(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) **EP 2 977 342 A1**

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
27.01.2016 Bulletin 2016/04

(51) Int Cl.:
B65H 75/40 *(2006.01)* ***B65H 75/44*** *(2006.01)*

(21) Application number: **15169822.2**

(22) Date of filing: **29.05.2015**

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA ME
Designated Validation States:
MA

(30) Priority: **21.07.2014 IT MO20140025 U**

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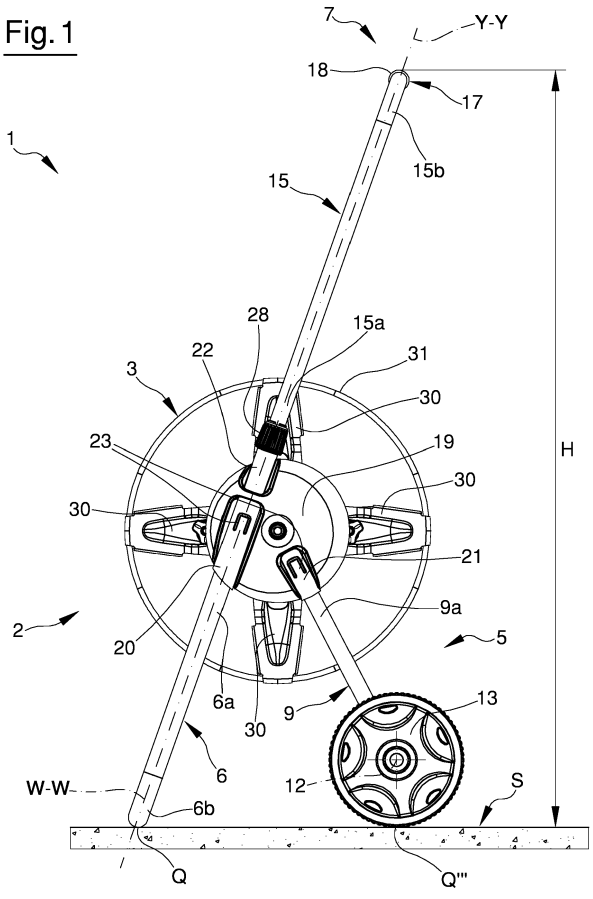
(54) A SUPPORTING DEVICE FOR A PIPE

(57) A supporting device for a pipe T provided with a reel 2, whereon the pipe T can be wound, a base surface 5 defining a supporting plane P for the reel 2 on the ground S, a gripping element 7 movable from an extended position to a contracted position. Said gripping element 7, when in the contracted position thereof, being at least partially nested inside the base surface 5.

Fig. 1



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Description

[0001] The invention relates to a supporting device for a pipe.

[0002] A supporting device is understood to be a device for winding and unwinding a pipe, more precisely a watering pipe.

[0003] Said device applies to the hobbies and gardening sector.

[0004] In the prior art there are provided several pipe supporting devices, all sharing the presence of a reel for winding and/or unwinding a pipe, manual or automated means for winding and/or unwinding a pipe, as well as a support base enabling to stabilize the reel on the ground, at the same time keeping it raised therefrom (thereby favouring operations of pipe unwinding /winding).

[0005] In the prior art, the design of pipe supporting devices has increasingly focused its efforts to achieve two main objectives i.e. improving functionality and use flexibility of the device and reducing the overall sizes as far as possible.

[0006] It very often happens that those who tend to prefer flexibility of use, are then forced to give up to space-savings. Indeed, the more the reel increases in size, the more device flexibility is improved; in this way different types of pipes watering can be housed within the reel, which require the adoption of larger support bases to the detriment of the overall space occupied by the device.

[0007] Conversely where the supporting device is the most compact possible, use of different pipe sizes is not possible, hence flexibility in use is penalized; furthermore said device is not even easy to carry under certain conditions. In this context, the technical task at the base of the present invention is to provide a device for supporting a pipe which obviates the drawbacks of the prior art as mentioned above.

[0008] In more detail, it is an object of the present invention to provide a device for supporting a pipe capable of improving use flexibility.

[0009] A further object of the invention herein, is to provide a device for supporting a pipe which is able to reduce the overall sizes when not in use.

[0010] The technical task mentioned and the aims specified are substantially attained by a supporting device for a pipe comprising the technical characteristics described in one or more of the appended claims. Further characteristics and advantages of the present invention will become more apparent from the indicative, and therefore non-limiting, description of a preferred but non-exclusive embodiment of a supporting device for a pipe as illustrated in the accompanying drawings wherein:

- Figure 1 is a side view of the supporting device for a pipe herein disclosed, in a first operational configuration;
- Figure 2 is a front view of the device of Figure 1;
- Figure 3 is a rear view of the device of Figure 1 always in the first operational configuration;
- Figure 4 is a perspective view of the device of Figure 1;
- Figure 5 is a rear view of the device of figure 1 in a second operational configuration;
- Figure 6 is a perspective view of the device of Figure 5 in the second operational configuration;
- Figure 7 is an enlarged view partially in section of a constructive detail of the device.

[0011] By the numeral 1, it is indicated a supporting device for a pipe T.

[0012] A supporting device is understood to be a device for winding and unwinding a pipe, more precisely a watering pipe.

