July 1, 1924.

1,499,644

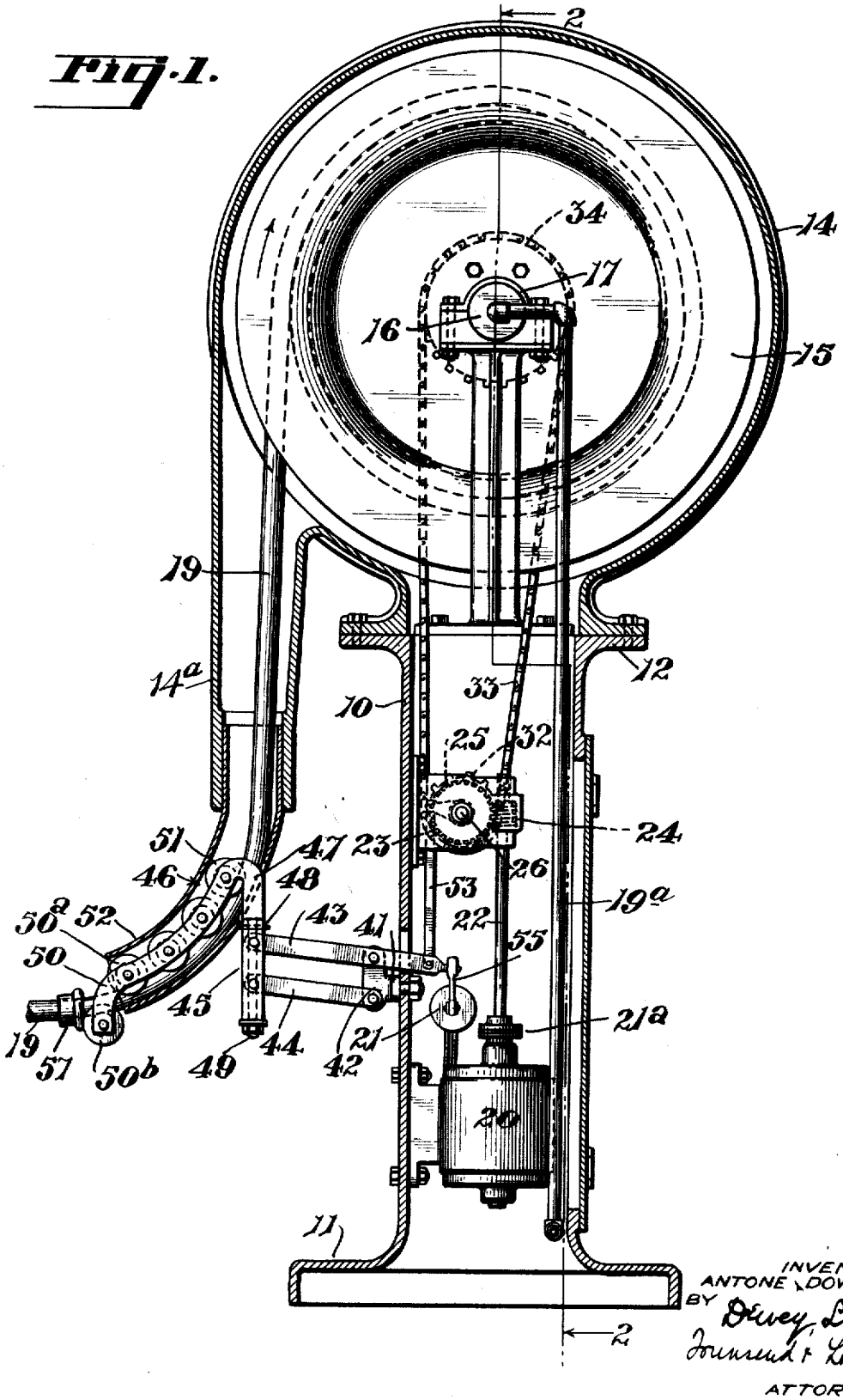
A. DOWRELIO

AUTOMATIC HOSE REEL

Filed June 19, 1923

2 Sheets-Sheet 1

Fig. 1.



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2 Sheets-Sheet 2

Fig. 2.

