

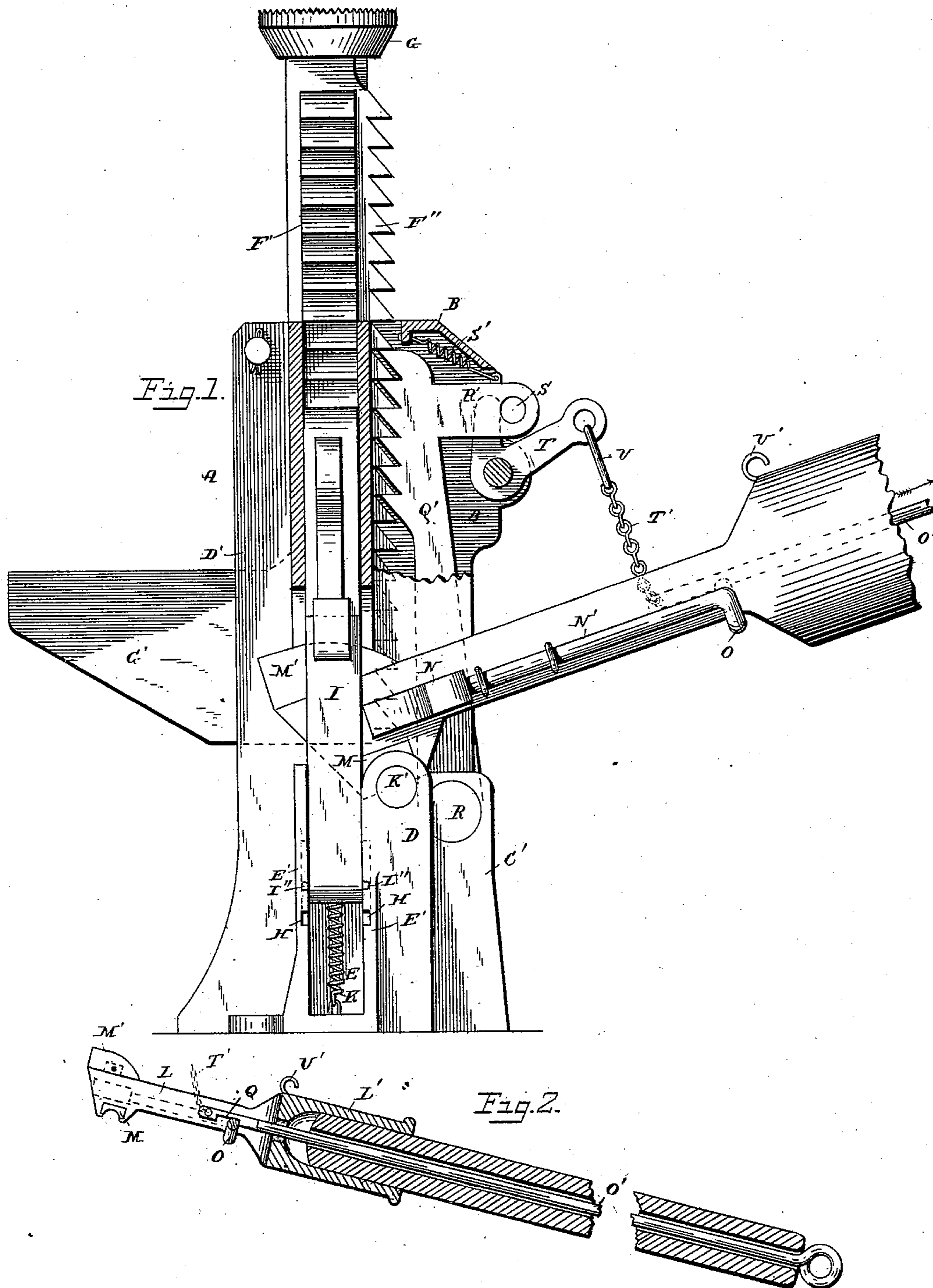
(No Model.)

3 Sheets—Sheet 1.

F. JORDAN.  
LIFTING JACK.

No. 355,323.

