

Jan. 26 , 1926.

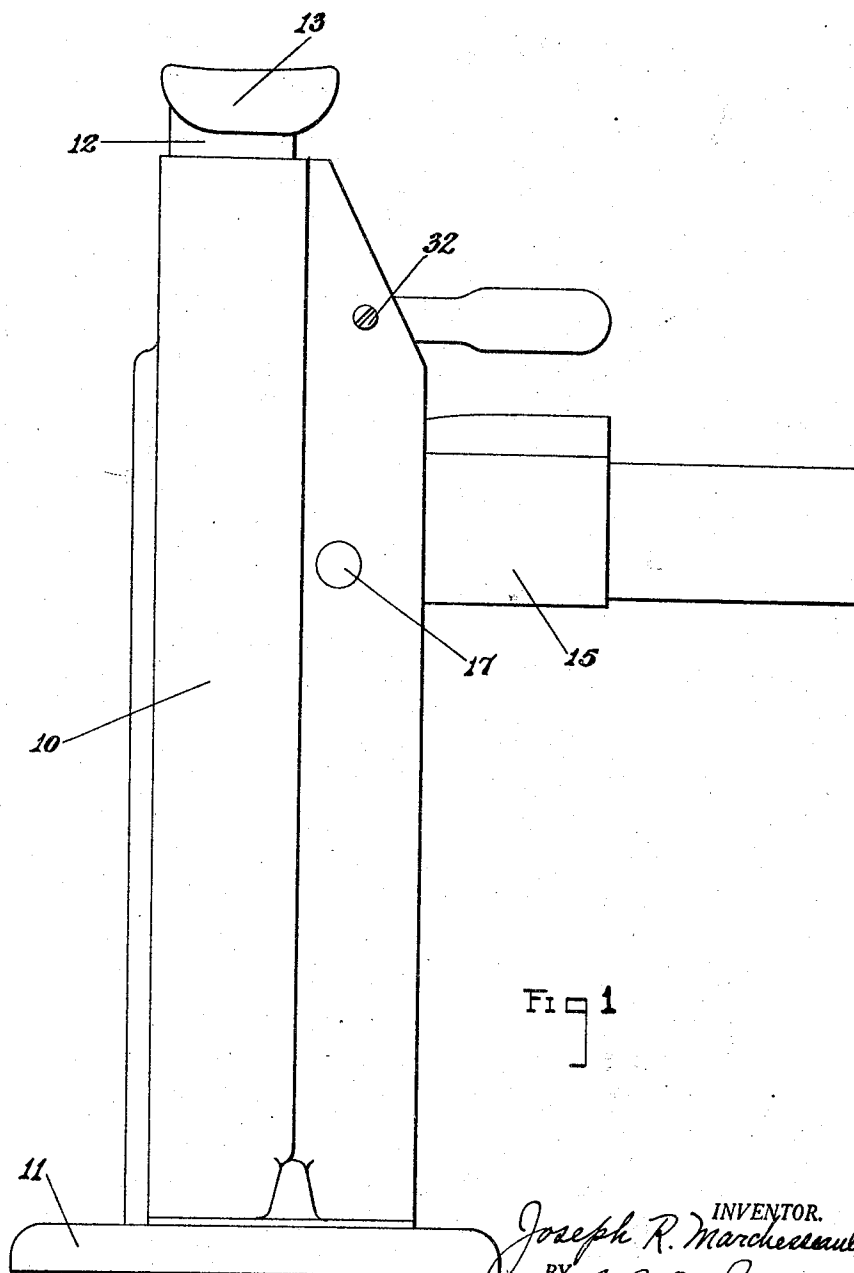
J. R. MARCHESSEAU

1,571,132

LIFTING JACK

Filed Feb. 16 , 1923

