Oct. 6, 1959 A. R. BENSTEIN 2,907,534

HOSE REEL

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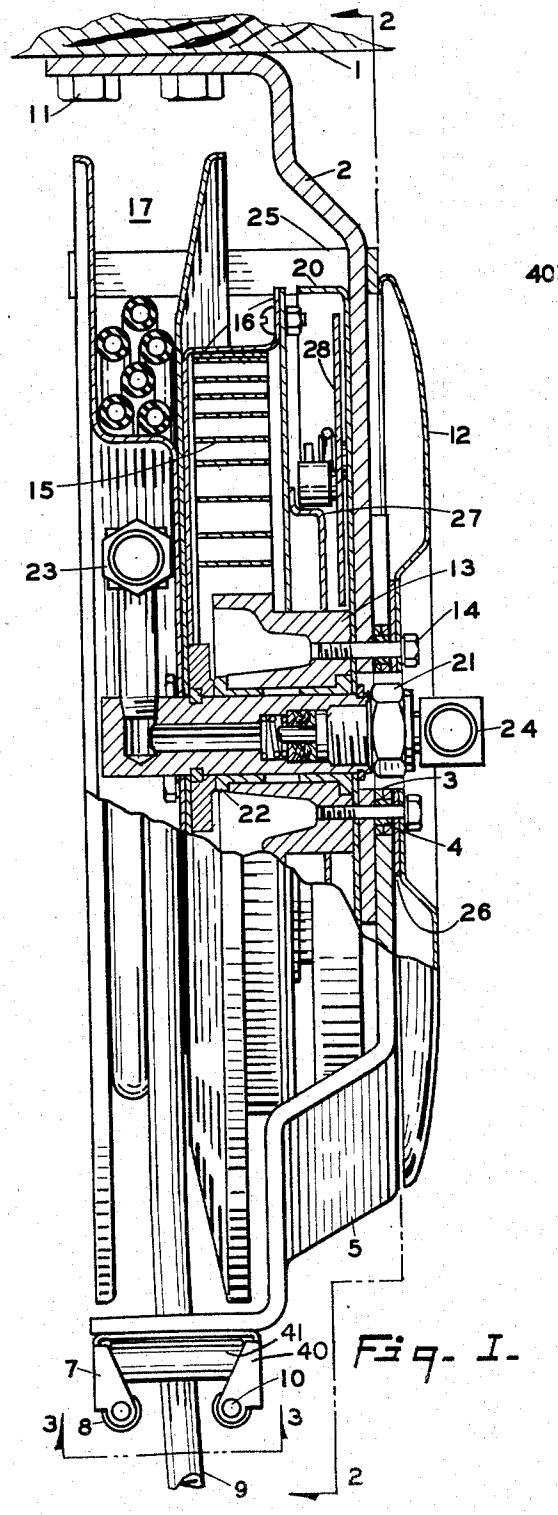


Fig. 1.

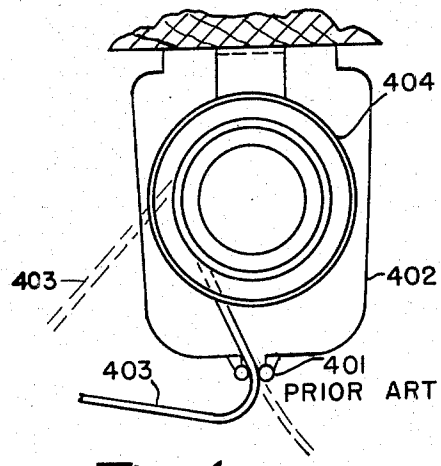


Fig. 4.

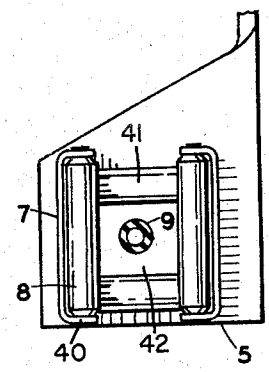


Fig. 3.

