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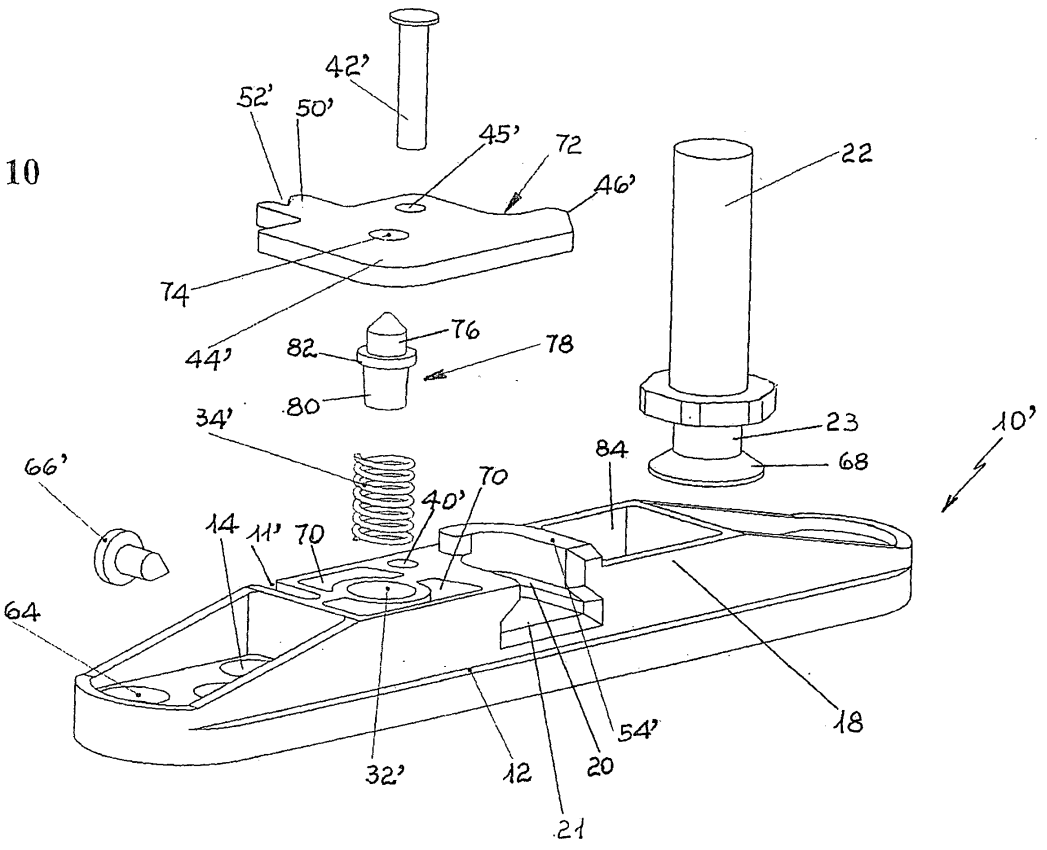
(54) **Bracket with front coupling for carriages of sliding wings or doors**

(57) A bracket (10 - 10') with front coupling for carriages (24) of sliding wings or doors (16) comprises a base (12) provided with through holes (14) for the fixing thereof by screws (13) to the top edge of said wings or doors; the base (12) centrally defines an extended raised portion (18) wherein a seat (20) is formed, which develops orthogonally relative to the longitudinal axis of the bracket (10) starting from an inlet (20') open on one of the opposite long sides of the bracket itself. The seat (20) is suitable for seating the bottom portion (23) of a pin (22) protruding from the bottom side of the frame (26) of each carriage (24).

Fig. 10



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Description

[0001] The present invention relates to a bracket with front coupling for carriages of sliding wings or doors.

[0002] More in particular, the present invention relates to a bracket with front coupling, with automatic stabilisation of the carriages associated to wardrobe wings or sliding doors manually actuated.

[0003] As is known, the wardrobes that are a part of home furniture, as well as those arranged into shops and offices, comprise a plurality of wings that may open projecting-wise or slide along top and bottom guides and tracks. The wardrobes provided with sliding wings exhibit the advantage of limiting the overall dimensions, since the same wings do not occupy space when they are open; the lack of space occupied by the wings makes the wardrobes of this kind suitable for better using the space, sometimes limited, of the various rooms. The wardrobes with sliding wings are also appreciated from the aesthetic viewpoint, since their front surface is free from hinges or other metal elements that may alter the overall linearity. The same applies to sliding doors that close one room and separate two spaces from one another.

[0004] With particular but non-exclusive reference to the doors for separating spaces, the known embodiments that cause the sliding thereof are provided with special devices for the connection, in the top portion thereof, to carriages that slide along corresponding guides. The last mentioned, generally consisting of shaped metal section bars, are fixed to the wall at or in the proximity of the level corresponding to the top edge of the wing that makes up the door. The connection between the wing and the carriage, provided with wheels that slide along or within the guide, is obtained through a shaped bracket, fixed to the top edge of the same wing; however, such connection is difficult since the wings must be kept suspended at a precise height while the constraint between the bracket and a carriage takes place.

[0005] Said constraint causes the stabilisation of a head protruding from the carriage, generally shaped as a mushroom relative to the shaped bracket, which takes place by a screw, a bolt or equivalent.

[0006] In order to obviate these drawbacks, which also occur when the wings are removed, the same Applicant devised the solution described in Italian patent no. 259,744, filed on 24/5/2004. The patent right relates to a bracket that, upon the assembly of the doors or wings of wardrobes, allows the automatic coupling and stabilization of the head of the carriages relative to the respective brackets. On a head, the last mentioned are provided with a seating inlet for the mushroom head of the respective carriage; once inserted into the inlet, the head is locked by a tongue articulated to the bracket and tensioned by a spring. In particular, the mushroom head is hooked into a recess of said tongue, which is pushed by the spring in the direction of the same head. Without any doubts, this solution is advantageous because, compared to the traditional embodiments, it does not require the use of screws or the like for the lock between the bracket and the head of the carriage; in fact, such lock is obtained automatically thanks to the tongue tensioned by the spring. However, it has been noted that this solution has some drawbacks too. First, since the connection between carriage and bracket takes place on a head of the latter, it is necessary to position the same wing underneath the carriage and then lift it up and move it to the side. In this way, the empty space between the floor and the wing is unavoidably increased, since the latter must be lifted, and this therefore causes an unaesthetic effect. Other known brackets of this kind imply a difficult manual intervention for the fixing thereof to the carriage, and moreover they remain exposed, also in this case creating a considerable unaesthetic effect.

[0007] The object of the present invention is to obviate the drawbacks mentioned hereinabove.

[0008] More in particular, the object of the present invention is to provide a bracket with front coupling for carriages of sliding wings or doors which allows a quick and precise connection between wings and carriage, keeping a very limited space between door and floor.

[0009] A further object of the invention is to provide a bracket as defined above suitable for automatically stabilising the single wings or doors relative to the carriages, without the need of resorting to tools for tightening screws or the like.

[0010] Last but not least, an object of the invention is to provide a bracket with front coupling free from protruding and exposed parts, thus such as to prevent aesthetical-related drawbacks.

[0011] A further object of the invention is to provide the users with a bracket with front coupling for carriages of sliding wings or doors suitable for ensuring a high level of resistance and reliability over time, also such as to be easily and inexpensively constructed.

[0012] These and yet other objects are achieved by the bracket with front coupling for carriages of sliding wings or doors of the present invention which comprises a base provided with through holes for the fixing thereof by screws to the top edge of said wings or doors, and which is essentially characterised in that the base centrally defines an extended raised portion wherein a seat is formed, which develops orthogonally relative to the longitudinal axis of the bracket starting from an inlet open on one of the opposite long sides of the bracket itself, said seat being suitable for seating the bottom portion of a pin protruding from the bottom side of the frame of each carriage.