4 Sheets-Sheet 1



INVENTOR.
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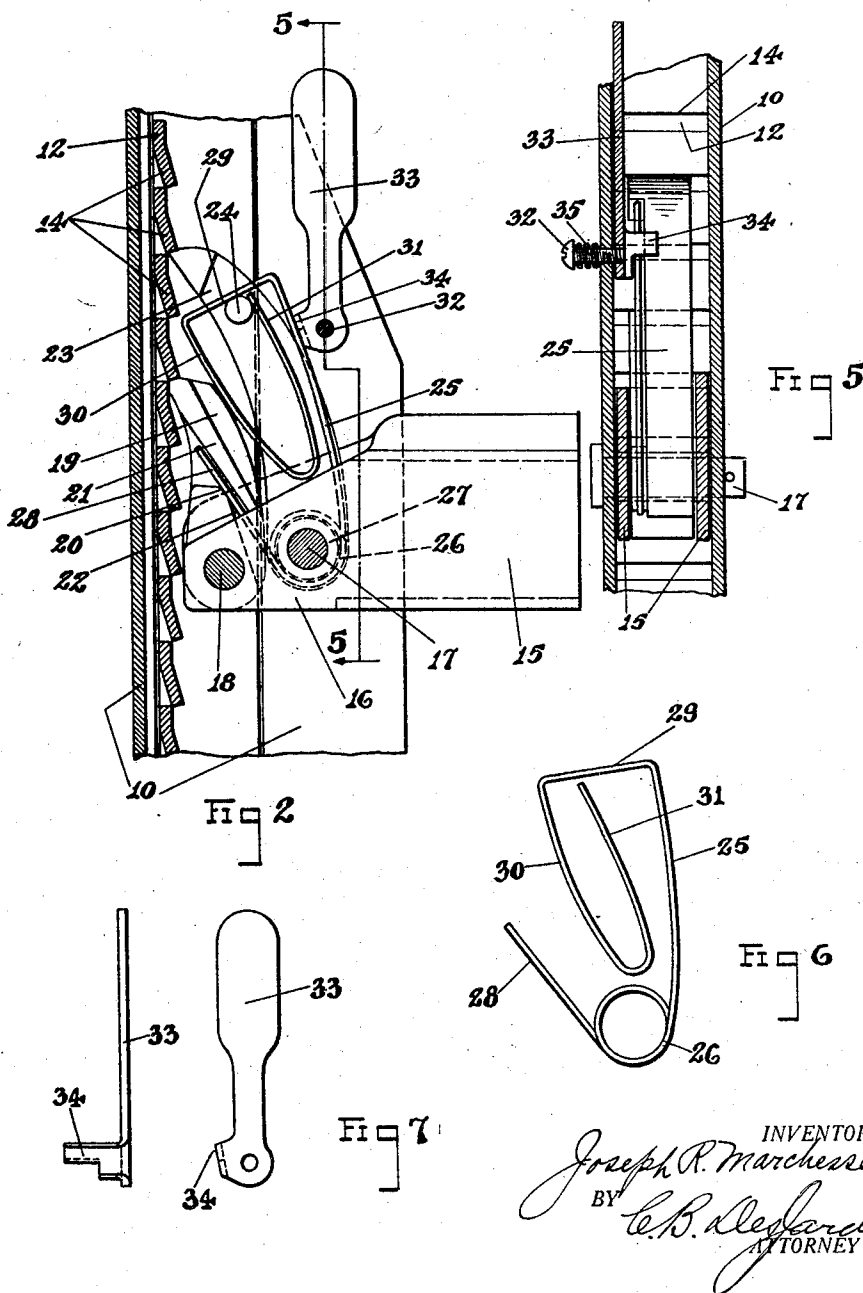
J. R. MARCHESSEAULT

