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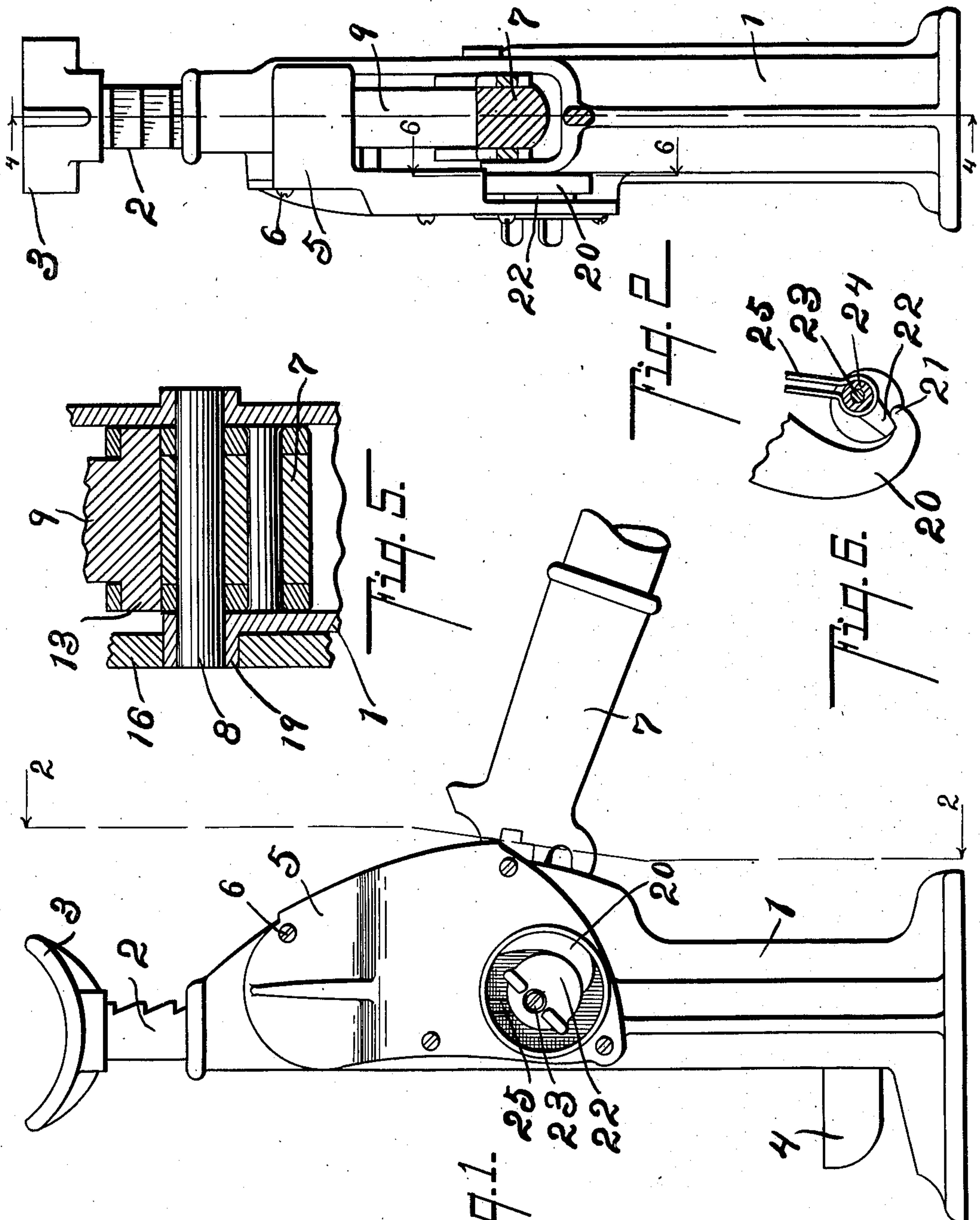
PATENTED JUNE 23, 1908.

F. C. BUTLER & E. COOK.

LIFTING JACK.

APPLICATION FILED AUG. 21, 1907.

