

No. 830,659.

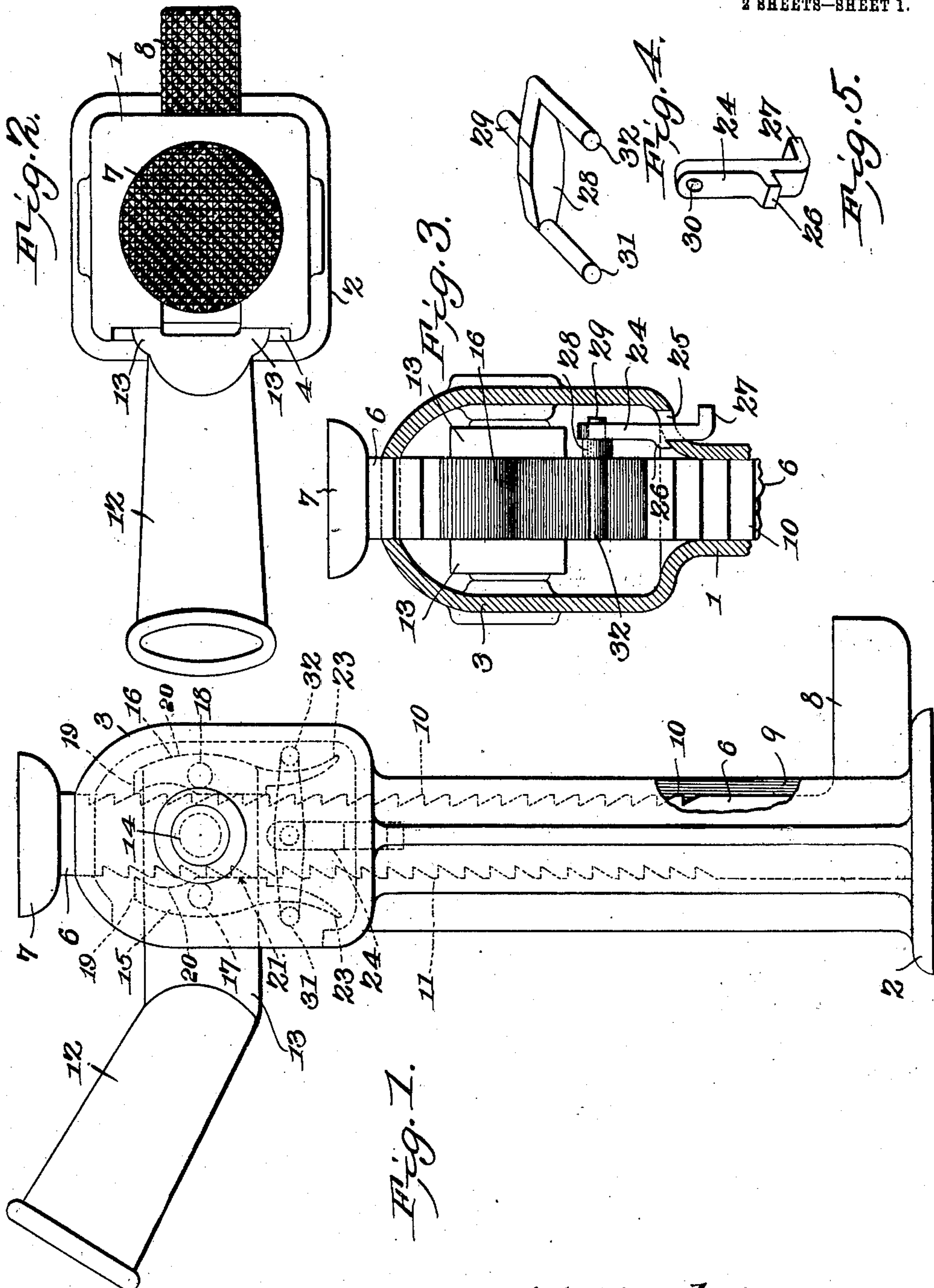
PATENTED SEPT. 11, 1906.

J. C. GEBHART.

LIFTING JACK.

