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(72) Inventors:
• **Spadotto, Oliviano**
33170 PORDENONE (IT)
• **Franchini, Gaetano**
33080 FIUME VENETO (PN) (IT)

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(74) Representative: **Mittler, Enrico et al**
Mittler & C. S.r.l.
Viale Lombardia, 20
20131 Milano (IT)

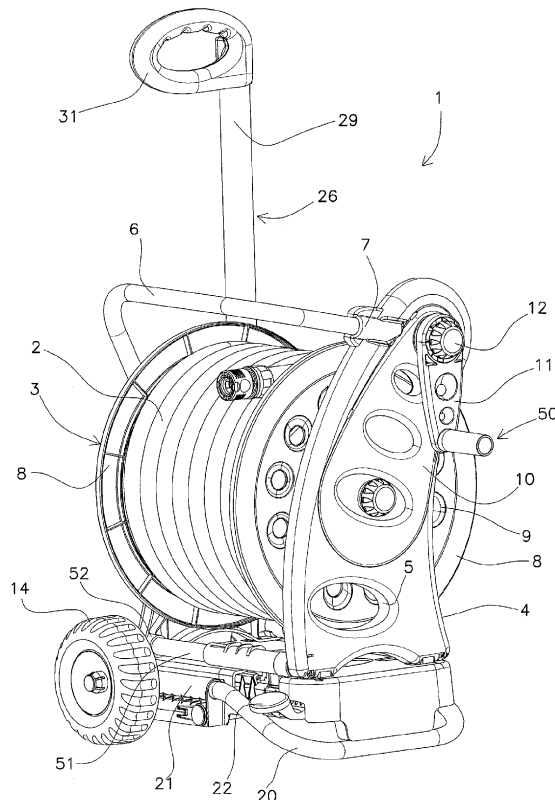
(71) Applicant: **CLABER S.P.A.**
33080 Fiume Veneto (PN) (IT)

(54) **Separable trolley reel.**

(57) A trolley reel (1) for flexible irrigation pipe (2) is described comprising a pipe winding device (50) consisting of a pipe winding drum (3) rotatably supported by two side walls (4), and of a crank (11) for rotating the drum

(3). Said pipe winding device (50) is positioned on a trolley (13) with a base (18) provided with positioning seats (15-17), and is releasable and reconnectable to the same base (18) through fastening means (22-24, 30).

Fig. 1



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Description

[0001] The present invention relates to a separable trolley reel.

[0002] Within the gardening sector, the use of wide-spread, common flexible pipes is at the basis of irrigating more or less extended fields, and subsequently of water distribution. Starting from the water intake, the flexible pipe is to cover, with the entire length thereof and the displacement thereof, the entire surface wanted to be replenished with water. At the same time, there is the need to minimize the volume of the flexible pipe when it is not used, or used for a small field area with respect to the water intake. The reel falls within this context and during movements along the work route, allows an adequate length of the flexible pipe to be available, thus at the same time ensuring an orderly repositioning once work is complete.

[0003] Trolley reels are known which comprise a drum formed by a hub on which a flexible pipe winds, and by a pair of flanges, which have the function of laterally holding the wound flexible pipe. A crank allows the manual rotation of the drum to rewind the flexible pipe. The drum is rotatably supported by a trolley provided with at least one pair of wheels from which a first tubular element extends upwards thus forming a handle, and from which, in case of a single pair of wheels, a tubular element that acts as a rest on the ground, may extend downwards.

[0004] Examples are also known, for example from Patent US 6,908,058, of reel with crank connected to the drum by means of reduction gear to allow easier rewinding of the pipe.

[0005] The known trolley reels form a single structure which does not lend itself to different types of use.

[0006] Trolley reels in which a pipe winding device with a pipe winding drum rotatably supported by two side walls and a crank for rotation of the drum roof is positioned in releasably and reconnectable way on a support trolley base are known from US D621,119 S, US 4 700 737 A, US 5 622 319 A and JP 2004 315103 A.

[0007] It is the object of the present invention to make a trolley reel which has innovative features with respect to the ones currently on the market, thus being versatile to use depending on requirements.

[0008] According to the invention, such an object is achieved by a trolley reel for flexible irrigation pipe as defined in claim 1.

[0009] The features of the present invention will become apparent from the following detailed description of some embodiments thereof, shown by way of non-limiting example in the accompanying drawings, in which:

figure 1 shows a perspective view of a two-wheel trolley reel and crank provided with reduction gear;
figure 2 shows a perspective view of the trolley without the reel device;
figure 3 shows a perspective view of the winding device released and resting on the ground;

figure 4 shows a perspective view of the winding device released and attached to a wall;

figure 5 shows a top view of the trolley base with handle removed;

figure 6 shows a section view of the trolley base according to the line VI-VI in figure 5;

figure 7 shows a section view of the trolley base according to the line VII-VII in figure 5;

figure 8 shows an enlarged detail from figure 7, with base-reel hook in open position;

figure 9 shows an enlarged detail from figure 7, with base-reel hook in closed position;

figure 10 shows a front view of a two-wheel trolley reel without reduction gear;

figure 11 shows a rear view of the reel in figure 10;

figure 12 shows a side view of the reel in figure 10;

figure 13 shows a front view of a four-wheel trolley reel with reduction gear;

figure 14 shows a rear view of the reel in figure 13;

figure 15 shows a side view of the reel in figure 13.

