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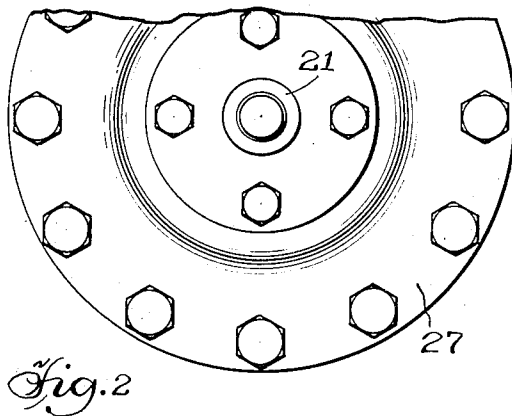
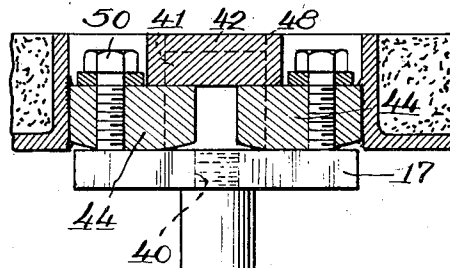
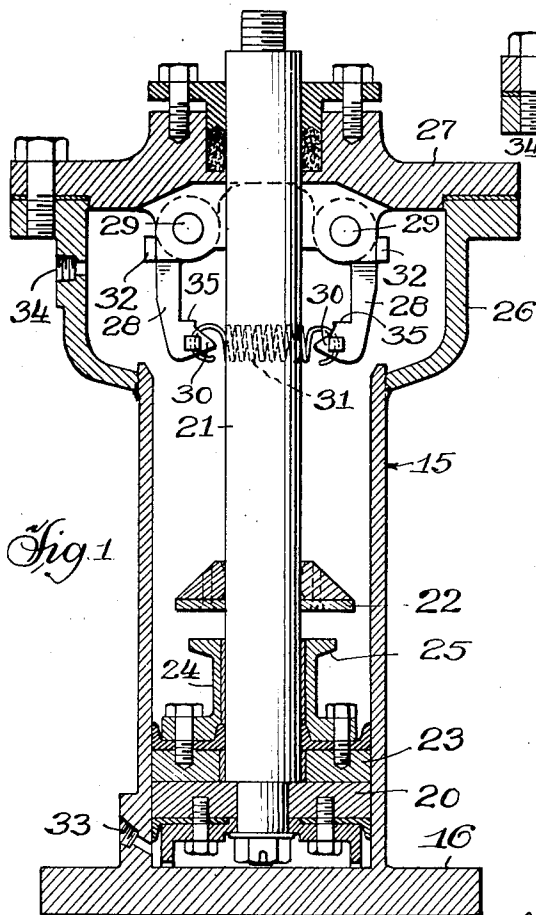
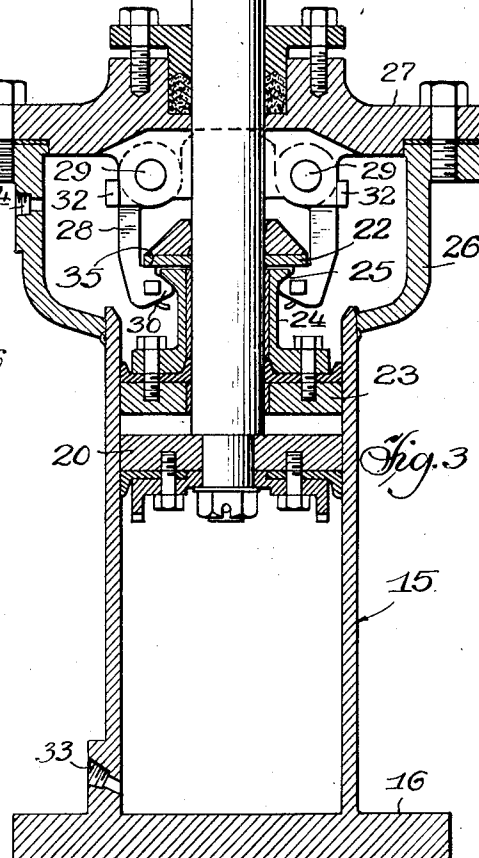
A. T. SCANNELL

2,333,274

MEANS FOR RAISING AND LOWERING CURBS

Filed July 21, 1941

3 Sheets-Sheet 1



INVENTOR.