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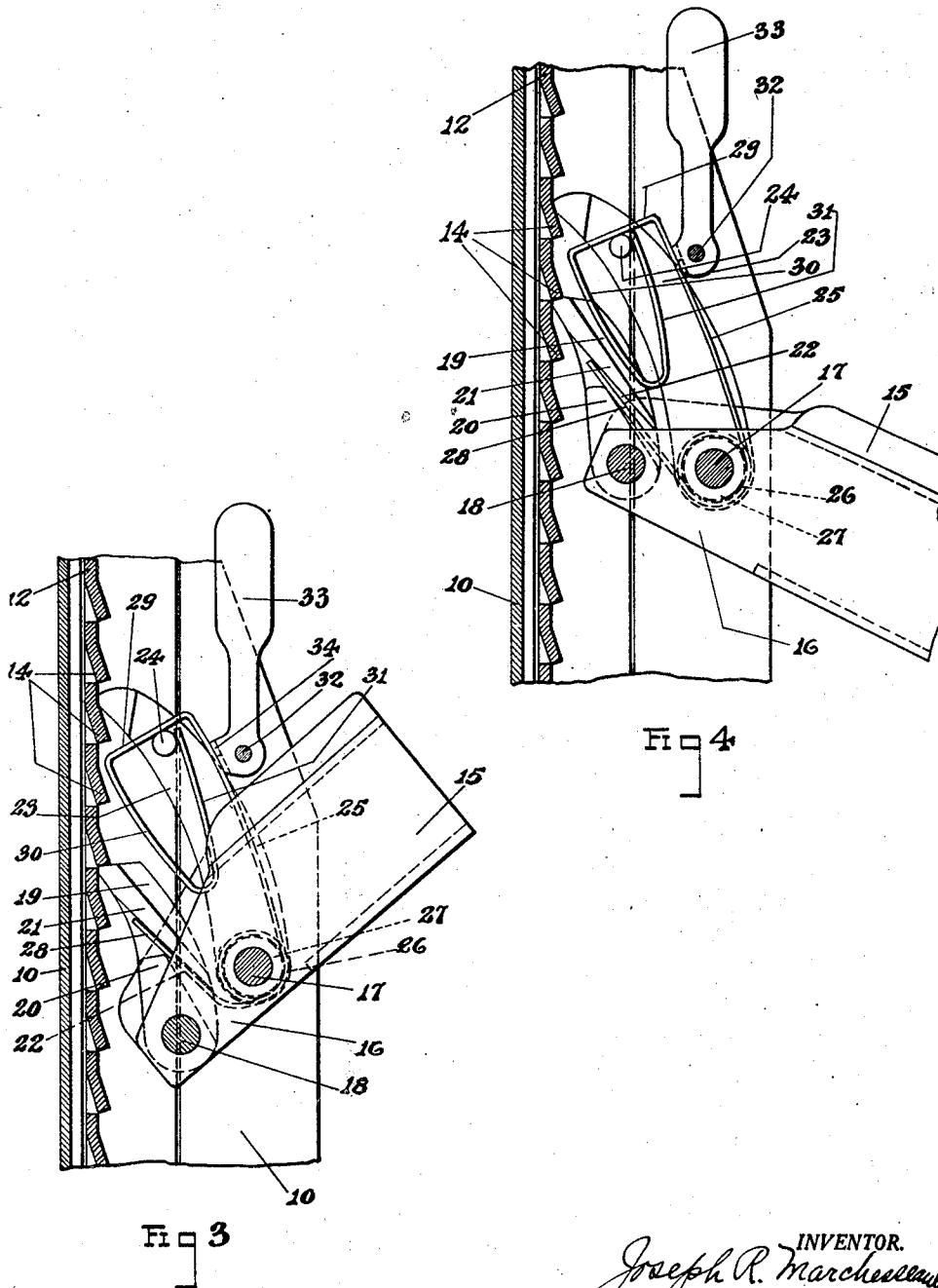
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LIFTING JACK