Patented Jan. 4, 1887.



WITNESSES

Edwin L. Bradford

Geo F. Broth,

INVENTOR

Frank Jordan,  
By Paulmin & Jones,  
his Attorneys.

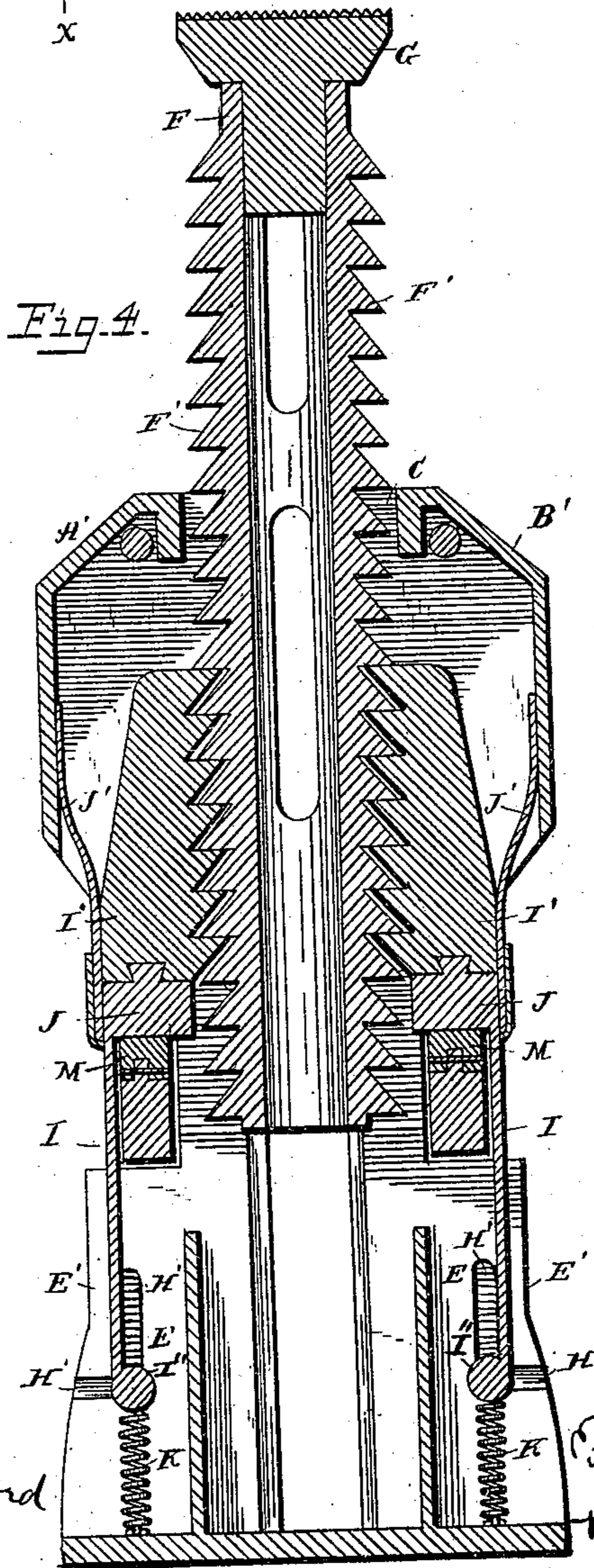
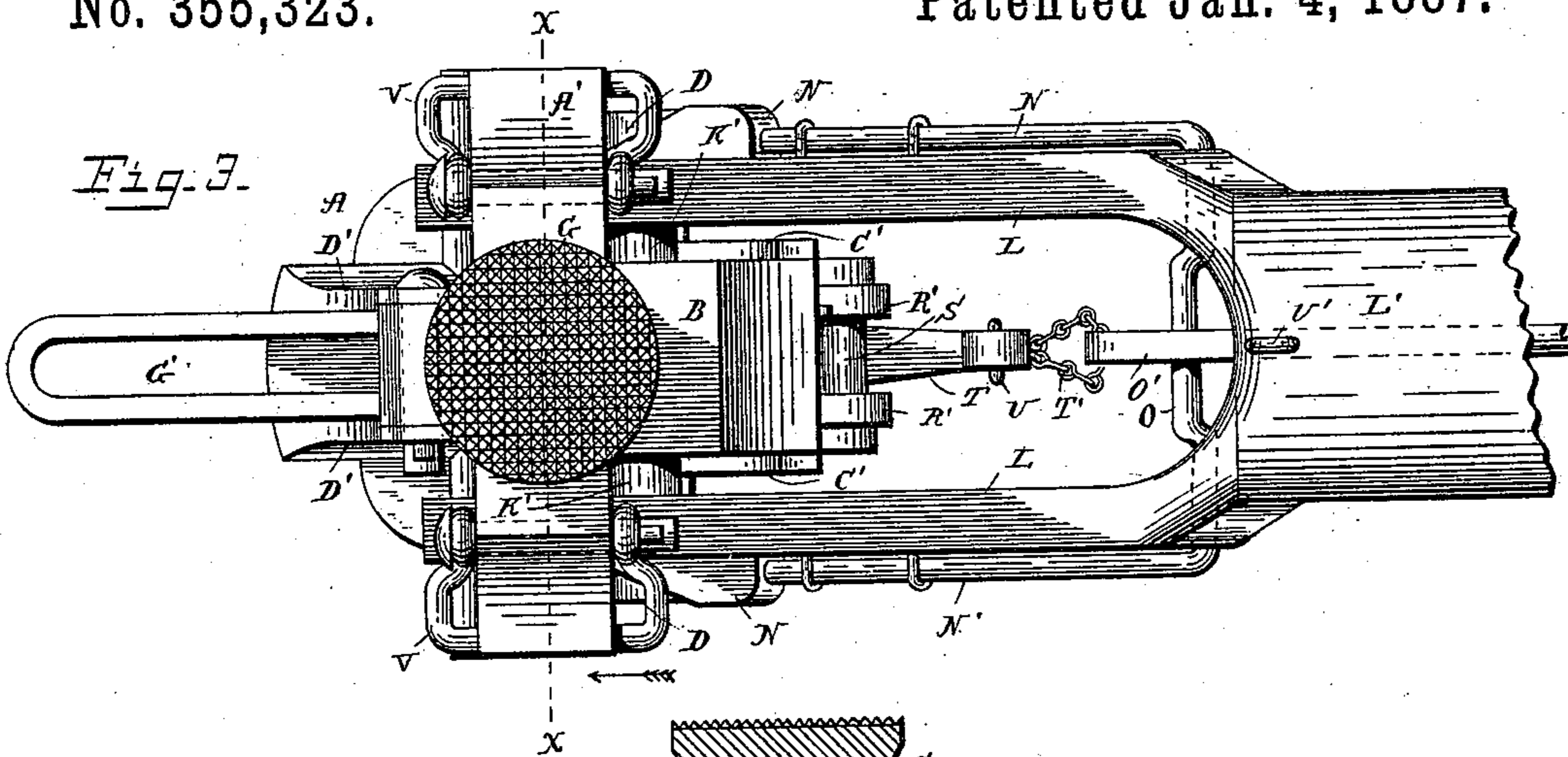
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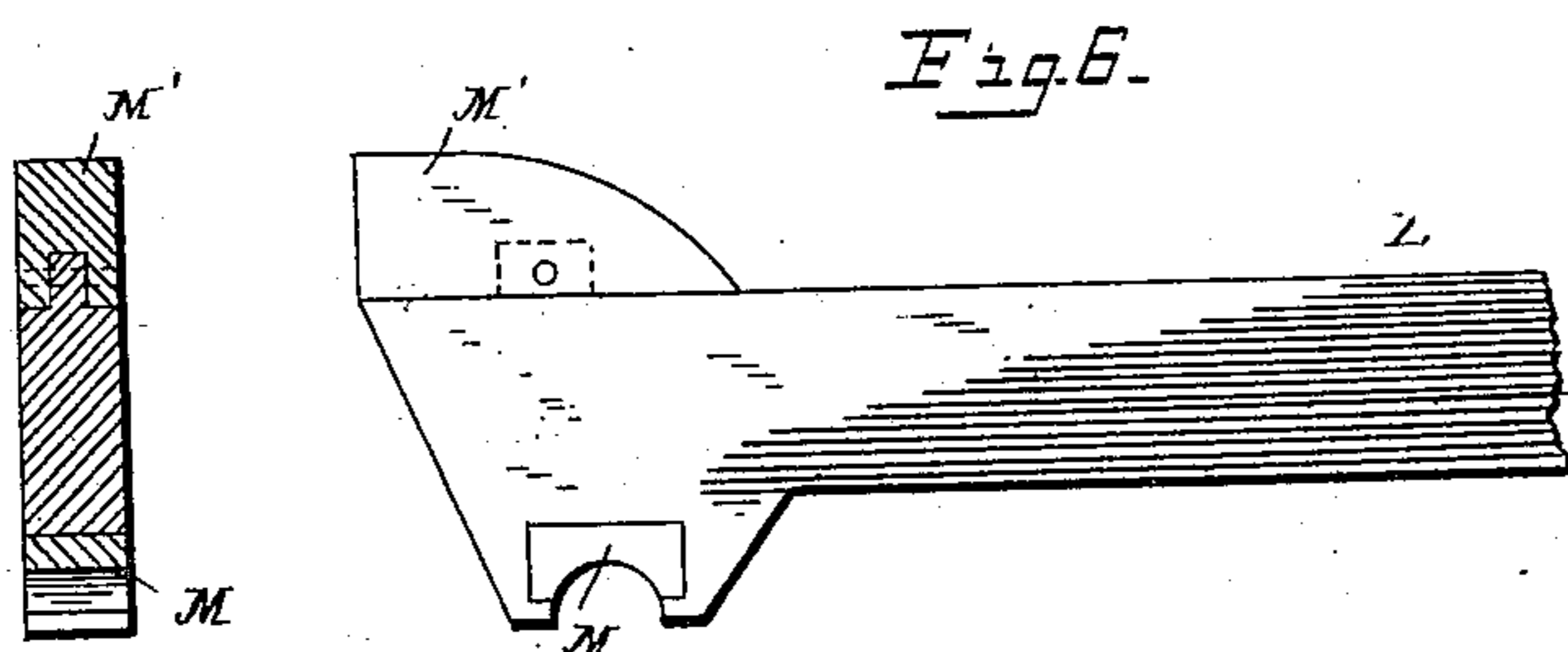