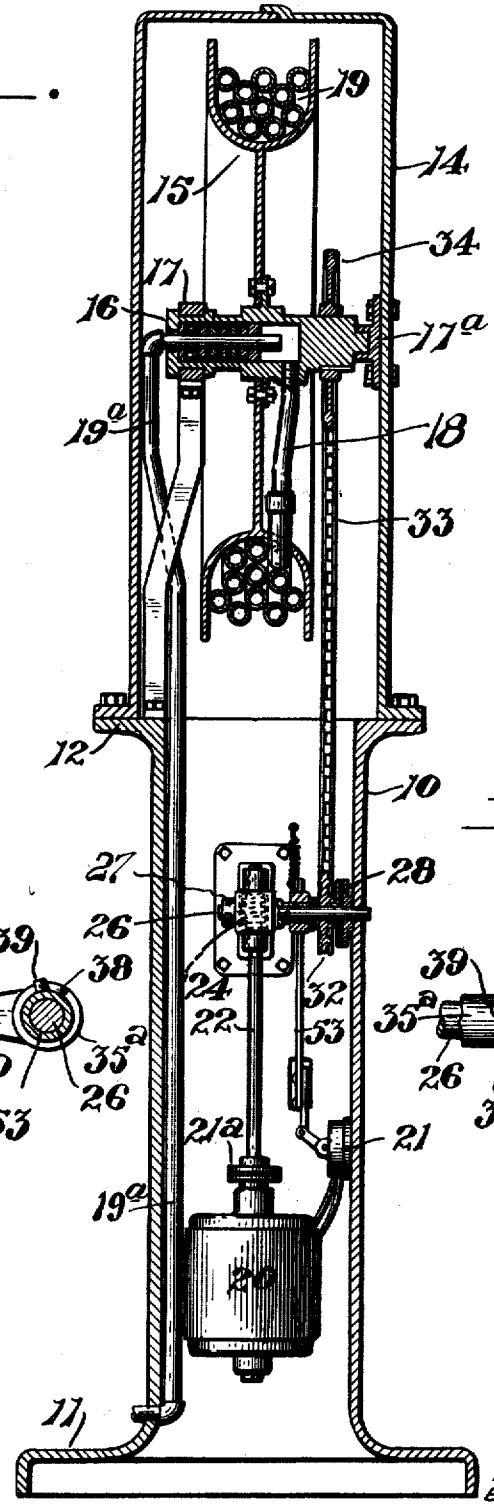


Fig. 3.

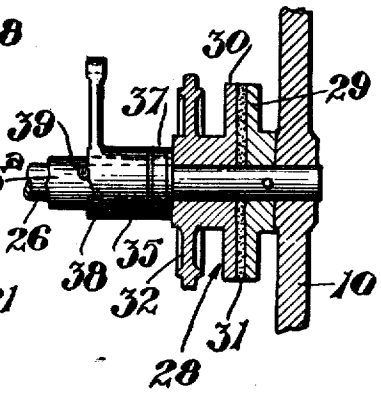
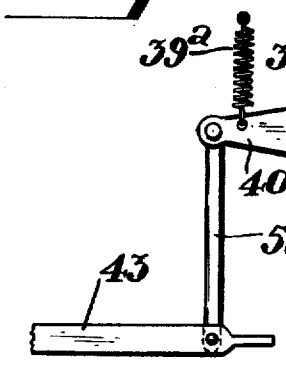


Fig. 4.



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UNITED STATES PATENT OFFICE.

ANTONE DOWRELIO, OF CROCKETT, CALIFORNIA.

AUTOMATIC HOSE REEL.

Application filed June 19, 1923. Serial No. 646,422.

To all whom it may concern:

Be it known that I, ANTONE DOWRELIO, a citizen of the United States, residing at Crockett, county of Contra Costa, and State of California, have invented new and useful Improvements in Automatic Hose Reels, of which the following is a specification.

This invention relates to automatic hose reels and particularly pertains to certain improvements on the device disclosed in my prior application entitled "Automatic hose reel," filed Sept. 26, 1922, now Patent No. 1,489,664.