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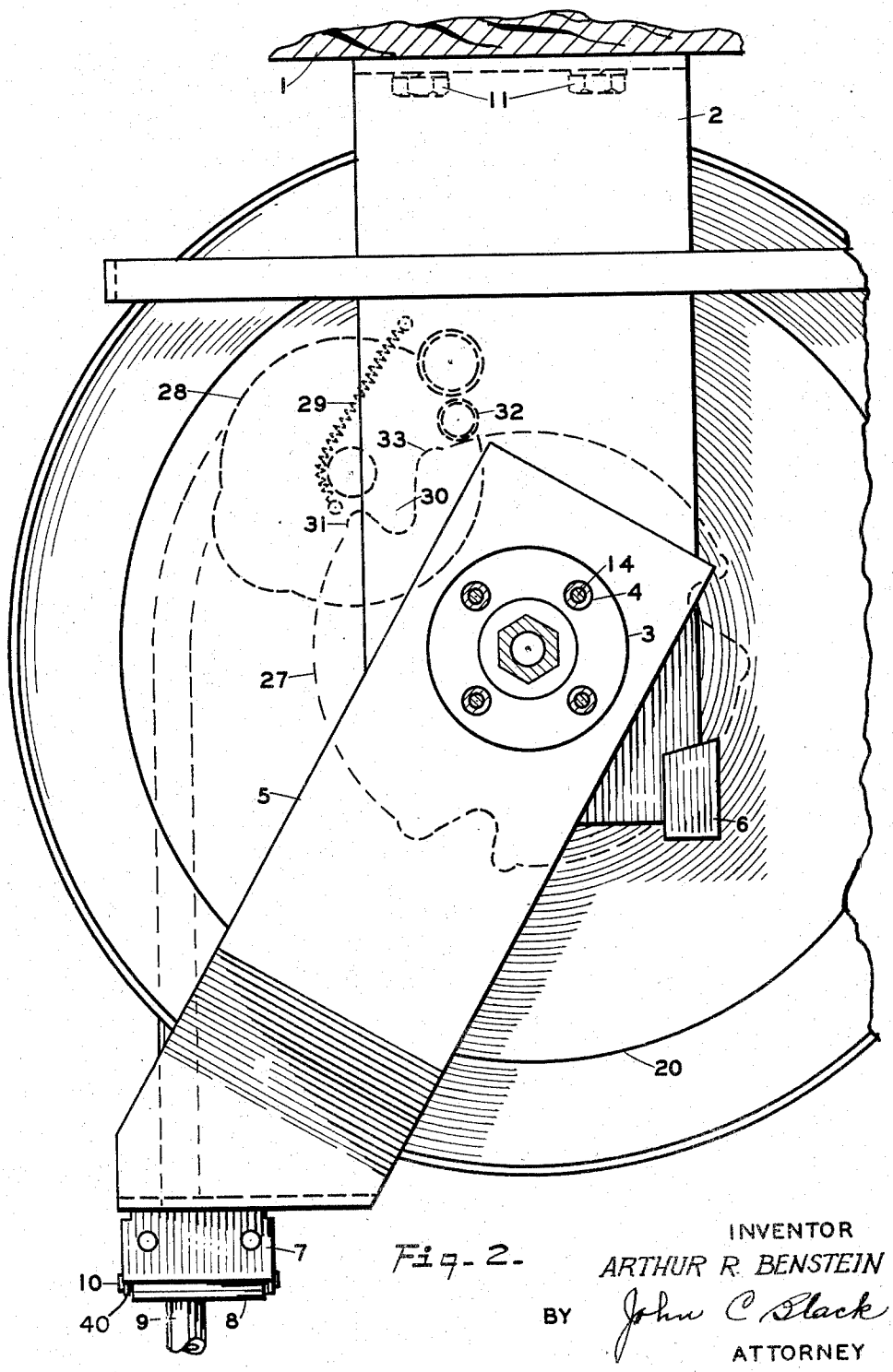


Fig. 2.

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HOSE REEL

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Application March 8, 1955, Serial No. 492,828

1 Claim. (Cl. 242—86)

This invention relates in general to hose reels and more particularly to the use therein of a rotatably mounted guide means for the hose.

It is the primary object of this invention to provide a means which will minimize wear on a reel hose due to excessive bending in the position at which the hose leaves the reel enclosure.

A feature of this invention is the use of a rotatably mounted hose guide arm on an overhead hose reel.

Other objects and features will be evident upon a perusal of the following disclosure in which:

Fig. 1 shows an elevation view of a hose reel with a sectional cut-out at its upper end;

Fig. 2 shows a side view along line 2—2 of Fig. 1;

Fig. 3 shows a bottom view of the guide arm rollers along line 3—3 of Fig. 1; and

Fig. 4 shows a conventional type overhead reel with a conventional hose guide arrangement instead of a rotatable guide arm.

It is customary in overhead hose reels in commercial use today, such as reel 404 shown briefly in Fig. 4, to provide a roller guide arrangement 401 secured to the cover 402 to prevent wear on the hose 403 as well as to guide the hose as it is rolled on the reel after use. As shown in Fig. 4, the roller guide 401 is usually rigidly positioned in a horizontal plane immediately below the center of the reel. No problem is encountered when the hose 403 is used in a position immediately below the reel 404 nor when it is used in a position to the right-hand side of the reel 404 with respect to Fig. 4; however, it will be noted that, if the hose 403 is used in a position to the left-hand side of the reel 404 with respect to Fig. 4, the hose 403 must be severely bent to reach said position. This bending of the hose 403 is even more critical because the hose holds fluid under pressure. Dotted lines 403 (Fig. 4) show the approximate position of the hose 403 when the rotatable arm of the present invention is used, in which position the hose bends only slightly.

Except for a rotatable guide arm 5 (Fig. 2) and its stop 6, the reel and mounting shown in Figs. 1–3 are of a conventional type well known in the art. Briefly, the reel is suspended from the ceiling 1 (Fig. 1) by an L-shaped supporting arm 2 suitably held to the ceiling 1 by screws 11. A U-shaped hose retaining arm 25 is welded to the support arm 2. A reel hub 13 and a cover 12 are rigidly mounted on the support arm 2 by means of machine screws 14.

