

Nov. 27, 1934.

C. HARRIS

1,982,610

HOSE REEL

Filed Aug. 25, 1933

2 Sheets-Sheet 1

Fig. 1

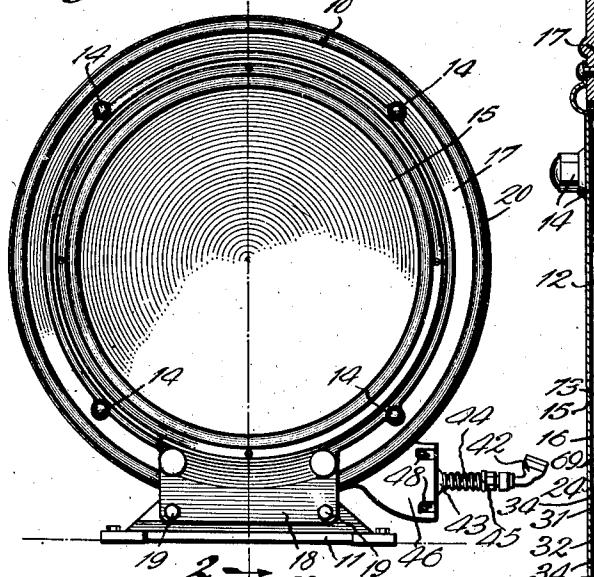
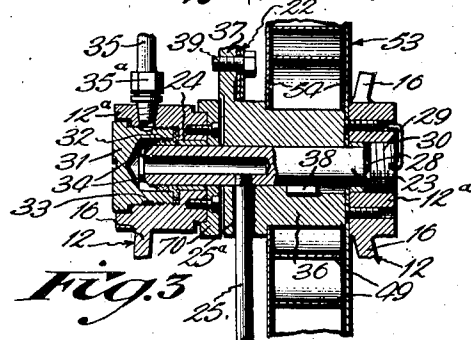
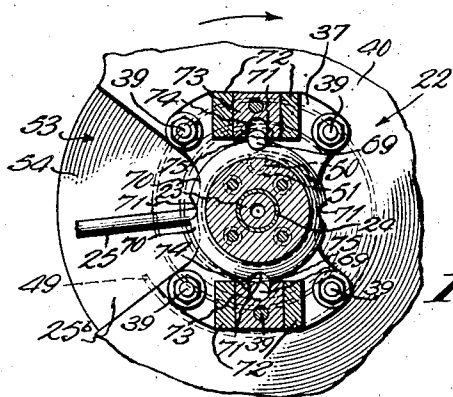
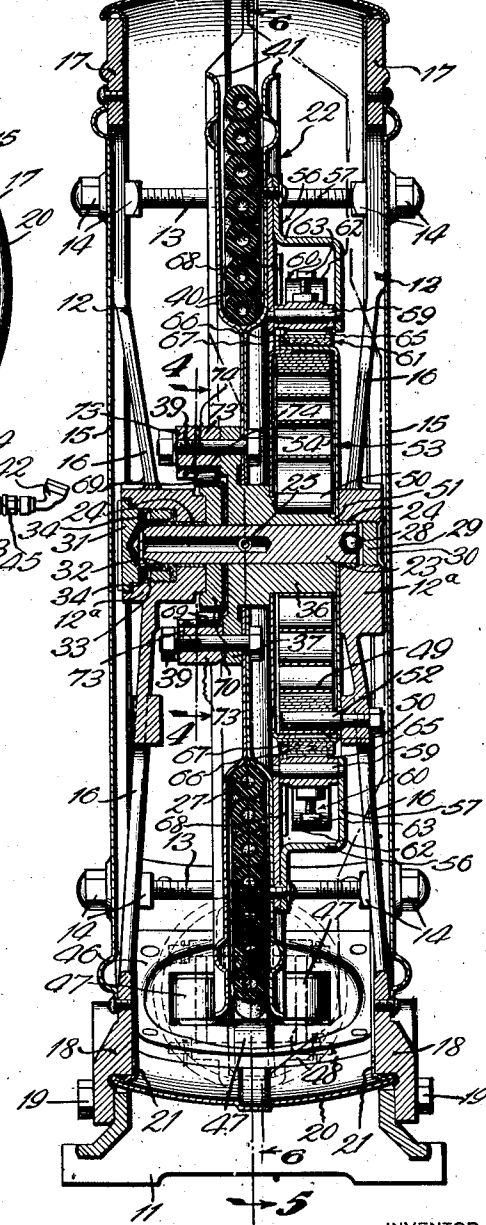


Fig. 2



INVENTOR

Cleo Harris

Word & Word

ATTORNEYS

Nov. 27, 1934.