[0013] When mentioning the concept of winding described hereinafter, reference will also be made to the concept of unwinding, in that it deals with the reverse operation.

[0014] The supporting device 1 macroscopically comprises a reel 2, a base surface 5 and a gripping element 7.

[0015] The reel 2 consists of a pair of corresponding and opposite flanges 3, 3', which are connected one to another by a roller 4.

[0016] The roller 4 extending along an axis X-X parallel to the ground and preferably horizontal, acts as a winding base of the pipe T. In other words the pipe T, being wound on the reel, forms a coil whose innermost layer is resting on the roller 4, whereas the outermost layers thereof are in mutual contact.

[0017] The pair of flanges 3, 3', preferably arranged perpendicularly to the axis X-X, act as a lateral restraint of the wound coil of the pipe T. Since the flanges 3, 3' are identical to one another, only one of them will be described hereinafter. The numerical references below adopted for a flange, are also valid for the other (for the twinned flange 3', the reference numbers are followed by a superscript).

[0018] Said flange 3 exhibits a central region 19 which is preferably disc-shaped. Four arms 30 forming a cruise, develop from the central region 19, moving away therefrom. Said arms 30 are then connected to one another by a ring 31.

[0019] On one of the pairs of flanges 3, 3', a crank 29 is arranged, which is suitable for enabling winding and unwinding operations of the pipe T. By acting on the crank 29, the reel 2 is in fact made to rotate on the axis X-X of the roller 4, thus allowing winding or unwinding of the pipe T according to the direction of rotation impressed to the reel 2.

[0020] Each central region 19 exhibits a first, second and third seat 20, 21, 22. Since the three seats are present in the central twinned region 19' as well, the overall seat number within the reel 2 is six.

[0021] Preferably each seat is defined by a hole.

[0022] Locking means 23 are placed relative to the first and third seat 20, 21. Said locking means 23 comprises a leaf spring 24 ending with a protrusion 25.

[0023] Operation of the locking means will be better

explained here below.

[0024] By the reference number 5 it is indicated the base surface.

[0025] Said base surface 5 provides a supporting plane P for the reel 2.

[0026] Said base surface 5 comprises a plurality of tubular elements.

[0027] On the front there are afforded a first and a second tubular element, respectively referred to with 6 and 8. Said first and second tubular elements 6 and 8 extend along a respective first axis V-V and second axis W-W parallel to one another.

[0028] Each tubular element has an upper portion 6a, 8a connected to the reel 2. More precisely, the upper portion 6a is connected to the central region 19 of the flange 3.

[0029] Similarly the upper portion 8a is connected to the central region 19' of the flange 3'.

[0030] Each upper portion 6a, 8a has a hole 26 adapted to enter into contact with the corresponding protrusion 25 of the leaf spring 24, which leaf spring 24 belongs to the locking element 23.

[0031] The coupling between the first and second tubular element 6, 8 with the respective first seats 21, 21', occurs owing to the snap coupling between the tubular element, 6 or 8, and the respective first seat 21 or 21'.

[0032] When inserting, by way of example, the tubular portion 6 into the corresponding first seat 21, the leaf spring 24 flexes while moving away from the central region 19, so as to allow passage of the tubular portion 6. As soon as the hole 26 of the tubular portion matches with the protrusion 25, a snap coupling occurs therebetween, thus favoring the blocking of the tubular portion 6 inside the seat 2 of the reel.

[0033] This coupling occurs in a similar manner between the tubular element 8 and the respective first seat 21'.

[0034] Each tubular element has then a lower portion 6b, 8b ending relative to the ground S, thereby defining a respective support point Q, Q'.

[0035] As shown in the accompanying figures, the lower portions 6b, 8b are connected to one another by a third crosspiece 32.

[0036] Said base surface 5 exhibits, on the rear side thereof, a third tubular element 9 and a fourth tubular element 10.

[0037] Said third and fourth tubular elements have a respective first upper terminal end 9a, 10a connected to the reel 2. The connection is particularly formed at the central region 19 by means of respective second seats 22, 22'.

[0038] Each upper terminal end 9a, 10a further exhibits a hole 26 so as to go to strike onto the corresponding protrusion 25 which is part of the locking element 23.

[0039] This coupling mode is quite similar to the one previously described.

[0040] Said third and fourth tubular element 9, 10 further exhibit a respective second lower terminal end 9b, 10b.

[0041] The respective lower terminal ends 9b, 10b are connected together by a first crosspiece 11.

[0042] Said first transverse 11 is then connected, preferably by welding, with an axis 12, at the ends of which a pair of wheels 13, 14 are mounted rotatably idle. Each wheel defines a respective third and fourth support point Q", Q"'.

[0043] The first, second, third and fourth support point Q, Q', Q", Q"' , all lie on the supporting plane P.

[0044] Above the reel 2 there is provided the gripping element 7.

[0045] Said gripping element 7 enables movement of the device 1 by lifting it at least partially.

[0046] By keeping the pair of wheels 13, 14 resting, the supporting device 1 can be moved through inclination, i.e. through a partial lifting.

[0047] Likewise, the supporting device 1 can be fully raised from the ground S by acting on the gripping element 7.

[0048] Said gripping element 7 is movable from an extended position to a retracted position.