Filed Feb. 16, 1923

4 Sheets-Sheet 3



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LIFTING JACK

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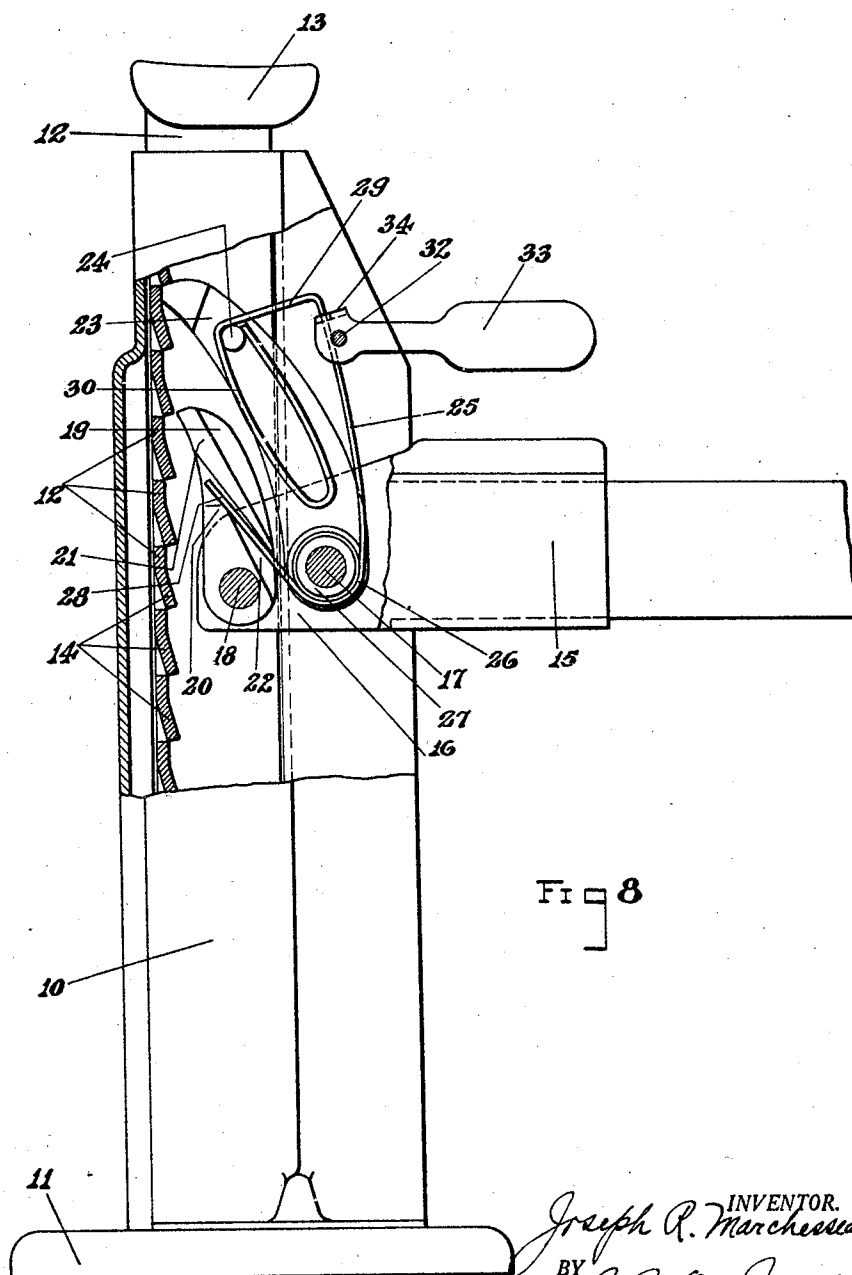


Fig 8

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UNITED STATES PATENT OFFICE.

JOSEPH R. MARCHESSEAU, OF BRIDGEPORT, CONNECTICUT, ASSIGNOR TO THE AMERICAN TUBE AND STAMPING COMPANY, OF BRIDGEPORT, CONNECTICUT, A CORPORATION OF CONNECTICUT.

LIFTING JACK.

Application filed February 16, 1923. Serial No. 619,355.

To all whom it may concern:

Be it known that I, JOSEPH R. MARCHESSEAU, a citizen of the United States, residing at Bridgeport, Connecticut, have invented certain new and useful Improvements in Lifting Jacks, of which I declare the following to be a full, clear, and exact description.

My invention relates to improvements in lifting jacks and has to do, more particularly, with jacks of the general type used in connection with automobiles.

The chief object of my invention is to provide a lifting jack of improved and simplified construction which is strong and durable in construction but comparatively light and such that it may be manufactured at a comparatively low cost.

A further object of my invention is to provide a lifting jack having pawl mechanism so arranged that the pawls, pawl-actuating spring and actuating lever may be assembled apart from the jack casing and mounted in place in the latter by a simple and convenient assembling operation, thus making the construction very cheap and easy to manufacture.

A further object of my invention is to provide a lifting jack having an improved and simplified reversing mechanism by which the parts are changed from lowering to raising position and vice versa.

A further object of my invention is to provide an improved jack construction having a single pawl-actuating spring and means whereby the change from raising to lowering position is effected by pressure applied to certain portions of the spring.

Further objects, and objects relating to details and economies of construction and operation, will definitely appear from the detailed description to follow. In one instance, I accomplish the objects of my invention by the devices and means set forth in the following specification. My invention is clearly defined and pointed out in the appended claims. A structure constituting a preferred embodiment of my invention is illustrated in the accompanying drawings, forming a part of this specification, in which:

Fig. 1 is a view of the jack in side elevation.

Fig. 2 is a fragmentary, vertical, sectional view through the jack, the pawls, pawl-actuating spring and reversing lever being shown in side elevation, the parts being in raising position.