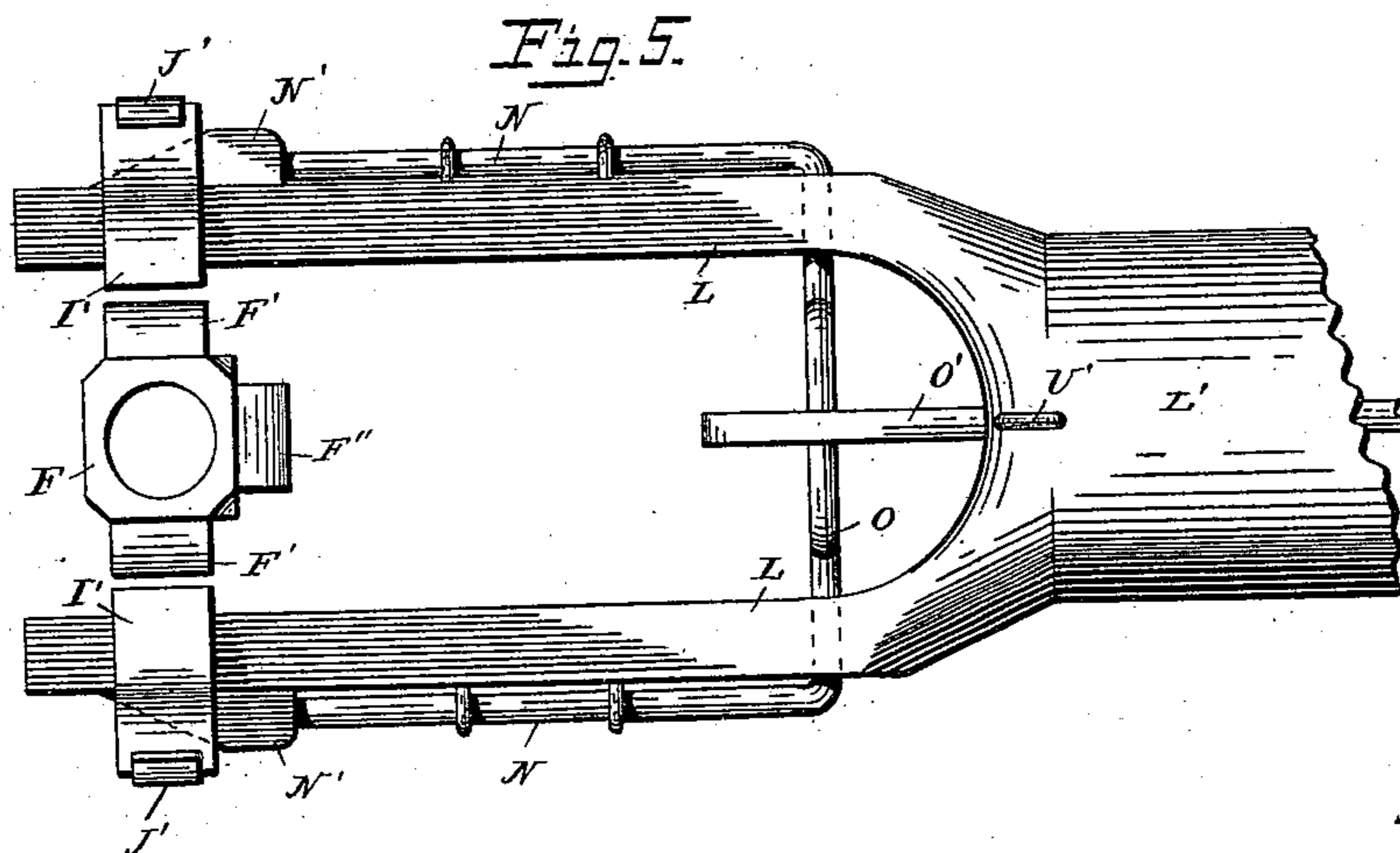
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# UNITED STATES PATENT OFFICE.