3 SHEETS—SHEET 1.



Witnesses

Gertrude Tallman
Lulu Greenfield

By

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Fred Clayton Butler
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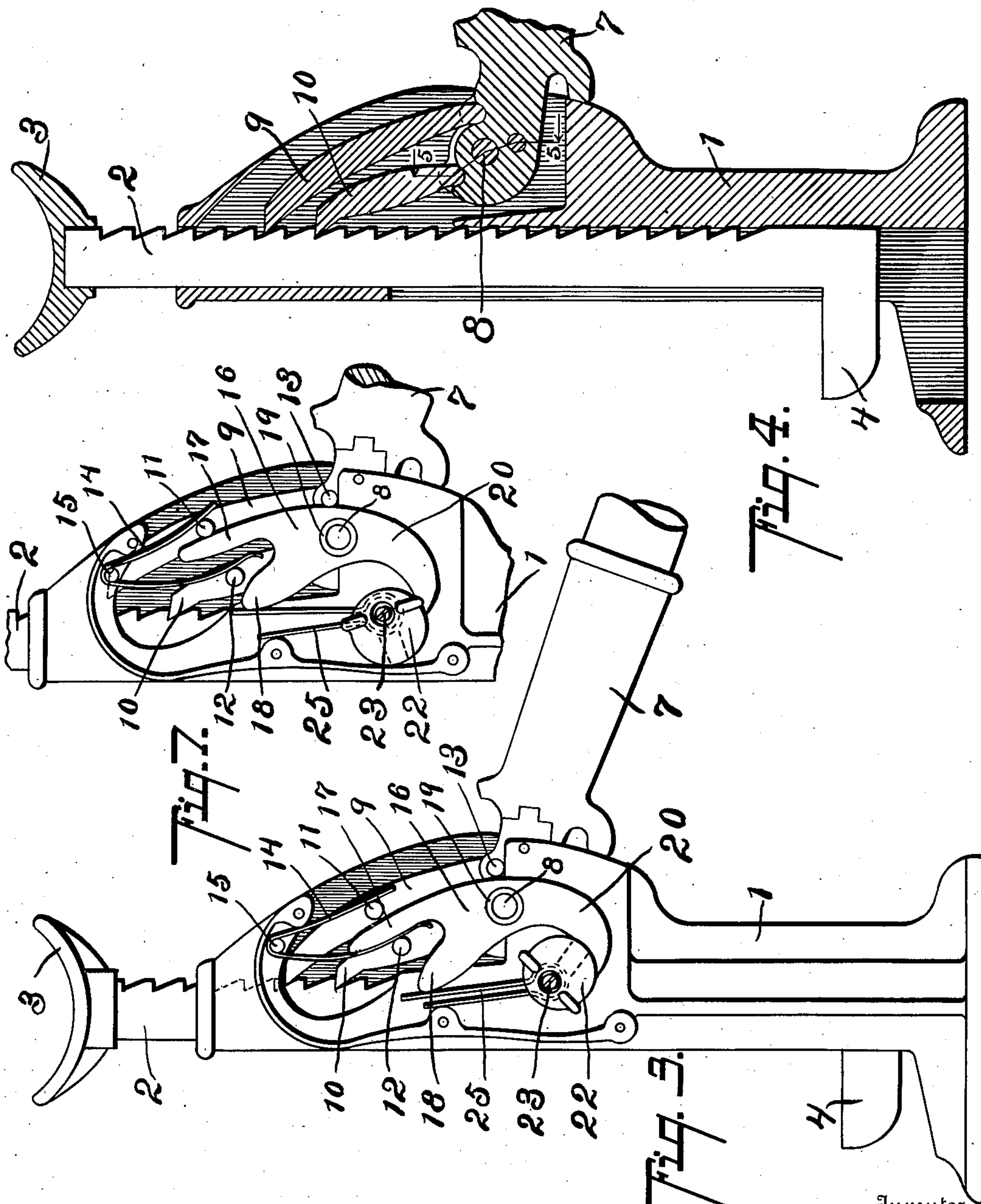