BY *Albert T. Scannell,*
Christon, Miles,
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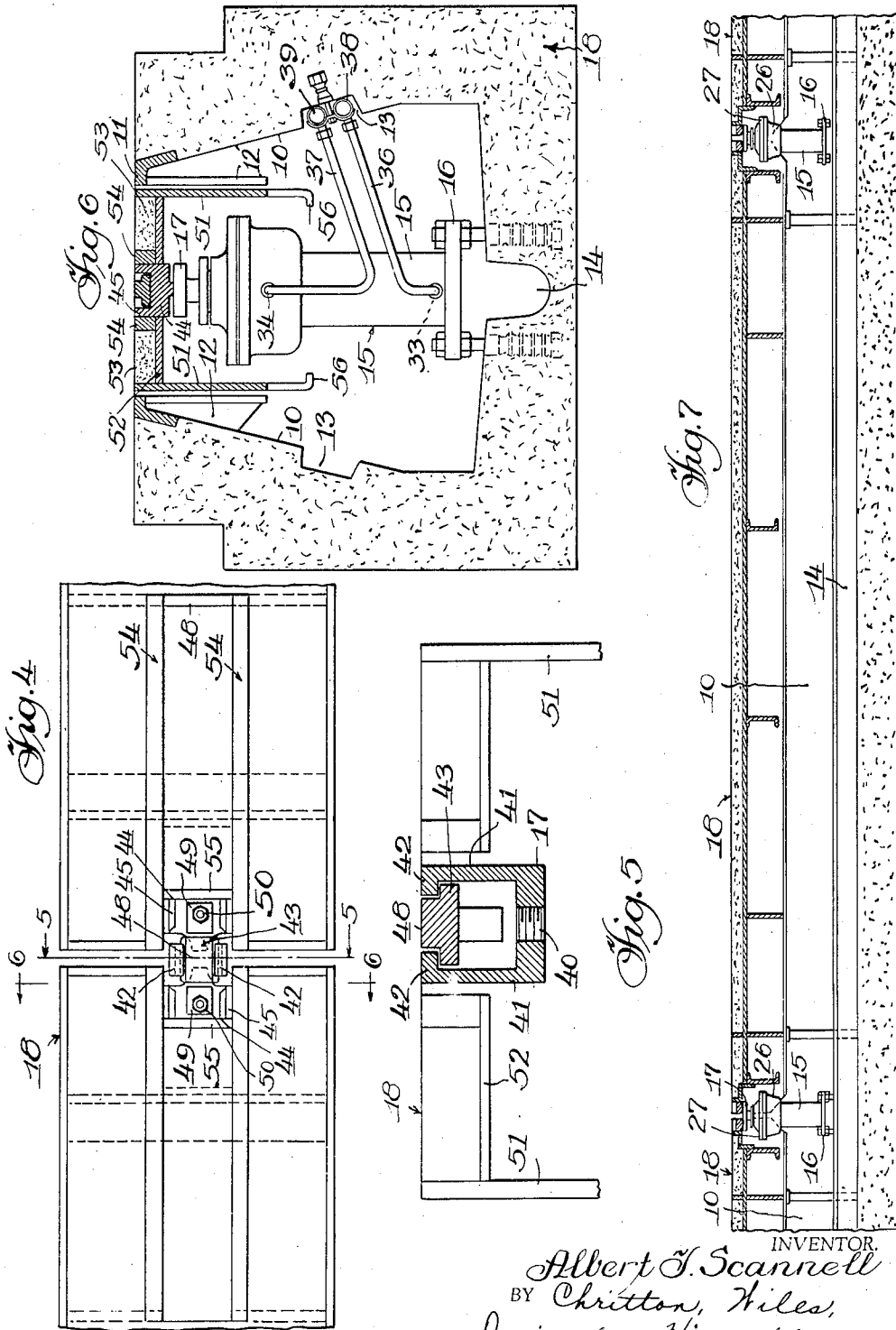
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MEANS FOR RAISING AND LOWERING CURBS

