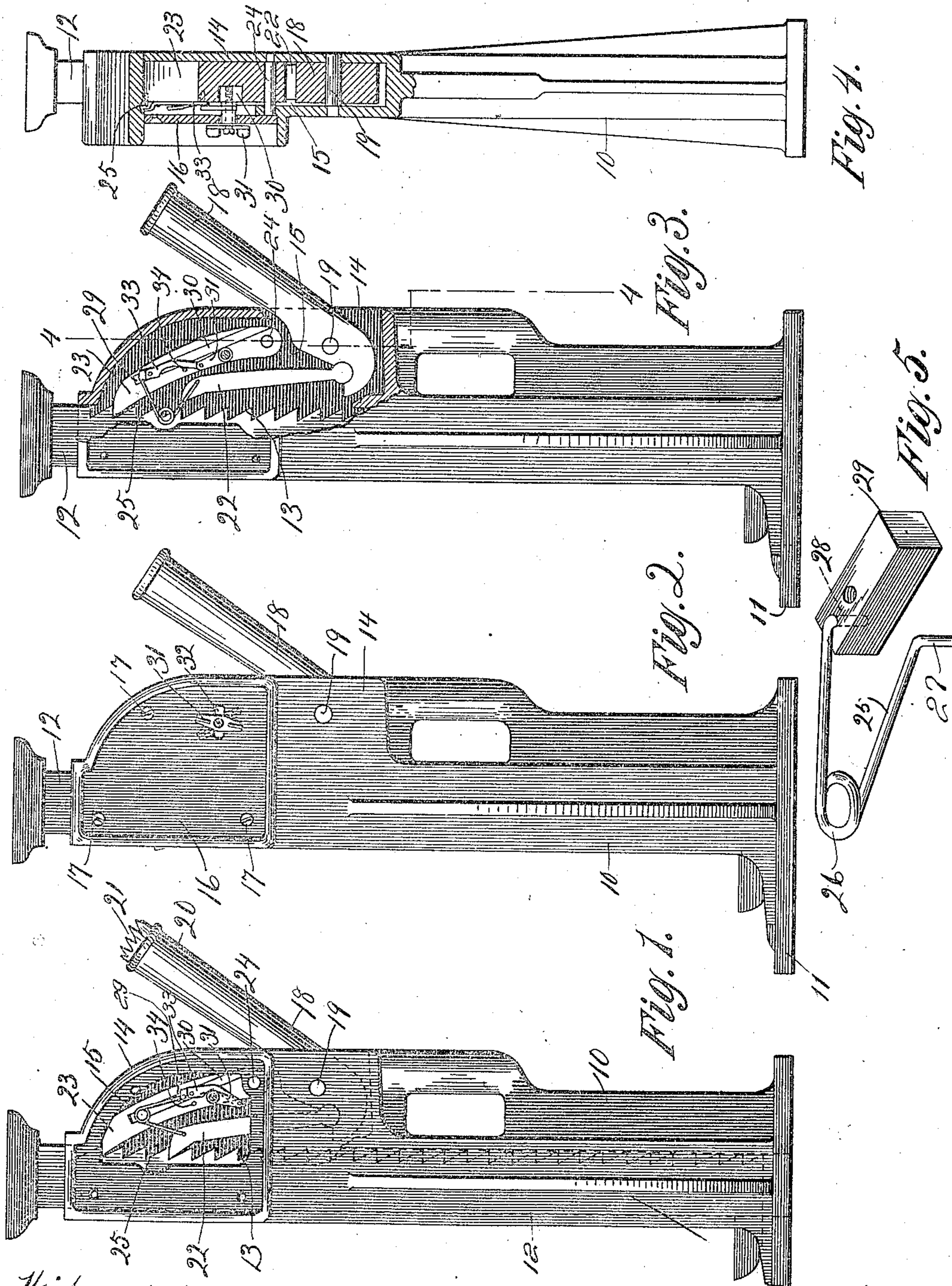


No. 812,580.

PATENTED FEB. 13, 1906.

H. M. MARSH.
LIFTING JACK.

APPLICATION FILED OCT. 4, 1905.