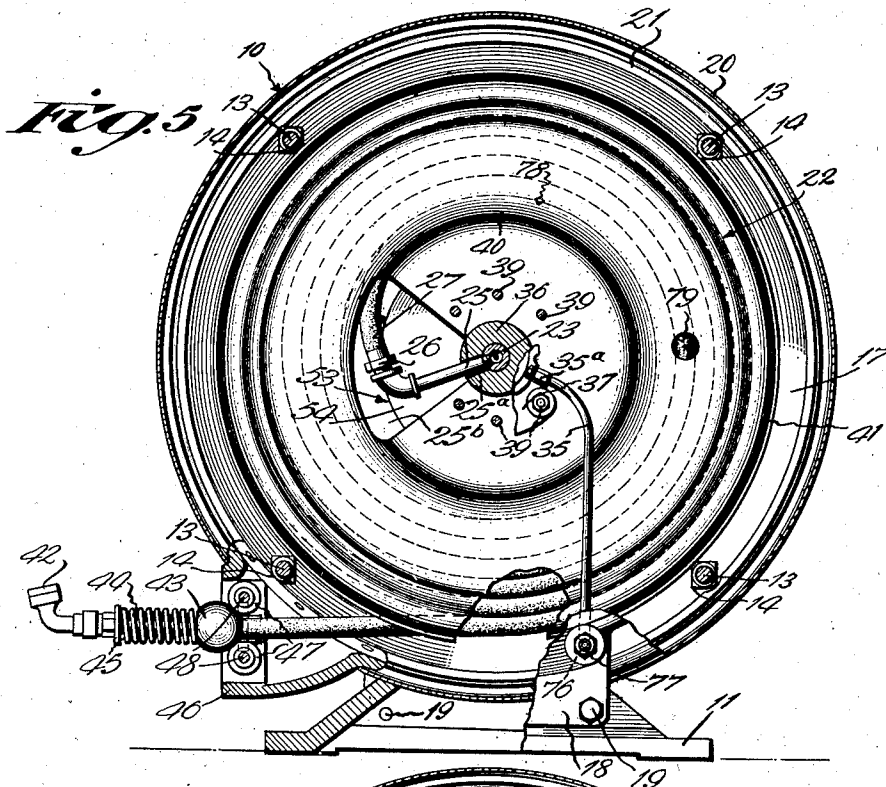
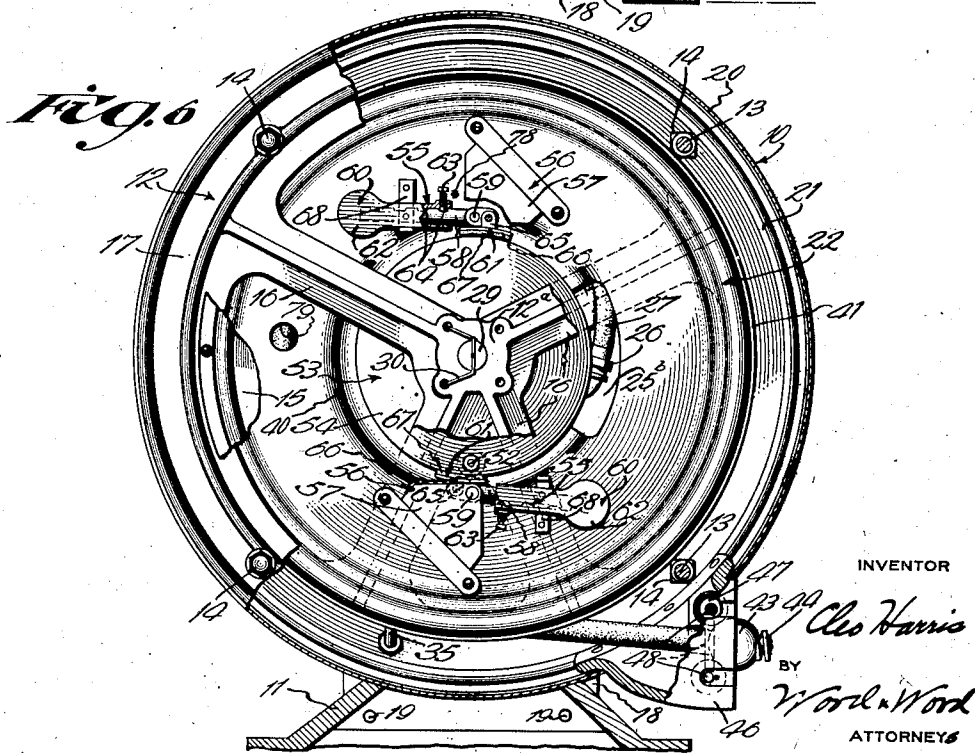
C. HARRIS

