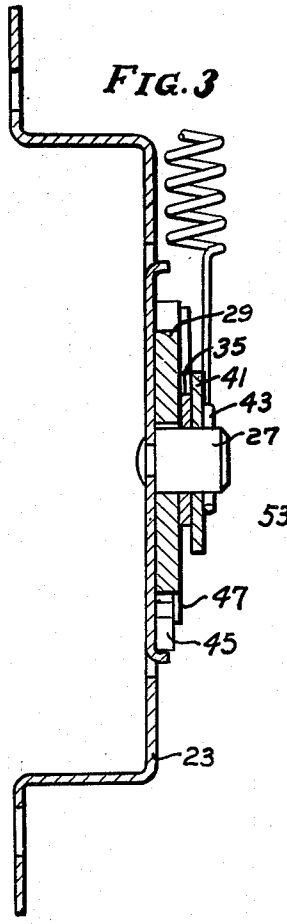
June 3, 1941. H. E. MARVEL 2,244,541

HOSE REEL LATCHING MECHANISM

Filed June 22, 1939

FIG. 3



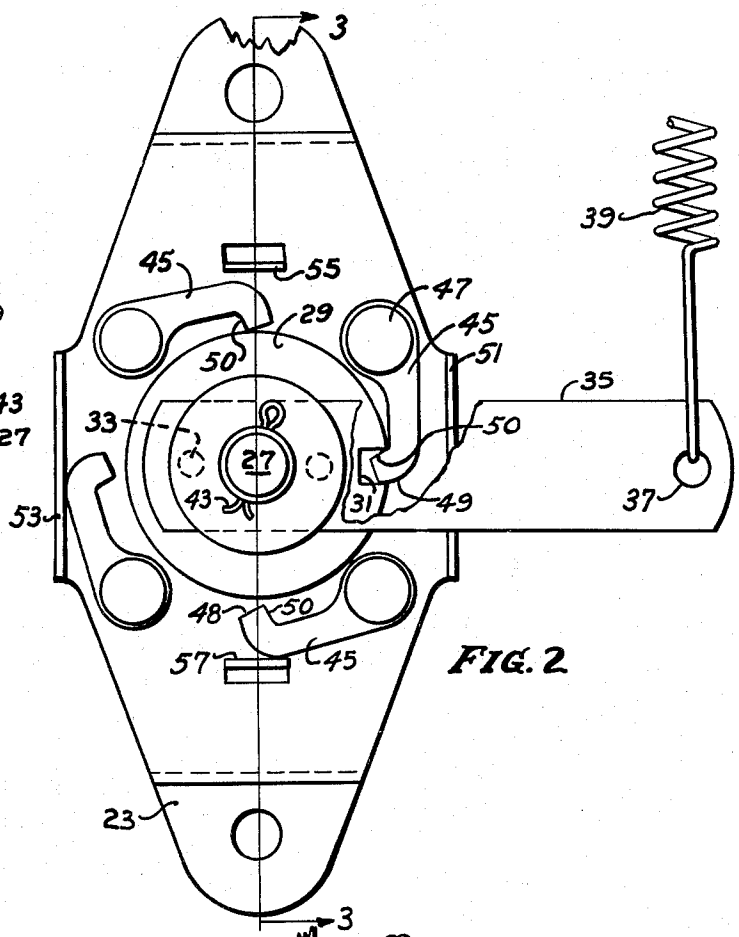


FIG. 2

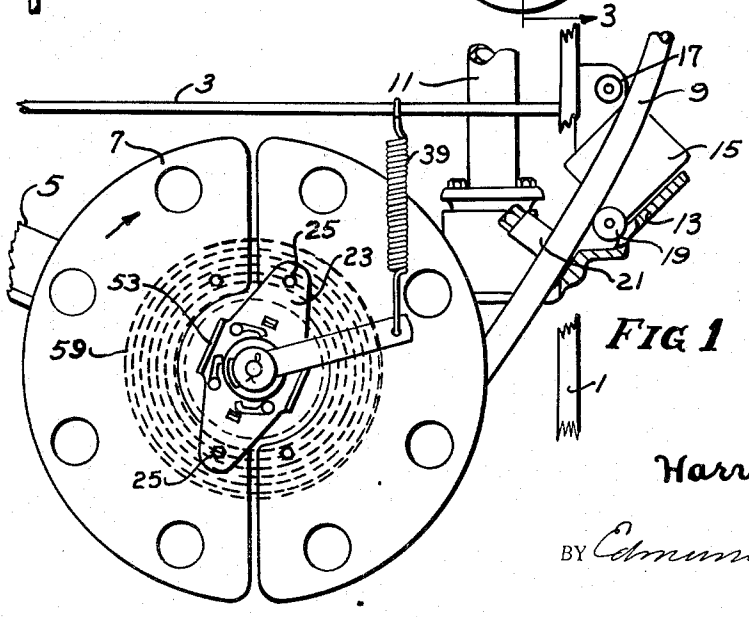


FIG 1

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HOSE REEL LATCHING MECHANISM

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12 Claims. (Cl. 242—86)

This invention relates to liquid dispensing apparatus of the type in which a hose or a portion thereof is stored upon a reel mounted inside the apparatus housing and in which the reel is usually spring biased so that tension must be exerted on the hose to withdraw it from the housing, and so that when tension is relaxed, the hose will be rewound.

More specifically, my invention relates to a device which is adapted to hold the hose in a withdrawn position against the action of the spring and which is releasable at will to permit the hose to be returned to the reel under action of the spring.

One of the objects of my invention is to provide a latching device which may be rendered effective or ineffective at will by manipulation of the hose.

Another object of my invention is to provide a latching device which may be readily applied to existing devices.

Yet another object of my invention is to provide a latching device of the type described which is adapted to absorb the shock which occurs when the relatively oppositely moving parts of the latching means are engaged.

These and other objects will appear from a consideration of the specification in connection with the accompanying drawing which forms a part thereof and in which:

Figure 1 is a side elevation of the latching and shock absorbing device showing it applied to a hose reel.

Figure 2 is an enlarged elevation of the device of Figure 1 with parts broken away, showing the device in the position occupied just after engagement.

Figure 3 is a section taken on the line 3—3 of Figure 2.