[0013] The construction and functional features of the bracket with front coupling for carriages of sliding wings or doors of the present invention shall be better understood from the following detailed description, made with reference to the annexed drawings showing preferred and non-limiting embodiments thereof, and wherein:

figure 1 shows a schematic perspective view of the bracket with front coupling of the present invention,

as well as the carriage whereto it is connected;
figure 2 shows a schematic perspective view of the same bracket with front coupling connected to a carriage;
figure 3 schematically shows an exploded view of the bracket of the present invention and a portion of the carriage;
figure 4 shows a schematic top view of the same bracket in the position close to the carriage coupling;
figure 5 shows a schematic top view of the same bracket connected to the carriage;
figure 6 shows a schematic perspective view of a pair of brackets of the present invention partially embedded along the top edge of a wing, as well as the carriage sliding into the respective guide;
figure 7 shows a schematic perspective view of a pair of brackets of the present invention partially embedded along the edge of a wing, as well as the carriage sliding into the respective guide positioned on top of the same wing;
figures 8 and 9 schematically show a perspective view of as many possibilities of use of the bracket of the present invention;
figure 10 shows a schematic exploded view of the bracket of the present invention according to an alternative and preferred embodiment;
figure 11 shows a schematic top view of the bracket of figure 10 in a position close to the carriage coupling;
figure 12 shows a schematic top view of the same bracket coupled to the carriage.

[0014] With reference to said figures, the bracket with front coupling of the present invention, globally indicated with reference numeral 10 in figures 1 and 2, comprises a base 12, with a substantially rectangular plan, provided with opposite through holes 14 for the fixing thereof by screws 13 to the top edge of the wing or door, indicated with reference numeral 16 in figures 6 and 7.

[0015] Wing 16 may be made of wood, plastic, rolled sections or other suitable material, or of glass, as shall be detailed hereinafter.

[0016] In the preferred embodiment of the figures, base 12 centrally defines an extended raised portion 18, wherein a seat 20 is formed, suitable for seating the bottom end of a pin 22 associated to a carriage 24. Said latter, of a per se known type, comprises a frame 26 which supports two pairs of wheels 28 suitable for sliding in a guiding profile, such as for example that indicated with reference numeral 30 in figures 6 to 9. Figures 6 and 7 illustrate, relative to profile 30, the means that constrain it to the wall and that, by way of an example, consist of metal squares 31. Pin 22, which centrally protrudes from the bottom side of frame 26, is intended for coupling with bracket 10 stabilising into seat 20, as detailed hereinafter. Seat 20 develops according to an orthogonal direction relative to the longitudinal axis of bracket 10 starting from an inlet 21 open on one of the opposite long sides of the same bracket, in particular on the side facing carriage 24 coupled to profile 30. Adjacent said seat 20, said bracket is provided with a cavity 32 wherein a helical spring 34 is seated; a rivet 36 is fitted into spring 34 so that the protruding head 38 thereof faces seat 20.

[0017] A through hole 40 is made between cavity 32 and seat 20, on the raised portion 18, suitable for seating a rivet 42.

[0018] Bracket 10 is associated to a shaped plate 44, which surmounts the raised portion 18 whereto it is connected through rivet 42; said shaped plate therefore has the possibility of rotating at least partially on the plane defined by the raised portion 18. On the side facing seat 20, the shaped plate 44, which is provided with a through hole 45 wherein the stem of rivet 42 fits, exhibits an appendix 46 which defines a hook having semicircular profile; said appendix is suitable for partially surrounding the zone of pin 22 close to the bottom end and indicated with reference numeral 23. The profile of appendix 46 is therefore suitable for mating with a portion of end 23 of said pin 22. In a position adjacent and opposite appendix 46, the shaped plate 44 is provided with an integral tongue 48 bent at 90° downwards. Tongue 48 is the element that acts pushing onto head 38 of rivet 36 inserted in the helical spring 34 for temporarily compressing the same spring and opening access to seat 20 for inserting zone 23 of pin 22 of carriage 24 therein. Tongue 48 is therefore abutted into cavity 32 with systematic contact with head 38 of rivet 36. Seat 20 of bracket 10 defines inlet 21 open in the direction of the wall whereto guide 30 is fixed for the known carriage 24, as shown in particular in figure 6. The front of bracket 10 opposite that whereon said inlet 21 opens is accessible to the operator called to fix the wing or door schematized with reference numeral 16 in figures 6 and 7. An appendix 50 exiting from the shaped plate 44 protrudes from the accessible front of bracket 10; said appendix 50 constitutes the projection whereon the thrust operates for partially rotating the shaped plate 44 and releasing inlet 21 of seat 20 in order to insert zone 23 of pin 22 exiting from carriage 24 therein. Preferably, appendix 50 frontally exhibits a "V" recess 52 for supporting a screwdriver which pushes in partial rotation the shaped plate 44. Seat 20 is partially delimited by a kerb 54 that develops above the raised portion 18 of base 12, forming a rise thereof; kerb 54 is obtained in a position substantially opposite to cavity 32 and is abutted by the hook appendix 46 of the shaped plate 44 when the latter is pushed by spring 34 and surrounds portion 23 of pin 22.

[0019] Bracket 10 of the present invention may also be used on aluminium frames, as illustrated for example in figure 9 wherein a portion of said frame is indicated with reference numeral 56, or with so-called jaws 58, illustrated in figure 8, for glazed doors 60. In these last mentioned cases, bracket 10 is fixed to the respective frame 56 or to the assembly formed by jaws 58 by means of metrical threading screws 62 (figure 3) inserted into flared and threaded holes 64 of base 12 of the same bracket. A safety screw 66, visible in particular in figures

3 and 5, is advantageously arranged in the proximity of the shaped plate 44, after having assembled the wing or door, for preventing the same plate from accidentally moving and causing the exit of pin 22 from seat 20 of bracket 10. Screw 66 may be easily positioned starting from the exposed front of bracket 10 into a suitable seat, such as for example that indicated with reference numeral 11 in figure 3, and is sized so as to abut or move with the head thereof next to a portion of the external edge of the shaped plate 44. Said latter globally exhibits such an extension as to surmount cavity 32 almost entirely, thus stabilising the helical spring 34 therein.

[0020] During the assembly, the door or wing provided with one or more brackets 10 along the top edge is moved next tQ pin 22 exiting from carriages 24; in particular, the bottom zone 23 of said pin 22 is led to move close and insert into seat 20 of bracket 10, while the shaped plate 44 is pushed in partial rotation starting from appendix 50 for freeing the access to inlet 21 of said seat 20. After that, once the insertion has been made, the shaped plate 44 is released and the helical spring 34 that was compressed before extends again, partially rotating said plate 44 that surrounds with appendix 46 thereof the end portion 23 of pin 22 of carriage(s) 24. The safety screw 66 is then placed into the seat provided for preventing any accidental movement of the shaped plate 44.

[0021] In a known manner, pin 22 of carriage 24, underneath portion 23, is provided with an integral truncated-cone base 68 that keeps the tensile connection with bracket 10, since seat 20 of the same bracket is shaped in a complementary manner.

[0022] Figures 10 to 12 relate to an alternative and preferred embodiment of the bracket with front coupling of the present invention. In such embodiments, the same reference numerals of the solution described above are used, sometimes followed by an apex, as regards common components and parts, with the bracket body that is globally indicated with reference numeral 10' in figure 10. As with bracket 10, said bracket comprises base 12 with through holes 14 and extended central raised portion 18 with seat 20 for pin 22 of carriage 24. Adjacent seat 20, bracket 10' is provided with a cavity 32' with circular plan wherein a helical spring 34' with vertical orientation is arranged. Cavity 32' is preferably delimited by further shaped cavities 70 for lightening base 12. A through hole 40' suitable for seating a rivet 42' is created between cavity 32' and seat 20. Bracket 10' is also associated to a shaped plate, indicated with reference numeral 44'; said plate surmounts the raised portion 18 of base 12, whereto it is made integral by rivet 42', and is provided with a through hole 45' wherein the stem of rivet 42' fits. The same plate 44' exhibits, on the side facing seat 20, an appendix 46' that extends for forming a portion with basically semicircular profile 72 suitable for surrounding at least partially the zone of pin 22 close to the bottom end, indicated with reference numeral 23. At least one further through hole 74 is obtained on plate 44', wherein the conical or hemispherical top end 76 of a push rod 78 engages. Push rod 78 comprises a bottom half portion 80 with cylindrical or truncated-cone shape, which fits into the helical spring 34' arranged in cavity 32'. Said push rod 78 is provided with an integral projecting collar 82, which separates the bottom half portion 80 from the top one 76.