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3 Sheets-Sheet 2



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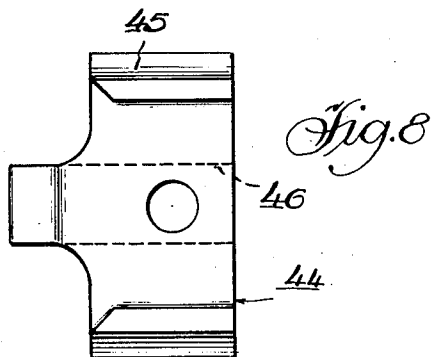
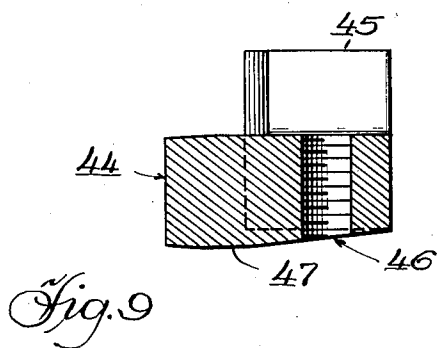
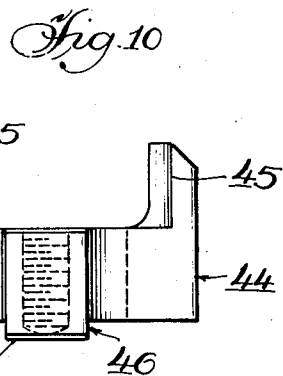
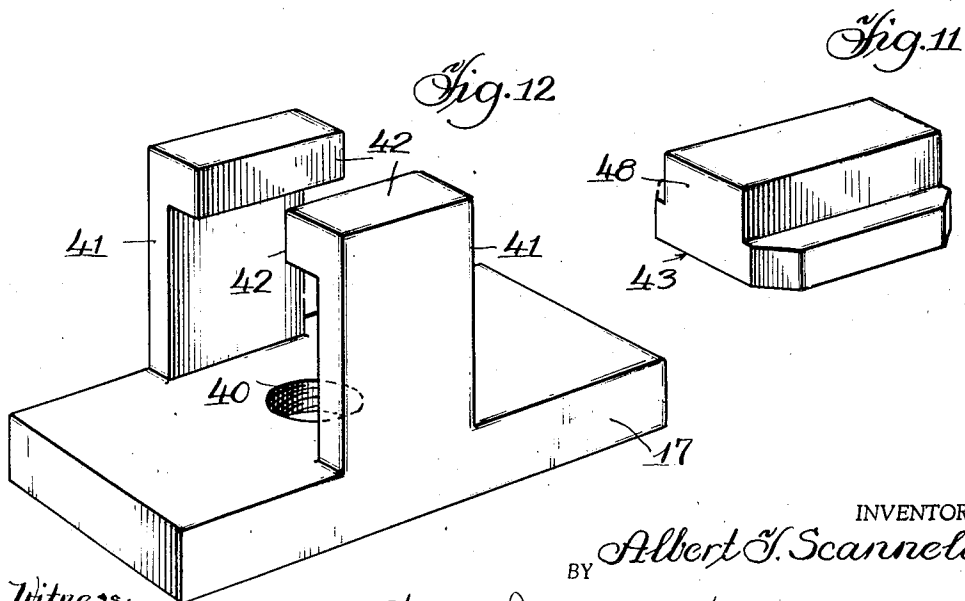
A. T. SCANNELL

2,333,274

MEANS FOR RAISING AND LOWERING CURBS

Filed July 21, 1941

3 Sheets-Sheet 3



Witness:
Chas. A. Hirsch

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UNITED STATES PATENT OFFICE

2,333,274

MEANS FOR RAISING AND LOWERING
CURBS

Albert T. Scannell, Chicago, Ill.

Application July 21, 1941, Serial No. 403,417

6 Claims. (Cl. 121-40)

My invention relates to improvements in means for raising and lowering a curb mounted in a slot or trench in a roadway. One use for curbs of this character is to divide the roadway at certain times of the day into traffic lanes.

An installation of this character has been developed in which the curb sections are raised by jacks actuated by oil under high pressure. When the curb sections are raised they are held in uppermost position by maintaining the pressure in each jack. When the pressure is released the curbs sink of their own weight, aided by powerful springs which are compressed during the upward movement so as to force the curbs downwardly in case they become frozen in uppermost position, due to the accumulation of snow and ice in winter, for example.

The general object of the present invention is to provide a fluid pressure actuated jack, with means for holding the plunger in uppermost position without maintaining the pressure in the jack and with pressure actuated means for releasing the plunger. In this way it is not necessary to apply the fluid pressure to the jack except when it is to be actuated to raise or lower the weight superimposed on it, and it is not necessary to use oil at high pressures.

Other objects and advantages will be apparent from the description which follows:

In the accompanying drawings I have illustrated the jack as embodied in apparatus for raising and lowering curb sections for controlling traffic.