Fig. 3 is a similar view showing the pawls at the beginning of the raising stroke.

Fig. 4 is a similar view showing the pawls in raising position.

Fig. 5 is a detail sectional view on the line 5-5 of Fig. 2.

Fig. 6 is a view of the pawl-actuating spring.

Fig. 7 is a plan and side elevation view of the reversing lever, and

Fig. 8 is a view of the jack, similar to Fig. 2, but showing the parts in lowering position.

In the drawings, the same reference numerals refer to the same parts throughout the several views and the sectional view is taken looking in the direction of the arrows at the ends of the section line.

It has been common practice, heretofore, to construct lifting jacks consisting of a casing in which a rack is slidably mounted, the rack having a head which engages beneath the part to be lifted. The rack is actuated for raising or lowering the load, due to the coaction therewith of a lifting pawl carried by the actuating lever and a holding pawl mounted on a fixed pivot. Various spring devices have been suggested which yieldingly force the pawls into engagement with the rack during the raising movement and, when the mechanism is set for lowering, intermittently throw the pawls into and out of engagement with the rack. My invention consists in mounting both the pawls and the spring which actuates them upon the actuating lever so that the pawls, spring and lever may be assembled together and then mounted in position in the jack casing. My invention further consists in a single spring, preferably mounted on the holding pawl pivot, and acting on both the lifting and holding pawls, the action of the spring upon the pawls being changed, for reversing, by pressure applied to certain portions of the spring. This spring is preferably coiled or journaled around the holding pawl pivot and has one arm which acts on the lifting pawl and another arm which embraces a

stud or projecting portion on the holding pawl. This spring has a spring and lever action, when the mechanism is set for lowering, so that the movement of the lifting pawl tends to swing the holding pawl into and out of engagement with the rack but, when pressure is applied to the spring by the reversing lever the two arms of the spring act independently to throw the pawls into engagement with the rack.

Referring to the numbered parts of the drawing, in which I have shown a lifting jack constituting one embodiment of my invention, the jack casing, 10, is fastened to the base, 11, and houses the pawls and the parts associated therewith. The rack, 12, is channel-shaped and has the teeth, 14, struck out from the base of the channel. The head, 13, is fastened to the upper end of the rack. The inner end of the actuating lever, 15, is forked and terminates in the spaced parallel plates, 16, between which the lifting and holding pawls work. The actuating lever, 15, has a socket to receive a handle constituting an extension of the lever. The lever, 15, is fulcrumed on the pivot pin, 17, which extends between and is supported by the side members of the casing, 10. The pivot pin, 17, also constitutes the fulcrum for the holding pawl, 23, which extends upwardly therefrom so that its free end is in proximity to the teeth, 14, of the rack, 12. The butt end of the pawl, 23, is positioned between the side plates, 16, of the actuating lever.

The pin, 18, carried by the inner ends of the side plates, 16, of actuating lever, 15, is the pivot on which the lifting pawl, 19, is mounted. Inasmuch as the pin, 18, is carried by the lever, 15, the pawl, 19, is raised and lowered as the handle of the lever is lowered and raised. The butt end of the pawl, 19, is positioned between the side plates, 16, of the lever and its free end extends into proximity with the rack teeth, 14, below the holding pawl, 23. One side of the pawl, 19, has a thickened portion or shoulder, 20, adjacent its pivot, and a transverse rib, 21, the rib being spaced from the shoulder so as to form the groove or slot, 22, between them. This slot, 22, receives one arm of the pawl-actuating spring.

The pawl-actuating spring is coiled around a boss, 27, formed on the holding pawl, 23, around the pivot, 17. One arm, 28, of this spring extends upwardly radially from the coiled portion, 26, and is lodged in the groove or slot, 22, of the lifting pawl, sliding therein as the pawl is raised and lowered. The opposite arm, 25, of the spring extends radially upward from the coiled portion, 26, and embraces a stud, 24, projecting laterally from the side of the holding pawl near the free end thereof. The arm, 25, extends laterally, at 29, over the

stud, 24, toward the free end of arm, 28, then downwardly, at 30, toward the pivot, 17, and is then bent back upon itself forming the free end portion, 31, which terminates adjacent the stud, 24. The portions, 30 and 31, of the spring lie on and are adapted to engage opposite sides of the stud, 24.