APPLICATION FILED DEC. 29, 1905.

2 SHEETS—SHEET 1.



WITNESSES:

E. J. Bennett
H. A. Shepard

John C. Gebhart,

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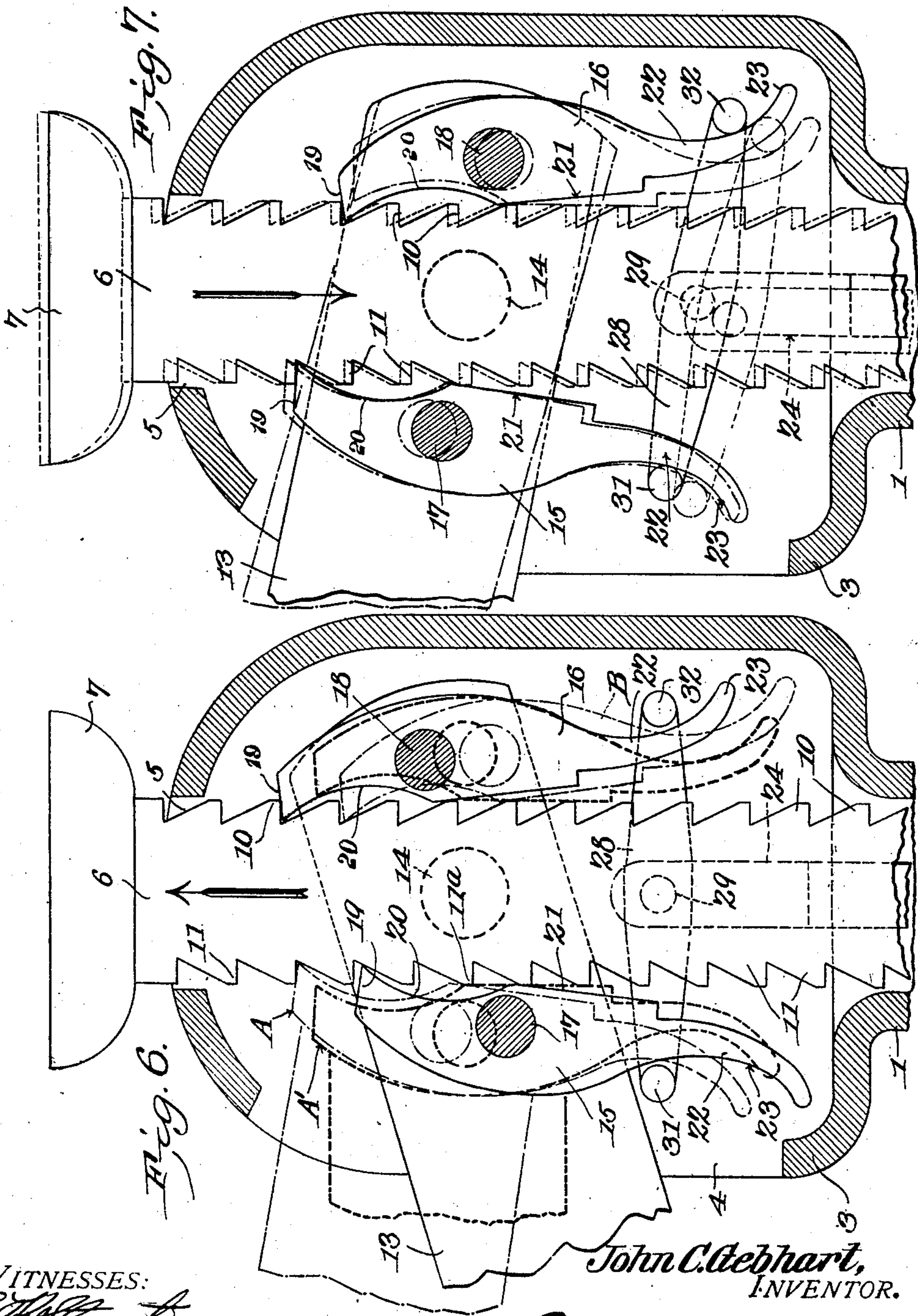
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UNITED STATES PATENT OFFICE.

