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(54) Trolley-mounted sqeezers

(57) A mop squeezer (104) is carried by a wheel-mounted frame (102). The squeezer comprises a squeezing surface (2) and at least one squeezing head (10,11) carried on a pivot bar (6). Downward movement of an operating linkage (31) rotates a pivoted plate (27) within the squeezer (104) which acts via a link (33) to rotate the pivot bar (6) thereby causing the squeezing head (10,11) to move towards the fixed squeezing surface (2). A treadle (105) is pivotally mounted at the front end of the frame at a lower level than the squeezer, and a link (48) connects the treadle to a pivoted member (52) mounted rearwardly of the treadle and to which the operating linkage (31) is connected. Thus, depression of the treadle (105) causes rotational movement of the pivoted member (52) thereby causing the operating linkage (31) to move in a downward direction.

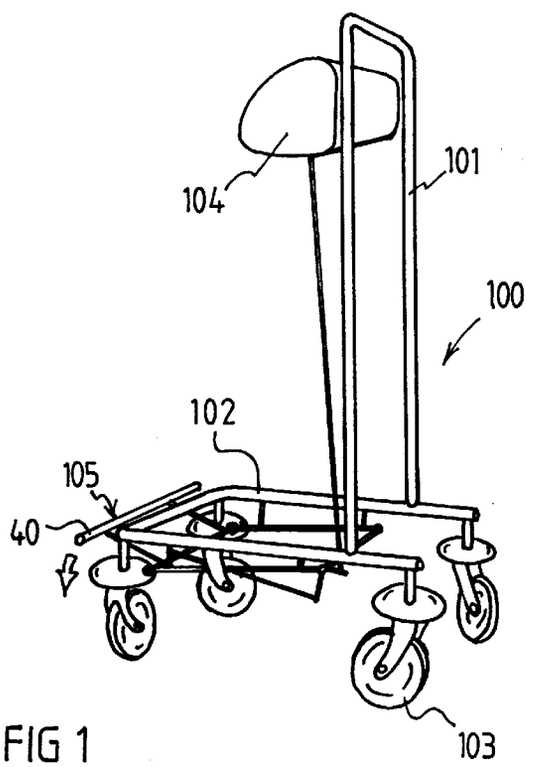

FIG 1

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Description

TECHNICAL FIELD OF THE INVENTION

[0001] This invention relates to trolley-mounted squeezers for mops and the like.

BACKGROUND

[0002] When cleaning a floor using a mop or similar wet cleaning implement it is necessary to squeeze excess water from the head of the implement after insertion into the cleaning water. One way of achieving this is to make use of a squeezing device (referred to herein as a "squeezer") into which the head of the implement can be inserted. Such squeezing devices are often mounted on a mobile trolley together with other items of cleaning equipment.

[0003] GB 2 314 501 A discloses a trolley-mounted squeezer which is operated by hand using a lever arm.

[0004] The present invention seeks to provide a trolley-mounted squeezer which is patentably different from any known form of squeezer.

SUMMARY OF THE INVENTION

[0005] The present invention proposes a trolley-mounted squeezer as set forth in the appended Claims.

BRIEF DESCRIPTION OF THE DRAWINGS

[0006] The following description and the accompanying drawings referred to therein are included by way of non-limiting example in order to illustrate how the invention may be put into practice. In the drawings:

Figure 1 is a general view of a cleaning trolley provided with a squeezer in accordance with the invention;

Figure 2 is a plan view of the squeezer, shown in the squeezing position;

Figure 3 is a fragmentary side view of the squeezer, again shown in the squeezing position;

Figure 4 is an open side view of the squeezer, this time in its open starting position;

Figure 5 is a similar view to Fig. 4, but showing the squeezer in its squeezing position;

Figure 6 is a side view of the lower region of the trolley; and

Figure 7 is a plan view of the same region.