A reversing lever, 33, is pivotally mounted on one of the side members of casing, 10, by means of a screw, 32, which is screwed into the lever, 33, and passes through a hole in the casing, 10. A spring, 35, compressed between the head of the screw, 32, and the casing, 10, forces the lever into frictional engagement with the inner surface of the casing, so that the lever will tend to remain in the position to which it has been adjusted. The lever, 33, has a laterally extending finger, 34, near its pivot, which is so located as to engage the portion, 25, of the spring.

In assembling the jack, the pawl, 19, may be pivoted in the actuating lever, 15, the holding pawl, 23, inserted in position in the actuating lever to receive the pivot, 17, and the spring mounted on the pawls with the coiled portion, 26, journaled on the boss, 27, arm, 28, in the groove or slot, 22, and the other arm embracing the stud, 24. The parts thus assembled may be inserted in the casing as a unit and secured in place by the simple operation of inserting the pivot pin, 17. It will be observed that this makes it very easy and convenient to assemble this jack and thus reduces the cost of manufacture.

This jack construction operates in the following manner. When it is to be used for raising a load, the head, 13, is placed beneath the load to be lifted and the reversing lever, 33, is moved to the position shown in Figs. 2 and 3. In this position, the finger, 34, on the reversing lever engages the portion, 25, of the spring and exerts a pressure thereon, forcing it toward the rack. This causes the whole spring to rotate somewhat around the boss, 27, this movement being yieldingly resisted by the engagement of the arm, 28, with the shoulder, 20, and the portion, 31, with the stud, 24. When pressure is applied thus by the reversing lever, 33, to the portion, 25, of the spring, the arms, 28 and 31, act on shoulder, 20, and stud, 24, respectively, and yieldingly force the lifting and holding pawls into engagement with the rack, 12. When the parts are in the position shown in Fig. 2, the holding pawl, 23, engages one of the teeth, 14, of the rack and supports the load. If the handle fitting in the socket of the actuating lever, 15, is now raised, the pawl, 19, descends, riding over the inclined surface of one of the teeth, 14, and being forced by the pressure of the spring arm, 28, into engagement with the

lower face of said tooth. When the handle is forced down, the pawl, 19, ascends carrying with it the rack, 12, and the holding pawl, 23, rides over the inclined surface of a tooth, 14, and is forced by spring arm, 31, into engagement with the lower face of said tooth. By repeated movements of the actuating lever, the rack, 12, is raised one tooth at a time. When it is desired to lower the load, the reversing lever, 33, is turned to the position shown in Fig. 8, in which the finger, 34, does not exert pressure on the portion, 25, of the spring. In Fig. 8, the parts are shown in position for lowering and the load is carried by the lifting pawl, 19, which is in engagement with one of the teeth, 14, of the rack. As the handle of the actuating lever, 15, is raised, the pawl, 19, descends and the rack descends with it until the holding pawl, 23, engages the tooth, 14, next above it. When this occurs, the descent of the rack is interrupted and the load shifts from the lifting pawl to the holding pawl, 23. When this takes place, the pawl, 19, has moved to such position with respect to pivot, 17, that the arm, 28, of the spring engaging the rib, 21, swings the pawl, 19, away from the rack. The handle is now lowered causing the pawl, 19, to ascend and, as the pawl ascends, its movement with respect to the pivot, 17, causes the arm, 28, of the spring to press on shoulder, 20, and force the pawl, 19, into engagement with the next highest tooth of the rack. Continued upward movement of pawl, 19, lifts the rack slightly, thus shifting the load from the holding pawl. When this takes place, the lifting pawl is in such position that shoulder, 20, exerts a pressure on arm, 28, of the spring which is effective, when the load is removed from pawl, 23, to swing the spring around the boss, 27, causing portion, 30, thereof to bear on stud, 24, and move pawl, 23, away from the rack so that the latter can be lowered one tooth. In this manner, the load may be lowered step by step, one tooth at a time.

I am aware that the lifting jack illustrated herein as an embodiment of my invention may be changed or varied considerably without departing from the spirit of my invention, and, therefore, I claim my invention broadly, as indicated by the appended claims.