1,982,610

HOSE REEL

Filed Aug. 25, 1933

2 Sheets-Sheet 2



INVENTOR

C. Harris

BY

V. Ford & Word

ATTORNEYS

UNITED STATES PATENT OFFICE

1,982,610

HOSE REEL

Cleo Harris, Cincinnati, Ohio, assignor to The Cincinnati Ball Crank Company, Cincinnati, Ohio, a corporation of Ohio

Application August 25, 1933, Serial No. 686,792

9 Claims. (Cl. 299—78)

This invention relates to improvements in air supply mechanism for delivering air under pressure, as for inflating tires, and is particularly directed to an improved apparatus of the nature employing a reeling device for an air delivery hose.

It is the object of this invention to generally improve the fabrication of the pneumatic hose reel device; to provide an improved construction for the spool; to provide an improved device for securing the reel against rewinding when it is desirable to use the hose with a selected length extended, which device will be conveniently operable for quickly releasing the hose from set position to permit automatic complete rewinding; to provide an adjustable braking mechanism for controlling the speed of rewinding movement of the reel; to provide improved adjustable spring return means for the reel; to provide for air supply to the rotating spool without loss of air; to provide a double support for the axle of the spool and improved mounting thereof; to provide for adjustment of the complete air supply unit for mounting the same in position with the hose extended in the most desirable direction, and to provide removable side panels for the reel frame.

Figure 1 is a side elevation of the improved hose reel.

Figure 2 is an enlarged sectional view taken on line 2—2, Figure 1, detailing the internal mechanism of the reel.

Figure 3 is an enlarged fragmentary view of a portion of Figure 2, illustrating the flexible air connection at the axis of rotation of the reel.

Figure 4 is a fragmentary sectional view taken on line 4—4, Figure 2, detailing the catch mechanism for automatically locking the reel with the hose in extended or withdrawn position.

Figure 5 is a sectional view taken on line 5—5, Figure 2, further detailing the hose reel.

Figure 6 is a sectional view taken on line 6—6, Figure 2, showing the brakes associated with the hose winding reel for slowing the rewinding movement thereof.

The hose reel structure described in general includes a housed winding spool for a length of hose, which hose can be pulled from the reel to some considerable distance for inflating tires etc. The reel is brake controlled for preventing undue rapidity in rewinding. Also, mechanism is included for automatically causing the reel to be latched in a series of positions with the hose drawn out, which mechanism is effective for release of the reel by a slight withdrawal and quick release of the hose.

The air connection is through the axial mount-

ing of the reel. The entire hose reel structure including the casing is designed for adjustment relative to its attachment bracket, so that the hose outlet may be disposed for service at any one of a plurality of positions.

Referring to the drawings, the hose reel casing or body is generally indicated at 10. A bracket 11 for mounting the casing is provided. The casing includes two side plate elements or spiders 12, each of which includes a central hub 12^a, these hubs being coaxially disposed for axial mounting of the reel. The side plates are joined and spaced by means of bolts 13 for screw-threaded rods including inner and outer plate engaging nuts 14 at each end. Removable circular cover plates 15 formed of sheet metal are attached against the sides of the side elements for covering the open work thereof since these side elements have spokes 16 connecting the hub portions 12 thereof to rim portions 17 for accessibility during adjustment and inspection. The side plate elements or spiders include extensions 18 attached to the bracket 11 by means of screws 19.

A sheet metal drum 20 is fastened around and spans the space between the side elements. The edges of this drum are flanges as at 21 overhanging the edges of the side plates and lying against the inner faces thereof.