Witnesses:

W. H. Cotton

Charles B. Gilson

By

Louis Gilson

Inventor:

Hugh M. Marsh

Att'y.

UNITED STATES PATENT OFFICE.

HUGH M. MARSH, OF CHICAGO, ILLINOIS.

LIFTING-JACK.

No. 812,580.

Specification of Letters Patent.

Patented Feb. 13, 1906.

Application filed October 4, 1905. Serial No. 281,306.

To all whom it may concern:

Be it known that I, HUGH M. MARSH, a citizen of the United States, and a resident of Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Lifting-Jacks, of which the following is a specification, and which are illustrated in the accompanying drawings, forming a part thereof.

The invention relates to a lifting-jack of that type in which a lifting-bar which slides in a suitable standard is operated from an actuating-lever by means of a ratchet-and-pawl mechanism, and particularly to such a jack which may be employed for lowering as well as raising a load. In devices of this kind there are usually provided two pawls, one of them pivotally secured to the actuating-lever and the other, a retaining-pawl, pivotally secured to the base or standard of the device, and means are provided for controlling the movement of the pawls into and out of engagement with the ratchet-teeth of the lifting-bar to obtain the required movement. As heretofore constructed, however, the mechanism employed for moving the pawls into and out of engagement with the ratchet-bar when the device is to be used for lowering a load has included mechanically-operated parts between which there is considerable friction and which when worn by use do not move the pawls completely into engagement with the ratchet-teeth, and the operation of the device is unreliable.

The object of the present invention is to provide a jack of the type described in which the movement of the pawls is entirely controlled by means of a spring, thus insuring that they are always completely advanced to their seat.

The invention consists in a spring for uniting the pawls, in means for shifting the point of engagement of the spring with one of the pawls for the purpose of modifying the effect of the spring to obtain the required movement of the pawls for the raising and lowering operations, and in certain details of construction, all as to be hereinafter described and claimed and as illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of my improved lifting-jack, a part of the outer casing being removed to show the interior construction. Fig. 2 is a side elevation of the device with the casing intact. Fig. 3 is a view similar to

Fig. 1, but showing the parts in a different position. Fig. 4 is a sectional view taken on the line 4 4 of Fig. 3; and Fig. 5 is a detail of the device, shown in perspective.

A standard 10 is provided for the device and is of ordinary construction, preferably having a broad base 11 to take a substantial bearing upon the ground. A lifting-post or ratchet-bar 12 slides within the standard 10 and is provided with ratchet-teeth 13, formed upon one of its sides for substantially the whole of its length. The upper portion of the standard 10 is extended at one side, as indicated at 14, to provide a suitable support for the moving parts of the device and an interior chamber 15, which is normally closed by a cover-plate 16, removably attached to the standard by means of screws 17.

An actuating-lever 18 reaches into the chamber 15 and is pivotally secured to the walls of the standard at 19. The outer end of this lever is formed into a tapered socket 20 for receiving a wooden bar 21, such as usually accompanies devices of this kind. A pawl 22 is pivotally attached to the inner end of the actuating-lever 18 for engaging the ratchet-teeth 13, and there is also provided the usual retaining-pawl 23, this pawl being pivotally attached to the walls 14 of the chamber 15 at 24 and shown as engaging the ratchet-teeth 13 above the point of engagement of the pawl 22.

A spring-rod 25 is provided for controlling the movement of the pawls into and out of engagement with the ratchet-teeth 13. As shown, it is of a V shape, having a coil 26 of one or more turns formed at the point of the V to increase its flexibility and having overturned ends 27 and 28 for engaging the pawls. The overturned end 27 is applied directly to one of the pawls, as 22, being inserted in a suitable socket formed in the body of the pawl, while the end 28 of the spring engages the other pawl, as 23, through the medium of a shiftable bearing-block 29, adapted to move in a slideway 30, extending longitudinally of the pawl for a considerable portion of its length.

The bearing-block 29 may be manually shifted and locked in each of its extreme positions by means of a turn-button 31, rotatably mounted on that pawl, as 23, upon which the bearing-block slides, and projecting through a slotted aperture 32 in the cover-plate 16. A link 33 joins the bearing-block and the

turn-button, the disposition of the parts being such that either of the extreme positions of the bearing-block is self-sustaining. As shown, a stop 34, projecting from the face of the pawl in the path of the link, aids in effecting this result.