[0010] With reference to figure 1, a reel 1 for flexible irrigation pipe 2 comprises a winding device 50 consisting of a drum 3 rotatably supported by two side walls 4 with curved profile. Such side walls 4 comprise a plurality of lightening oval holes 5 and are connected by an upper tubular element 6 with ends inserted within specific housings 7 on the upper part of the side walls 4, and by a pair of lower tubular bars 51 in turn with ends inserted within housings 52 of the side walls 4.

[0011] Drum 3 comprises a hub on which the flexible pipe 2 winds and a pair of flanges 8 provided with lightening holes 9 which laterally limit the hub. A reduction gear 10 at one of the side walls 4 facilitates the rotation of drum 3 for rewinding pipe 2, which occurs by means of a rotatable crank 11 fastened to the side wall 4 by means of a ring nut 12.

[0012] The pipe winding device 50 is placed on a trolley 13 provided with freely rotatable resting wheels 14, and the positioning is such that the projections of the pipe winding device 50 are at positioning seats 15, 16 and at a cavity 17 located on a base 18 of trolley 13. Base 18 comprises two oval cavities 19 and a metal tubular U-shaped supporting frame 20, with ends inserted within specific side housings 21. Frame 20 extends below base 18 thus offering a mechanical support thereto.

[0013] The pipe winding device 50 is fastened to base 18 of trolley 13 by means of a pedal 22 which controls a lever 23 provided with a hooking element 24 and rotatable about a fulcrum 40 supported by base 18. Such a hooking element 24 provides an "open" position (figure 8), which makes said cavity 20 accessible to a particular projection 25 of the pipe winding device 50, and a "closed" position (figure 9), in which the hooking element 24 engages projection 25, thus anchoring the pipe winding device 1 onto base 18. The pipe winding device 50 is released by pressing the releasing pedal 22 so that the hooking element is in the "open" position and then the pipe winding

device 50 is lifted for the removal thereof.

[0014] Thereby, the pipe winding device 50 can also be used from a fixed position, such as for example from the ground (figure 3), or placed on specific wall hooks (figure 4), while at this point, trolley 13 may be used for the most assorted functions with other types of loads. Resting on the ground and fastening to the wall can be obtained due to the parallel bars 51, while the manual movement of the pipe winding device 50 can be achieved due to the tubular element 6.

[0015] Unlike the known art, in which the axis of the wheels 14 and the axis of drum 3 are parallel, the pipe winding device 50 is positioned onto base 18 of trolley 13 with the axis of the drum perpendicular to the one of the wheels 14 (see figure 1). By doing this, a trolley 13 is obtained with smaller dimensions, which has an offset handle 26 which makes the fitting 27 available for the connection of the flexible pipe 2 to a water intake. Handle 26 is telescopic and comprises a fixed tubular lower part 28 and an upper part 29 slidably movable within said lower part 28, thus having the ability of being completely accommodated within said fixed part 28. A handgrip 31 allows the height control of handle 26, which provides the completely extended handle position and the completely closed handle position.

[0016] The fixed part 28 is held together by means of a junction 32, which may also act as a support for fittings, from which two tubular elements branch off, a straight tubular element 33 and a curved tubular element 34, respectively, to allow pulling reel 1 in a balanced way, even though said handle 26 is offset.

[0017] Said tubular elements 33, 34 and the fixed part 28 of handle 26 are fastened to a crosspiece 35 rotatably coupled to a rear portion 36 of base 18. Two separate positions are provided: one position in which handle 26 is vertical and one position in which handle 26 is folded on base 18.

[0018] A further reel 1 model is provided with two-wheel 14 trolley 13 without reduction gear (figures 10-12), which is entirely similar to the example described in figure 1.

[0019] A trolley 13 reel 1 model is also provided with four freely rotatable resting wheels 14 (see figures 13-15). In the four-wheel example, the presence is not provided of the metal tubular supporting frame 20, because base 18 alone, which is larger in size with respect to the two-wheel example, is capable of supporting the weight of the fastened load. The oval cavities 19 become three, while the positioning seats 15, 16 are located at the four corners of the surface of base 18. In any event, the reel fastening modes remain the ones described in the two-wheel trolley 13.

Claims

1. Trolley reel (1) for flexible pipe (2) for irrigation comprising a pipe winding device (50) with a pipe winding

drum (3) rotatably supported by two side walls (4) and a crank (11) for rotation of the drum (3), wherein said pipe winding device (50) is positioned onto a trolley (13) with a base (18) provided with positioning seats (15-17) and is releasable and reconnectable to the same base (18) through fastening means (22-24, 30), **characterized in that** said fastening means (22-24, 30) comprise a lever (23) provided with a hook (24) and rotatable around a fulcrum (40) supported by the base (18), said lever (23) being actuated by a releasing pedal (22) which branches off therefrom.

2. Trolley reel (1) according to claim 1, **characterized in that** said pipe winding device (50) is placed transversely onto the base (18) of the trolley (13) and the positioning is such that projections of the pipe winding device (50) are in correspondence of positioning seats (15, 16) and a cavity (17) on the base (18) of the trolley (13).

3. Trolley reel (1) according to claim 1, **characterized in that** said trolley (13) is provided with an offset telescopic handle (26), comprising a fixed tubular lower part (41) and an upper part (42) movable slidably within said lower portion (41).