[0049] When in the extended position thereof, the gripping element 7 reaches an elongation height from the ground S equal to H, while in the retracted position, said gripping element has a distance from the ground S corresponding to an overall size height h.

[0050] When the gripping elements 7 are at a height H, displacement of the device 1 is facilitated according to the methods indicated above. Conversely, when the gripping elements 7 are at the overall size height h, which is lower than the elongation height H, the device can be stored.

[0051] In this contracted position, the gripping element 7 is at least partially nested inside the base surface 5.

[0052] In other words, the gripping element 7 is coupled telescopically inside the base surface 5 and can be moved from the outside towards the inside of the base surface and vice versa.

[0053] Said gripping element 7 comprises a fifth and a sixth tubular element 15, 16 which are connected together by a second crosspiece 17.

[0054] Said fifth and sixth tubular element 15, 16 extend along a third and fourth axis K-K, Y-Y which are parallel to one another.

[0055] In particular, the third axis K-K turns out to be an extension of the first axis V-V, whereas the fourth axis Y-Y is an extension of the second axis W-W. Said fifth and sixth tubular element 15, 16 each have a first lower end 15a, 16a, and a second upper end 15b, 16b.

[0056] The first lower ends 15a, 16a are connected to the reel 2, while the second upper ends 15b, 16b are connected together by the second crosspiece 17. A handle 18 is provided relative to said second crosspiece, which handle 18 is defined by a soft coating of a middle portion of the second crosspiece 17, so that gripping and procedures for operating the supporting device 1 can be improved.

[0057] Said first ends 15a, 16a are connected to the flanges 3, 3' by means of the respective third seats 22, 22'.

[0058] More in particular, each seat 22, 22' has an extension 27 externally threaded, inside of which portions of the fifth and sixth tubular element 15, 16 freely translate.

[0059] Coupled on said extension 27 there is provided a ring nut 28, switchable from an open position to a close position and vice versa.

[0060] In the open position the gripping element 7, namely the fifth and sixth tubular element 15 and 16, can slide internally of the base surface 5, i.e. inside the first and second tubular element 5, 6, whereas in the close position, the gripping element 7 is stationary relative to the base surface 5. With the ring nut 28 in the open position thereof, the gripping element 7 can be switched from the extended position to the contracted position and vice versa.

[0061] Switching of the ring nut 18 occurs by screwing/unscrewing the same on the threaded extension 27 obtained on the third seat 22, 22'.

[0062] The device 1 of the invention herein, attains the proposed object. Indeed, a high reduction of the overall sizes can be obtained owing to the present invention, wherein the functionalities typical of the pipe T supporting devices are maintained unchanged.

[0063] When the device is in use, the operator, by acting on the ring nuts 28 (i.e. by loosening the same), can promote sliding of the fifth and sixth tubular element 15,16 in extension from the first and second tubular element 6,8. In doing so, the gripping element 7, particularly the handle 18, can reach the elongation height H from the ground S so as to enable a smoother movement of the device 1 from the ground.

[0064] Similarly, when the device in use is to be stored, the operator, by loosening the ring nut 28 in this case as well, can promote sliding of the fifth and sixth tubular element 15,16 by exerting a compression on the first and second tubular element 6,8. In doing so, the gripping element 7, particularly the handle 18, can reach the minimum overall size height h from the ground S so that storage of the device in the desired space can be performed.

Claims

1. A supporting device for a pipe (T) of the type comprising:

- a reel (2), whereon the pipe (T) can be wound, which reel (2) is defined by a pair of flanges (3,3') opposed and joined by a winding roller (4);
- a base surface (5), superiorly connected to the reel (2) and ending inferiorly in contact with the ground (S), which base surface (5) defines a supporting plane (P) for the reel (2) on the ground (S);
- a gripping element (7), which is free on the upper part thereof and inferiorly connected to the reel for moving the supporting device (1) by lifting it, at least partially, from the ground (S); said gripping element (7) being movable from an extended position, in which it reaches an elongation height (H) from the ground (S), to a contracted position, wherein it reaches an overall size height (h) from the ground (S), being the elongation height (H) greater than the overall size height (h); **characterized in that** said gripping element (7), when in the contracted position thereof, is at least partially nested inside the base surface (5).

2. A device according to claim 1 **characterized in that** said gripping element (7) is telescopically coupled within said base surface (5).

3. A device according to claim 1 **characterized in that** said base surface (5) comprises:

- at least a first and second tubular element (6,8), each comprising an upper portion (6a, 8a) connected to the respective flange (3,3') of the reel (2), and a lower portion (6b, 8b) ending relative to the ground (S), so as to define a respective first and second support point (Q, Q');
- a third and fourth tubular element (9,10) each having a first upper terminal end (9a, 10a) connected to the reel (2) and a second lower terminal end (9b, 10b) which is free;
- a first crosspiece (11) connecting the second lower terminal ends (9b, 10b);
- an axis (12), permanently connected to the first crosspiece (11), rotatably coupled to a pair of wheels (13,14) each defining a third and a fourth support point (Q", Q"') on the ground (S).