The operation of the device is as follows: When the jack is to be used for raising the load, the parts are moved to the position indicated in Fig. 1 and by full lines in Fig. 2. The shape of the spring 25 is normally such that it is slightly compressed when disposed as in Fig. 1, and the lifting-pawl 22 is thus urged into engagement with the ratchet-teeth 13 of the lifting-post when the lever 18 is in the raised position, as shown. If, now, the lever 18 is thrown down to raise the lifting-bar, the arms of the spring 25 are spread beyond their normal position as the pawl 22 rises, and when the limit of this movement has been reached the spring will be so extended as to draw the retaining-pawl 23 into engagement with the ratchet-teeth 13 to support the load, while the lever 18 is again raised to the position shown in Fig. 1 to lower the pawl 22 for a new hold upon the lifting-post. If, however, the turn-button 31 is rotated to throw the bearing-block 29 to its extreme upper position, as in Fig. 3, the arms of the spring 25 will be separated when the lifting-pawl 22 is down more than they would normally rest, and thus draw this pawl out of engagement with the ratchet-teeth 13. The lever 18 may now be moved down to raise the pawl 22 without raising the lifting-bar. Just before the pawl 22 reaches the limit of its upward movement, however, the spring 25 becomes compressed and urges the pawls apart. The pawl 22 being free moves into engagement with the ratchet-bar, and its continued upward movement raises the bar enough to release the pawl 23, which is then forced back by the spring, so that the load may descend with the pawl 22. The effect of the spring is again reversed just before the pawl 22 reaches the limit of its downward movement, and the retaining-pawl 23 being free is easily drawn into engagement with the ratchet-bar to support the load, after which the pawl 22 is immediately released by its continued downward movement and is drawn back by the spring, so that it may be raised for a new hold upon the ratchet-bar, as before, without raising the bar. It will be observed that the position of the pivot 24 of the pawl 23 is such that this pawl never comes into a vertical position, so that it is always urged by gravity into engagement with

the ratchet-bar and would support the load if the spring 25 should break at any time. 60

I claim as my invention—

1. In a lifting-jack, in combination, a standard, a lever pivoted to the standard, a ratchet-bar in sliding engagement with the standard, a pawl pivoted to the lever, a pawl pivoted to the standard, a spring connecting the pawls, and means carried by one of the named movable parts for shifting the spring. 65

2. In a lifting-jack, in combination, a standard, a lever pivoted to the standard, a ratchet-bar in sliding engagement with the standard, a pawl pivoted to the lever, a pawl pivoted to the standard, a spring having one end attached to each pawl, and means for shifting the point of attachment of the spring on one of the pawls. 75

3. In a lifting-jack, in combination, a standard, a lever pivoted to the standard, a ratchet-bar in sliding engagement with the standard, a pawl pivoted to the lever, a pawl pivoted to the standard, a pivot-block in sliding engagement with one of the pawls, a spring pivotally attached to the block and to the other pawl, and means for securing the block in an adjusted position on the pawl. 85

4. In a lifting-jack, in combination, a standard, a lever pivoted to the standard, a ratchet-bar in sliding engagement with the standard, a pawl pivoted to the lever, a pawl pivoted to the standard, a pivot-block in sliding engagement with the last-named pawl, a spring pivotally attached to the block and to the other pawl, and means for securing the block in an adjusted position on the pawl. 90

5. In a lifting-jack, in combination, a standard, a lever pivoted to the standard, a ratchet-bar in sliding engagement with the standard, a pawl pivoted to the lever, a pawl pivoted to the standard, a pivot-block in sliding engagement with one of the pawls, a turn-button pivoted to the pawl, a link connecting the turn-button and the block, and a spring pivotally attached to the block and to the other pawl. 100

6. In a lifting-jack, in combination, a standard, a ratchet reciprocating in the standard, a pair of pawls, a lever carrying one of the pawls, and a spring reacting between the two pawls and arranged to reverse its action as the lever approaches the limits of its movement. 110

HUGH M. MARSH.

Witnesses:

CHARLES B. GILLSON,
E. M. KLATCHER.