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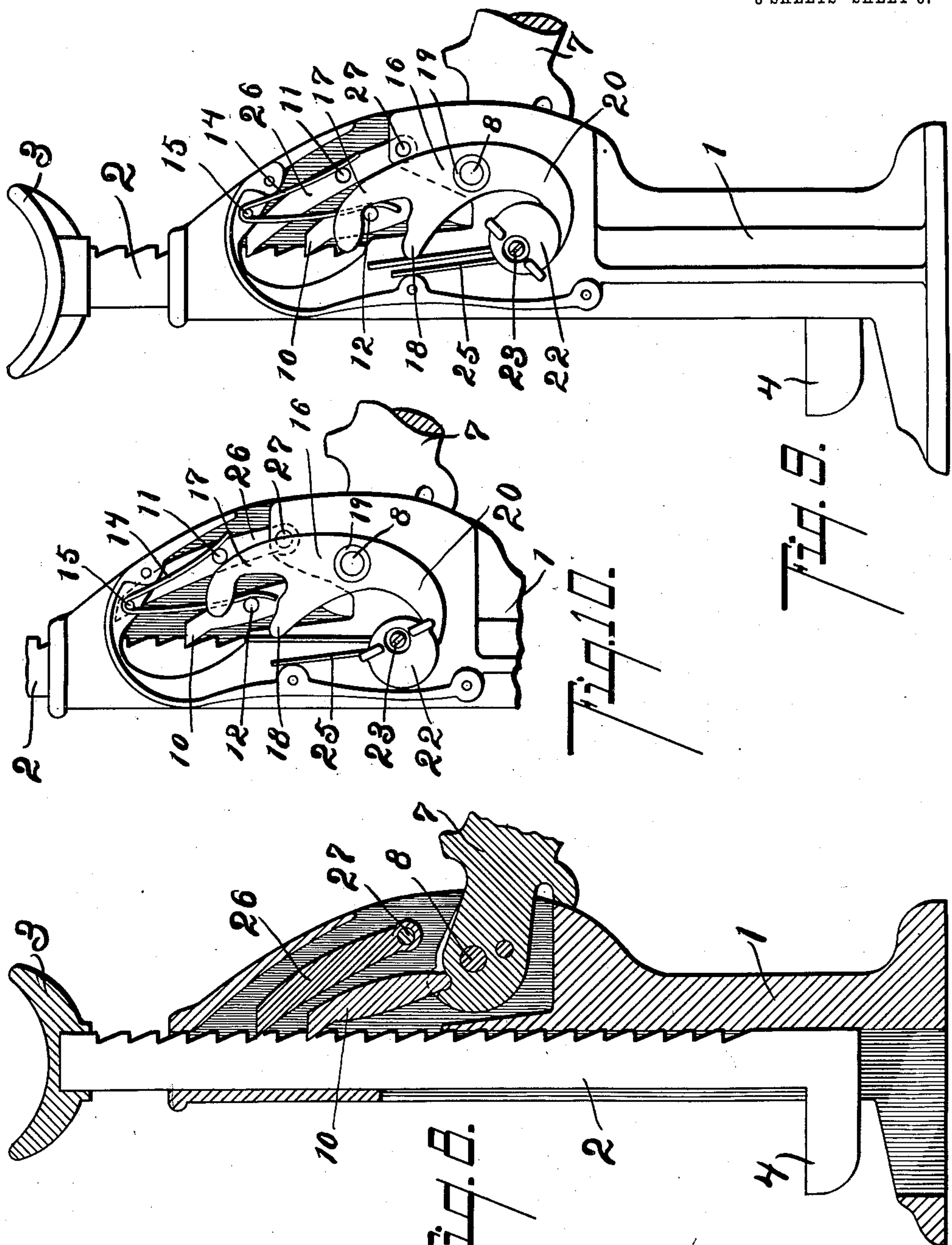
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3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