4. A device according to claim 3 **characterized in that** said gripping element (7) comprises:

- a fifth and sixth tubular element (15,16), each having a respective first lower end (15a, 16a) connected to the respective flange (3,3') of the winding reel (2) and a respective second upper end (15b, 16b) which is free; said fifth and sixth tubular element (15,16) being telescopically movable within the corresponding first and second tubular element (6,8) from a fully extended position, wherein the gripping element (7) is in the extended position thereof, to a fully inserted position, wherein the gripping element (7) is in the retracted position thereof;
- a second crosspiece (17) connecting said second upper ends (15b, 16b).

5. A device according to claims 3 and 4 **characterized**

in that said reel (2) comprises, for each flange (3,3'), a central region (19, 19') comprising:

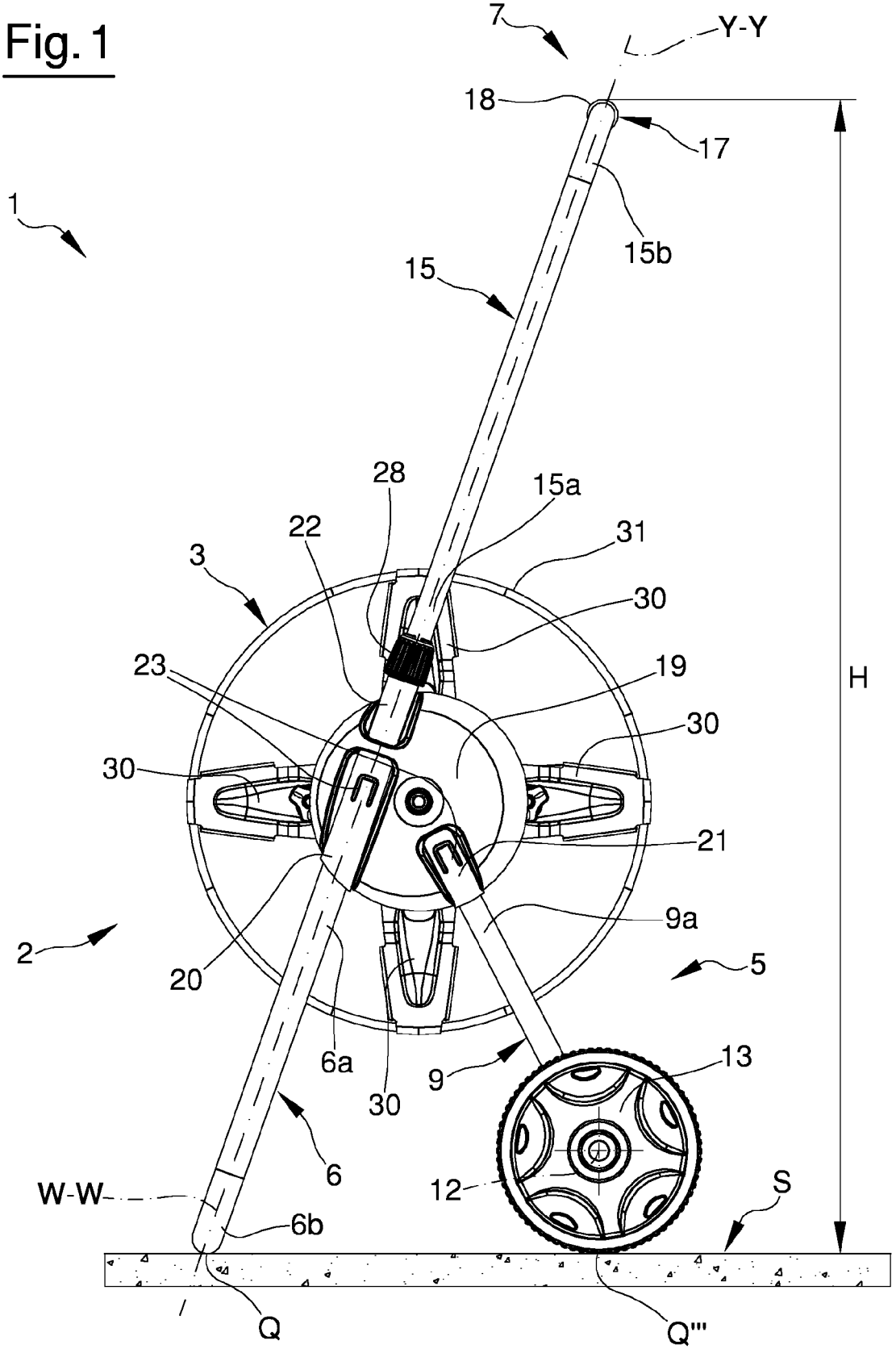
- a first seat (20, 20') for receiving respectively the first upper portion (6a, 8a) of the first and second tubular elements (6,8);
- a second seat (21,21') for receiving respectively the first upper terminal end (9a, 10a) of the third and fourth tubular element (9,10);
- a third seat (22,22') for receiving respectively the first lower end (15a, 16a) of the fifth and sixth tubular element (15,16).

