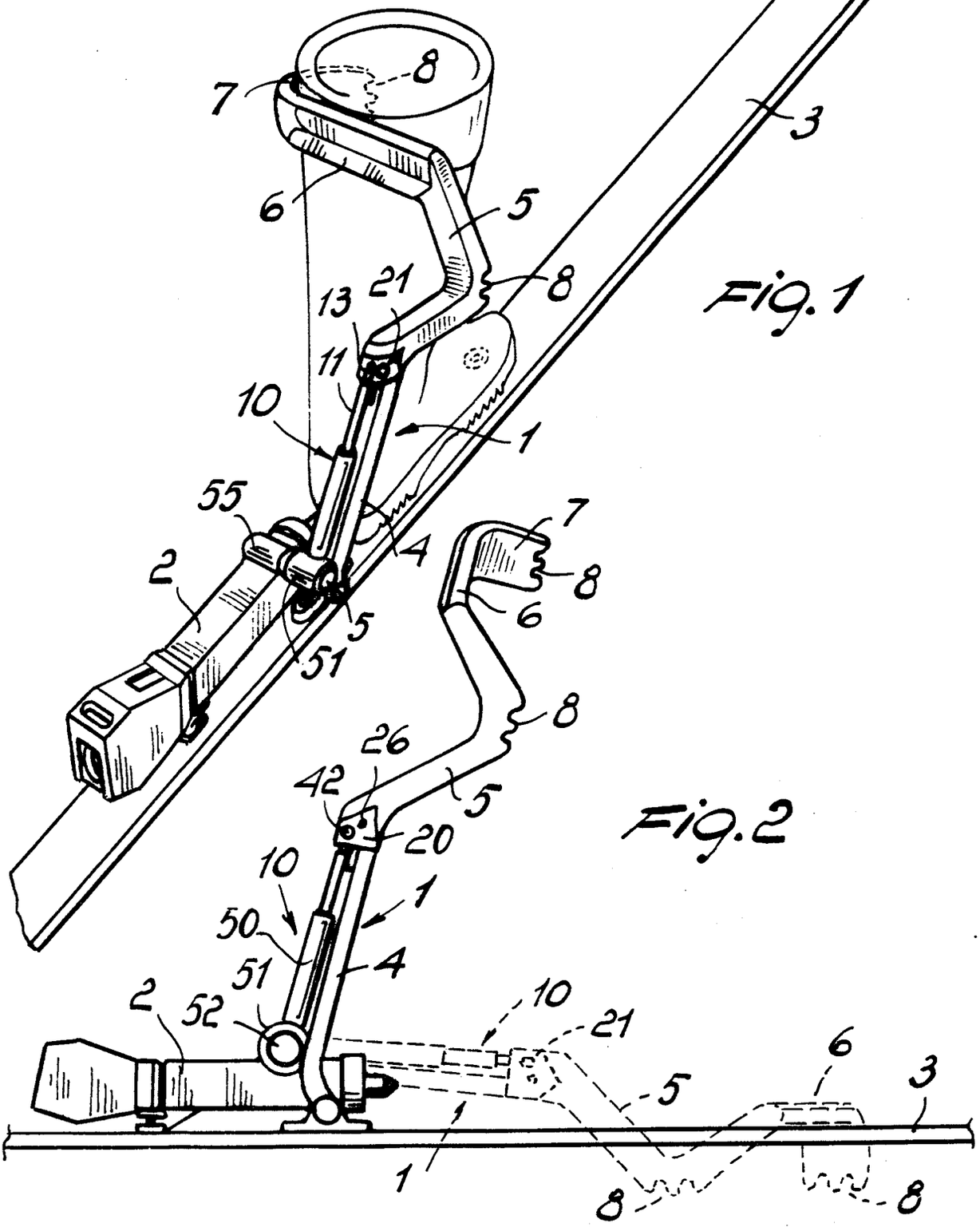

Fig.1

Fig.2

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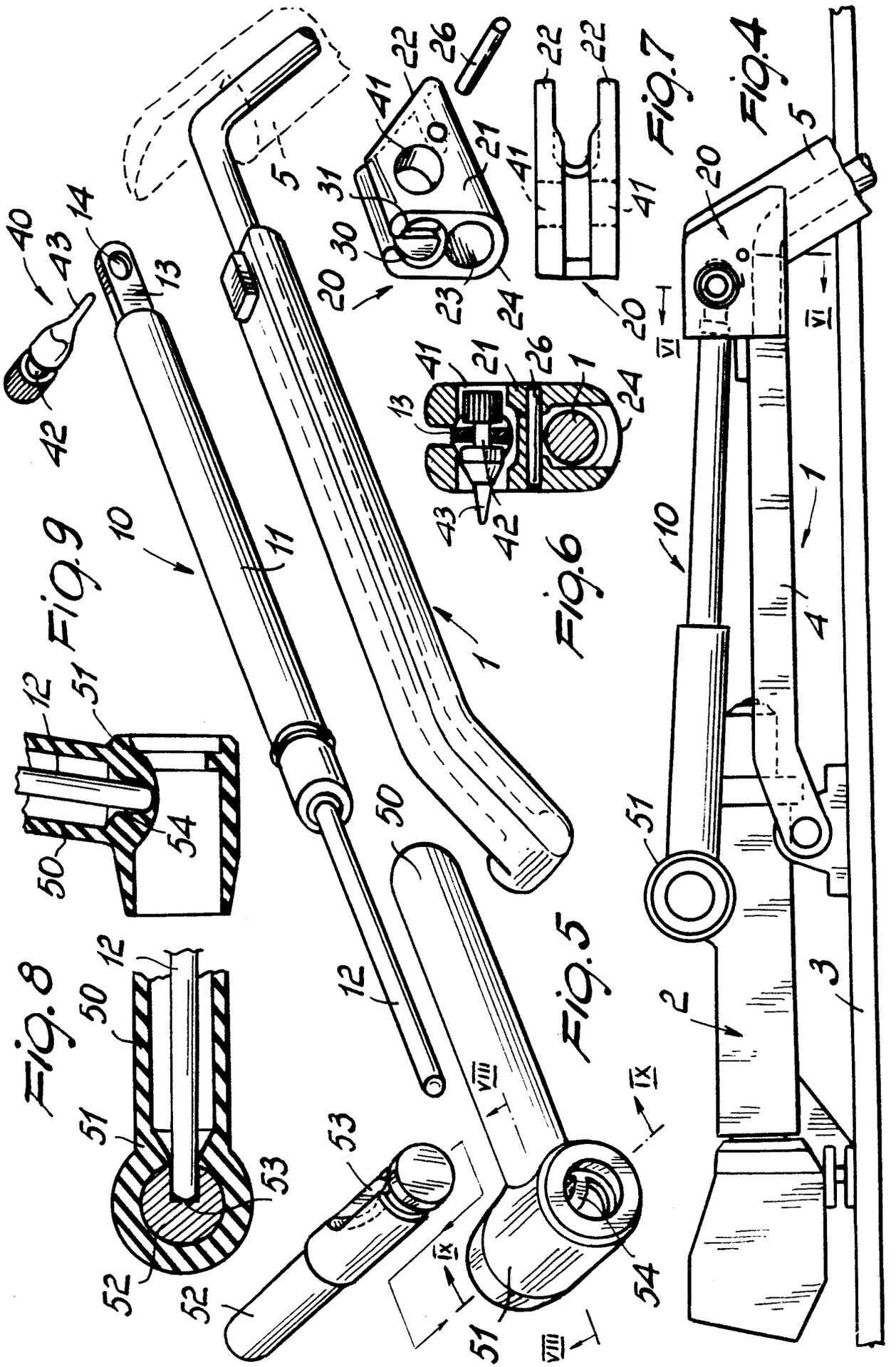

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EUROPEAN SEARCH REPORT

0126275
Application number

EP 84 10 4093

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)
X	EP-A-0 014 892 (A. FAULIN) * Page 18, lines 27-31; page 19, lines 1-15; figures 15, 16 *	1	A 63 C 9/00 A 63 C 9/086
A	* Page 6, lines 17-30; page 7, lines 1-4; figure 17, references 170, 171 * & US-A-4 353 574 (Cat. D, X)	2,3,10	
A	FR-A-2 349 913 (A. FAULIN) * Page 10, lines 25-32 *	2	
A	DE-A-1 912 959 (H. MOERIKE) * Claims 1-10; figure 2 *	1	
A	FR-A-2 426 478 (A. FAULIN)		TECHNICAL FIELDS SEARCHED (Int. Cl. ³) 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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