DETAILED DESCRIPTION OF THE DRAWINGS

[0007] Referring firstly to Fig. 1, the cleaning trolley 100 is of a known type comprising an inverted-U shaped upright frame 101 which is upstanding from the open rear end of a horizontal U-shaped base frame 102. The base frame is mounted on castor wheels 103 so that the trolley can be used to carry cleaning equipment and materials (not shown) from place to place. A squeezer 104 is mounted at hand level at the front of the upright frame 101 for operation by a treadle 105 mounted at the front of the base frame 102.

[0008] Referring now to Fig.s 2 and 3, the squeezer includes a moulded plastics shell 1 which incorporates a substantially rectangular and generally horizontal squeezing surface 2 containing an array of holes 3 through which water can pass into a bucket or like receptacle in use. The surface 2 extends between upright hollow end walls 4 and 5, within which is rotatably journalled a pivot bar 6, extending above the rear of the squeezing surface 2. A pair of radial arms 8 and 9 are secured at spaced positions along the bar 6 to extend above the surface 2. The arms 8 and 9 carry respective squeezing heads 10 and 11, each comprising a substantially rectangular and flat plate 12 having a pair of lugs 13 and 14 upstanding from its top surface. The heads 10 and 11 are pivotally secured to the respective arms 8 and 9 for limited freedom of movement by pivot pins 16 inserted through the lugs 13 and 14 and the free ends of the arms. Thus, upon rotation of the bar 6 the heads 10 and 11 are angularly moved towards the surface 2 as shown, the pivotal mounting of the heads 10, 11 to the arms 8 and 9 allowing for automatic angular adjustment of the heads to accommodate a mop head or like object interposed between the squeezing heads and the said surface.

[0009] The mechanism for rotating the bar 6 is shown in Fig. 4, in which the mechanism adopts a position in which the squeezing heads are raised. The mechanism is enclosed within the end wall 5 which is formed with a plastics cover 20 (Fig. 3) secured by screws inserted into pillars 21 (not all labelled). The end wall contains a pair of spaced reaction plates 22 through which the pivot bar 6 is inserted, the plates being non-rotatably located within the end wall by a stub shaft 23. A lever arm 24 is secured to the bar 6 between the plates 22, and a tension spring 25 acts between the arm 24 and a pin 26 fixed with one of the plates 22 so as to rotate the bar in a direction which moves the squeezing heads 10 and 11 away from the surface 2.

[0010] A pivoted V-plate member 27 comprising a pair of angularly disposed arms 28 and 29 is secured between the plates 22 on a pivot pin 30. The lower of the two arms 29 is pivotally secured to an operating linkage 31 which extends downwards through the bottom of the end wall 5. The linkage 31 is connected for operation by the treadle 105 as will be described below. If desired, a choice of pivot positions may be provided on the arm 29

to allow adjustment of the treadle travel and operating pressure required. The upper arm 28 is pivotally secured by pin 32 to a link 33 which, in turn is pivotally secured by pin 34 to the lever arm 24. In practice the link 33 comprises a pair of parallel plates disposed on opposite sides of the arms 24 and 28 to avoid twisting of the pins 32 and 34. The pivoted V-plate 27 and arm 24 could similarly comprise two or more superimposed plates.

[0011] When the operating linkage 31 moves downwardly the V-plate 27 rotates clockwise (when viewed as shown) so that the link 33 rotates the arm 24 and bar 6 in an opposite, anti-clockwise direction against the action of spring 25. When the condition illustrated in Fig. 5 is reached the squeezing heads 10 and 11 are urged against the surface 2 so that a mop can be squeezed between the heads and the surface 2. During this process the reaction plates 22 carry the reaction forces between the pivot pin 30 and the bar 6, to relieve the plastics shell of stresses which could result in creep or even splitting of the shell.

[0012] It will be noted in Fig. 5 that in the squeezing position the axis of the pivot pin 32 is substantially coplanar with the axes of the pins 30, 34. Therefore, in this position the spring 25 has little or no tendency to rotate the pivoted V-plate 27. This ensures that a squeezing force applied via the linkage 31 is not opposed by the spring 25, and the force applied to the squeezing heads 10 and 11 is thereby maximised.

[0013] The permitted range of pivotal movement of the V-plate 27 is determined by a pin 35 secured to the plates 22 which travels in an arcuate slot 36 in the V-plate 27.