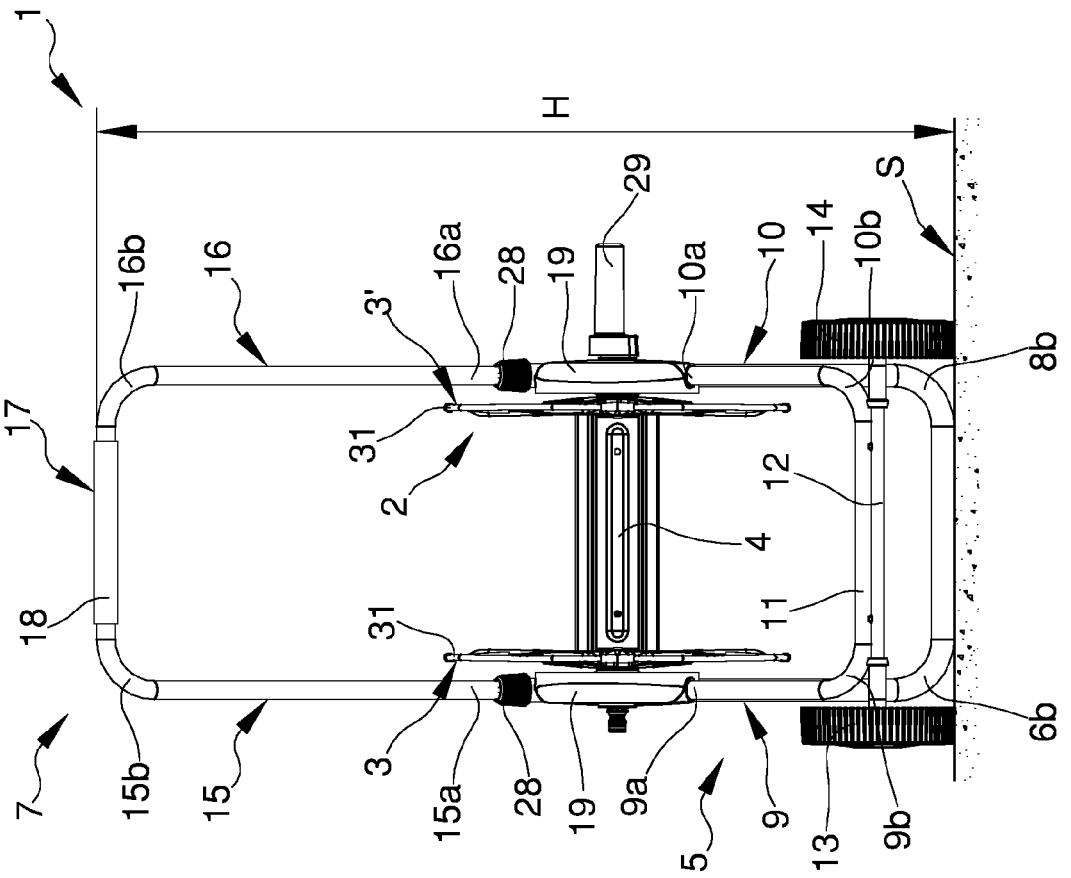
6. A device according to claim 5 **characterized in that** each first and third seat (20,20', 22,22') comprise a locking element (23) comprising a leaf spring (24) ending with a protrusion (25); said leaf spring fitting into a hole (26) formed within a respective tubular element (6,8,9,10) belonging to the base surface (5).

7. A device according to claim 5 **characterized in that** each second seat (21,21') includes a threaded extension (27) which can be coupled to a ring nut (28); said ring nut (28) being switchable from an open position, wherein sliding of the fifth and sixth tubular element (15,16) inside the first and second tubular elements (6,8) is allowed, to a close position, in which said sliding is inhibited.

8. A device according to claim 1 **characterized in that** it further comprises a crank (29) in order to facilitate rotation of the reel (2) about an axis (X-X) of the roller (4).

Fig. 1


7
Y-Y
18
17
1
15b
15
28
15a
22
31
3
30
23
19
H
30
30
21
9a
2
5
20
6a
9
13
30
6
W-W
12
S
6b
Q
Q'''


1
H
29
S
16b
16
3'
16a
28
19
10a
10
14
10b
8b
17
31
2
12
4
18
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6b
15b
15
15a
28
19
9a
9
5
13
9b