In general, the device referred to comprises a drum about which a length of hose is reeled and from which the hose may be unreeled when desired by exerting a pull on the hose. The drum mentioned is operatively connected to a driving mechanism which automatically operates to rotate the drum and thereby reel up the hose when the latter becomes slack or is released by the user.

It is the principal object of the present invention to generally improve the construction and operation of devices of the character referred to, whereby to provide an efficient hose reel designed to permit a hose to be easily unwound therefrom by manual effort when desired and to automatically operate to reel up the hose the instant it becomes slack or is released by the user.

In carrying out this object, I provide a frame structure supporting a drum around which a hose is reeled and a driving motor which is operatively connected to the drum for rotating it in a direction tending to reel up the hose. The motor and the connection between it and the drum are automatically controlled by a mechanism connected with the hose whereby when a pull is exerted on the latter, the motor and its connection to the drum will be rendered inoperative so that the hose may be easily unreeled by manual effort. Immediately the hose is released by the user and becomes slack, the motor commences operating and a driving connection will be established between it and the drum to drive the latter, and thereby reel up the hose.

One form which the invention may assume is exemplified in the following description and illustrated by way of example in the accompanying drawings, in which:

Fig. 1 is a central vertical section through the apparatus embodying the preferred form of the invention.

Fig. 2 is a vertical section through the apparatus taken on line 2—2 of Fig. 1.

Fig. 3 is an enlarged sectional view through the clutch mechanism.

Fig. 4 is a side elevation of the clutch showing the shifting collar.

Referring more particularly to the accompanying drawings, 10 indicates a cylindrical frame or base formed with a foot flange 11 and an upper flange 12. Supported by the latter is a casing 14 which encloses a winding drum 15. This drum is fitted with a hollow trunnion 16 journalled at its ends in bearings 17 and 17ª which are fixed to the casing 14. A pipe 18 is connected with the trunnion 16 and extends to the rim of the drum where it connects with one end of a hose 19 wound on the drum. The pipe 18 constitutes a fluid connection between the interior of the trunnion and the hose.

One end of a fluid supply pipe 19ª projects into the interior of the trunnion, as shown in Fig. 2, to deliver fluid thereto from a suitable source of fluid supply.

Mounted in the base 10 is an electric driving motor 20 which is controlled by a switch 21 of the tumbler type. The shaft of the motor 20 is connected by a flexible coupling 21ª to a worm shaft 22. This shaft is journalled in a subframe 23 secured within the base above the motor. The worm shaft 22 is fitted with a worm 24 which meshes with a worm gear 25 fixed on a jack shaft 26. This shaft is also journalled in the subframe 23.

Reference being had to Fig. 2, it is seen that the outer end of the jack shaft is fitted with a fixed collar 27. Also mounted on this shaft is a friction clutch 28 comprising a disk 29 fixed on the shaft, a movable disk 30 and a leather friction disk 31 interposed between the disks 29 and 30. The hub of the movable disk is fitted with a sprocket gear 32 which is connected by an endless chain 33 to a sprocket 34 fixed on the trunnion 16 of the drum 15. When the motor is in operation and the clutch is engaged the motor will rotate the drum at a comparatively slow speed in a direction tending to reel up the hose on the drum or in the direction indicated by the arrow in Fig. 1.

To control the clutch, a clutch shifting collar 35 is mounted on the reduced end 35ª

of one of the jack shaft bearings on the subframe. This collar bears against a thrust bearing 37 which in turn bears against the hub of the movable clutch disk 30. One face of the collar 35 is formed with a cam recess 38 which is adapted to be engaged by a fixed pin 39 secured to the bearing 35ª and when the collar is turned in one direction the pin will cause it to move axially and thereby shift the movable clutch disk and engage the clutch. The collar 35 is normally maintained in a position holding the clutch engaged by a tension spring 39ª which is connected to the base 10 and to the outer end of an arm 40 extending from the collar 35.