[0023] As already described with reference to bracket 10, also in bracket 10' seat 20 suitable for seating pin 22 of carriage 24 is partially delimited by a kerb 54', formed in a position opposite cavity 32' and abutted by the hook appendix 46' of the shaped plate 44' when the latter surrounds portion 23 of pin 22. Next to kerb 54', in a position opposite cavities 70, an extended lightening empty space 84 is preferably made. The same plate 44' comprises an appendix 50' with front "V" recess 52' and is associated to a safety screw 66' that is inserted into a suitable seat of bracket 10', such as for example that indicated with reference numeral 11' in figure 10.

[0024] The through hole 74 of plate 44' is suitable for seating the portion of push rod 78 that protrudes upwards above collar 82, so as to stabilise the same plate once the portion with basically semicircular profile 72 of appendix 46' has surrounded pin 22 into zone 23. It should also be provided for said plate 44' to be stabilised in opening too, that is, when seat 20 is free, or before inserting pin 22 therein; to this end, plate 44' is provided with a further through hole 75, wherein the same top portion of push rod 78 fits, as illustrated in figure 11.

[0025] During the assembly, the only difference compared to what described in relation to bracket 10 relates to the movement of plate 44', especially in the presence of the second hole 75. In this case, starting from the condition of figure 11 wherein said plate is locked in opening, the top conical or hemispherical end 76 of push rod 78 is compressed downwards for releasing the same plate and partially rotate it for locking pin 22, with the bottom zone 23' thereof, into seat 20. The operation of compressing push rod 78 may also be carried out manually, since spring 34' does not offer particular resistance as it only has to keep push rod 78 tensioned upwards; as an alternative, in any case, it is sufficient to use a screwdriver or an equivalent tool for carrying out such compression. Afterwards, when the rotation of plate 44' has moved profile 72 to surround the bottom portion 23 of stem 22 of carriage 24, push rod 78 automatically snaps upwards encountering hole 74, under the thrust of spring 34', thus locking plate 44' and as a consequence, carriage 24 relative to bracket 10'.

[0026] As can be noticed from the above, the advantages achieved by the invention are clear.

[0027] Bracket 10 or 10' of the present invention allows fixing in a very easy and quick manner the wings or doors to the respective carriages 24 which allow the sliding movement thereof. The coupling between bracket 10 or 10' and carriage 24 may be made immediately since it takes place according to a front direction and also, it does not require any prior lifting of the door or wing relative to the predetermined level as regards the height from the

floor. Since brackets 10 and 10' are mostly embedded in the doors, even if they are aluminium frames 56 or 58, no aesthetic drawbacks are found since said brackets are not exposed. The partial rotation movement of the shaped plate 44 or 44' does not imply specific difficulties during assembly, and any positioning of the safety screw 66 into a suitable seat 11 or 11' is easy.

[0028] Although the invention has been described hereinbefore with particular reference to an embodiment thereof made by way of a non-limiting example, several changes and variations shall clearly appear to a man skilled in the art in the light of the above description. The present invention, therefore, is intended to include any changes and variations thereof falling within the spirit and the scope of protection of the following claims.

Claims

1. A bracket (10-10') with front coupling for carriages (24) of sliding wings or doors (16), comprising a base (12) provided with through holes (14) for the fixing thereof by screws (13) to the top edge of said wings or doors, **characterised in that** the base (12) centrally defines an extended raised portion (18) wherein a seat (20) is formed, which develops orthogonally relative to the longitudinal axis of the bracket (10-10') starting from an inlet (20') open on one of the opposite long sides of the bracket itself, said seat (20) being suitable for seating the bottom portion (23-23') of a pin (22) protruding from the bottom side of the frame (26) of each carriage (24).

2. The bracket (10-10') with front coupling according to claim 1, **characterised in that** the raised portion (18) of the base (12) is surmounted by a shaped plate (44-44') provided with a through hole (45-45') for the articulated connection thereof to the same raised portion (18) by a rivet (42-42').

3. The bracket (10') with front coupling according to claim 2, **characterised in that** the shaped plate (44') comprises at least one further through hole (74) wherein the conical or hemispherical top end (76) of a push rod (78) engages, the bottom half-portion (80) whereof is fitted into a helical spring (34') arranged in a cavity (32') formed in the bracket (10') adjacent said seat (20).

4. The bracket (10') with front coupling according to claim 3, **characterised in that** the push rod (78) comprises an integral projecting collar (82) that separates the bottom half-portion (80) from the top one (76).

5. The bracket (10') with front coupling according to claim 3, **characterised in that** the shaped plate 44' comprises a through hole (75) wherein the conical or hemispherical top end of the push rod (78) engages as an alternative to the insertion of the same push rod into said hole (74).

6. The bracket (10') with front coupling according to claim 5, **characterised in that** the shaped plate (44') comprises an appendix (46') forming a portion with basically semicircular profile (72) that at least partly surrounds zone 23 close to the bottom end of the pin (22) inserted in the seat (20).

7. The bracket (10-10') with front coupling according to claim 1, **characterised in that** the shaped plate (44-44') comprises an appendix (50-50') protruding from the front opposite that of the inlet (20') and frontally provided with a "V" recess (52-52').

8. The bracket (10-10') with front coupling according to claim 7, **characterised in that** it comprises a safety screw (66-66') arranged in a seat (11-11') adjacent the appendix (50-50') and abutting with the head thereof a portion of the external edge of the shaped plate (44-44').

9. The bracket (10') with front coupling according to claim 3, **characterised in that** said cavity (32') is delimited by further shaped cavities (70) for lightening the base (12).

10. The bracket (10) according to claim 1, **characterised in that** the shaped plate (44) comprises an integral tongue (48) bent downwards at 90° and abutting in a cavity (32) made in a position adjacent said seat (20).

11. The bracket (10) with front coupling according to claim 10, **characterised in that** it comprises a helical spring (34) arranged into the cavity (32) and cooperating with the tongue (48) of the shaped plate (44).

12. The bracket (10) with front coupling according to claim 11, **characterised in that** a rivet (36) is inserted in the helical spring (34) the protruding head (38) whereof abuts the tongue (48) of the shaped plate (44).

13. The bracket (10) with front coupling according to claim 1, **characterised in that** the shaped plate (44) comprises, on the side facing the seat (20), an appendix (46) with semi-circular profile forming a hook suitable for partially delimiting the bottom portion (23) of the pin (22) of the carriage(s) (24).

14. The bracket (10-10') with front coupling according to claim 1, **characterised in that** the rivet (42-42') that articulated-wise connects the plate (44-44') to the raised portion (18) of the base (12) is inserted in a

hole (40-40') of the same base made between the cavity (32-32') and said seat (20) and it crosses a hole (45-45') formed in the same plate.

15. The bracket (10-10') with front coupling according to claim 1, **characterised in that** the seat (20) is partially delimited by a kerb (54-54') which develops above the raised portion (18) of the base (12) forming a rise thereof, said kerb being obtained in opposite position relative to the cavity (32-32').

16. The bracket (10-10') with front coupling according to claim 1, **characterised in that** it is combined with doors (16) with guiding section bars (30) for the carriages (24), or with aluminium frames (56) or made up of jaws (58) for glazed doors (60).

17. The bracket with front coupling according to claim 1, **characterised in that** the base (12) comprises flared and threaded holes (64) for the fixing thereof by metrical threading screws (62) to said frames (56) or jaws (58) for glazed doors.