Fig. 3

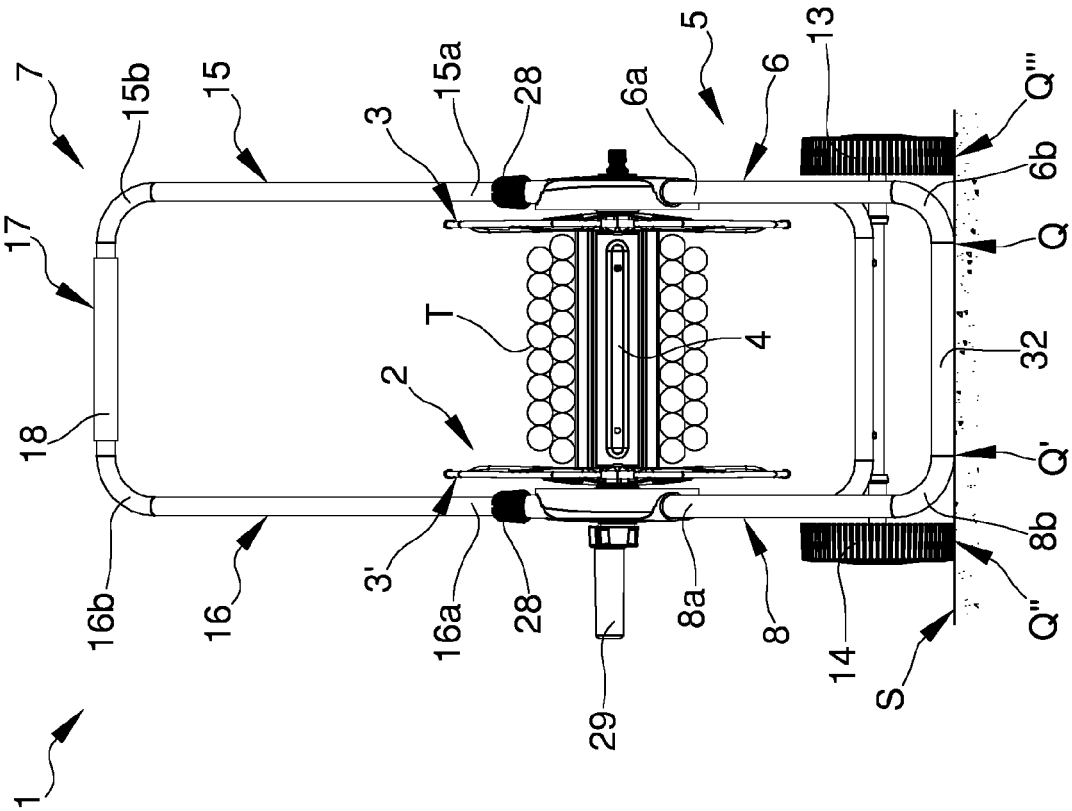
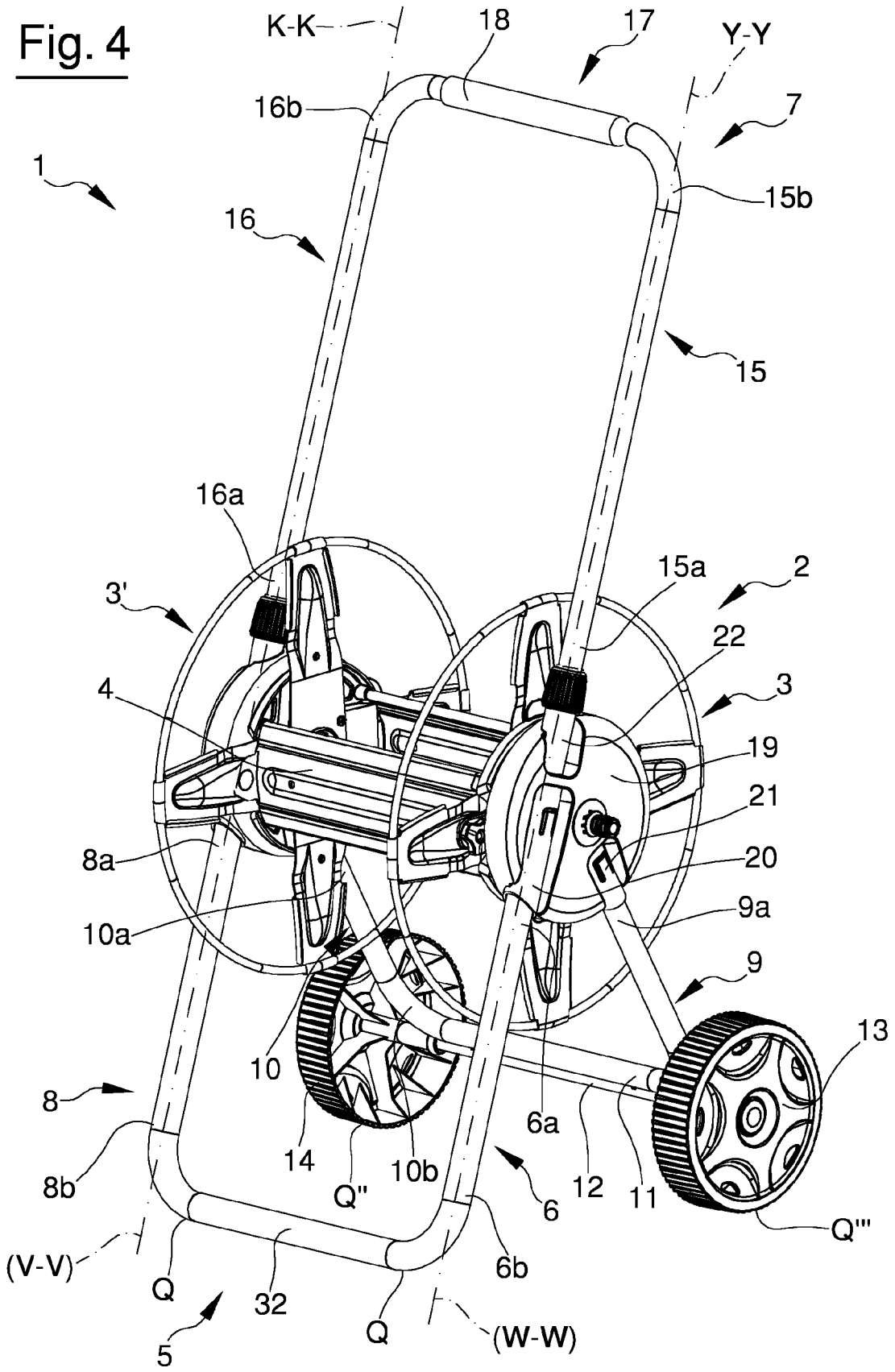