4. Trolley reel (1) according to claim 3, **characterized in that** said fixed part (41) comprises tubular reinforcement elements (33, 34) which connect the lateral rear ends of the base (18) of the trolley (13) to a junction structure (32) anchored to the upper end of said fixed part (41).

5. Trolley reel (1) according to claim 1, **characterized in that** said side walls (4) are connected by a tubular element (6) with ends inserted in housings (7) of the upper part of the side walls (4) and a pair of tubular bars (51) with ends inserted in housings (52) of the lower part of the side walls (4).

6. Trolley reel (1) according to claim 5, **characterized in that** one of the side walls (4) includes a reduction gear (10) of connection of the crank (11) to the axis of rotation of the drum (3).

7. Trolley reel (1) according to any one of claims 1-6, **characterized in that** said base (18) is provided with two wheels (14) and a supporting tubular frame (20) with ends inserted inside of side housings (21) of said base (18).

8. Trolley reel (1) according to any one of claims 1-6, **characterized in that** said base (18) is resting on four wheels (14).

Fig. 1

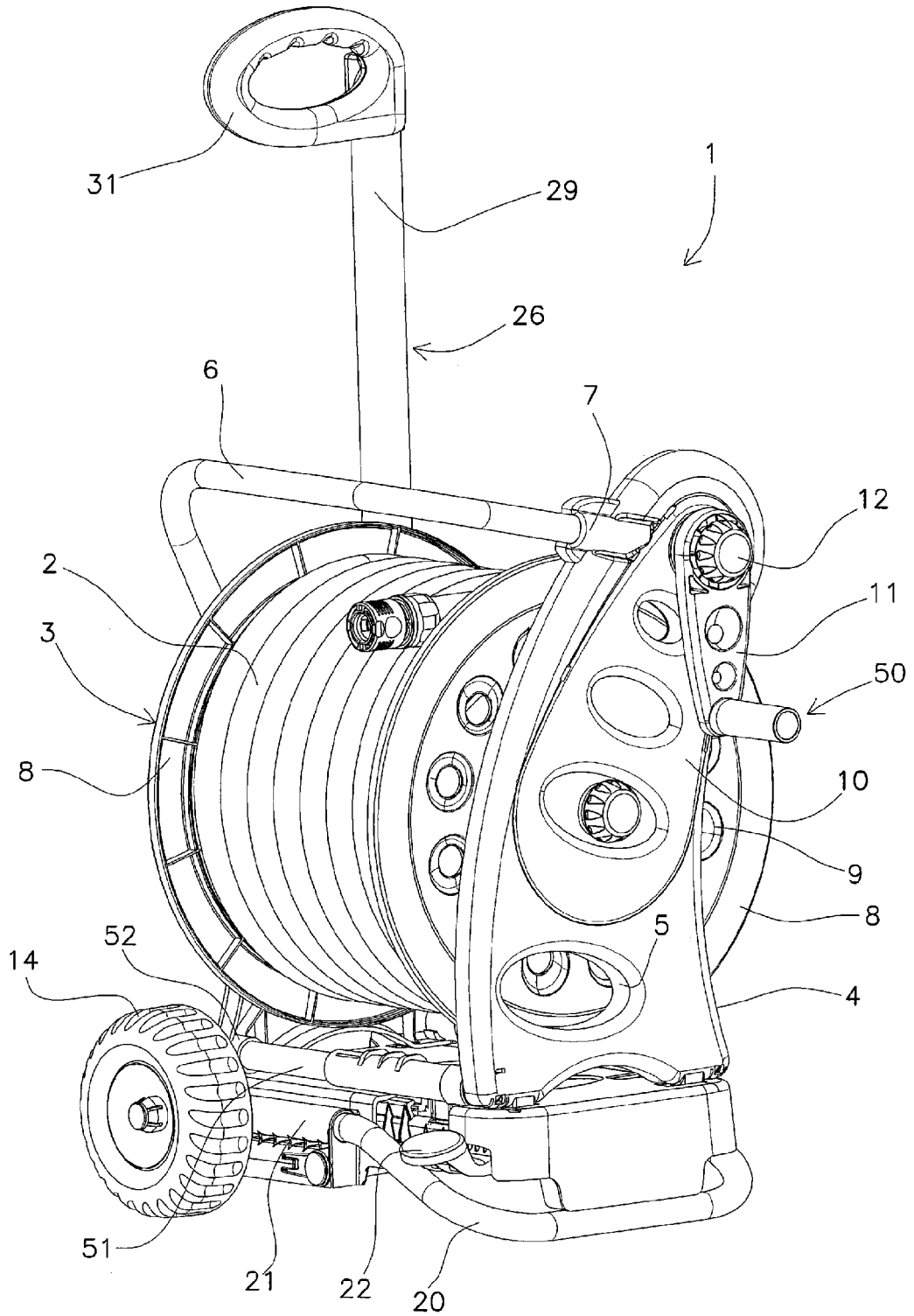


Fig.2

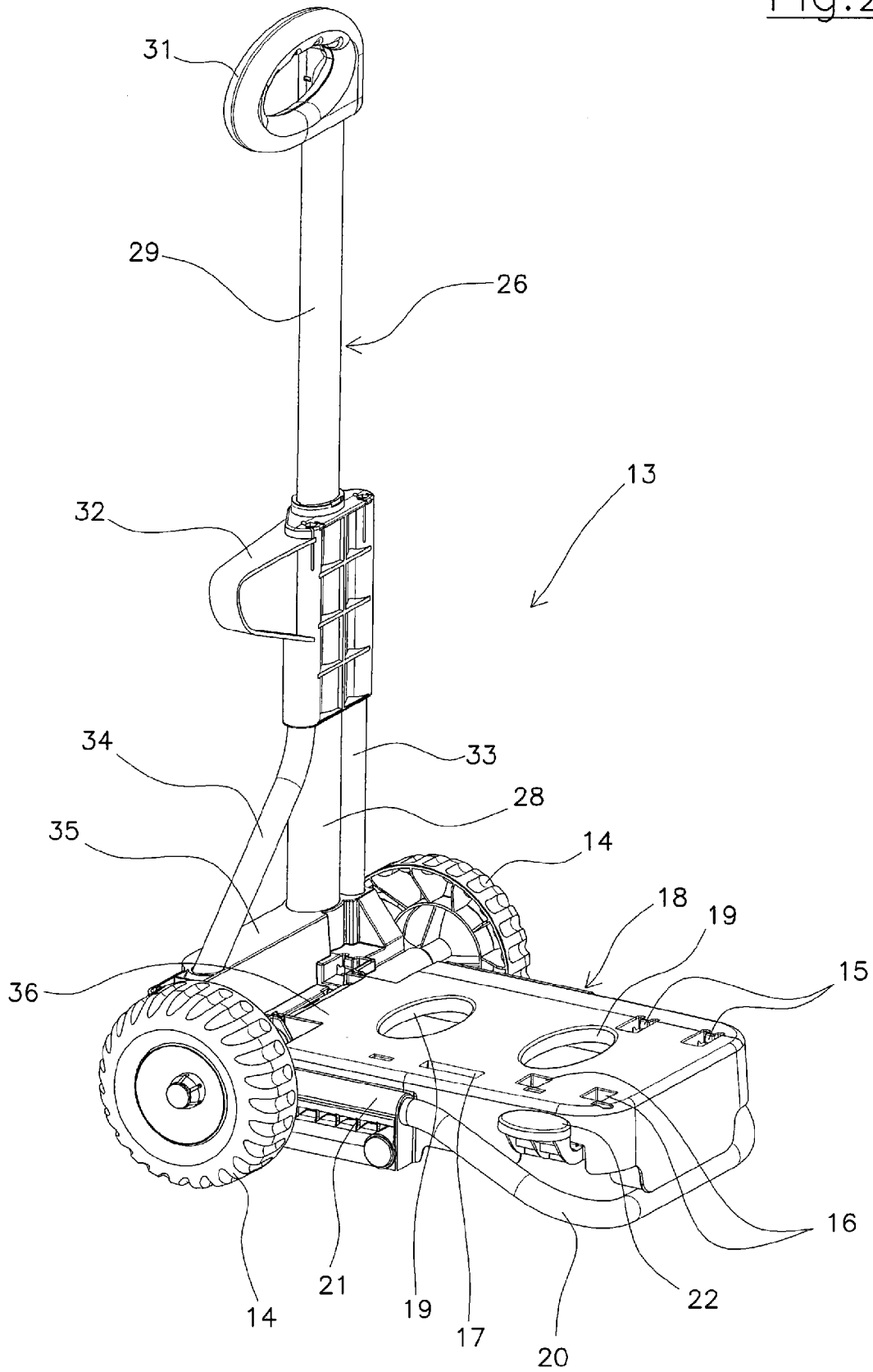


Fig.3

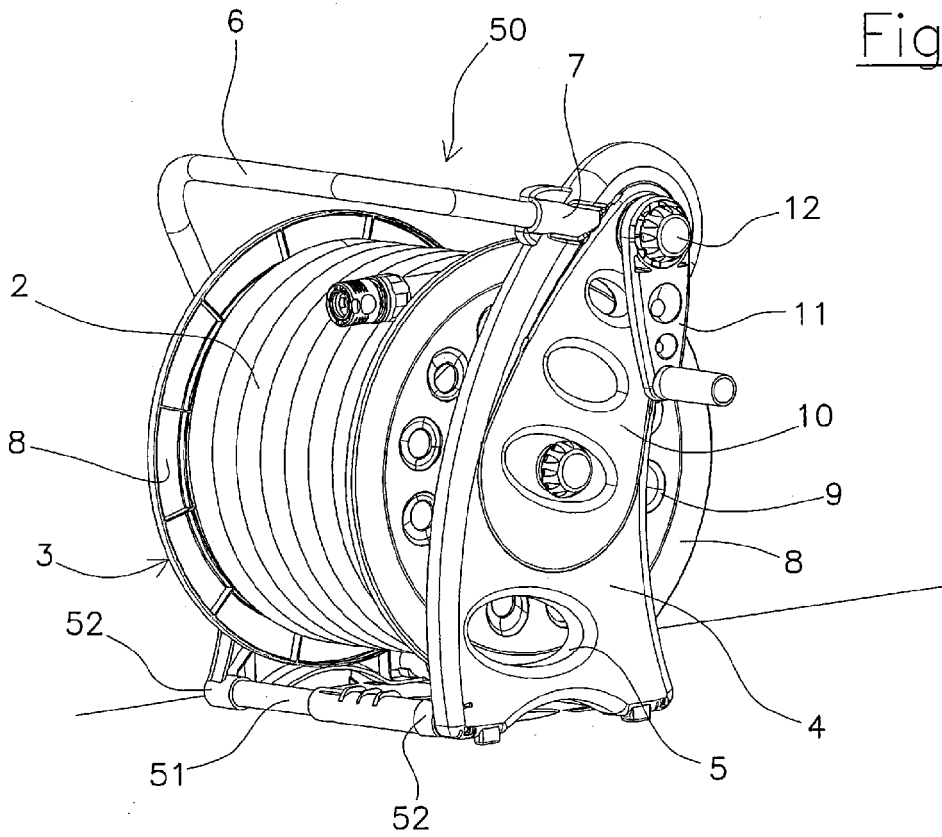


Fig.4

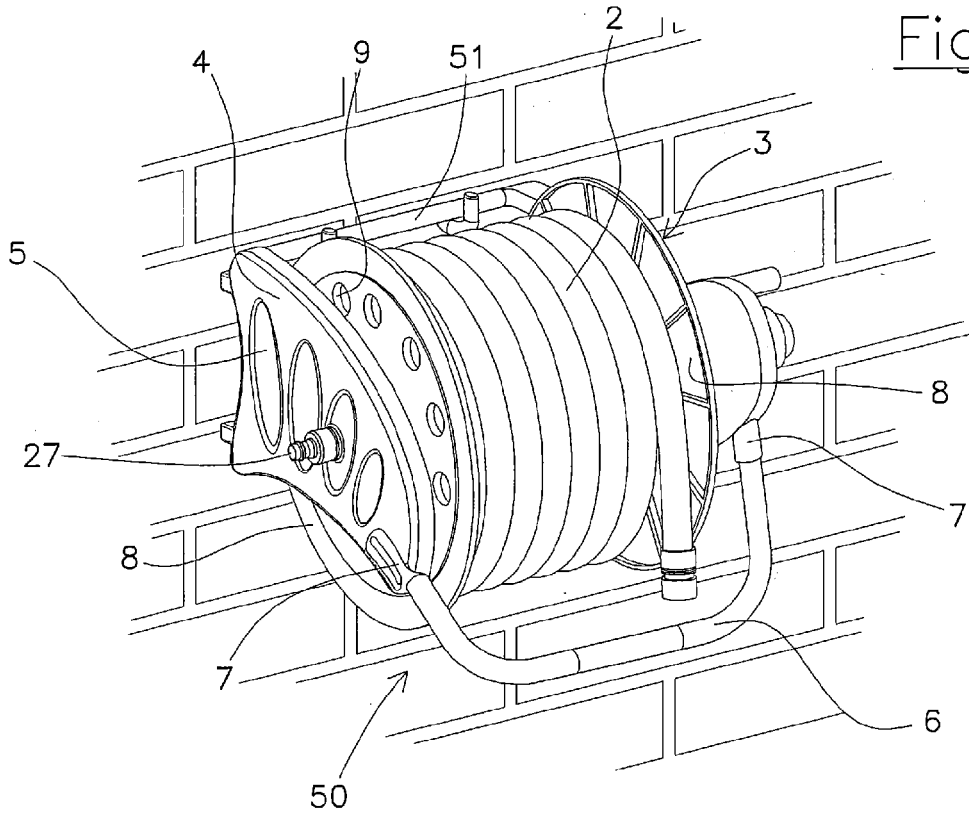


Fig.5

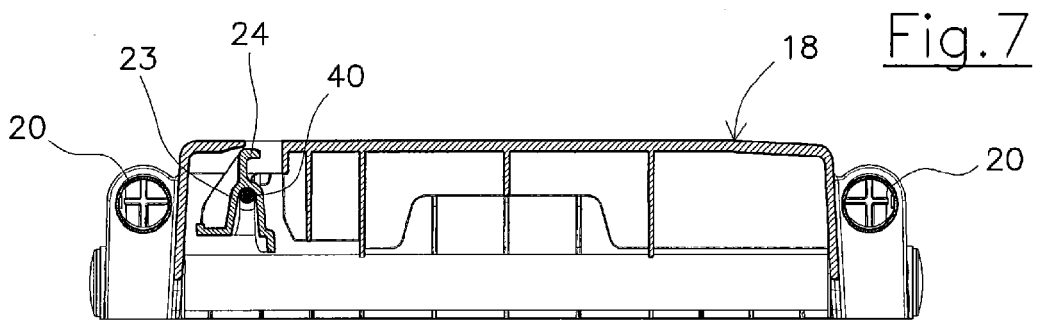
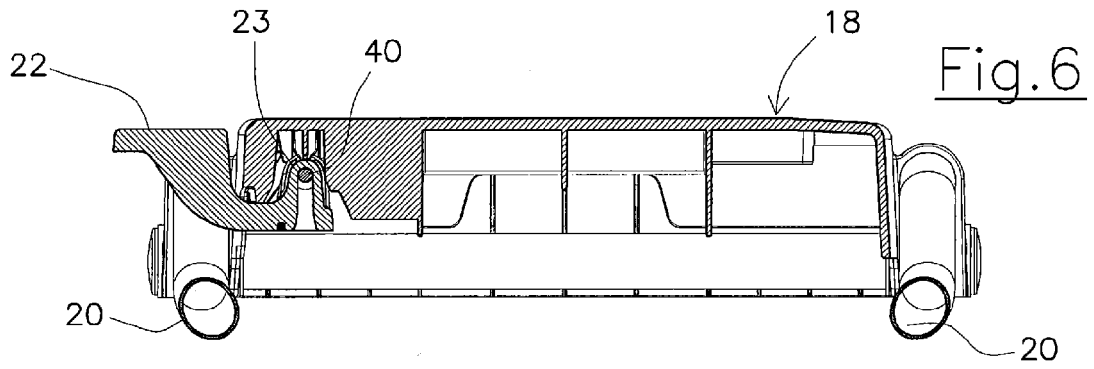
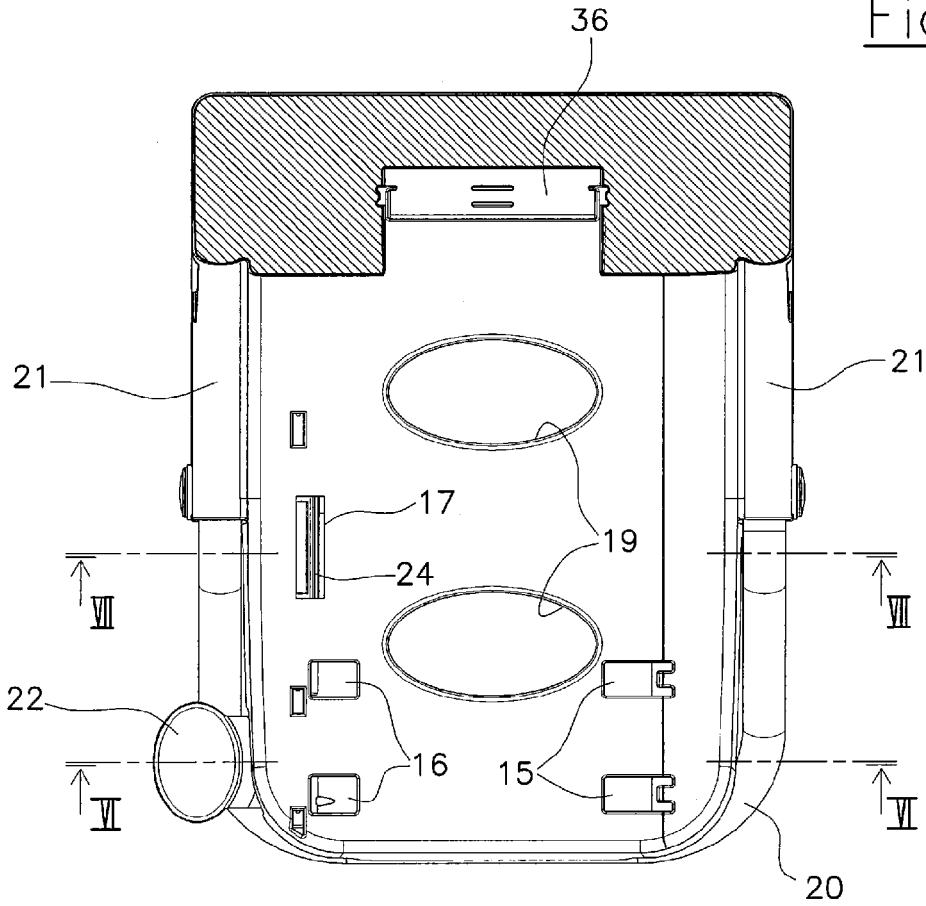