In the drawings—

Fig. 1 is a sectional elevation of the jack;

Fig. 2 is a partial top plan view thereof;

Fig. 3 is a sectional view similar to Fig. 1 but with the jack plunger or piston rod in uppermost position;

Fig. 4 is a fragmentary top plan view of the adjacent ends of two lengths of curb;

Fig. 5 is a section on the line 5-5 thereof;

Fig. 6 is a section on the line 6-6 thereof;

Fig. 7 is a longitudinal sectional elevation through a length of curbing;

Fig. 8 is a plan view of a casting, one of which is welded to each end of the curb sections;

Fig. 9 is a central sectional elevation of said casting;

Fig. 10 is an end view thereof;

Fig. 11 is a perspective view of a yoke; and

Fig. 12 is a perspective view of the supporting member at the upper end of each jack.

The roadway or pavement is provided with a trench or trenches running longitudinally there-

of, each of which is formed of a body of concrete having preferably undercut, inclined walls 10 lined at the opening or slot in the top with suitable metal castings 11 imbedded in said concrete. Vertical metal brackets or guides 12 are also imbedded in the concrete. Said side walls have recesses 13 in which are mounted the pipes which supply the fluid pressure, as hereinafter described. A suitable drainage trough or groove 14 is also provided in the bottom of the trench. The jacks 15, as shown in Fig. 7 are located in the trench at suitable intervals, each having a base plate 16 and an upper supporting member 17 on which rest the ends of the curb sections, each indicated as a whole by 18. Each jack is arranged to raise the adjacent ends of two curb sections. In other words, each curb section is supported at its opposite ends by two jacks and is lifted by the concurrent action of both jacks. In fact, all of the jacks for a length of curbing of several hundred feet are actuated at the same time, as hereinafter explained.

The operation of the curbs in general, and the manner in which they are used to provide roadways or traffic lanes of variable width, are the same as described in the application of Otto K. Jelinek, Serial No. 350,962, filed August 3, 1940, and issued June 23, 1942, as Patent No. 2,287,685. In fact, the general cross sectional shape of the trench, the metal liners, the guide brackets and the use of a remote control to insure that a group of curb sections several hundred feet long may be raised a few inches in advance of another group of similar curb sections in a progressive action, are substantially the same as in said prior application.

As shown in Figs. 1 and 3, the cylindrical portion of each jack contains a suitable piston 20 secured to a piston rod 24. Above said piston and spaced therefrom an appropriate distance, is a cam member for actuating a latching device, which member may have the form of a stop or disc 22 fixed to the piston rod, as for example by welding. Between the main piston 20 and the cam disc 22 is a slidably mounted piston 23 having a sleeve 24 secured to it, the upper end of which is flared outwardly to provide a second annular cam member 25. The piston 23, which may be called a supplemental piston, and its associated cam member have a limited movement up and down on the shaft but normally rest in lowermost position, as shown in Fig. 1. The cam disc 22 serves as a stop to limit the upward movement of said slidable piston and sleeve.

The upper bell-shaped portion 26 of the jack

is closed by a suitable cover 27 under which a latching device is mounted. It consists preferably of a pair of latching members 28 pivoted at 29 to the underside of the cover, each having its lower end formed with a double cam surface 30. These lower ends are normally drawn toward each other by a helical spring 31, the inward movement, however, being limited by suitable stops 32. Fluid pressure is applied beneath the piston through a suitable inlet 33 to raise said piston and its associated parts and also the curb sections until the plunger reaches an upper position in which it is held by the latching mechanism, after which the power may be shut off. To lower the curbs, fluid pressure is supplied through the upper inlet 34 to automatically release the latch and force the plunger and hence the curb, downwardly, in case it is frozen in uppermost position. After its initial downward movement, it sinks of its own weight until the parts reach the normal position shown in Fig. 1.

The operation of the latch mechanism will now be described. When the piston 23 is moved upwardly by the pressure beneath it, the sleeve 24 which rests on said piston in the position shown in Fig. 1, also moves upwardly, and the cam disc 22 above it, affixed to the piston rod 21, moves upwardly also and near the upper end of the stroke engages the lower of the double cam surfaces 30 on the pivoted latch members 28 and forces them apart, riding upwardly between them to a position somewhat above that shown in Fig. 3, in which position the cam-shaped flange 25 at the upper end of the fixed sleeve 24 has also forced its way past the lower cam ends of said pivoted latch members. Further upward movement of the piston rod being obstructed, the pressure under the piston tends to build up but is automatically released by an automatic release valve associated with the pumping mechanism, not shown herein. As soon as the pressure is released, the piston 20, the piston rod 21 and the cam disc 22 thereon move downwardly slightly, due to the weight of the parts, until said disc rests on the shoulders 35 on said latch members. Thus the plunger, and indirectly the curb ends supported thereby, engage a positive stop or stops which hold the curb in uppermost position, usually for a number of hours.