7
15b
15
3
15a
28
6a
5
6
13
Q'''
17
6b
Q
T
4
32
2
18
Q'
3'
8b
16b
16
16a
28
8a
8
14
Q''
S
29
1

Fig. 2

Fig. 4


K-K
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17
Y-Y
16b
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1
15b
16
15
16a
15a
2
3'
22
4
3
19
21
8a
20
9a
10a
9
13
10
8
6a
14
10b
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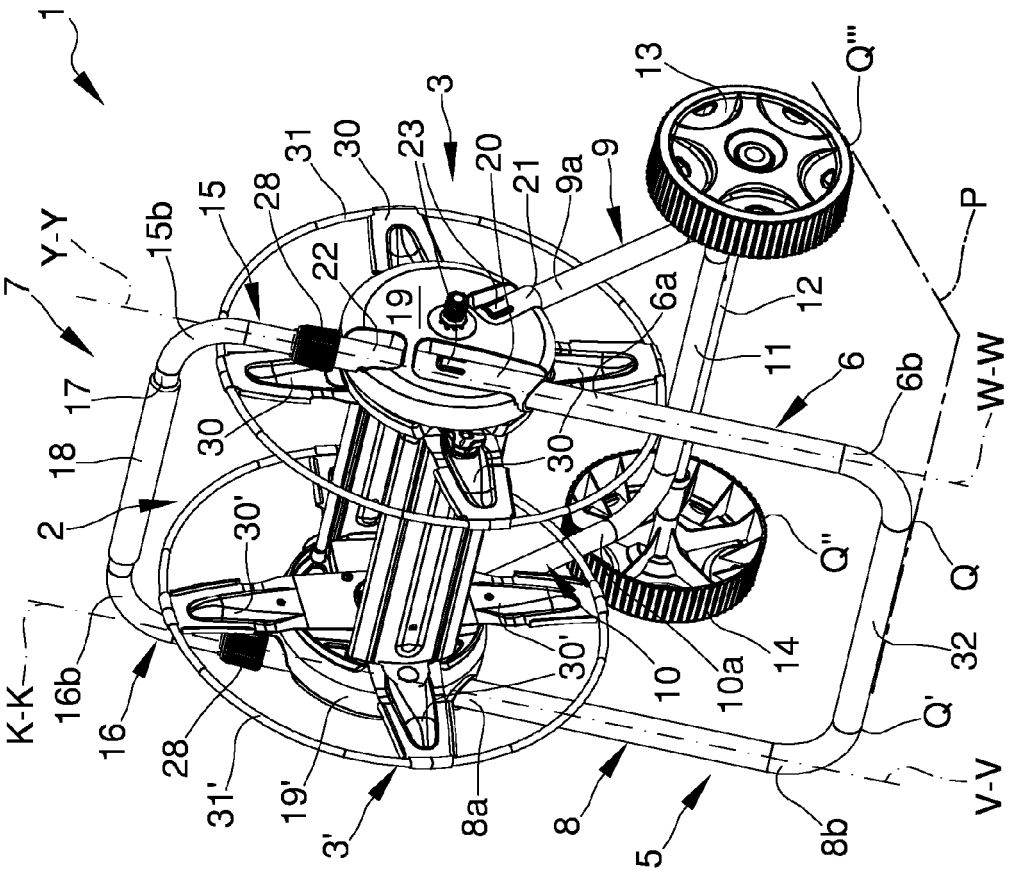
8b
Q"
6
Q'''
(V-V)
6b
Q
32
Q
(W-W)
5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Y-Y
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15b
15
28
31
30
23
3
20
21
9a
9
13
Q'''
P
22
19
6a
12
11
6
6b
W-W
17
18
2
30
30'
30
Q''
Q
K-K
16b
16
28
31'
19'
3'
8a
8
5
8b
30'
10
10a
14
32
Q'
V-V