JOHN C. GEBHART, OF EAST POINT, GEORGIA, ASSIGNOR TO ATLANTA UTILITY WORKS, INC.

LIFTING-JACK.

No. 830,659.

Specification of Letters Patent.

Patented Sept. 11, 1906.

Application filed December 29, 1905. Serial No. 293,860.

To all whom it may concern:

Be it known that I, JOHN C. GEBHART, a citizen of the United States, residing at East Point, in the county of Fulton and State of Georgia, have invented a new and useful Lifting-Jack, of which the following is a specification.

This invention relates to lifting-jacks, and has for its object to provide an improved jack of the double-acting type wherein the prompt and effective operation of the dogs or pawls is insured without the employment of springs and in this connection to provide for positively throwing the pawls into and out of engagement with the teeth of the lifting-bar, so as to successively travel from one tooth to another in a very simple and satisfactory manner.

A further object of the invention is to provide for conveniently and effectively tripping the dogs or pawls from the teeth when lowering the bar by the manipulation of a lever, and also to provide for holding both pawls or dogs out of engagement with the bar when it is desired to quickly lower the latter.

With these and other objects in view the present invention consists in the combination and arrangement of parts, as will be hereinafter more fully described, shown in the accompanying drawings, and particularly pointed out in the appended claims, it being understood that changes in the form, proportion, size, and minor details may be made within the scope of the claims without departing from the spirit or sacrificing any of the advantages of the invention.

In the drawings, Figure 1 is a side elevation of a lifting-jack embodying the features of the present invention, the internal mechanism of the jack being shown by dotted lines. Fig. 2 is a top plan view thereof. Fig. 3 is a detail sectional view on the line 3-3 of Fig. 1. Figs. 4 and 5 are detail perspective views of the elements of the dog-tripping device. Fig. 6 is an enlarged detail view with the standard broken away to show the operation of the dogs in conjunction with the teeth of the lifting-bar. Fig. 7 is a similar view illustrating the manner of lowering the bar.

Like characters of reference indicate corresponding parts in each of the several figures of the drawings.

The present device includes a hollow standard 1, provided with a broad flat base 2 to in-

sure a stable support therefor, the upper end of the standard being enlarged, as at 3, and provided in its back with an upright slot or opening 4, there being a central opening 5 in the top of the enlargement through which works the lifting-bar 6. Upon the upper end of the bar there is a broad head 7, and the lower end of the bar is provided with a laterally-directed foot 8, working in the vertical slot 9 in the front of the standard. The front edge of the lifting-bar is provided with a vertical series of ratchet-teeth 10, which are staggered with respect to the ratchet-teeth 11, provided upon the rear edge of the bar. It will here be noted that the outer end of each ratchet-tooth is flattened or rounded, so as to avoid a sharp edge, which might bite into one of the dogs or pawls, as will be appreciated as the nature of the invention is more fully understood.

The operating-lever is in the nature of a casting including a socket 12, which is provided at its forward end with a fork 13, set at an angle to the socket and working in the opening 4 in the back of the standard. The outer end of the socket is open to receive a suitable handle, (not shown,) while the fork straddles the lifting-bar and has each member pivoted upon a trunnion or pivot-pin 14, piercing the adjacent side of the enlarged portion 3 of the standard.

The lever is equipped with a pair of dogs 15 and 16, mounted within the fork upon the respective pivots 17 and 18 and lying, respectively, at the front and rear of the lifting-bar for coöperation with the ratchet-teeth thereof. These dogs are duplicates in structure and operation, and therefore a description of one of them is deemed sufficient. Each dog is pivoted above its middle, so as to hang vertically when not engaged with the lifting-bar. The top 19 of the dog is flat and occupies a substantially horizontal position when the dog is out of engagement with the lifting-bar. The upper inner side of the dog is concaved, as at 20, downwardly to a point in alignment with the center of the pivotal support of the dog. From the lower end of the concaved portion there is a straight flat portion 21, which stands vertical when the dog is out of engagement with the lifting-bar. The lower end portion 22 of the dog is reduced in width and is inclined or flared outward, its outer side being concaved and its inner side convexed.