Fig.8

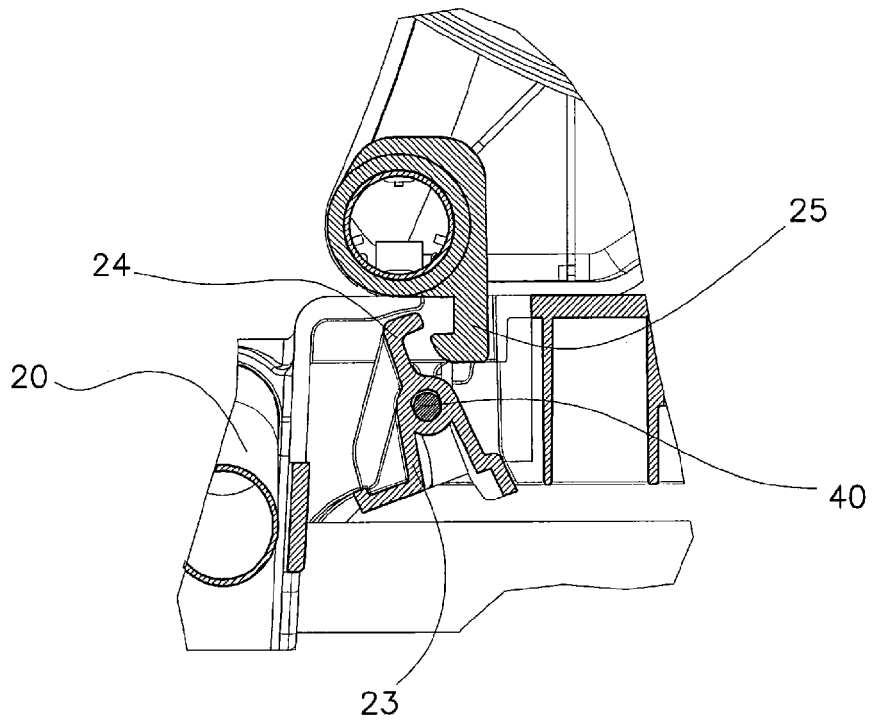
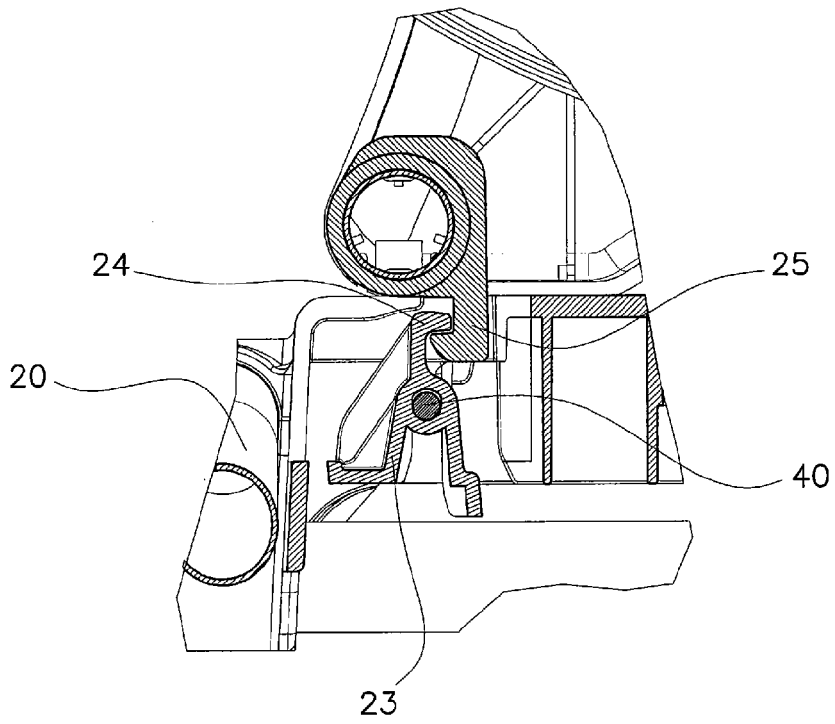