It is intended that the clutch and motor be automatically controlled to permit the hose to be unreeled manually and to automatically operate the drum to reel up the hose when the latter has been unreeled and released by the user. To accomplish this, I secure a rigid bracket 41 to the exterior of the base 10. This bracket is fitted with a vertical arm 42 which is pivotally connected at its ends to a pair of parallel horizontal levers 43 and 44. The outer ends of these levers pivotally connect to a vertical sleeve 45. This sleeve supports a hose guide 46 which comprises a pair of parallel flat members 47. These members are connected at one end by a spacer 48 which is positioned at the top of the sleeve 45 and pivoted thereto by a vertical pivot bolt 49. This mounting permits the hose guide to be swung horizontally to any desired position. The members 47 are bent in somewhat of a V-shape and with their longer portions 50 constituting bearings for rollers 51. These rollers are formed with concave peripheries. The hose is preferably passed between the lower rollers 50ª and 50ᵇ as shown in Fig. 1.

For the sake of appearance it is desirable to enclose the members 47 and the rollers supported thereby in a casing 52. The upper end of this casing 52 is tubular and is slidable in the lower end of an extension 14ª formed on the casing 14.

In operation of the device assuming that the hose is fully wound on the drum and that the stop member 57 at the end of the hose has engaged the rollers 50ª and 50ᵇ of the hose guide so as to raise the latter to its uppermost position and maintain the switch 21 open, when it is desired to unreel the hose, a pull exerted thereon will maintain the hose guide in its uppermost position. This will hold the switch 21 open and the clutch mechanism disengaged so that continued pull on the hose will revolve the drum 15 and unreel the hose.

The moment the hose is released by the user and becomes slack, the hose guide 46 will lower by gravity. This will impart turning movement to the shifting collar 35 through the lever 43, the link 53 and the arm 30 and will shift the collar axially, through the medium of the pin 39 and the cam recess 38, and cause the clutch to engage. Simultaneously with the engaging of the clutch, the switch 21 is closed to start the motor 20. To operate the switch, the end of the lever 43 is connected to the switch by a link 55. Therefore, when the end of the lever 43 is swung upwardly the switch will be closed and will complete the motor circuit, and thereby cause the motor to operate and rotate the drum to reel up the hose.

When the hose has been fully reeled, a stop member 57 which is fixed at the end of the hose, engages the rollers 50ª and 50ᵇ of the hose guide. This causes the movement of the hose to raise the hose guide and open the motor circuit to stop the motor.

Should it be desired to unreel the hose before the latter has been fully wound on the drum, a pull exerted on the free end of the hose will cause the hose guide 46 to rise and will swing the levers 43 and 44 upwardly. This movement will be transmitted to a link 53 which connects the inner end of the lever 43 to the end of the arm 40 on clutch shifting collar 55. Downward movement of the link 53 caused by upward movement of the hose guide 46 will turn the collar 35 so that the pin 39 on the bearing 35ª will register with the deepest end of the cam recess 38 and permit the collar to actuate and release the clutch. Continued pull on the hose will then revolve the drum and unreel the hose.

The pipe 19ª may be connected with any suitable source of fluid under pressure. This pipe will deliver the fluid to the interior of the trunnion 16 and thence through the pipe 18 to the hose. A nozzle may be fitted to the free end of the hose to control the flow of fluid therethrough.

From the foregoing it is obvious that a desirable hose reel has been provided which will be efficient in operation.

While I have shown the preferred embodiment of the invention as now known to me, it is to be understood that various changes in its construction may be made without departing from the invention as defined in the appended claims.

Having thus described my invention, what I claim and desire to secure by Letters Patent is:—

1. An automatic hose reel comprising a frame, a drum rotatably supported thereby, a hose reeled on said drum, a driving motor carried by the frame operatively connected to said drum for driving the same in a direction tending to wind said hose on the drum, and means operated by the hose adapted to render the connection between the motor and the drum inoperative whereby the hose may be unreeled from the drum.

2. An automatic hose reel comprising a frame, a drum rotatably supported thereby, a hose reeled on said drum, a driving motor carried by the frame operatively connected to said drum for driving the same in a direction tending to wind said hose onto said drum, a guide through which one end of the hose is led, a clutch in the connection between the motor and the drum, and an operative connection between said guide and the clutch whereby the guide may be operated by the hose to disengage the clutch to permit the hose to be unreeled, said guide being adapted to automatically operate to engage said clutch when the unreeled hose becomes slack.