The successive positions of the dogs in the operation of the lifting-jack have been shown in Fig. 6 of the drawings. Starting with the lever in an elevated position, the dog 15 will be elevated and in engagement with one of the teeth 11, as indicated by the dot-and-dash position of the dog, which will be designated A, while the dog 16 will be depressed to the dot-and-dash position indicated at B, with its upper end in engagement with one of the teeth 10. By pressing down upon the lever, which swings upon its fulcrum 14, the bar will be elevated by the elevation of the dog 16, while the dog 15 will travel downwardly and disengage the adjacent tooth. In the position A the straight inner side 21 of the dog has its upper end engaged with the outer end of one of the teeth 11^a, from which it inclines outwardly. As the dog travels downwardly it also moves away from the lifting-bar upon the arc described by its pivot 17, and its straight inner edge rocks upon the tooth 11^a until the lever assumes a horizontal position. During this downward movement of the dog the lifting-bar has been elevated by the dog 16, whereby the weight of the bar will be relieved from the dog 15 and the latter will gravitate into an upright position, as indicated by the dotted position designated A'. In this position of the dog the center of its pivotal support 17 will be in horizontal alinement with the adjacent tooth 11^a, and as the dog continues to move downward, and of course inwardly toward the lifting-bar, its straight inner edge 21 will pass below the tooth 11^a and the next below teeth will press outwardly upon the dog below its pivotal support, and thereby swing its upper end into engagement with one of the teeth 11. Upon lifting the lever the bar will be lifted with the dog 15, while the dog 16 will pass through the successive movements occasioned in the same manner as described for the dog 15.

From the foregoing description of the operation of the dogs it is apparent that they work successively to elevate the lifting-bar and are positively actuated by the lifting-bar, so as to insure prompt and effective engagement and disengagement of the dogs with respect to the bar without employing springs or other extraneous means for swinging the dogs upon their pivotal supports. The movement of each dog is controlled by the engagement of its flat face 21 with the lifting-bar, and therefore its movement is prompt and positive and there can be no slipping of the dog by the failure of some part to properly perform its functions.

By reason of the fact that the dogs are housed within the enlargement 3 of the standard it is impossible to have access thereto for tripping the same in lowering the bar, wherefore I have provided means which is accessible from the exterior of the standard for tripping the dogs. This means includes an upright

bracket-arm 24, which extends through an opening 25 in the bottom of the enlarged portion 3 at one side of the lifting-bar and midway between its toothed edges. Upon the inner side of this bracket-arm there is a projection or shoulder 26, designed to rest upon the bottom of the enlargement, so as to support the bracket-arm in an upright position. The lower exposed end of the bracket-arm is provided with a flange or laterally-directed foot 27, forming a handle whereby the bracket may be lifted and then moved laterally to permit dropping thereof downwardly through the opening 25. It will of course be understood that the opening 25 is wider than the bracket 24 and the shoulder or projection 26, so as to permit of the latter passing downwardly through the opening. A rocking cross-head 28 is supported upon the top of the bracket-arm by means of a bearing-pin or stud 29, carried by the cross-head midway of its ends and rotatably received within an opening 30 in the top of the bracket-arm. At opposite ends of the cross-head are fingers 31 and 32, which lap the outer sides of the respective dogs in position to cooperate with the downwardly-directed tailpieces thereof. It will here be explained that in the normal condition of the lifting-jack the dog-tripping device is in the position shown in Figs. 3 and 6, with the fingers 31 and 32 spaced beyond the outward limits of the tailpieces of the dogs, so as not to interfere therewith in their up-and-down and swinging movements.