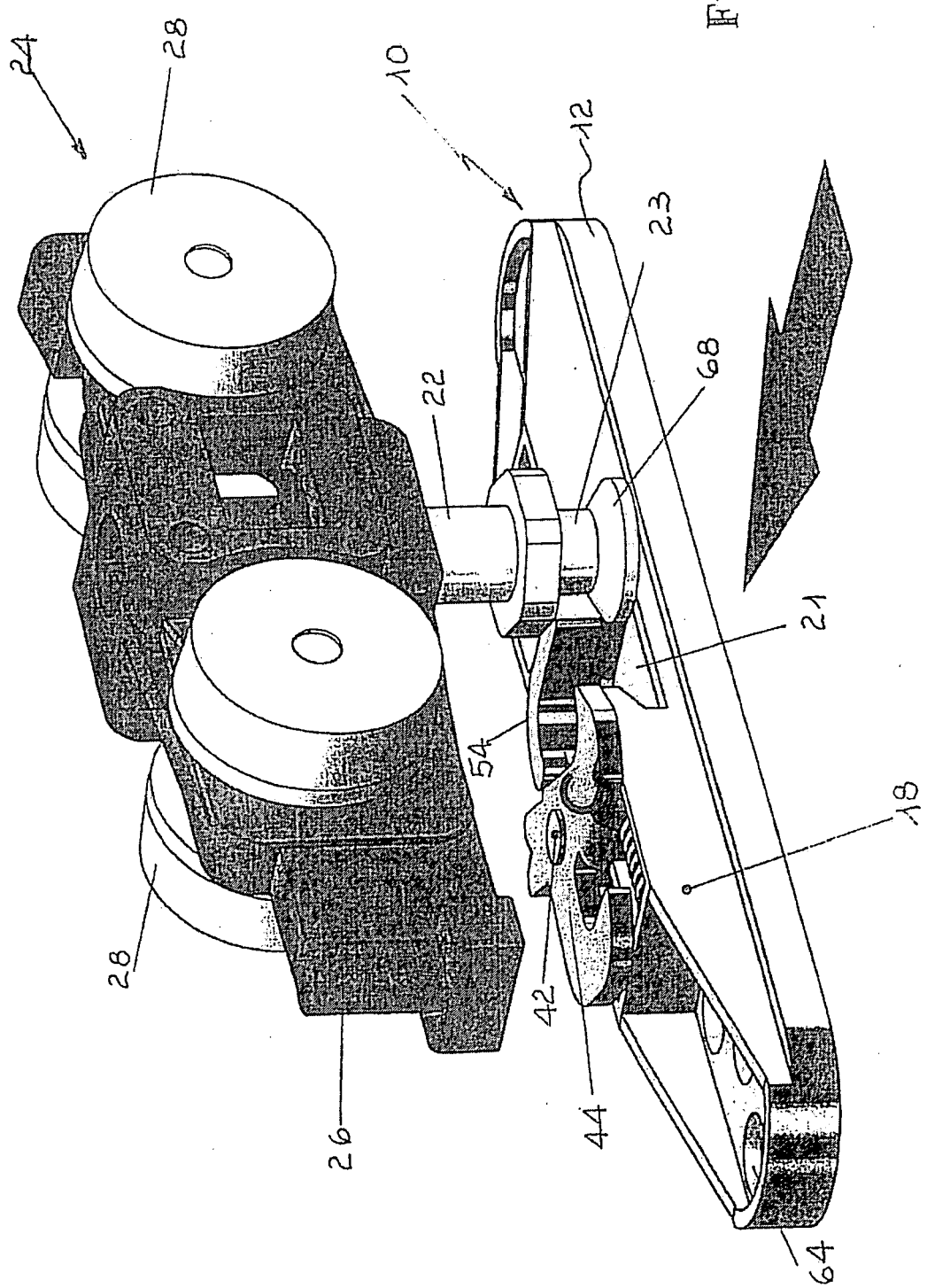


Fig. 1

Fig. 2

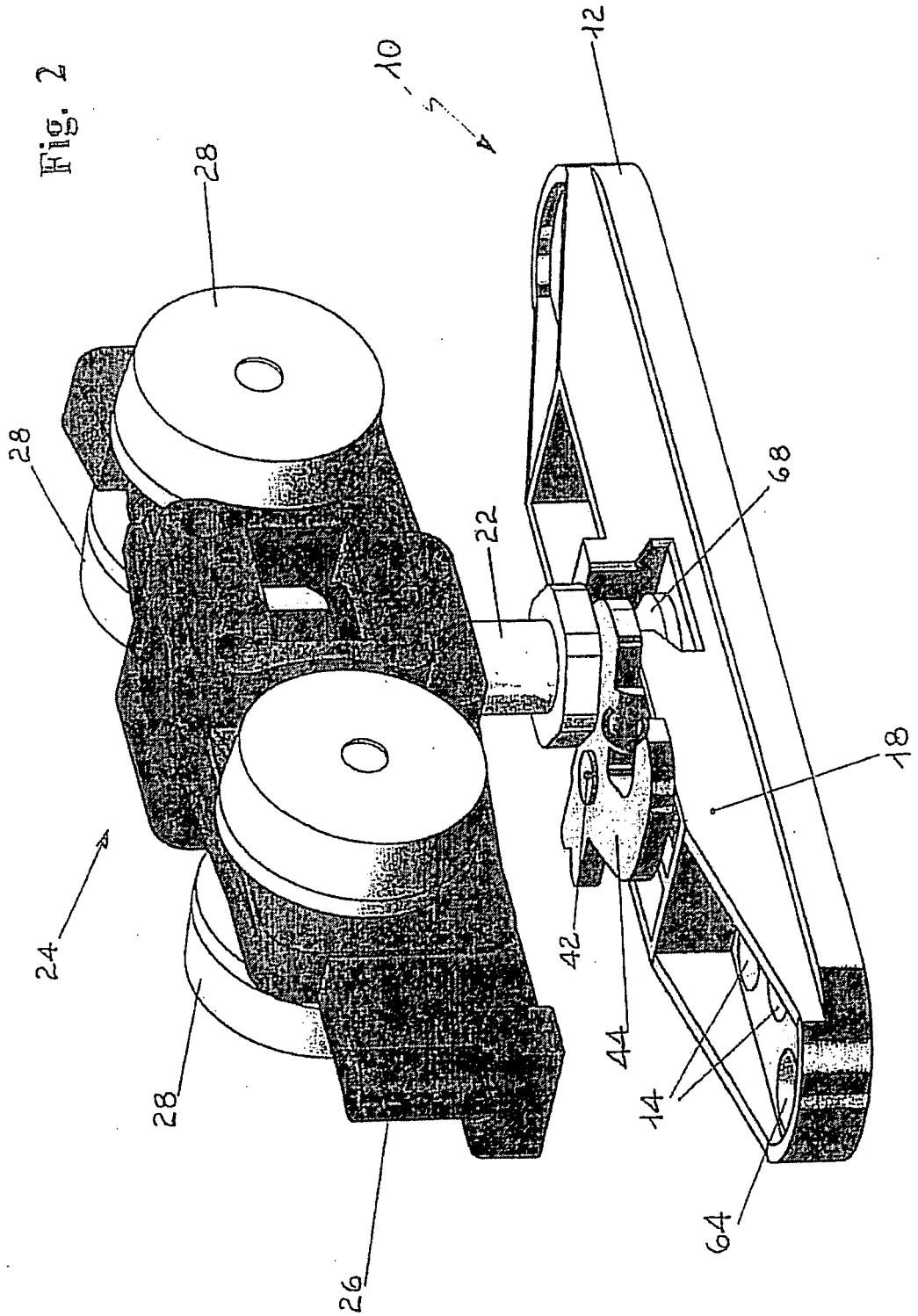
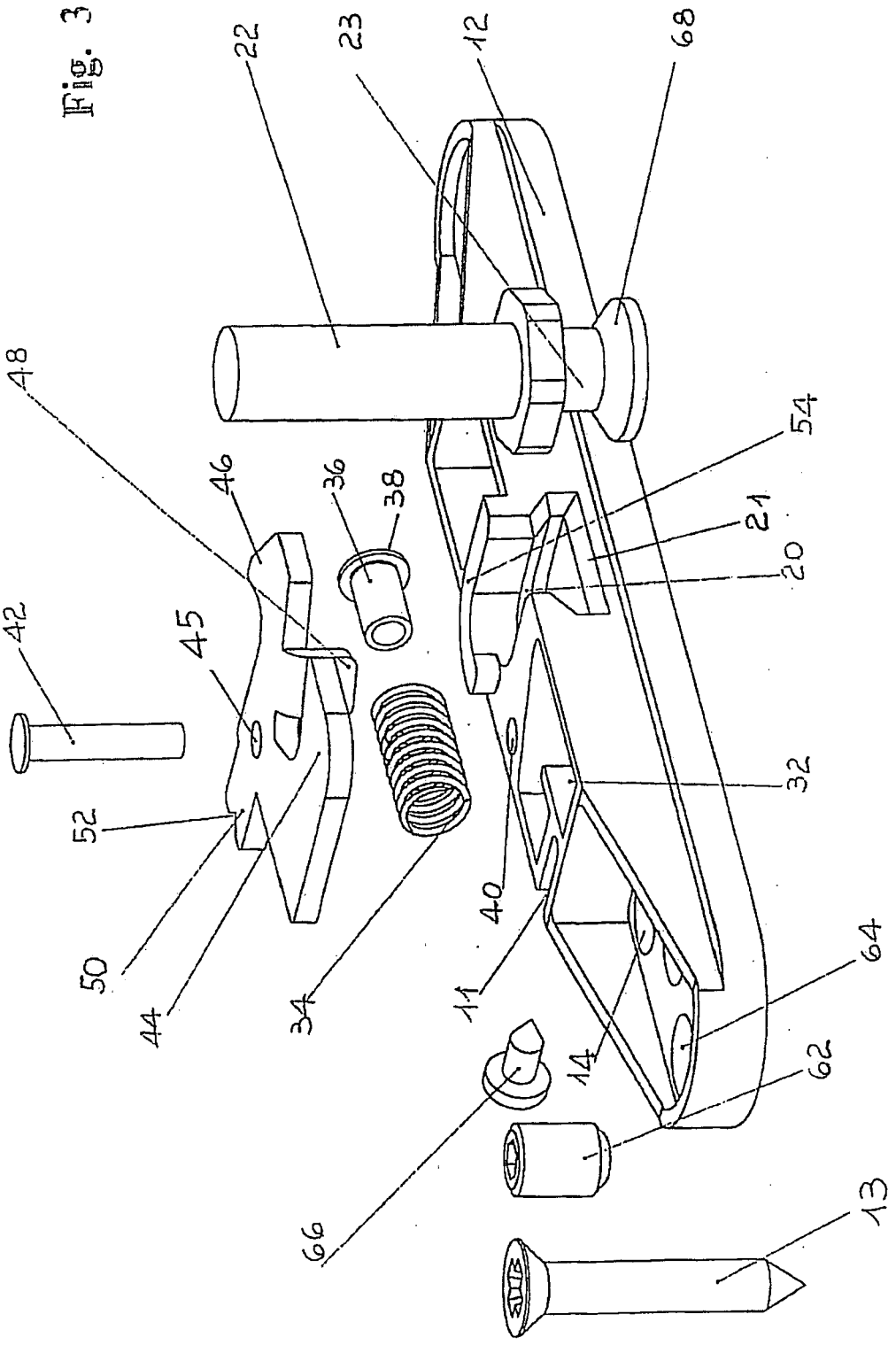