3. An automatic hose reel comprising a frame, a drum rotatably supported thereby, a hose reeled on said drum, a driving motor carried by the frame operatively connected to said drum for driving the same in a direction tending to wind said hose on the drum, a guide through which one end of the hose is led, a clutch in the connection between the motor and the drum, and an operative connection between said guide and the clutch, whereby the guide may be operated by the hose to disengage the clutch to permit the hose to be unreeled.

4. An automatic hose reel comprising a frame, a drum rotatably supported thereby, a hose reeled on said drum, a driving motor carried by the frame and operatively connected to said drum for driving the same in a direction tending to wind the hose onto said drum, a switch controlling the operation of said motor, a member through which the hose is led, a clutch in the connection between the motor and the drum, an operative connection between said member and said clutch, an operative connection between said member and said switch whereby said member may be operated by the hose to disengage the clutch and open the switch to permit the hose to be unreeled, said member being adapted to automatically close said switch and engage said clutch when the unreeled hose becomes slack to cause said motor to rotate the drum and thereby reel up the hose.

5. An automatic hose reel comprising a frame, a drum rotatably supported thereby, a hose reeled on said drum, a driving motor carried by the frame operatively connected to said drum for driving the same in a direction tending to wind said hose on the drum, a guide through which one end of the hose is led, a clutch in the connection between the motor and the drum, an operative connection between said guide and the clutch, said guide being adapted to be operated by the hose to disengage the clutch, a switch controlling the operation of the motor, a connection between said guide and said switch, said guide being adapted to close said switch and engage said clutch when the hose is unreeled and becomes slack to cause said motor to rotate the drum and thereby reel up the hose, and means for automatically actuating the guide to open said switch when the hose has been fully reeled on the drum.

6. An automatic hose reel comprising a frame, a drum rotatably supported thereby, a hose reeled on said drum, an electric motor carried by the frame, a switch controlling said motor, an operative connection between said motor and said drum, a clutch in said connection, a lever pivoted to the frame, a hose guide connected to one end of said lever and through which the hose is led, a connection between the other end of the lever and said clutch, and said switch whereby movement of the hose guide will operate said clutch and said switch, said guide being adapted to be operated by the hose to disengage said clutch and open the switch and when the hose has been unreeled and becomes slack to automatically engage said clutch and close said switch to cause the motor to operate and revolve the drum and reel up the hose.

7. An automatic hose reel comprising a frame, a drum rotatably supported thereby, a hose reeled on said drum, an electric motor carried by the frame, a switch controlling said motor, an operative connection between said motor and said drum, a clutch in said connection, a lever pivoted to the frame, a hose guide connected to one end of said lever and through which the hose is led, a connection between the other end of the lever and said clutch, and said switch whereby movement of the hose guide will operate said clutch and said switch, said guide being adapted to be actuated by the hose to disengage said clutch and open said switch and when the hose has been unreeled and becomes slack to automatically engage said clutch and close said switch to cause the motor to operate and revolve the drum and reel up the hose, and means fitted at one end of the hose and engageable with the hose guide when the hose has been fully reeled to actuate the guide to open said switch and thereby stop the motor.

8. An automatic hose reel comprising a frame, a drum rotatably supported thereby, a hose reeled on said drum, an electric driving motor operatively connected to said drum for driving the same in a direction tending to reel up the hose, a hose guide pivoted to the frame through which the hose is led, a normally open switch controlling said motor, a connection between said switch and the hose guide whereby when the hose is unreeled and becomes slack the hose guide will be automatically operated to close said switch to start the motor and thereby operate the drum to reel up the hose.

9. An automatic hose reel comprising a frame, a drum rotatably supported thereby, a hose reeled on said drum, an electric driving motor operatively connected to said drum for driving the same in a direction tending to reel up the hose, a hose guide pivoted to the frame through which the hose is led, a normally open switch controlling said motor, a connection between said switch and the hose guide whereby when the hose is unreeled and becomes slack the hose guide will be automatically operated to close said switch to start the motor and thereby operate the drum to reel up the hose, and means at the end of the hose adapted to engage the hose guide and actuate the same to open the switch when said hose has been fully reeled on the drum.

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