When it is desired to lower the lifting-bar with a step-by-step movement, the bracket-arm 24 is dropped down through the opening 25, so as to have the fingers 31 and 32 hang upon the concaved faces of the tailpieces of the dogs. With the lever, dogs, and dog-tripping device in the position shown by full lines in Fig. 7 of the drawings, the lever is first elevated slightly to the dot-and-dash position, whereby the lifting-bar will be slightly elevated and the weight of the bar relieved from the dog 16. As the dog-tripping device hangs upon the tailpieces of the two dogs and the dog 16 is relieved of the weight of the lifting-bar, the weight of the dog-tripping device will swing the dog 16 into an inoperative position. (Shown by the dot-and-dash lines.) The lifting-bar can be lowered by lowering the lever until the dog 16 engages the next above tooth, which it is compelled to do by reason of the action of its straight inner face portion 21 upon the adjacent toothed edge of the lifting-bar.

Having thus described the invention, what is claimed is—

1. A lifting-jack having a lifting-bar provided upon opposite sides with ratchet-teeth, a lever, and dogs pivoted upon the lever in cooperative relation to the respective sets of ratchet-teeth, each dog having a portion to cooperate with the lifting-bar and positively

engage and disengage the dog with respect to the teeth.

2. A lifting-jack having a lifting-bar provided on opposite sides with teeth, a lever, and dogs pivoted upon the lever in cooperative relation with the respective sets of teeth, each dog having its inner face concaved above its pivot and provided with a straight inner portion extending downwardly from its pivot and disposed in an upright position when the dog is free from the lifting-bar, said straight portion being disposed to work over the teeth of the lifting-bar to positively engage and disengage one of the free ends of the dog with respect to the teeth.

3. A lifting-jack having a lifting-bar provided with teeth, a lever, and a dog pivoted upon the lever for cooperation with the teeth, said dog having a portion to work over the teeth and positively engage and disengage the dog with respect to the teeth.

4. A lifting-jack having a lifting-bar provided with teeth, a lever, and a dog pivoted upon the lever with its upper free end in cooperative relation with the teeth, the inner face of the dog being concaved above its pivotal support, and said inner face having a straight portion extending downwardly from the pivot and disposed in vertical position when the upper free end of the dog is disengaged from the teeth, said straight portion being disposed to work over the teeth of the bar and positively engage and disengage the upper free end of the dog with respect to the teeth.

5. A lifting-jack comprising a hollow standard, a lifting-bar working in the standard and provided upon its sides with ratchet-teeth, a forked lever straddling the lifting-bar, and dogs pivoted within the fork at opposite sides of the lifting-bar with their upper ends in cooperative relation with the respective sets of teeth, the upper inner face of each dog being concaved above its pivotal support, said inner face being straight from the pivotal support downward and disposed to lie in a vertical position when the dog is disengaged from the teeth, said straight portion also being disposed to work over the teeth and positively engage and disengage the up-

per free end of the dog with respect to the teeth.

6. A lifting-jack having a lifting-bar, a lever, a pair of pivotal dogs carried by the lever and cooperating with the lifting-bar, and dog-tripping means normally supported in an elevated inoperative position and capable of being dropped to hang upon the dogs and successively trip the same.

7. A lifting-jack having a lifting-bar, a lever, a pair of dogs fulcrumed upon the lever at opposite sides of the lifting-bar for cooperation therewith, and dog-tripping means including a cross-head having pins lapping the outer sides of the dogs, said cross-head being normally supported in an elevated position with the fingers out of the path of the dogs and capable of being dropped with the fingers embracing and hanging upon the dogs to automatically and successively trip the latter.

8. A lifting-jack comprising a hollow standard having an enlarged portion, a lifting-bar working through the enlarged portion of the standard, a lever fulcrumed within the enlarged portion of the standard, dogs carried by the lever at opposite sides of the lifting-bar in cooperative relation with the latter, the bottom of the enlarged standard portion having an opening, a bracket member extending through said opening and provided with a shoulder to rest upon the bottom of the enlarged standard portion for the support of the bracket, the bracket capable of being moved laterally and dropped through the opening, a cross-head carried by the bracket and provided with spaced fingers spanning the dogs and normally out of engagement therewith, said fingers capable of engaging the dogs and hanging thereon when the bracket is dropped through the opening, whereby the weight of the cross-bar and fingers automatically and successively trip the dogs.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

JOHN C. GEBHART.

Witnesses:

H. MIMS,
D. C. LYLE.