The hose spool 22 includes a spindle 23 fixed thereto and supported in sleeve bushings 24 of the coaxial hubs 12^a of the side plates. The spindle is hollow through half its length for air supply purposes and a pipe 25 extends radially from the inner end of the hollow interior of the axle and through a radial clearance opening 25^a in the hub of the reel and openings 25^b on the sides of the spool, and by means of appropriate fittings 26 has the inner end of the hose 27 connected thereto.

At the solid end of the spindle, for the purpose of securing end thrusts a ball bearing 28 is disposed in an axial recess in the end of the axle, the ball protruding sufficiently for contacting a screw plug 29 locked in place in the screw-threaded outer end of the hub bore by means of a wire clip 30 fixed in the hub and traversing the screw driver slot of the plug. The other end of the spindle or the air intake end extends into an air chamber provided in the hub of the adjacent side element. This chamber is provided by screw-threading a gland 31 into the screw-threaded counterbore portion of the hub over the extended end of the spindle, the gland being internally bored for entirely clearing the spindle. This gland 31 engages a packing gasket 32 in the bot-

tom of the hub bore, maintaining the gasket in position against the spindle for preventing leakage of air along the axle surface.

The inner bore of the gland 31 forms an air chamber which as stated is of larger diameter than the diameter of the spindle. The outer periphery of this chamber element includes an annular groove 33 connected to the internal bore by means of a series of radial apertures 34. The air supply pipe 35 is connected to the hub 12^a by means of a nipple 35^a, the tap hole receiving the nipple being in communication with the annular groove. Through this arrangement the air is delivered to the interior of the spindle without leakage, despite the rotative mounting of the spindle relative to the hub.

The spool is fabricated of the following parts: A hub element 36 including an attaching flange 37 is rotatively fixed to the spindle axle by means of a key 38. The spool body is formed of duplicate circular plate sections, oppositely engaged on the hub element 36 and attached to the flange 37 thereof by means of bolts 39. The sections of the spool lie flat together at the central portions, but each includes a rounded offset 40 providing portions of the elements, which when assembled form an annular chamber for receiving the coils of the hose.

The outer ends of the plates making up the reel are outwardly flared as at 41 and the space provided for receiving the hose is slightly greater in width than the diameter of the hose for working clearance. The narrow annular space causes the hose to coil with the coils directly on top of each other, that is, with directly superimposed coils. The outer or supply end of the hose includes a filling coupling device 42 of conventional character. A rubber ball 43 is slidably mounted on the hose and lies against a compression spring 44, the compression spring abutting a shoulder 45 adjacent the supply fitting of the hose.

The discharge end of the hose passes out of the reel frame through a laterally disposed outlet element 46 fixed to the drum of the reel casing. A plurality of rollers 47 are journaled on shafts 48 in the outlet fitting surrounding the hose, there being four rollers spaced at 90° around the hose for guiding the hose and permitting withdrawal of the hose angularly without undue friction.

The hose spool is urged in a winding direction by means of a clock spring 49 disposed about the hub thereof. The ends of this clock spring are formed to provide tubular terminals 50. The inner terminal is anchored in an axially disposed semi-circular notch 51 in the hub of the spool by slipping the same longitudinally into the notch. The outer terminal is engaged over a terminal pin or stud 52 secured in the adjacent side plate of the reel body. The spring is enclosed within a casing 53 formed by overlapping cup shaped casing elements 54 fitted over and secured to the hub of the spool.

Referring to Figure 6, it will be observed that brake devices 55 are provided operating on the spring containing drum or casing 53 using the outer periphery of this casing as a braking surface for slowing down the return or rewinding movement of the spool. These brake devices are duplicates and are diametrically oppositely positioned relative to the braking surface, being attached to the side of the spool.

The supporting brackets 56 for the braking devices are formed of plate elements 57 rigidly secured to the sides of the spool and having their

outer or brake pivoting ends spaced apart. Each braking unit includes a brake arm 58 fulcrumed on a pin 59 extended between and secured to the plate elements of each bracket. This brake arm carries a weight 60 on its outer end and a brake shoe 61 on its inner end. The weight consists of a sleeve-like element having an enlarged or knob portion 62 on its outer end and a shank adapted to be slipped over the end of the arm and adjustably secured by means of a set screw 63 therein engageable in any one of a series of transverse notches 64 in the brake arm.