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

1. A lifting jack comprising a casing, a rack slidably mounted therein, an actuating lever pivoted on said casing, a lifting pawl carried by said lever and engaging said rack, a holding pawl pivoted on said casing and engaging said rack, and a single spring mounted on the holding pawl pivot only and engaging both of said pawls, said spring

being capable of assembly on the holding pawl pivot outside of the casing and subsequent mounting in the casing as a unit.

2. A lifting jack comprising a casing, a rack slidably mounted therein, an actuating lever pivoted on said casing, a lifting pawl carried by said lever and engaging said rack, a holding pawl pivoted on the actuating lever pivot and engaging said rack, and a single spring mounted on said pivot only and engaging both of said pawls.

3. A lifting jack comprising a casing, a rack slidably mounted therein, an actuating lever pivoted on said casing, a lifting pawl carried by said lever and engaging the rack, a holding pawl pivoted on the casing and engaging said rack, a single spring journaled on a common pivot with said holding pawl and engaging both of said pawls, and a reversing member movable to a position in which it engages and exerts pressure on said spring.

4. A lifting jack comprising a casing, a rack slidably mounted therein, an actuating lever pivoted on said casing, a lifting pawl carried by said lever and engaging the rack, a holding pawl pivoted on the casing and engaging said rack, a single spring journaled on a common pivot with said holding pawl and engaging both of said pawls, and a reversing lever pivoted on said casing and movable to a position in which it engages and exerts pressure on said spring.

5. A lifting jack comprising a casing, a rack slidably mounted therein, an actuating lever pivoted on said casing, a lifting pawl carried by said lever and engaging the rack, a holding pawl pivoted on the actuating lever pivot and engaging said rack, a single spring journaled around said pivot and engaging both of said pawls, and a reversing member movable to a position in which it engages and exerts pressure on said spring.

6. A lifting jack comprising a casing, a rack slidably mounted therein, an actuating lever pivoted on said casing, a lifting pawl carried by said lever and engaging said rack, a holding pawl pivoted on said casing and engaging said rack, and a single spring journaled on an axis coincident with that of the holding pawl and having one arm engaging the lifting pawl and another arm engaging opposite sides of a portion of the holding pawl near the free end thereof.

7. A lifting jack comprising a casing, a rack slidably mounted therein, an actuating lever pivoted on said casing, a lifting pawl carried by said lever and engaging said rack, a holding pawl pivoted on the casing and engaging said rack, and a single spring journaled on an axis coincident with that of the holding pawl and having one arm positioned in a slot in the lifting pawl and the other arm engaging opposite sides of a

stud on the holding pawl near the free end thereof.

8. A lifting jack comprising a casing, a rack slidably mounted therein, an actuating lever pivoted on said casing, a lifting pawl carried by said lever and engaging said rack, a holding pawl pivoted on the casing and engaging said rack, and a spring coiled around the holding pawl pivot only and having one arm engaging the lifting pawl and another arm lying alongside of the holding pawl and engaging opposite sides of a stud projecting laterally from the holding pawl.

9. A lifting jack comprising a casing, a rack slidably mounted therein, an actuating lever pivoted on said casing, a lifting pawl carried by said lever and engaging said rack, a holding pawl pivoted on said casing and engaging the rack, said pawl having a stud projecting from one side thereof, and a wire spring having a coil intermediate its ends journaled around the holding pawl pivot, one arm extending radially from said coil into engagement with the lifting pawl, and a second arm extending radially from said coil toward the free end of said holding pawl, thence extending toward the free end of the first-mentioned arm above said stud, thence extending radially toward said coil between said stud and the lifting pawl, and thence bent back upon itself to form a free end extending on the opposite side of said stud from the lifting pawl.

10. A lifting jack comprising a casing, a rack slidably mounted therein, an actuating lever pivoted on said casing, a lifting pawl carried by said lever and engaging said rack, a holding pawl pivoted on said casing and engaging said rack, a single spring journaled on an axis coincident with that of the holding pawl and having one arm engaging the lifting pawl and another arm embracing a portion of the holding pawl near the free end thereof, and a reversing member movable into engagement with said spring near the free end of the holding pawl.

11. A lifting jack comprising a casing, a rack slidably mounted therein, an actuating lever pivoted on said casing, a lifting pawl carried by said lever and engaging said rack, a holding pawl pivoted on said casing and engaging the rack, a spring coiled around the holding pawl pivot and having one arm engaging the lifting pawl and another arm lying alongside of the holding pawl and embracing a stud projecting laterally therefrom, and a reversing lever pivoted on the casing and movable to a position in which it exerts pressure on said spring adjacent the portion embracing said stud.