When it is desired to lower the pistons and piston rods and hence the curb sections supported thereby, fluid pressure is introduced through the upper wall 26 at the inlet port 34, exerting downward pressure on the upper face of the slidable piston 23 (see Fig. 3). Downward movement of said piston is obstructed by the upper surfaces of the double cams 30 at the lower ends of the pivoted latches 28, on which the cam-shaped flange 25 rests. The increasing pressure on said piston 23, however, forces said flange 25 downwardly, spreading apart the lower ends of the pivoted latches 28 sufficiently to release the cam disc 22. Said slidable piston 23, during its downward movement, engages the main piston 20 and forces it and the piston rod 21 downwardly. The cam disc 22, which is affixed to said piston rod, thereupon descends and immediately rides downwardly over the upper part of said cam surfaces 30, forcing them farther apart during the gradual descent of said piston rod until said disc clears the cam-shaped ends of the latches 28, after which said disc continues to descend to its initial position as in Fig. 1. The downward movement of the parts is checked by a dash pot action of the main piston 20 as it

reaches the lower part of the cylindrical structure of the jack 15. Said main piston 20 and the slidable piston 22 are provided with the necessary packing, not described in detail, to provide an effective seal.

Referring again to Fig. 6, the pipe 36 connects with the lower inlet 33 and the pipe 37 connects with the upper inlet 34, these pipes extending laterally to appropriate supply pipes 38, 39, which are positioned in one of the recesses 13 and extend longitudinally a distance corresponding to whatever length of curbing or division is controlled by a single pumping station, which division, for example, may be six hundred or more feet long. All of the jacks in a single division are actuated simultaneously, and in fact a number of divisions having an aggregate length of several miles may have controlling means causing the pumping stations to operate concurrently so that the entire length of curbing, several miles long, is raised at the same time. It is preferable, however, to begin the elevation of a series of individual curbs having an aggregate length of five hundred or six hundred feet, followed a few seconds thereafter by another group, and so on, with the result that a stepped arrangement is provided, resulting in progressive elevation of the curbing as a whole. For this purpose the pumping stations are controlled by valves and relays operating in timed relationship.

In commercial practice twenty-five feet is a convenient length for the individual curbs, one of which is shown in Fig. 7 with the adjacent ends of two others. During the interval when the curb as a whole is being raised, presenting different levels, each about two inches higher than the next level, there will be one intervening curb length between two successive levels which will have a slight incline, one end being about two inches higher than the other. This deviation is permitted by the fact that the curb ends rest on a suitable support at the upper end of each jack, and is further facilitated by the detailed end construction now described and shown in Figs. 5 and 6, as well as at the top of the structure of Fig. 3.

The plate 17, shown in Figs. 5 and 12, has a screw threaded opening 40 and screws over the reduced upper end of the piston 21. Said plate has a pair of vertical flanges 41 with inturned upper ends 42 overlying the yoke 43, which is shown also in Fig. 11.

A casting 44 is welded to each end of each length of curb, the details of said casting being shown in Figs. 8, 9 and 10. It has vertical side flanges 45 and a rib 46 on the bottom, the under surface of which is curved at 47 to provide for a rocking action (see also Fig. 3). Said yoke, with its central projection 48, has an inverted T section, as shown in Fig. 5 and Fig. 11, and rests on the adjacent end castings beneath the inwardly turned flanges 42, previously mentioned. Said yoke, which serves as a spacer, is held against longitudinal movement by square washers 49 (Fig. 4) at each end thereof which are secured by bolts 50 having, preferably, self locking threads which engage the screw threaded opening in each of the end castings (see Fig. 9). Thus the weight of one end of the curb is transmitted by the rocker surface 47 to the plate 17 which rests on the shoulder at the top of the piston rod. When the piston is forced downwardly, the overhanging flanges 42 force the yoke downwardly and this in turn draws the adjacent ends of the curbs downwardly with sufficient pressure to crush any

snow or ice which may obstruct the initial downward movement.