[0014] Referring now to Fig.s 6 and 7, the treadle 105 comprises a treadle bar 40 (see Fig. 1 also) which extends substantially the full width of the trolley, the treadle bar being shown in this fully depressed condition. The treadle bar 40 is provided with a pair of rearwardly extending arms 41 which are secured to a transverse pivot bar 42. The base frame 102 includes a pair of bottom members 43 which are mounted beneath the side members of the frame by standoff arms 44 and 45, to extend in a front-rear direction. The pivot bar 42 is journalled in bearings at the front ends of the bottom members 43 whereas a further pivot bar 46 is similarly journalled in bearings at the rear ends of the bottom members, the axes of the pivot bars 42 and 46 being substantially parallel. The treadle 105 is operably connected to the rear pivot bar 46 by a link 48. The front end of the link 48 is pivotally secured to a lever arm 49 which is upstanding from the front pivot bar 42, whereas the rear end of the link is pivoted to a lever arm 50 which extends downwardly from the rear pivot bar 46. Thus, the application of foot pressure to produce downward pivotal movement of the treadle 105 (anti-clockwise as shown) thus results in an opposite clockwise pivotal movement of the rear pivot bar 46, which, in turn, causes a further lever arm 52, extending rearwardly from the bar 46, to move downwardly. The lower end of the operating linkage 31 is pivotally secured to this arm 52 so that the linkage 31 also moves downwardly to apply a squeezing force to the heads 10 and 11 as described above.

[0015] It will be appreciated that when foot pressure is relieved on the treadle 105 the system is balanced such that the heads 10 and 11 start to move away from the squeezing surface 2. The spring 25 will then progressively come into operation, raising the heads 10 and 11 as described and also lifting the linkage 31 which, in turn, assists the foot pedal to return to the raised position, as indicated in outline in Fig. 6.

[0016] The mechanism described results in an efficient squeezing operation, maximising the transfer of foot pressure to the squeezing heads when they are close to the squeezing surface 2 but, at the same time, producing a controlled spring-assisted return of the treadle. The arrangement of the operating pivots, levers and linkages also minimises the risk of interference to the squeezing operation by articles normally carried on the trolley.

[0017] It will be appreciated that the features disclosed herein may be present in any feasible combination. Whilst the above description lays emphasis on those areas which, in combination, are believed to be new, protection is claimed for any inventive combination of the features disclosed herein.

Claims

1. A trolley comprising a wheel-mounted frame (102) having front and rear ends, a squeezer (104) mounted on the frame, the squeezer comprising a squeezing surface (2) and a squeezing head assembly (10, 11) which is co-operable with said squeezing surface to squeeze a mop head or like object therebetween,

   characterised by a foot-operable treadle (105) pivotally mounted at the front end of the frame (102) at a lower level than the squeezer, the treadle being operably coupled to the squeezing head assembly such that depression of the treadle causes said squeezing head assembly to move towards said squeezing surface.

2. A trolley according to Claim 1, in which the treadle (105) is operably coupled to the squeezing head assembly via an upwardly extending operating linkage (31).

3. A trolley according to Claim 2, in which downward movement of the treadle (105) causes downward movement of the operating linkage (31).

4. A trolley according to Claim 2 or 3, in which the treadle (105) moves the operating linkage (31) via a pivoted member (52) which is mounted rearwardly of

the treadle.

5. A trolley according to Claim 4, in which the treadle (105) and the pivoted member (52) are arranged to rotate in opposite senses.

6. A trolley according to any of Claims 2 to 5, in which the squeezer (104) comprises a second pivoted member (27) which is rotated by said operating linkage (31) such as to move said squeezing head assembly (10, 11) towards said squeezing surface (2).

7. A trolley according to Claim 6, in which said squeezing head assembly (6, 10, 11) comprises a pivot bar (6) which carries at least one squeezing head (10, 11) and is mounted for rotation about its axis, said second pivoted member (27) being pivotally coupled to an operating arm (24) which projects from said pivot bar such that said pivot bar and said second pivoted member rotate in opposite senses..