Fig. 6

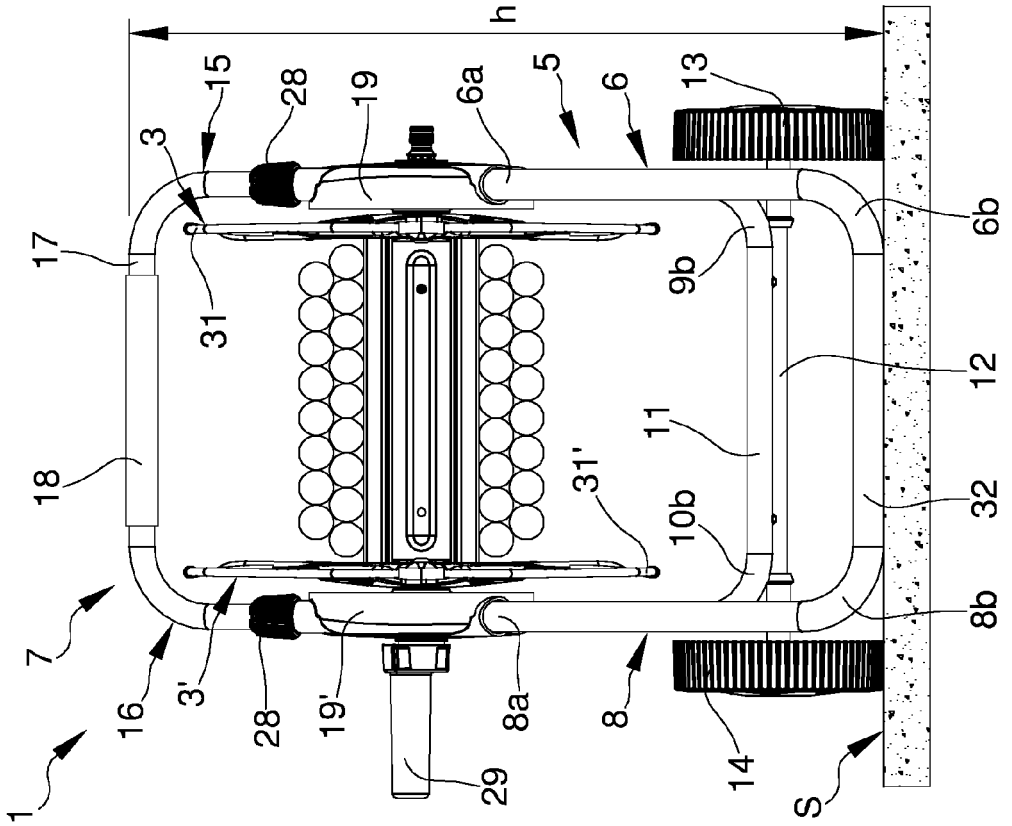
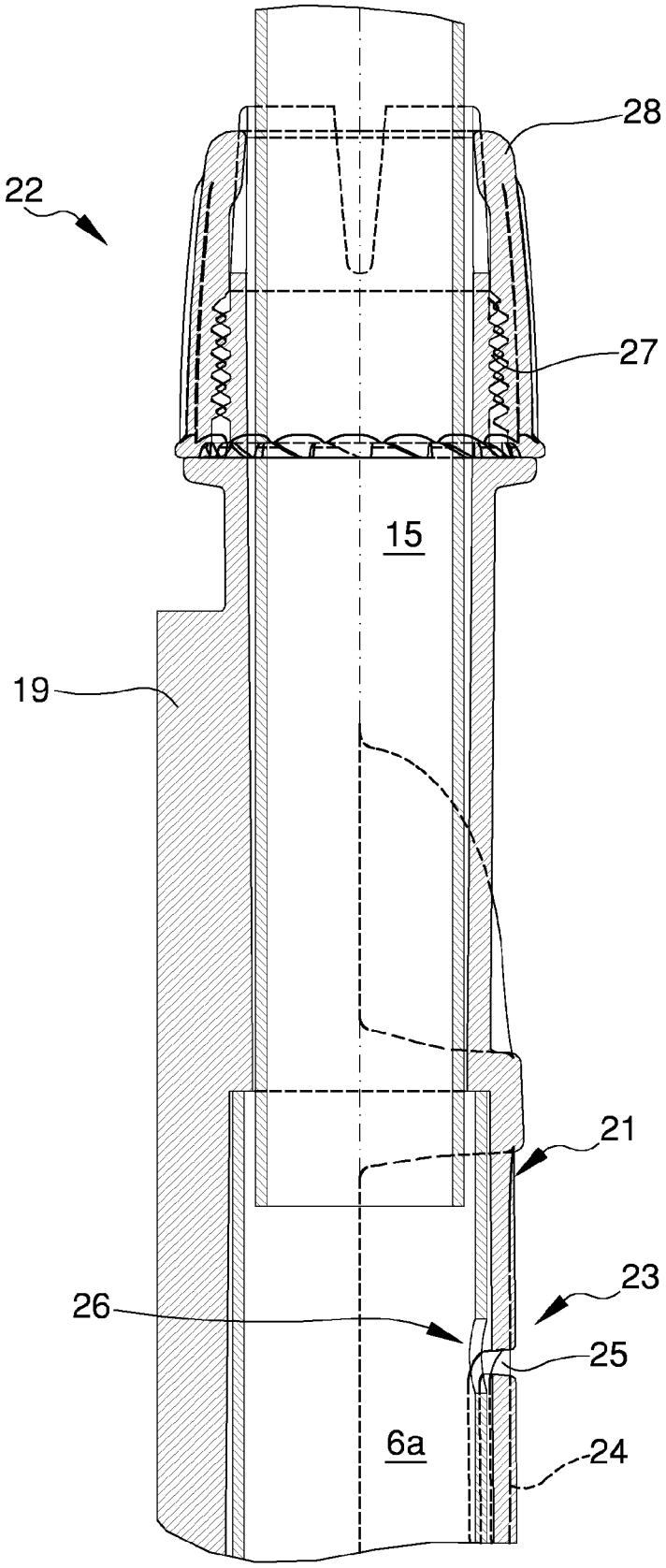

h
15
28
19
6a
5
6
13
3
6b
17
31
9b
12
11
18
31'
10b
32
8b
7
16
3'
28
19'
8a
8
14
1
29
S

Fig. 5

Fig. 7



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EUROPEAN SEARCH REPORT

Application Number
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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	12 November 2015	Lemmen, René

CATEGORY OF CITED DOCUMENTS

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