As shown in Figs. 5 and 6, the curb itself is made up of two vertical steel plates 51 with a connecting cross plate 52 below the top of the side plates, providing a trough which is preferably filled with paving material 53 so that the same will be flush with the surface of the roadway when the curb is in lowermost position, and will be of practically the same material. A pair of additional longitudinal bars 54 is also provided, together with suitable cross members 55, 55, providing, in effect, a notch at each end of the curb section in which the curb supporting castings are received, with the yoke 43 mounted directly over the vertical axis of the jack. The lower ends of the plates 51 have inwardly turned extensions 56 to strengthen the structure.

I claim:

1. A fluid pressure jack comprising a cylinder, a piston rod therein having a piston fixed thereon, a stop fixed to said piston rod, an unlocking collar slidable on said piston rod between said piston and said stop whereby it travels with said piston rod when engaged by said piston or stop, a yielding latching member associated with said cylinder and normally projected into the path of movement of said stop, and cooperating surfaces on said stop and latching member to retract the latter when engaged by said stop, said stop having a locking surface thereon to be engaged by said latching member to prevent return movement of said piston rod until said latching member is retracted.

2. A fluid pressure jack comprising a cylinder, a piston rod therein having a piston fixed thereon, a stop fixed to said piston rod, a collar slidable on said piston rod between said piston and said stop whereby it travels with said piston rod when engaged by said piston or stop, a yielding latching member associated with said cylinder and normally projected into the path of movement of said stop and said collar, and cooperating surfaces on said stop and said latching member to retract the latter when engaged by said stop, said stop having a locking surface thereon to be engaged by said latching member to prevent return movement of said piston rod until said latching member is retracted, said collar having an extension thereon on the side away from said piston, and said latching member having an additional cam surface positioned to be engaged by said extension to retract said latching member when said collar is forced past the same.

3. A jack comprising a cylinder having a piston therein, a piston rod having its lower end secured to said piston, a second piston above said first piston and slidable on said piston rod, a cam member secured to said piston rod above said slidable piston and a latching device at the

upper end of said cylinder, said latching device having portions to be engaged by said cam device during its upward movement to open said latch and engage the same to resist downward movement, said slidable piston having a cam device thereon which also engages said latch in said uppermost position, whereby an increase of pressure on the upper side of said piston will cause said cam device to force aside said latch and release said cam member and said piston.

4. A jack comprising a cylinder, a main piston therein, a piston rod secured thereto, a chamber comprising an upper extension of said cylinder, said rod having a sliding bearing in a wall of said chamber, a pair of pivoted latches depending from said wall, a double cam on each of said latches and a spring tending to draw said double cams toward each other, a cam disc fixed to said piston rod above said piston, a sleeve slidable on said rod and provided with a cam flange, an auxiliary piston within said cylinder and normally resting on the main piston, said double cams being disposed in the path of movement of said cam disc and pressed apart by the same and by said cam flange during the upward movement of the piston rod, whereby when the pressure beneath said main piston is released, said cam disc rests on said latches to hold said piston rod in uppermost position with said cam flange resting on the upper surfaces of said double cams, the wall of said chamber having a port therein to admit pressure above said auxiliary piston and move said flange downwardly to force said latches apart and release said cam disc and piston.

5. A jack as in claim 4 in which said latches each have a seat thereon above said double cam whereby when said latches are forced apart, said cam disc is released from the two seats of the two latches and presses against the upper of said double cam surface to force said latches farther apart.

6. A jack comprising a cylinder having a piston therein, a piston rod having one end secured to said piston, a second piston adjacent said first piston and slidable on said piston rod and normally a collar secured to said piston rod spaced from said slidable piston, and a latching device at the upper end of said cylinder, said latching device and said collar having cooperating surfaces engaged during the upward movement of said piston rod and collar to withdraw said latch and permit the same to engage said collar and prevent downward movement, said second piston having a cam device thereon which also engages said latch when in uppermost position, whereby an increase of pressure on the upper side of said piston will cause said cam device to force aside said latch and release said cam member and said piston.

ALBERT T. SCANNELL.

CERTIFICATE OF CORRECTION.

Patent No. 2,333,274.

November 2, 1943.

ALBERT T. SCANNELL.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 3, second column, lines 45 and 46, claim 6, for the words "rod and normally a collar secured to said piston rod spaced" read --rod, a collar secured to said piston rod and normally spaced--; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 4th day of January, A. D. 1944.

Henry Van Arsdale,

Acting Commissioner of Patents.

(Seal)