8. A trolley according to Claim 7, comprising spring means acting to rotate said pivot bar (6) such as to move said at least one squeezing head (10, 11) away from said squeezing surface (2).

9. A trolley according to Claim 7 or 8, in which said second pivoted member (27) is coupled to the operating arm (24) via a further pivoted link (33).

10. A trolley according to Claim, in which, when said at least one squeezing head (10, 11) is in squeezing relationship with said squeezing surface (2) the pivot axes of said further pivoted link (33) are substantially co-planar with the pivot axis of said second pivoted member (27).

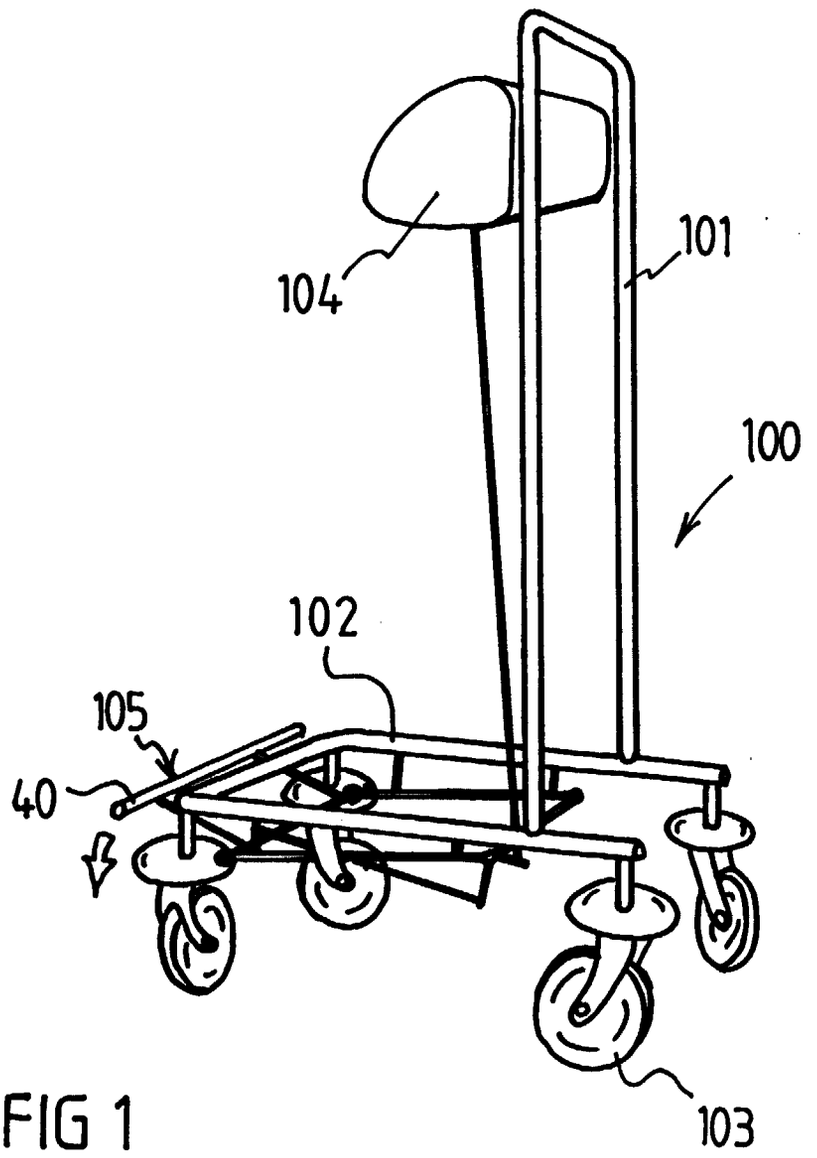

FIG 1

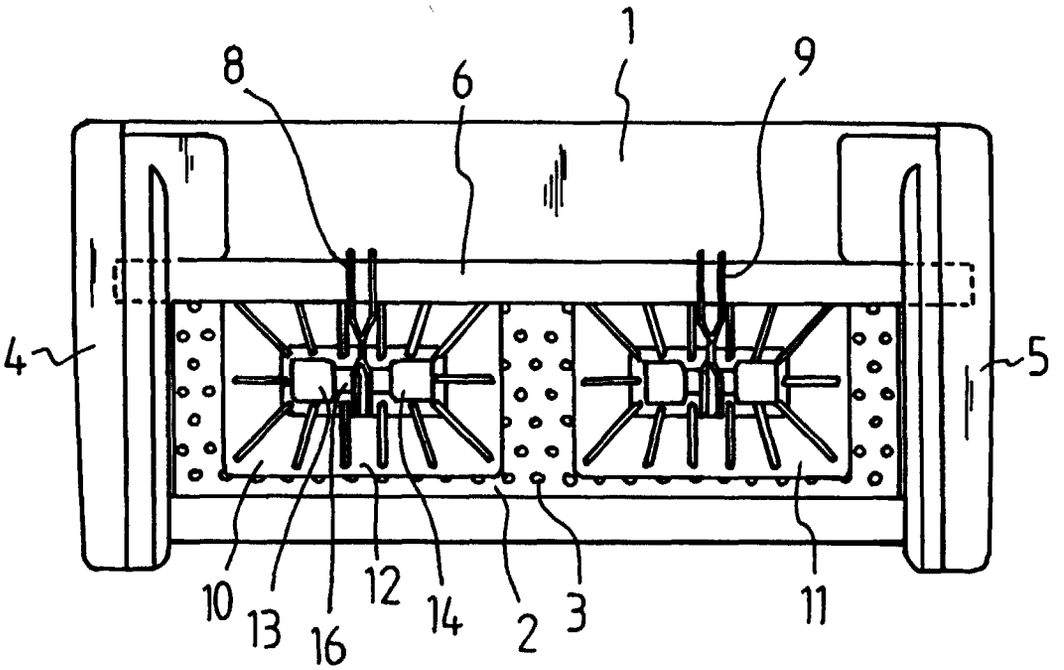

FIG 2

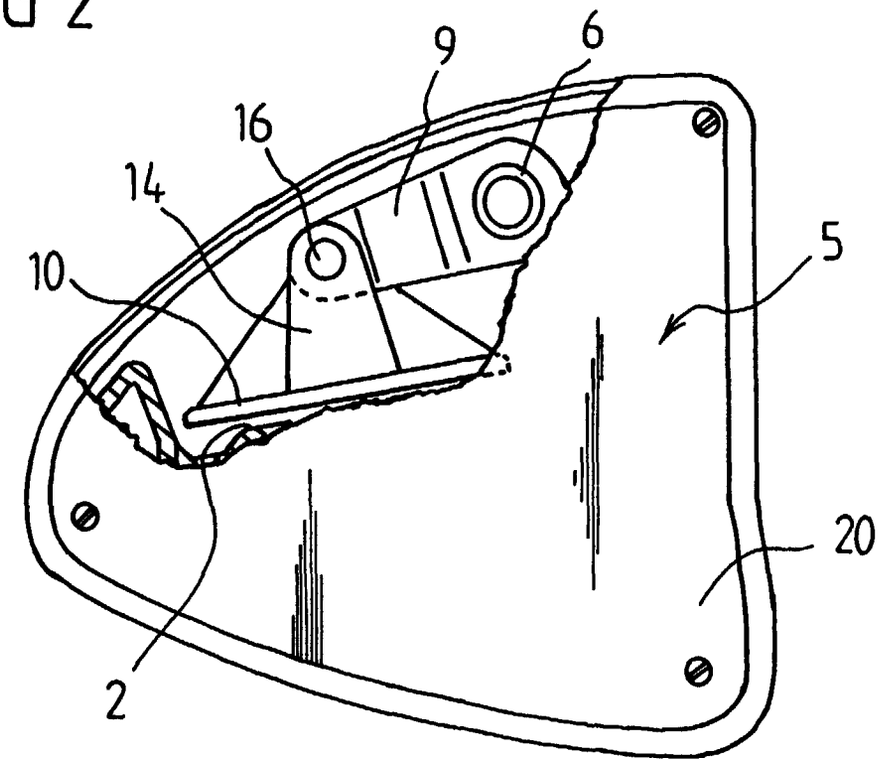

FIG 3

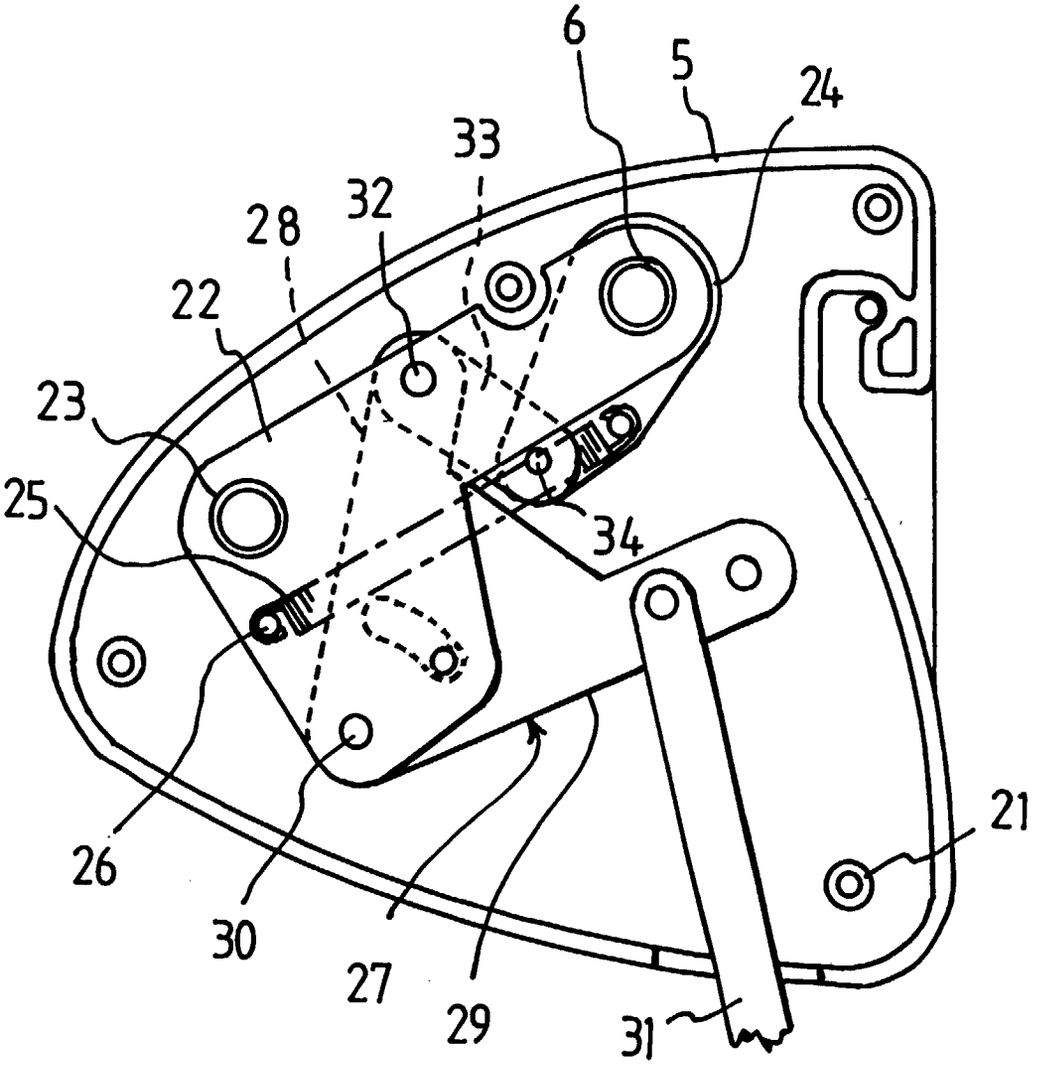

FIG 4

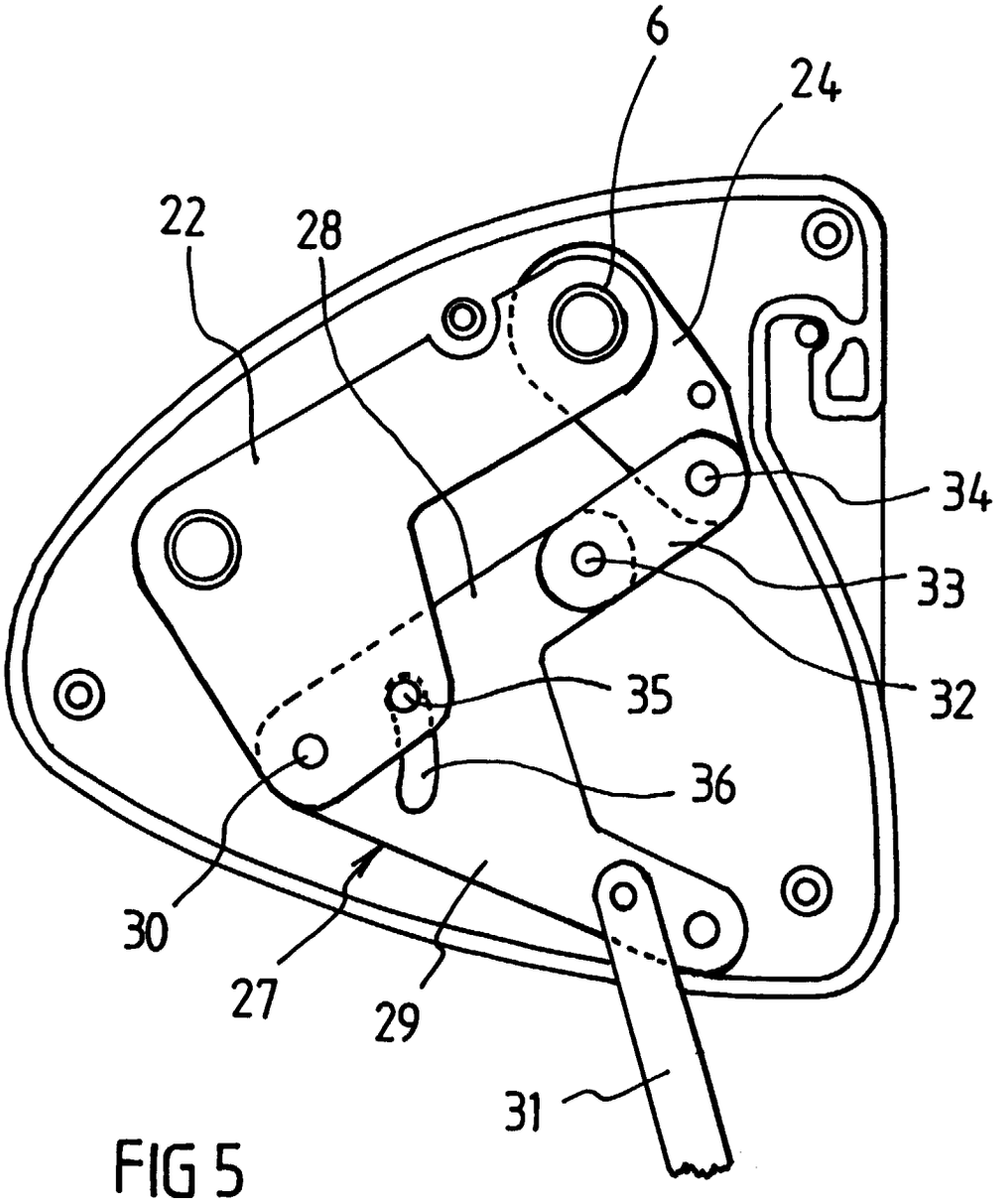

FIG 5