FRED CLAYTON BUTLER AND EUGENE COOK, OF KALAMAZOO, MICHIGAN; SAID BUTLER
ASSIGNOR TO COOK'S STANDARD TOOL COMPANY, OF KALAMAZOO, MICHIGAN, A COR-
PORATION OF MICHIGAN.

LIFTING-JACK.

No. 891,523.

Specification of Letters Patent.

Patented June 23, 1908.

Application filed August 21, 1907. Serial No. 389,524.

To all whom it may concern:

Be it known that we, FRED CLAYTON BUTLER and EUGENE COOK, citizens of the United States, residing at the city and county of Kalamazoo, State of Michigan, have invented certain new and useful Improvements in Lifting-Jacks, of which the following is a specification.

This invention relates to improvements in lifting jacks.

The main objects of this invention are: first: to provide an improved lifting jack which may be operated in any position; and second: to provide an improved lifting jack in which the parts are very simple and economical to produce and easily and quickly assembled, and, at the same time, one which is strong and durable in use.

Further objects, and objects relating to details of construction, will definitely appear from the detailed description to follow.

We accomplish the objects of our invention by the devices and means described in the following specification.

The invention is clearly defined and pointed out in the claims.

A structure embodying the features of our invention is clearly illustrated in the accompanying drawing forming a part of this specification, in which:

Figure 1 is a side elevation of a structure embodying the features of our invention, a portion only of the operating lever being shown; Fig. 2 is an elevation, partially in section, taken on a line corresponding to the broken line 2—2 of Fig. 1; Fig. 3 is a side elevation, corresponding to Fig. 1, the side-plate 5 being removed; Fig. 4 is a vertical central section, taken on a line corresponding to line 4—4 of Fig. 2; Fig. 5 is an enlarged detail taken on a line corresponding to the broken line 5—5 of Fig. 4, showing the structural details of the operating-lever and reversing-plate; Fig. 6 is an enlarged detail, taken on a line corresponding to the broken line 6—6 of Fig. 2, showing the structural details of the reversing-plate; Fig. 7 is a detail side elevation corresponding to Fig. 3, with the reversing-plate in its operative position, it being shown in its inoperative position in Fig. 3; Fig. 8 is a detail vertical section corresponding to Fig. 4, of a single-acting jack; Fig. 9 is a detail side elevation corre-

sponding to that of Fig. 3, of a modified construction in which we adapt and apply our invention to a single-acting jack; and Fig. 10 is a detail side elevation corresponding to Fig. 9, with the reversing-plate in its operative position.

In the drawing, the sectional views are taken looking in the direction of the little arrows at the ends of the section lines, and similar numerals of reference refer to similar parts throughout the several views.

Referring to the drawing: The frame 1 is provided with a suitable way for the rack-bar 2. The rack-bar is provided with a head 3 at its upper end, and a laterally-projecting foot 4 at its lower end. The frame is provided with a removable side-plate 5. When this plate is removed, the frame is opened up, so that the operating mechanism may be placed therein, the plate being detachably secured to the frame by means of suitable screws, as 6. The operating-lever 7 is mounted upon a suitable pivot pin 8, arranged transversely of the frame.

The lifting pawls 9 and 10 are mounted upon the operating-lever, one at each side of its pivot. These pawls are provided with laterally-projecting pins 11 and 12, which are preferably cast integral with the pawls. The pawls are provided with suitable bearing pivots 13. The pawls are held yieldingly in engagement with the rack-bar by means of the U-shaped spring 14 which is supported in an inverted position on the pin 15, projecting from the frame, the arms of the spring being arranged to engage the pins 11 and 12 on the pawls, as clearly appears from Figs. 3 and 7. This spring 14 holds the pawls in engagement with the rack-bar, so that the jack may be operated in any position. To reverse the jack, that is, to adjust it so that it lowers the load, when the lever is operated, we provide a Y-shaped reversing-plate 16, the upwardly-projecting fingers 17 and 18 of which are adapted to act upon the pins 11 and 12, respectively, of the pawls. The reversing-plate is preferably mounted upon one of the bearings 19 for the lever pivot, which projects from the frame like a boss, as clearly appears from Fig. 5. The reversing-plate is locked out of its operative position by means of the button 22, which is mounted on a suitable pivot screw as 23. This button is adapted to

engage the lower end or stem 20 of the reversing-plate, which is shaped so that as the button is turned, the reversing-plate is swung out of and locked in its inoperative position.

5 The reversing-plate is provided with a suitable stop 21 at its end for limiting the movement of the button.

The frame is provided with a suitable boss-like projection 24, on which the reversing-plate spring 25 is mounted, the pivot screw 23 for the button 22 being tapped into the boss so that the button serves to retain the spring thereon. This spring is U-shaped, its lower end being bent around the boss 24 and its arms arranged so that one engages the reversing-plate and the other the frame. This spring 25 is of sufficient strength so that in operation it overcomes the tension of the pawl springs, throwing the pawls out of engagement with the rack when they are freed from the load. The fingers of the reversing-plate, are so arranged as to act alternately on the pawls, lifting first one and then the other from engagement with the rack, when the pawls are freed from the load. The fingers of the reversing-plate are so arranged as to act alternately on the pawls, lifting first one and then the other from engagement with the rack, when the pawls are freed from the load, as stated.

In Fig. 3, we have illustrated the reversing-plate as in its locked or inoperative position, while in Fig. 7, it is in its operative position.