The brake shoe includes integral pivot lugs 65 pivotally attached to the end of the brake arm and an arcuate shoe portion 66 including a brake band 67 on its concave side engaging the braking surface of the spool. Centrifugal force is effective for throwing the weights outwardly pressing the brake shoes against the braking surface when the speed of rotation of the spool becomes too great. The application of centrifugal force is controlled by adjustment of the brake arm weights. A stop 68 is provided consisting of a length of metal secured to the spool and including an outwardly extended portion on which the weight rests. This stop limits gravity induced movement of the brake arm maintaining the brake band in close proximity to the drum.

The spool is adapted to be set in a plurality of positions with the hose withdrawn by means of centrifugally operated clutch elements 69. For this purpose a circular clutch element 70 is secured to the hub of the reel casing by means of screws. This element 70 includes a series of four notches 71 evenly arranged in its periphery.

The flange 37 of the spool or reel hub 36 has pairs of spaced lugs 72 extending from its outer face, the pairs being diametrically related relative to the axis of rotation of the spool. A clutch element retainer block 73 is fixed between each pair of lugs and includes a cross groove 74 in its inner edge. These retainers are fixed in place by means of the bolts 39 which secure the parts of the reel or spool together. The clutching elements 69 are in the form of short rollers mounted for radial movement in the grooves of the retainers and are adapted to engage in the cross notches of the clutch element secured to the reel frame.

As indicated, in Figure 4, unwinding rotation of the spool is clockwise. The notches in the clutch element, which is fixed and non-rotative, are inclined gradually in one direction to permit the rollers to move easily out of the groove when the reel is moved clockwise for unwinding. On rewinding or anticlockwise movement, the rollers engage in the grooves and lie against abrupt shoulders 75 of the grooves preventing further spring urged rewinding movement of the spool.

It will be apparent that only one roller is working at a time since the movement of the rollers into engagement with the grooves of the clutch element is gravity induced, it being noted that only the uppermost groove of the fixed clutch element 70 is being utilized for a given setting of the clutch. However, the element can be rotatively adjusted to four positions and can therefore have its position changed when one of the grooves wears out.

It will be apparent that if the reel is suddenly released, the centrifugal action of the clutch element throws the rollers into the grooves of the retainers and prevents effective engagement of any one of the rollers with the upper groove and the spool will rewind to take in all of the hose.

Slow return movement however causes latching for a roller will drop into the groove and lie against the abrupt shoulder. Accordingly, it is possible to latch the reel at half turn positions due to the use of two clutch engaging rollers.

The inlet pipe 35 for the reel has its outer end screwed into a tap hole 76 in the side plate of the frame on the inside thereof. After the reel unit has been installed as desired, a supply line 77 can be connected into the outer end of the tap hole as shown in Figure 5.

The hose has its innermost coil secured against the bottom of the spool by means of a cotter pin 78 inserted through the sides of the spool and overlying this coil so that unwinding movement or extension of the hose is limited. The air servicing unit herein described has been designed to permit adjustment of the hose outlet so that the unit can be mounted in any position, as for instance, on the wall, ceiling, floor, or pedestal or under the floor.

The adaptation of the unit to a particular installation is accomplished by changing the circumferential relation of the unit mounting bracket and the hose outlet. This can be accomplished in the following manner: It is first necessary to remove the side panels or plates 15. The cotter pin 78 is then removed and the hose is pulled out to full length. With the hose at full length, a screw driver or rod is inserted through the hole 79 in the sides of the spool, permitting the hose to rewind until the screw driver or rod engages against a spoke of the frame. If the hose connection cannot then be reached, the hose is permitted to rewind further so that the hose connection fittings 26 are accessible, whereupon the hose can be disconnected and entirely removed from the spool. The nuts on the bolts 13 are then loosened and the hose outlet 46 is grasped and moved to the desired circumferential position relative to the unit mounting bracket. For example, if the unit is to be mounted as shown in Figure 5 of the drawings, for floor installation, the hose outlet extends horizontally with the outlet in proper position. The operator then holds the hose spool, removing the rod, thereafter turning the spool against spring tension until the hose connection is directly above or below the hose outlet. The hose is inserted through the rollers and connected to the pipe 25 by means of the fittings 26. After the connection is made, the spool is permitted to move inwardly for one complete turn only and the cotter pin is replaced.

Having described my invention, I claim:

1. In a hose reeling device, a pair of side frame elements of generally circular form including coaxial hub portions, an annulus adjustably secured about and spanning the space between said side frame elements, said annulus including a hose outlet fitting fixed thereto, said side frame elements being of open construction, removable cover plates secured against each side element, a spindle journaled between and in the coaxial hub portions, a spool mounted on said spindle, a supply hose wound on said spool and extending through the hose outlet fitting, and an inlet connection to said hose extended through the axial mounting of said spool.