Fig.9



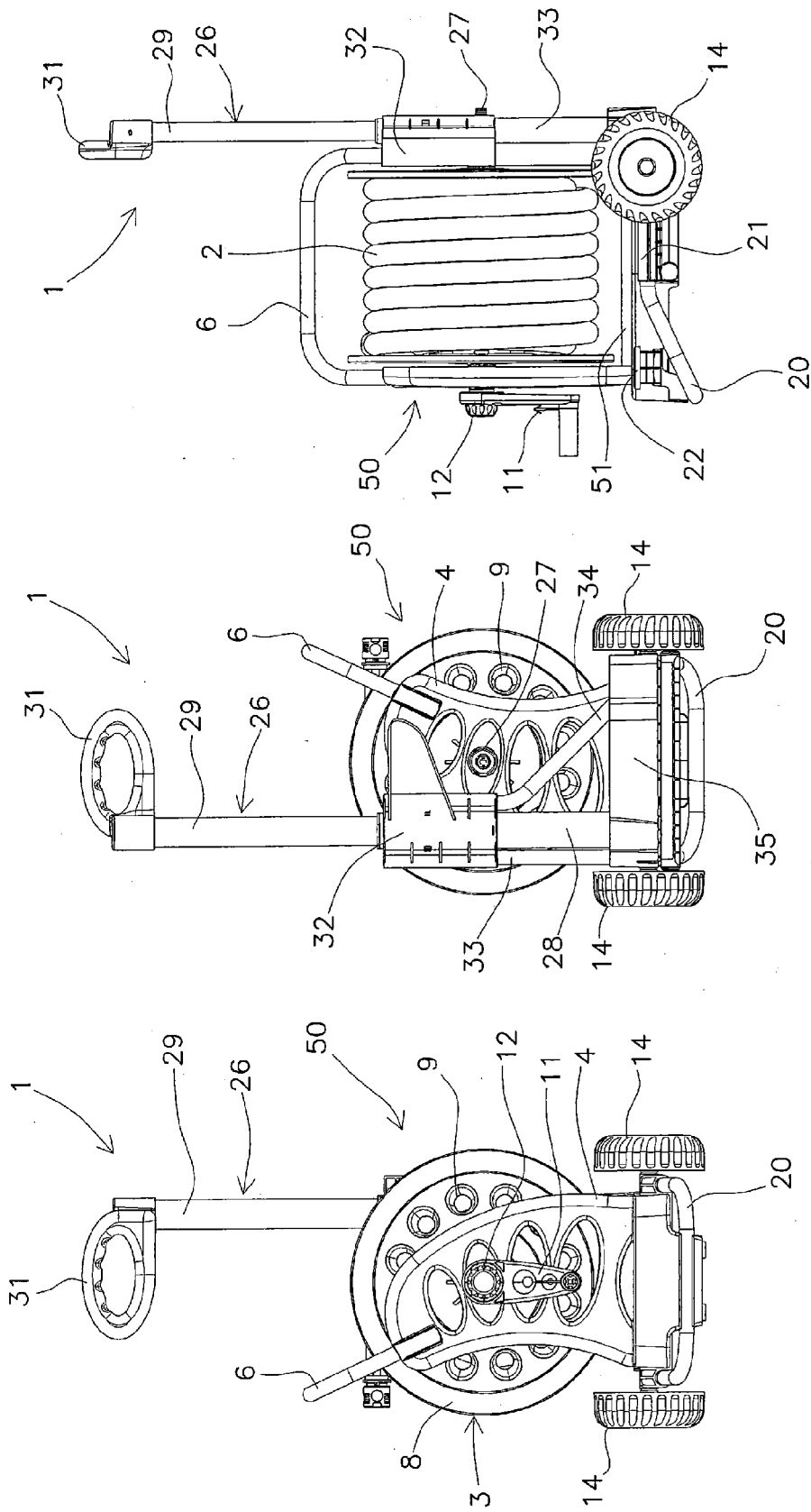


Fig.10

Fig.11

Fig.12

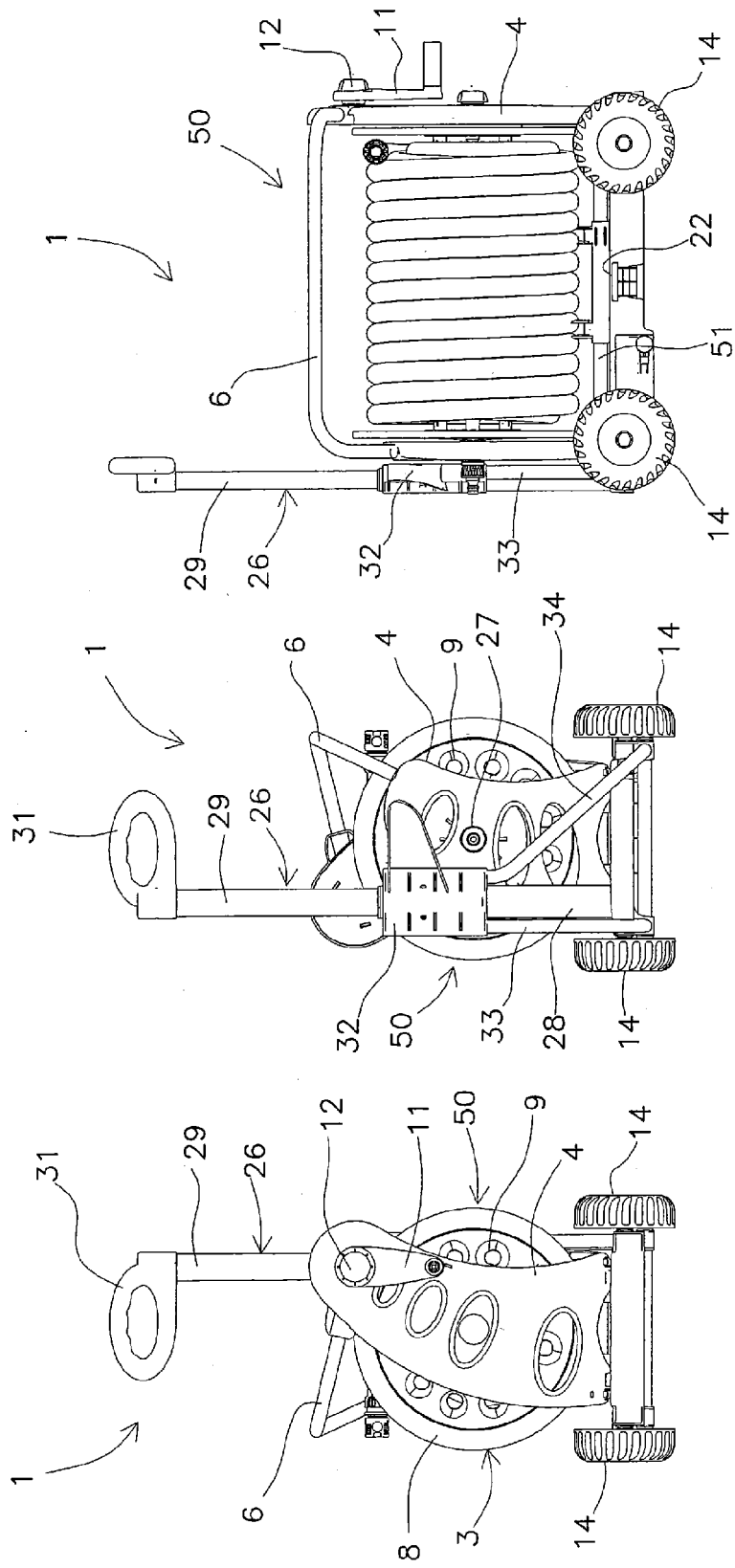


Fig.13

Fig.14

Fig.15



EUROPEAN SEARCH REPORT

Application Number
EP 13 16 7759

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Place of search The Hague		Date of completion of the search 6 June 2013	Examiner Lemmen, René	
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EUROPEAN SEARCH REPORT

Application Number
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Place of search The Hague		Date of completion of the search 6 June 2013	Examiner Lemmen, René
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