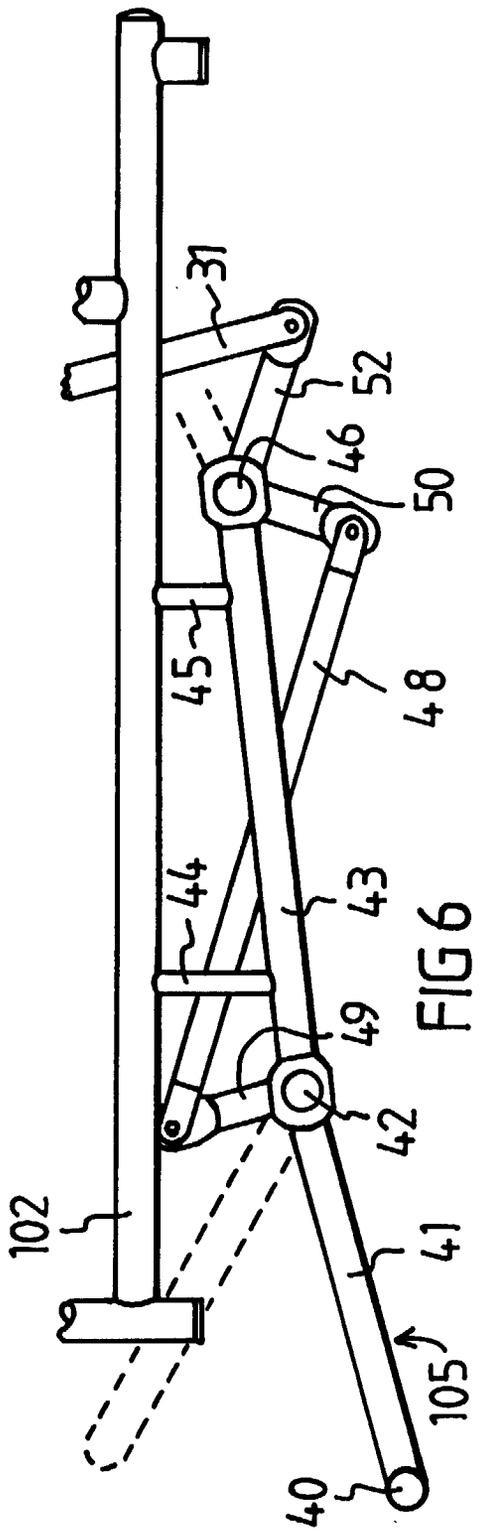

FIG 6

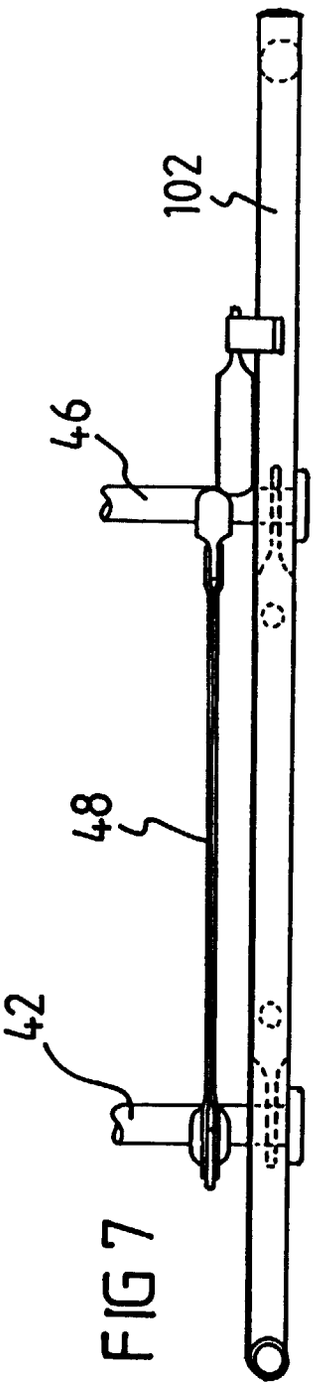

FIG 7

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EUROPEAN SEARCH REPORT

Application Number
EP 98 30 7908

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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	19 January 1999	Cabral Matos, A

CATEGORY OF CITED DOCUMENTS

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ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 98 30 7908

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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