In the modified structure shown in Figs. 8, 9 and 10; we show our improvements adapted and applied to a single-acting jack, that is, one which is provided with only one lifting-pawl as 10, the other pawl 26 being a holding-pawl. The pawl 26 is mounted on a pivot 27 carried by the frame instead of being mounted upon the lever, as is the pawl 9 shown in the main views. The fingers of the reversing-plate are adapted to act upon the pins projecting from the pawls, substantially the same as in the main construction, but are somewhat modified in shape to properly engage and act upon the pawls in their changed relation.

Our improved jack is very simple and economical in structure and the parts may be readily assembled by an inexperienced workman. The tripping-plate and the pawl-spring 14 are held upon their pivots by means of the removable side-plate. It is obvious, however, that other means of securing them might be provided. This means, however, is of great advantage as it reduces to a minimum the number of parts, and, by removing the side-plates, the parts may be readily removed or slipped into place. By holding pawls yieldingly in engagement with the rack-bar, as by means of the spring described, the jack may be operated in any position.

Having thus described our invention, what we claim as new and desire to secure by Letters Patent is:

1. In a lifting-jack, the combination with a frame provided with a removable side-plate, of a rack-bar; a lever; a pivot for said lever arranged in suitable bearings in said frame; a pair of pawls having laterally-projecting pins thereon mounted on said lever, one at each side of its pivot; an inverted U-shaped spring, the arms of which are arranged to engage the said pins on said pawls, whereby the pawls are held yieldingly in engagement with said rack; a pin on said frame, by which said pawl spring is supported; a Y-shaped reversing-plate mounted on one of the bearings for said lever pivot, arranged so that its upwardly-projecting fingers are adapted to engage said pins on said pawls; a button arranged to engage the lower end of said reversing-plate for swinging and locking it out of its operative position; a boss on said frame; a pivot screw for said button, tapped into said boss; a U-shaped spring mounted on said boss, with one of its arms arranged to engage said reversing-plate and the other the frame, said spring being of greater strength than said spring for said pawls; a stop on said reversing-plate for said button; and means for securing said removable side-plate in position, whereby said pawl spring and said reversing-plate are retained in position.

2. In a lifting-jack, the combination with a frame provided with a removable side-plate of a rack-bar; a lever; a pivot for said lever, arranged in suitable bearings in said frame; a pair of pawls having laterally-projecting pins thereon mounted on said lever, one at each side of its pivot; an inverted U-shaped spring, the arms of which are arranged to engage said pins on said pawls, whereby the pawls are held yieldingly in engagement with said rack; a pin on said frame by which said pawl spring is supported; a Y-shaped reversing-plate mounted on one of the bearings for said lever pivot, arranged so that its upwardly-projecting fingers are adapted to engage said pins on said pawls; a button arranged to engage the lower end of said reversing-plate for swinging and locking it out of its operative position; a boss on said frame; a pivot-screw for said button, tapped into said boss; a U-shaped spring mounted on said boss, with one of its arms arranged to engage said reversing-plate and the other the frame, said spring being of greater strength than said spring for said pawls; and means for securing said removable side-plate in position, whereby said pawl spring and said reversing-plate are retained in position.

3. In a lifting jack, the combination with a frame, of a rack-bar; a lever; a pivot for said lever arranged in suitable bearings in

said frame; a pair of pawls having laterally-projecting pins thereon mounted on said lever, one at each side of its pivot; an inverted U-shaped spring, the arms of which are arranged to engage said pins on said pawls, whereby the pawls are held yieldingly in engagement with said rack; a Y-shaped reversing-plate mounted on one of the bearings for said lever pivot, arranged so that its upwardly-projecting fingers are adapted to engage said pins on said pawls; a button arranged to engage the lower end of said reversing plate for swinging and locking it out of its operative position; a boss on said frame; a pivot-screw for said button, tapped into said boss; a U-shaped spring mounted on said hub-like projecting boss, with one of its arms arranged to engage said reversing-plate and the other the frame, said spring being of greater strength than said spring for said pawls; and a stop on said reversing-plate for said button.