Referring to Figure 1, the numeral 1 represents one of the corner posts of the frame of a liquid dispensing apparatus while 3 represents a platform which is fixed to the corner posts 1 and which carries the reel support 5.

An axle, not shown, supports the reel 7 for rotation about its center and the hose 9 is connected to the reel. The latter, in turn, is connected with the pipe 11 leading from the pump, air separator, meter and sight glass, not shown, which form a part of the usual dispensing apparatus.

A bracket 13 is mounted on the posts 1 and supports rolls 15, 17, 19 and 21 which serve to guide the hose 9 as it leaves the reel, and which also serve to guide the hose back on to the reel as the hose is retrieved. The rolls also prevent damage to the hose by friction or bends of unnecessarily sharp radius.

A bracket 23 is mounted by means of screw fastenings 25 upon the exterior of the reel 7. A trunnion 27 is riveted to the bracket 23 and rotatably supports a latch plate 29 which is formed with a notch 31.

Fixed to the latch plate, as by means of rivets 33, is a lever 35 which is also rotatably mounted on the trunnion. The lever overlies the latch plate and at its outer end is provided with an opening 37 which is adapted to receive one end of a spring 39. The upper end of said spring is attached to the platform 3. A washer 41 is mounted on the trunnion adjacent lever 35 and a cotter key 43 is inserted through the trunnion adjacent the washer so as to hold the entire assembly in place on the trunnion.

Pawls 45, preferably four in number, are mounted for pivotal motion upon pins 47 which are riveted or otherwise held in the bracket 23. These pawls are provided with portions 49 which are adapted to engage the notch 31 in the latch plate. The notch is approximately one-sixteenth of an inch wider than the pawls and the face 48 of each pawl is disposed at about 15 degrees to the axis of the pawl. The heel 50 of each pawl forms an angle of slightly more than 90 degrees with the face 48.