Rotatably mounted on hub 13, in a well known manner, are a flat spiral spring 15 in its housing 16, a hose 9 in its channel 17 and a disc 27 in a housing 20. The disc 27, which has three grooves therein, co-operates with a second disc 28 to form a latch arrangement to hold the reel against rewinding in a clockwise direction with respect to Fig. 2 when the hose 9 has been pulled out for use. In a well known manner, disc 27 rotates in a counterclockwise direction with respect to Fig. 2 when the hose is being drawn from the reel. Whenever the wheel 32, rotatably mounted on disc 28, is forced into a groove 30 by the spring 29, said wheel 32 will roll over the right-hand edge of the groove. However, if the hose is slowly released to allow the reel and disc 27 to rotate slowly in a clockwise direction under tension from spring 15, then wheel 32 is forced into groove 30 but cannot roll over the steeply inclined left-hand edge of the groove; and, therefore, wheel 32 will hold the reel against clockwise movement. When it is desired to rewind the hose on the reel after use, the hose is pulled suddenly to roll wheel 32 out of the groove 30, then released to allow the reel to freely rotate clockwise at a speed sufficient to cause wheel 32 to bounce over the groove 30. A slight projection 33 at the upper right-hand edge of the groove 30 aid wheel 32 to bounce over the groove 30.

Rotatably mounted within hub 13 is a conventional swivel arrangement 21 resting within a sleeve bearing 22. One end 23 of swivel 21 is suitably connected to hose 9 and the other end 24 is connected to a source of fluid (under pressure) in a manner well known in the art.

A pair of bearing washers 3 and a washer 26 are held between the support arm 2 and the cover 12 by machine screws 14. Four holes have been drilled in bearing washers 3 (Fig. 2) in order to accommodate cylindrical spacers 4.

A guide arm 5 is rotatably mounted on the bearing washers 3 between the support arm 2 and the washer 26; the longitudinal length of spacers 4 is slightly greater than the width of guide arm 5 to provide clearance for arm 5 between support arm 2 and washer 26. A stop or projection 6 is rigidly mounted (e.g. welded) on the lower right-hand end of support arm 2 in the plane of travel of guide arm 5. The stop 6 has been formed and located in the preferred embodiment shown herein so as to permit the guide arm 5 to rotate from a vertical position (Fig. 2) through approximately a 75° arc to the left, the guide arm 5 engaging the left and top sides of stop 6 in its two extreme positions. A generally U-shaped bracket 7 is rigidly secured to the lower end of guide arm 5, the vertical sides (Fig. 2) of bracket 7 being turned inwardly to form ears 40. Each set of ears carries a roller 8 rotatably mounted on a pin 10. A pair of rollers 41 (Fig. 3) are rotatably mounted on the sides of bracket 7 at right angles to the rollers 8. The hose 9 projects through the opening 42 provided between the opposing pairs of rollers 8 and 41. It will be noted that the bracket 7 is disposed so that the intersection of a plane extending through the axis 10 of rollers 8 and a plane lying along the right-hand side edge of bracket 5 forms an obtuse angle. This permits the hose to project through bracket 7 substantially perpendicular to the opening 42 when poled from almost any position of normal use, whereby unnecessary bending of the hose 9 at this point is eliminated.

Guide arm 5 has been shown in the preferred embodiment to have a maximum swing of 75° because this is felt to be sufficient for commercial applications; however, it will be understood that the present invention is not to be limited thereby. Obviously stop 6 could be omitted or formed and positioned to permit guide arm 5 to traverse a greater arc .

While there has been described what is at present believed to be the preferred embodiment of the invention, it will be understood that various modifications may be made therein; and it is contemplated to cover in the appended claim all such modifications as fall within the true spirit and scope of the invention.

What is claimed is:

In combination, a hose reel of the type which carries a high pressure fluid bearing hose and which is sub-

jected during use to substantial radial and lateral forces, a single rigid generally L-shaped support arm with one of its legs disposed vertically and the other leg disposed horizontally for connection with an overhead supporting structure, means for rotatably securing the reel to the vertical leg of the arm, a bearing structure rigidly secured to the arm coaxial to the reel, a guide arm having a circular aperture therein for rotatably mounting the guide arm on the bearing structure, said guide arm having upper and lower side edges, means secured to the support arm for retaining the guide arm against lateral movement with respect to the support arm, a roller guide structure including a plurality of rollers rotatably mounted on axes lying in a plane defining an obtuse angle with a plane lying along the lower edge of said guide arm, two of the rollers rotatably mounted on axes parallel to the axis of the reel in positions adjacent the outer periphery of the reel, and a projection carried by the supporting arm and engaging the guide arm to limit movement of the guide arm from a substantially vertical position to a position on the side of the reel from which the hose is withdrawn defining an angle of approximately 75 degrees with the vertical position.

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