Fig. 3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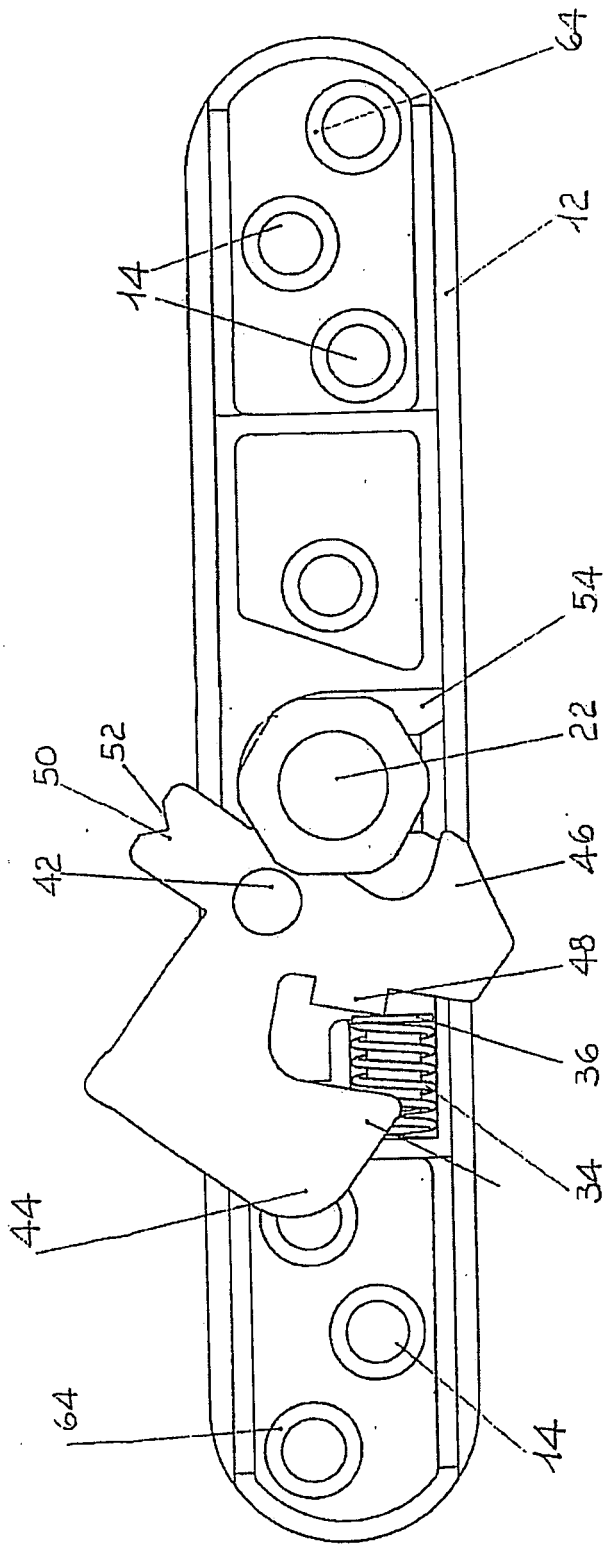