Two ears 51 and 53 are bent up on the bracket 23 and two other ears 55 and 57 are punched out of the bracket. These ears are so positioned as to prevent movement of the pawls away from the latch plate 29 more than a predetermined distance.

The notch 31 in the latch plate is disposed at substantially the transverse center of lever 35, and in the normal disengaged position the lever 35, and consequently the notch 31, extend in a direction which is substantially 15 degrees above the horizontal line through the trunnion 27 (see Fig. 2).

The spring 59 is connected at one end to the reel and at its other end to a fixed frame member so that it tends to rotate the reel in the direction of the arrow in Figure 1.

Operation

The operator, by exerting a tension on the hose 9, may withdraw hose from the reel causing the reel to rotate in a direction opposite to that indicated by the arrow in Figure 1, and consequently, such an action increases the tension on the spring 59.

The pawls 45 rotate in a counter-clockwise direction with respect to the latch plate 29 (Fig. 2), and due to the inclined construction of the heels 50 of the pawls, any pawls which may be engaged will be kicked out of engagement with the notch.

When the operation of withdrawing the hose is completed the operator may relax the tension on the hose slightly, thus permitting the spring 59 to rotate the reel relatively slowly in the direction of the arrow (Fig. 1). If this action is sufficiently slow, that is, if a pawl 45 is in alignment with the notch for a length of time sufficient to permit gravity to force the pawl which is disposed above the latch plate 29 and which due to gravity rests upon the latch plate, into the notch, then the lever 35 and latch plate 29 will be latched together. Due to the angularity of the faces 48 of the pawls and the location of pivots 47, the point formed by the intersection of the heel 50 and face 48 of each pawl is the portion which rides on the surface of the latch plate.

The notch 31 is disposed at an angle above the horizontal so that the engagement of the pawl with the notch may be effected by gravity.

The kinetic energy of the reel under action of the spring will be absorbed when the motion of the pawl 45 is transmitted to the latch plate 29, and thence to lever 35 and the spring 39. The spring 39 will be stretched and take up the energy originally in the reel. This arrangement serves to reduce the shock of contact of pawl 45 with notch 31, and consequently, the destruction of pawl 45 is prevented. The lever 35 and reel will come to rest in the position in which the action of spring 59 is balanced by that of spring 39.

Assuming that the pawls and latch plate are engaged and the operator desires to return the hose to the reel, it is necessary merely for him to pull on the hose and immediately relax most of the tension on the hose. The initial pull will cause the pawl 45 to be cammed out of notch 31, and upon relaxation of the tension the speed of rotation of the reel 7, induced by spring 57, will be so great that none of the pawls 45 will have time to drop into the notch 31; consequently, the hose may be returned entirely to the reel without further interruption by the engagement of the pawls with the notch in the latch plate.

It is obvious that various changes may be made in the form, construction and arrangement of parts, and accordingly, applicant does not desire to be limited to the specific construction herein disclosed by way of example; instead, he desires protection falling fairly within the scope of the appended claims.

What I claim to be new and desire to protect by Letters Patent of the United States is:

1. In a liquid dispensing apparatus, a frame, a hose storing device mounted for movement on said frame, a hose mounted on said device, retrieving means connected with said device and adapted to move it to retrieve said hose, a first latch element carried by said device, a second latch element adapted to engage said first element to prevent movement of the device by said retrieving means, and a yieldable connection between said first element and said frame connected so as to balance the action of said retrieving means when said elements are engaged.

2. In a liquid dispensing apparatus, a frame, a hose storing device mounted for movement on said frame, a hose mounted on said device, retrieving means connected with said device and adapted to move it to retrieve said hose, a latch mechanism adapted to be engaged upon manipulation of said hose in a predetermined manner, a yieldable connection between said latch mechanism and said frame, said yieldable connection being so disposed and arranged as to oppose the action of said retrieving means when said latch mechanism is engaged.

3. In a liquid dispensing apparatus, a frame, a hose storing device mounted for movement on said frame, a hose mounted on said device, yieldable retrieving means connected with said device and adapted to move it to retrieve said hose, a latch mechanism adapted to be engaged when the hose is retrieved at a speed slower than a predetermined speed, but adapted to remain disengaged when the hose is retrieved at above said predetermined speed, and means for absorbing the shock of engagement of said latch mechanism.