4. In a lifting-jack, the combination with a frame, of a rack-bar; a lever; a pivot for said lever arranged in suitable bearings in said frame; a pair of pawls having laterally-projecting pins thereon mounted on said lever, one at each side of its pivot; an inverted U-shaped spring, the arms of which are arranged to engage said pins on said pawls, whereby the pawls are held yieldingly in engagement with said rack; a Y-shaped reversing-plate mounted on one of the bearings for said lever pivot, arranged so that its upwardly-projecting fingers are adapted to engage said pins on said pawls; a button arranged to engage the lower end of said reversing-plate for swinging and locking it out of its operative position; a boss on said frame; a pivot screw for said button, tapped into said boss; and a U-shaped spring mounted on said boss, with one of its arms arranged to engage said reversing-plate and the other the frame, said spring being of greater strength than said spring for said pawls.

5. In a lifting-jack, the combination with a frame, of a rack-bar; a lever; a pivot for said lever arranged in suitable bearings in said frame; a pair of pawls having laterally-projecting pins thereon mounted on said lever, one at each side of its pivot; a U-shaped spring, the arms of which are arranged to engage said pins on said pawls, whereby the pawls are held yieldingly in engagement with said rack; a Y-shaped reversing plate mounted on one of the bearings for said lever pivot, arranged so that its upwardly-projecting fingers are adapted to engage said pins on said pawls; a button arranged to engage the lower end of said reversing-plate for swinging and locking it out of its operative position; a stop on said reversing-plate for said button; and a spring arranged to act on said reversing-plate, said spring being of greater strength

than said spring for said pawls, all co-acting for the purpose specified.

6. In a lifting-jack, the combination with a frame, of a rack-bar; a lever; a pivot for said lever arranged in suitable bearings in said frame; a pair of pawls having laterally-projecting pins thereon mounted on said lever, one at each side of its pivot; a U-shaped spring, the arms of which are arranged to engage said pins on said pawls, whereby the pawls are held yieldingly in engagement with said rack; a Y-shaped reversing-plate mounted on one of the bearings for said lever pivot, arranged so that its upwardly projecting fingers are adapted to engage said pins on said pawls; a button arranged to engage the lower end of said reversing-plate for swinging and locking it out of its operative position; and a spring arranged to act on said reversing-plate, said spring being of greater strength than said spring for said pawls, all co-acting for the purpose specified.

7. In a lifting-jack, the combination with a frame, of a rack-bar; a lever; a pair of alternately-acting pawls having laterally-projecting pins thereon; a U-shaped spring, the arms of which are arranged to engage said pins on said pawls, whereby the pawls are held yieldingly in engagement with said rack; a pivotally-mounted Y-shaped reversing-plate arranged so that its upwardly-projecting fingers are adapted to engage said pins on said pawls; means for locking said reversing-plate out of its operative position, and a U-shaped spring with one of its arms arranged to engage said reversing-plate and the other the frame, said spring being of greater strength than said spring for said pawls, all co-acting for the purpose specified.

8. In a lifting-jack, the combination with a frame, of a rack bar; a pair of alternately-acting pawls having laterally-projecting pins thereon; a spring for holding said pawls yieldingly in engagement with said rack; a pivotally-mounted Y-shaped reversing-plate, arranged so that its upwardly-projecting fingers are adapted to engage said pins on said pawls; a button arranged to engage the lower end of said reversing-plate for locking it out of its operative position; a stop on said reversing-plate for said button; and a spring arranged to act on said reversing-plate, said spring being of greater strength than said spring for said pawls, all co-acting for the purpose specified.

9. In a lifting jack, the combination with the frame, of a rack bar; a pair of alternately acting pawls having laterally-projecting pins thereon; a spring for holding said pawls yieldingly in engagement with said rack; a pivotally-mounted reversing plate adapted to alternately engage said pins on said pawls; a spring arranged to actuate said reversing

plate, said spring being of greater strength than the spring for said pawls; and a button arranged to engage said reversing plate for locking it out of its operative position against the tension of said actuating spring therefor, all co-acting for the purpose specified.

10. In a lifting jack, the combination with a frame, of a rack bar; a pair of alternately acting pawls; a spring for holding said pawls yieldingly in engagement with said rack; a pivotally-mounted reversing plate adapted to alternately act on said pawls; a spring arranged to actuate said reversing plate, said

spring being of greater strength than said spring for said pawls; and means for locking said reversing plate out of its operative position against the tension of said actuating spring therefor. 15

In witness whereof, we have hereunto set our hands and seals in the presence of two witnesses.

FRED CLAYTON BUTLER. [L. S.]
EUGENE COOK. [L. S.]

Witnesses:

CHARLES A. MERRELL,
GERTRUDE TALLMAN.