Fig. 4

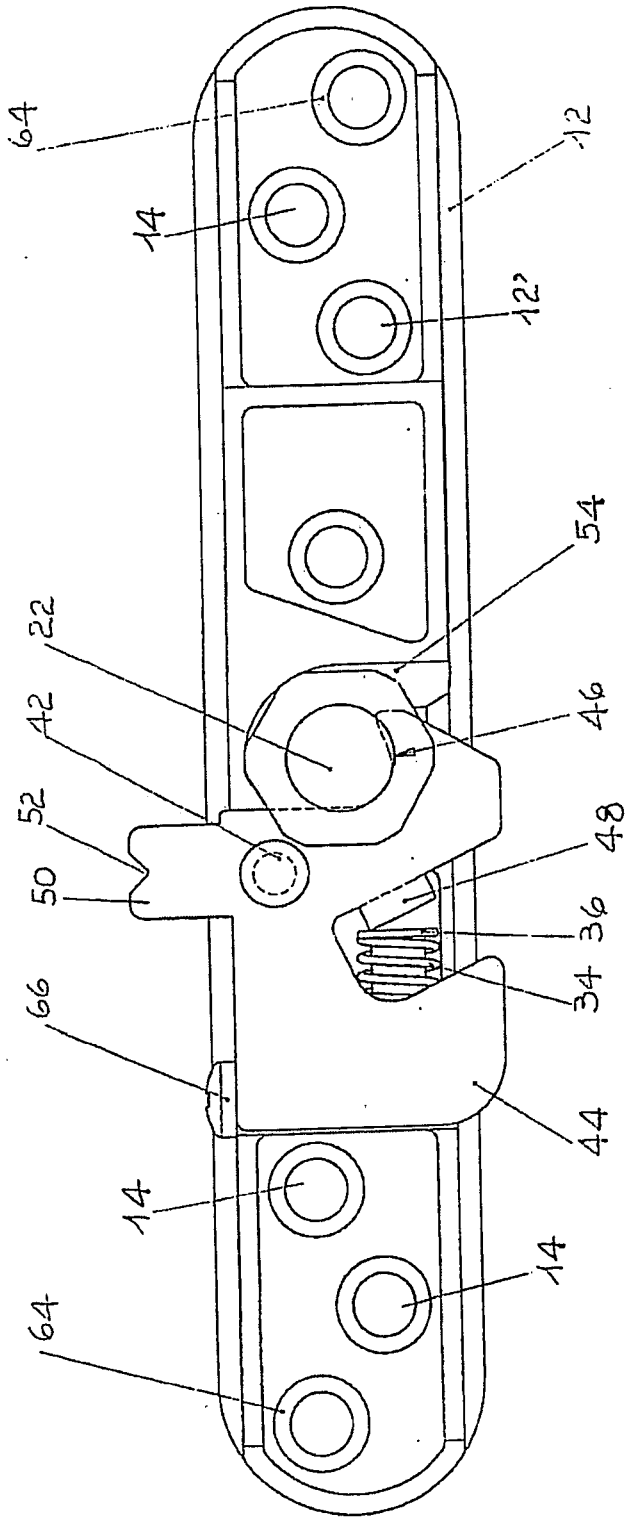
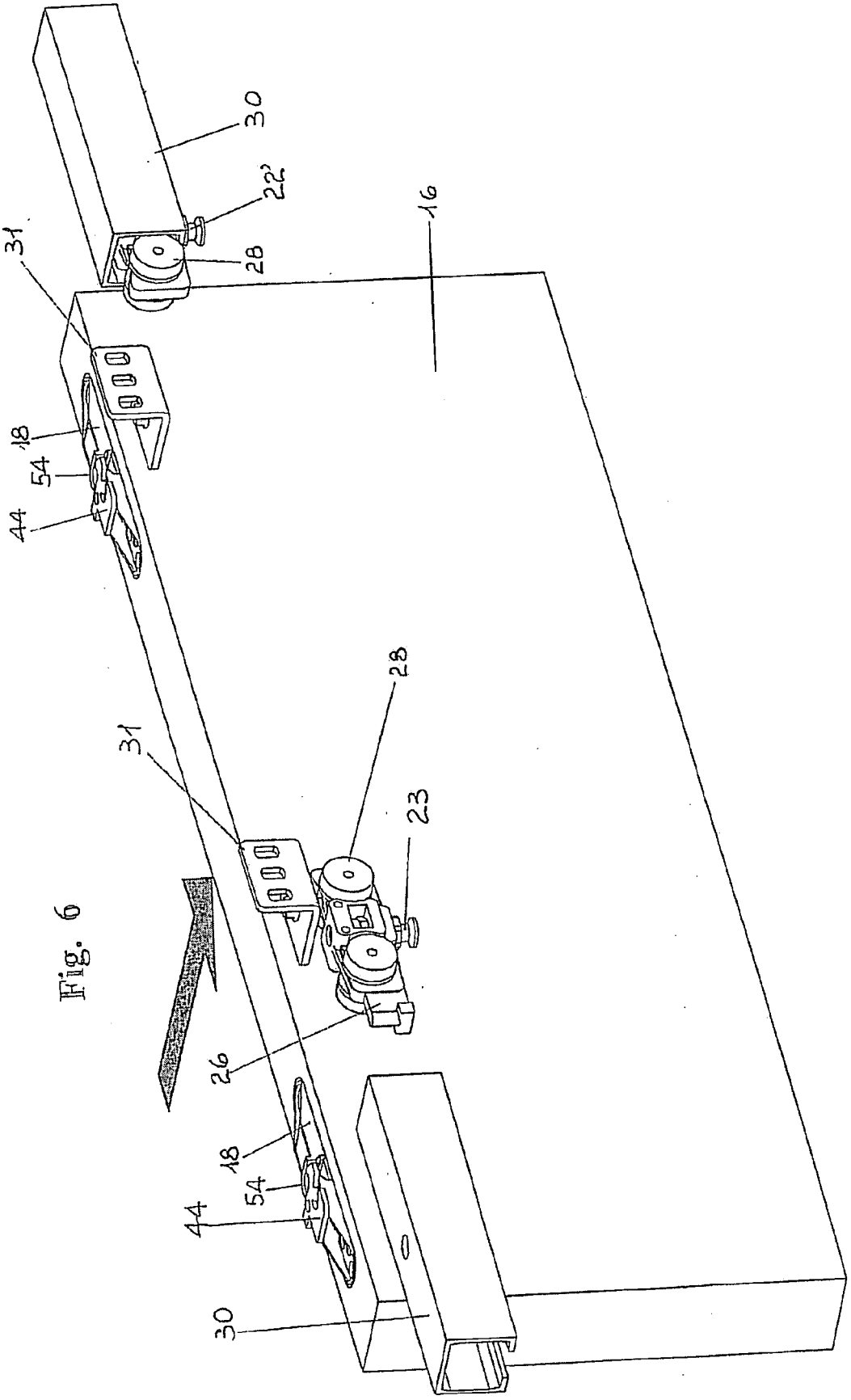


Fig. 5



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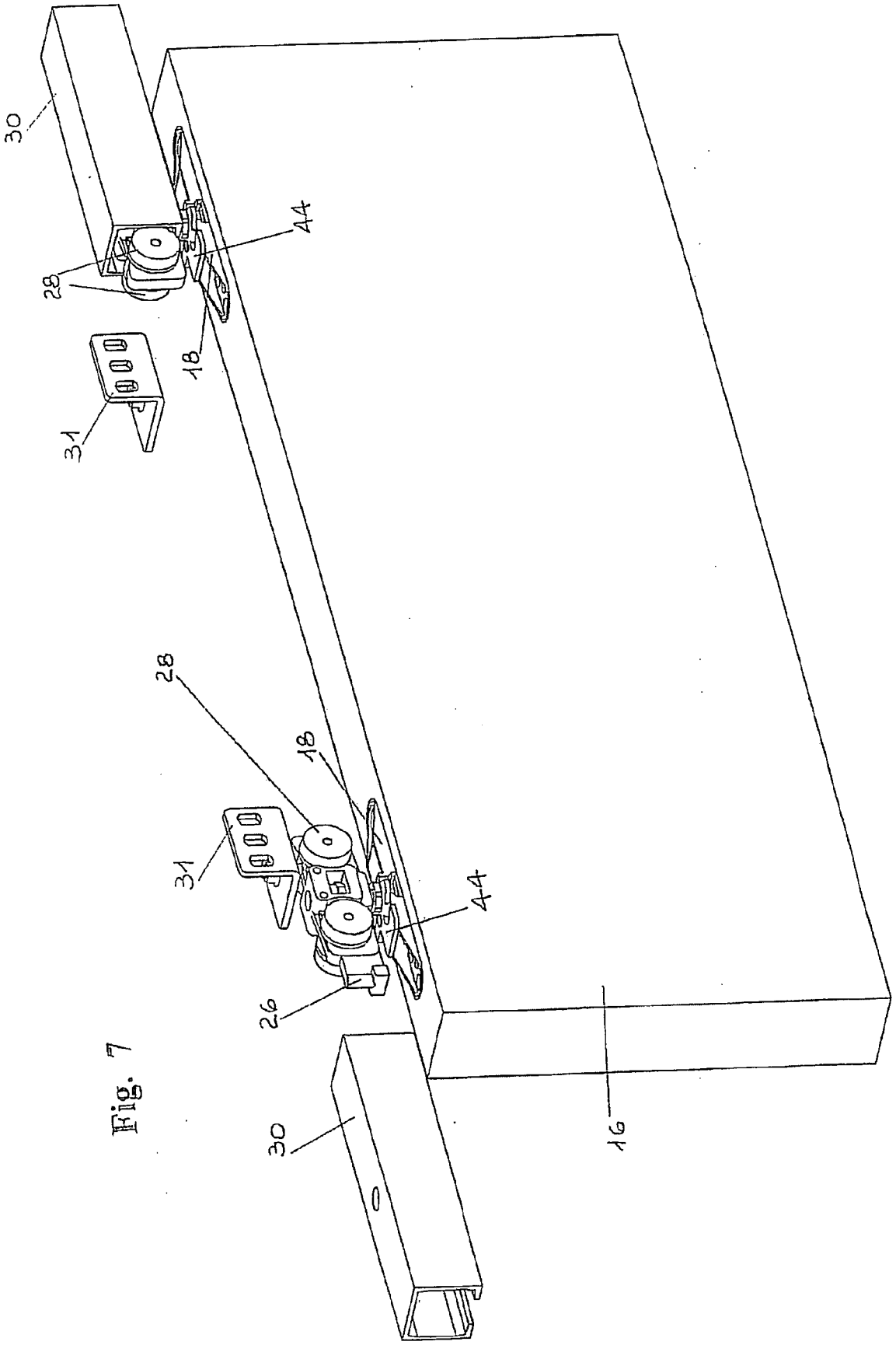