2. In a hose reeling device, a pair of side frame elements including coaxial hub portions, an annulus adjustably secured about and spanning the space between said side frame elements, said annulus carrying a hose outlet fitting, a spindle journaled in and between the coaxial hub portion, a spool mounted on said spindle, a hose

wound on said spool and extended through said hose outlet fitting, and an inlet connection to said hose extended through the spindle.

3. In a hose reeling device, a pair of side frame elements of generally circular form including coaxial hub portions, an annulus rotatably adjustably secured about and spanning the space between said side frame elements, a hose outlet fitting fixed on said annulus, a spindle journaled in and between the coaxial hub portions, a spool mounted on said spindle between said hub portions, a hose wound on said spool and extended through said outlet fitting, said spindle of tubular construction from one end to the central portion thereof, an inlet connection to one of said hubs, the open end of said spindle disposed in said latter hub, and a hose coupling pipe extended radially from the inner portion of said tubular spindle.

4. In a hose reel, a frame including coaxial supporting hubs, a spindle journaled in said hubs, a spool fixed on said spindle, a hose wound on said spool, said spindle including an internal bore extending from one end to an intermediate point thereof, a hose supply pipe extended radially from said spindle bore and connected to the inner end of the hose, a packing gland disposed in one of said hubs and about the open end of said spindle, said gland surrounding the end of said spindle forming a chamber about the same and including a radial aperture and an annular groove in its outer surface entered by said aperture, and a supply pipe connected to the hub and in communication with said annular groove.

5. In a hose reel, a frame including coaxially disposed hubs, a spindle journaled in said hubs, a spool carried by said spindle between said hubs, a hose wound on said spool, an air supply connection to one of said hubs, said spindle being hollow at one end, said end thereof disposed adjacent said supply connection, a pipe extending from said hollow spindle to the inner end of said hose, the end of said spindle opposite to the air supply end including a coaxial recess in its end, a ball bearing in said recess extending slightly beyond the end of said spindle, and a bearing plug secured in the hub of the frame adjacent said ball bearing for contact thereby, whereby the end thrusts of the spindle are accommodated and the air supply at the open end of the spindle holds the spindle ball bearing against the plug.

6. In a hose reel, a frame including coaxially disposed hubs, a spindle journaled in said hubs, a spool carried by said spindle between said hubs, a hose wound on said spool, an air supply connection to one of said hubs, said spindle being hollow at one end thereof adjacent said supply connection, a pipe extending from said hollow spindle to the inner end of said hose, a ball bearing engaged against the other end of said spindle, and a bearing plug secured in the hub of the frame adjacent said ball bearing for receiving end thrusts of the spindle.

7. In a hose reeling apparatus, a spool, a frame for rotatively mounting said spool, a hose wound on said spool, said spool including a hub having a semi-circular groove along its outer periphery, a stud carried by said frame, a clock spring disposed about said hub and having circular terminals at its respective ends engaged in the longitudinal groove and on the stud, a casing fixed on the hub and surrounding said spring, and means for braking said spool acting upon said casing.

8. In a hose reel, a frame adapted to be installed in fixed position, a spool having rotative mount-

ing in said frame, a hose wound on said spool, said frame including an annular casing element and side plates, bolts for clamping said side plates against said annular casing element, an attaching bracket for the frame fixed to said side plates, an outlet element for said hose fixed to said annular casing element, whereby said annular casing element and said hose outlet can be rotatively shifted relative to the side frame elements and the attaching bracket, for changing the position of the hose outlet relative to the attaching bracket.

9. In a hose reel, a casing adapted to be installed in fixed position, a spool having rotative

mounting in said casing, a hose wound on said spool, said casing including an annular casing element and open side frames, means for clamping said side frames against said annular casing element, an attaching bracket for the casing fixed to said side frames, cover plates for said frames, an outlet element for said hose fixed to said annular casing element, whereby said annular casing element and said hose outlet can be rotatively shifted relative to the side frames and the attaching bracket, for changing the position of the hose outlet relative to the attaching bracket.

CLEO HARRIS.

15

20

25

30

35

40

45

50

55

60

65

70

75

80

85

90

95

100

105

110

115

120

125

130

135

140

145

150