12. A lifting jack comprising a casing, a rack slidably mounted therein, an actuating lever pivoted on said casing, a lifting pawl carried by said lever and engaging said rack, a holding pawl pivoted on said casing and

engaging said rack, said pawl having a stud projecting from one side thereof, a wire spring having a coil intermediate its ends journaled around the holding pawl pivot, one arm extending radially from said coil into engagement with the lifting pawl, and a second arm extending radially from said coil toward the free end of said holding pawl, thence extending toward the free end of said first-mentioned arm above said stud, thence extending radially toward said coil between said stud and the lifting pawl, and thence bent back upon itself to form a free end extending on the opposite side of said stud from the lifting pawl, and a reversing member movable into engagement with the radially extending portion of said spring adjacent its junction with the portion extending above said stud.

13. A lifting jack comprising a casing, a rack slidably mounted therein, an actuating lever pivoted on said casing, a lifting pawl carried by said lever and engaging said rack, a holding pawl pivoted on the actuating lever pivot and engaging said rack, and a single spring journaled on an axis coincident with that of said pivot and having one arm engaging the lifting pawl and another arm embracing a portion of the holding pawl near the free end thereof.

14. A lifting jack comprising a casing, a rack slidably mounted therein, an actuating lever pivoted on said casing, a lifting pawl carried by said lever and engaging said rack, a holding pawl pivoted on the actuating lever pivot and engaging said rack, and a single spring journaled on an axis coincident with that of said pivot and having one arm positioned in a slot in the lifting pawl and the other arm embracing a stud on the holding pawl near the free end thereof.

15. A lifting jack comprising a casing, a rack slidably mounted therein, an actuating lever pivoted on said casing, a lifting pawl carried by said lever and engaging said rack, a holding pawl pivoted on the actuating lever pivot and engaging said rack, and a spring coiled around said pivot and having one arm engaging the lifting pawl and another arm lying alongside of the holding pawl and embracing a stud projecting laterally from the holding pawl.

16. A lifting jack comprising a casing, a rack slidably mounted therein, an actuating lever pivoted on said casing, a lifting pawl carried by said lever and engaging said rack, a holding pawl pivoted on the actuating lever pivot and engaging the rack, said pawl having a stud projecting from one side thereof, and a wire spring having a coil intermediate its ends journaled around said pivot, one arm extending radially from said coil into engagement with the lifting pawl, and a second arm extending radially from said coil toward the free end of the holding

pawl, thence extending toward the free end of the first-mentioned arm above said stud, thence extending radially toward said coil between said stud and the lifting pawl, and thence bent back upon itself to form a free end extending on the opposite side of said stud from the lifting pawl.

17. A lifting jack comprising a casing, a rack slidably mounted therein, an actuating lever pivoted on said casing, a lifting pawl carried by said lever and engaging said rack, a holding pawl pivoted on the actuating lever pivot and engaging said rack, a spring coiled around said pivot and having one arm engaging the lifting pawl and another arm lying alongside of the holding pawl and embracing a stud projecting laterally from the holding pawl, and a reversing lever pivoted on the casing and movable to a position in which it exerts pressure on said spring adjacent the portion embracing said stud.

18. A lifting jack comprising a casing, a rack slidably mounted therein, an actuating lever pivoted on said casing, a lifting pawl

pivotaly mounted on said lever and engaging said rack, said pawl having a slot in one side face thereof, a holding pawl engaging said rack and pivoted on an axis coincident with that of said lever, said pawl having a stud projecting from one side thereof, and a spring journaled around the pivot of said holding pawl and having one arm positioned in the slot of the lifting pawl and another embracing the stud on the holding pawl.

19. A lifting jack comprising a casing, a rack slidably mounted therein, an actuating lever pivoted on the casing, a lifting pawl pivotaly mounted on said actuating lever, a holding pawl having a hub portion around its pivotal axis, and a spring coiled around the hub portion of said holding pawl only and acting on both said pawls, said pawls, spring, and actuating lever being capable of assembly outside of the casing and subsequent mounting in the casing as a unit.

In testimony whereof, I affix my signature.

JOSEPH R. MARCHESSEAU.