Fig. 7

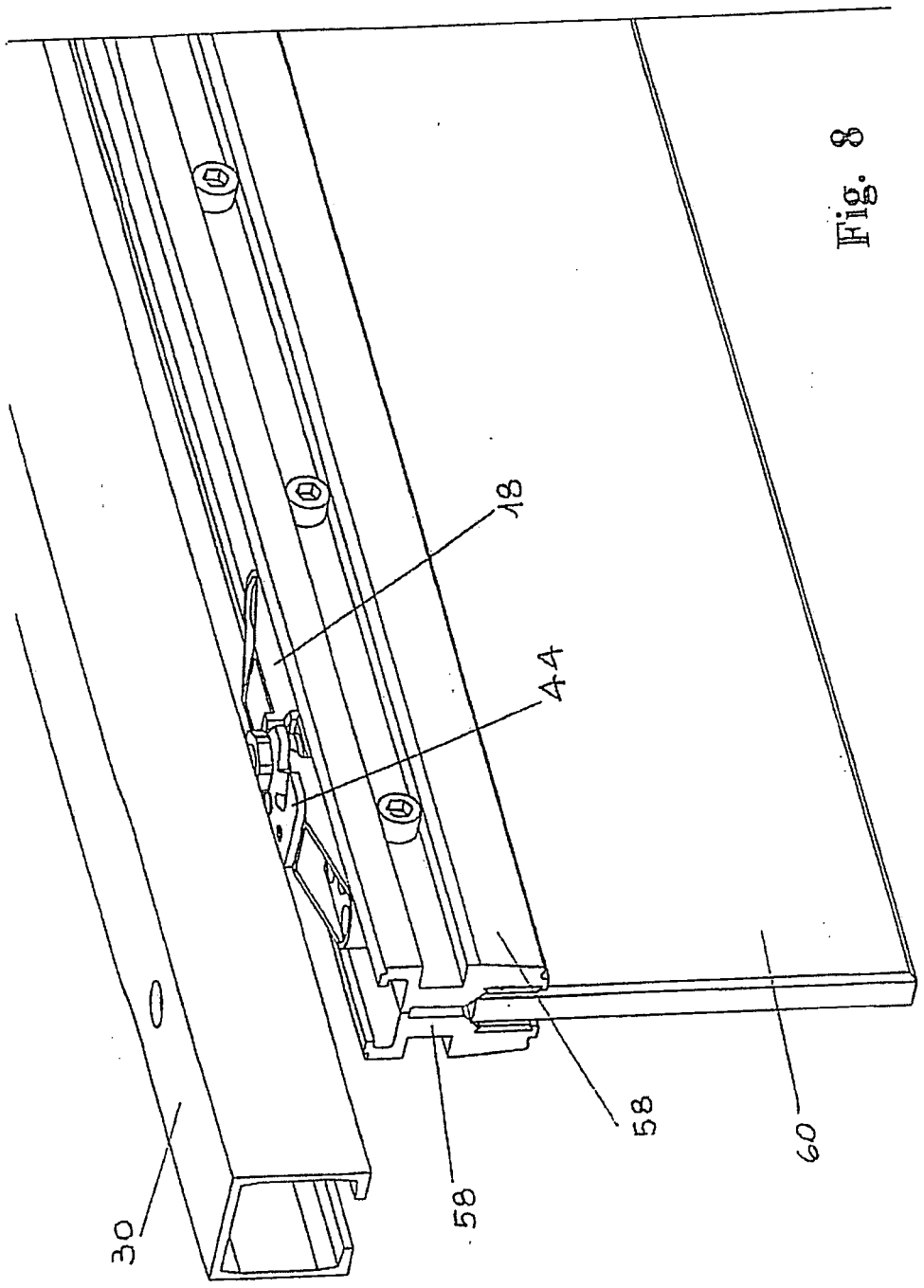

Fig. 8

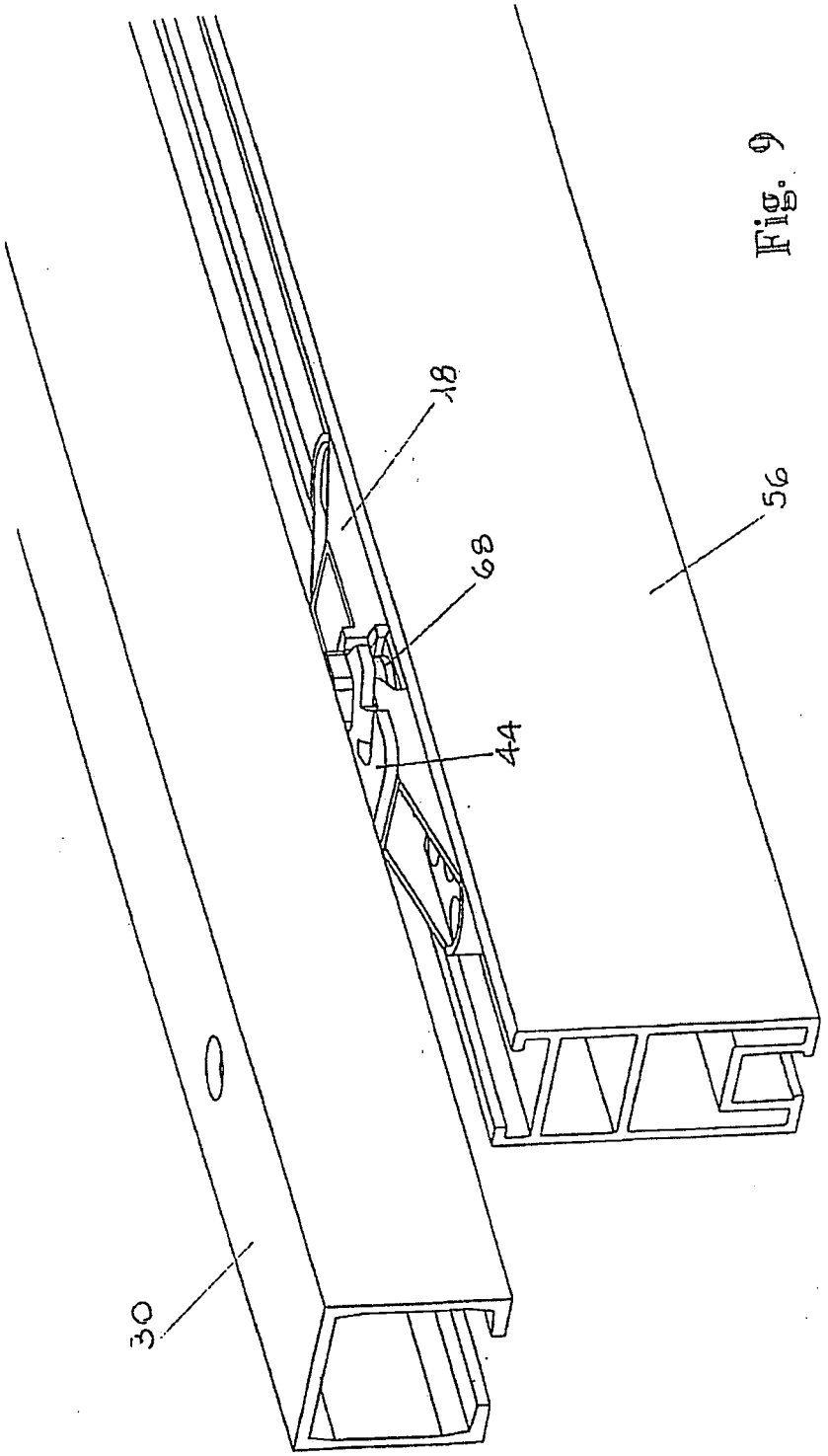

Fig. 9

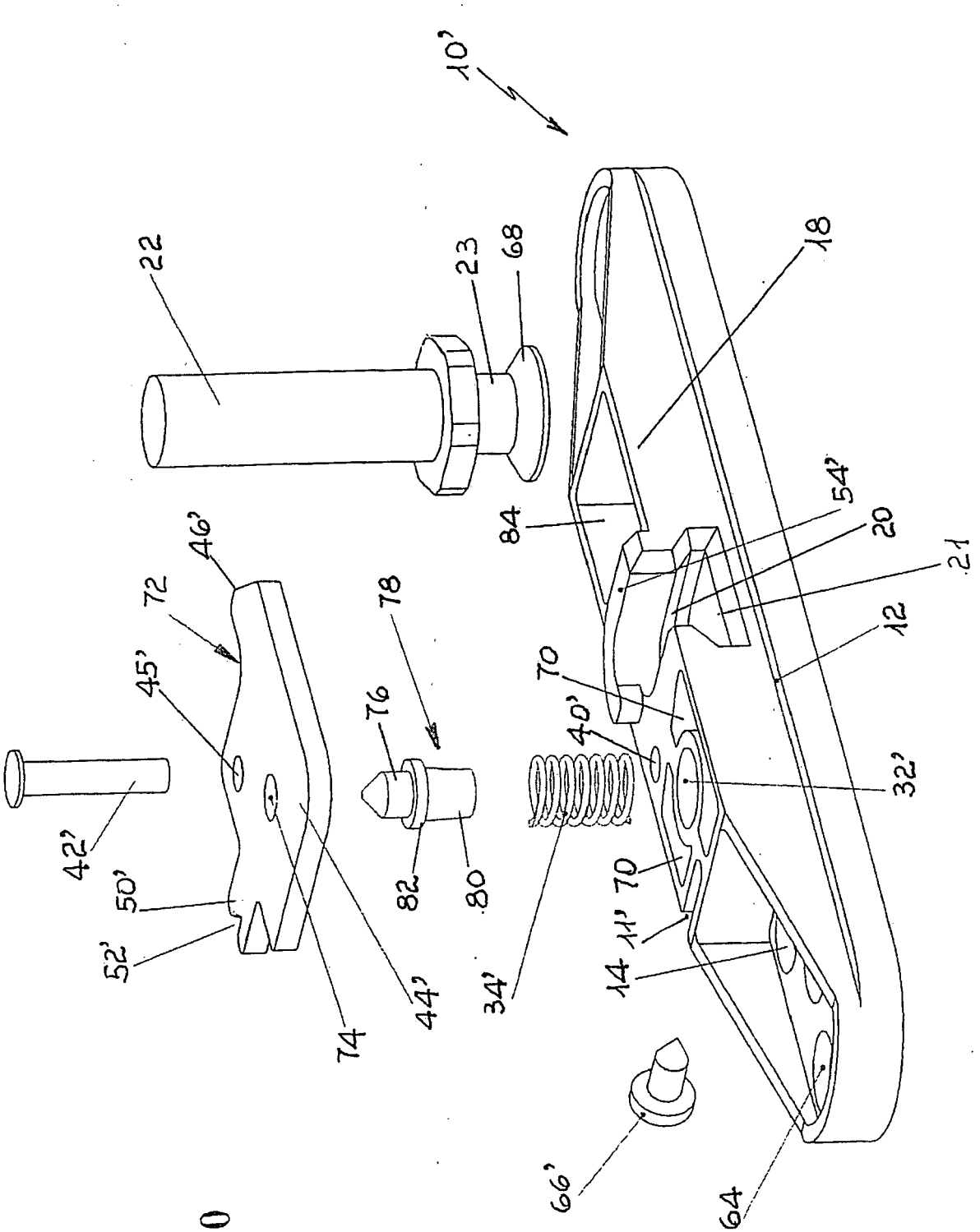
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Fig. 10

Fig. 11

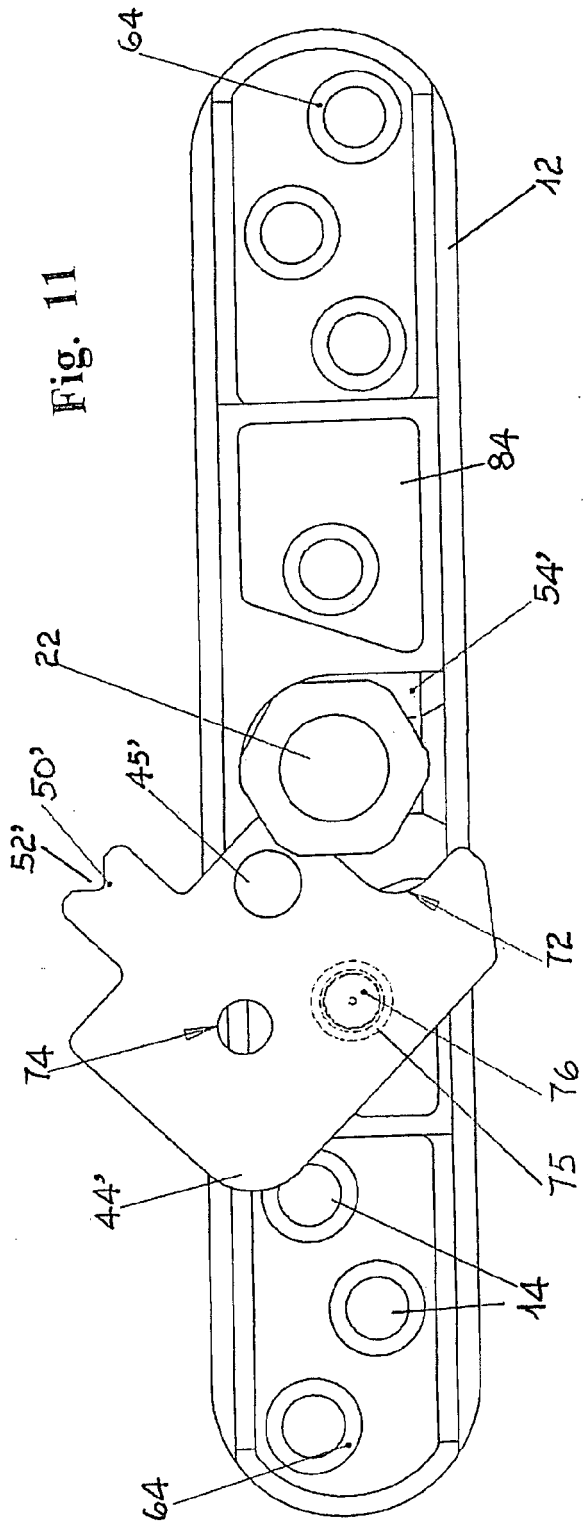