4. In a liquid dispensing apparatus, a frame, a hose reel mounted for rotation on said frame, a hose mounted on said reel, retrieving means connected with said reel and adapted to rotate it to reel up said hose, a bracket carried by the reel, a trunnion supported by said bracket, a latch plate mounted for rotation on said trunnion, a lever fixed to said latch plate at one end and supported on a spring at the other end, a notch in said latch plate, and a latch pawl mounted on said bracket for cooperation with said latch plate to transmit rotation imparted by said yieldable retrieving means to said lever and spring.

5. In a liquid dispensing apparatus, a frame, a hose storing device mounted for motion on said frame, a hose mounted on said device, retrieving means connected with said device and adapted to move it to retrieve said hose, a first latch element rotatably mounted on said frame and provided with engaging means, a second latch element mounted for movement by said device relative to said first element, said elements being constructed and arranged so as to engage when their relative speeds fall below a predetermined maximum, and yieldable means connected with said first latch element for restraining its rotation on said frame.

6. In a liquid dispensing apparatus, a frame, a hose reel mounted for rotation on said frame, a hose mounted on said reel, yieldable retrieving means connected with said reel and adapted to rotate it to reel up said hose, a latch element rotatably mounted on said frame and provided with a pawl engaging means, a latch pawl mounted for movement with said reel about said latch element, said pawl engaging means being disposed so that the pawl will be urged into engagement therewith by gravity, and yieldable means connected with said latch element and said frame to absorb the shock of the engagement of said latch pawl with the pawl engaging means of said element.

7. In a liquid dispensing apparatus, a frame, a hose storing device mounted for movement on said frame, a hose mounted on said device, retrieving means connected with said device and adapted to move it to retrieve said hose, a cushioning mechanism supported by said frame, a clutch comprising a driving element mounted for movement by said device and a driven element connected with said cushioning mechanism so as to be controlled thereby, said elements comprising relatively movable means adapted to establish a driving relation between said elements.

8. In a liquid dispensing apparatus, a frame, a hose reel mounted for rotation on said frame, a hose mounted on said reel, yieldable retrieving means connected with said reel and adapted to rotate it to reel up said hose, a cushioning mechanism supported by said frame, a clutch comprising a driving element mounted for movement with said reel and a driven element connected with said cushioning mechanism so as to be controlled thereby, said clutch being constructed and arranged so as to engage only when the relative speeds of the elements fall below a predetermined maximum.

9. In a liquid dispensing apparatus, a frame, a reeling device mounted for movement on said frame, an object adapted to be reeled on said device, retrieving means connected with said device and adapted to move it to retrieve said object, a cushioning mechanism supported by said frame, and a speed responsive clutch connecting said reeling device with said cushioning mechanism.

10. In a liquid dispensing apparatus, a frame, a hose storing device mounted for movement on said frame, a hose mounted on said device, retrieving means connected with said device and adapted to move it to retrieve said hose, a cushioning mechanism having normal and actuated positions, supported by said frame, a clutch comprising relatively movable pawl means and pawl receiving means, means connecting said pawl means for movement by said storing device, and means connecting said pawl receiving means with said cushioning mechanism, said last named connecting means being constructed and arranged to hold said pawl receiving means in receiving position when said cushioning mechanism occupies its normal position.

11. In a clutch mechanism, a fixed support, a driven element comprising a movably mounted disc provided with a notch, a driving element mounted for rotation with respect to said disc, said element comprising a pawl mounted for engagement with said disc, and cushioning means connected with said disc and said fixed support to absorb the shock resulting from the engagement of said pawl in said notch.

12. In a liquid dispensing apparatus, a frame, a reeling device mounted for movement on said frame, an object adapted to be reeled on said device, retrieving means connected with said device and adapted to move it to retrieve said object, a cushioning mechanism supported by said frame, and a clutch connecting said reeling device with said cushioning mechanism.

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