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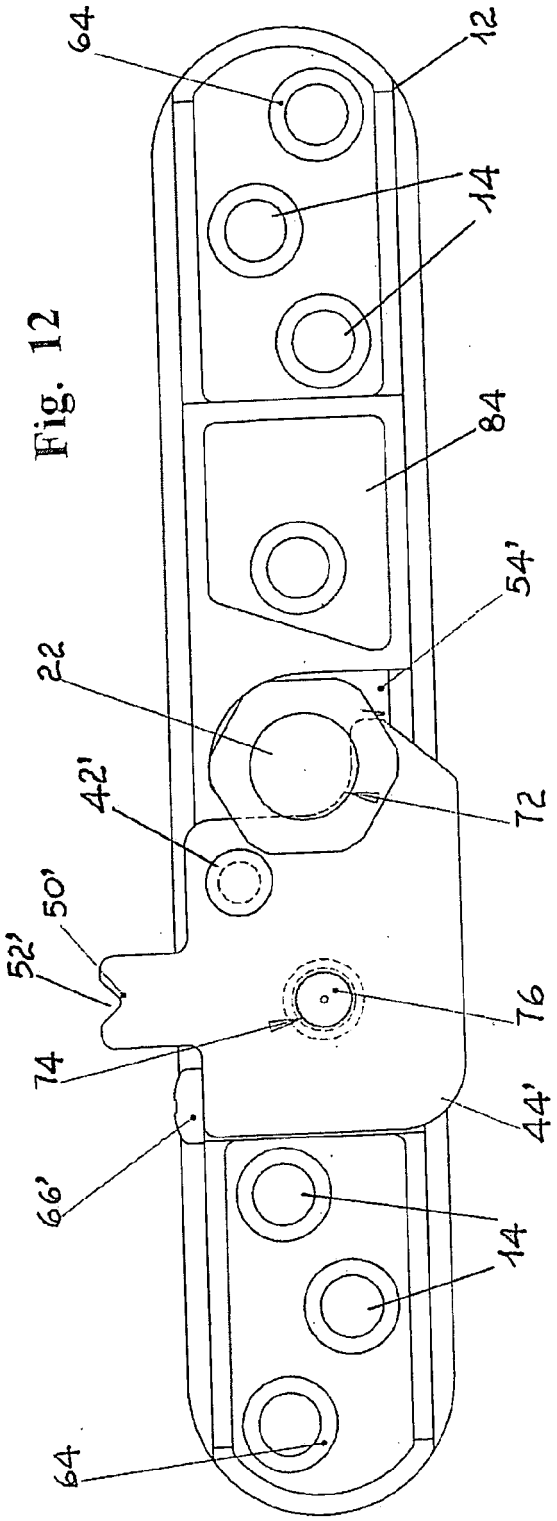
Fig. 12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REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

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