FRANK JORDAN, OF MOBILE, ALABAMA.

## LIFTING-JACK.

SPECIFICATION forming part of Letters Patent No. 355,323, dated January 4, 1887.

Application filed September 9, 1886. Serial No. 213,101. (No model.)

*To all whom it may concern:*

Be it known that I, FRANK JORDAN, a citizen of the United States, residing at Mobile, in the county of Mobile and State of Alabama, have invented certain new and useful Improvements in Lifting-Jacks, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to certain new and useful improvements in lifting-jacks, being more especially intended for lifting heavy weights; and it has for its objects, first, to provide such a construction as will bring the fulcrum-point of the operating-lever as close as possible to the follower, and at the same time to admit of acting upon the follower at opposite sides to prevent forcing it out of a vertical line, and also to bring the operating-lever as nearly under the actuating-pawl as possible; second, to provide such a construction as will admit of the follower being slowly lowered without operating the holding-detent and elevating-pawls directly by hand, but at a point of some distance, as at the end of the lever; and, third, to also provide such a construction as will admit of the follower being instantly freed and allowed to drop without operating the holding-detent and elevating-pawls immediately by hand.

In the accompanying drawings, forming a part of this specification, and on which similar letters of reference indicate the same or corresponding features, Figure 1 represents a vertical sectional view and a partial side elevation of my improved lifting-jack; Fig. 2, an axial sectional view of the operating-lever thereof; Fig. 3, a plan view of the jack; Fig. 4, a sectional view on the line *xx* of Fig. 3, looking in the direction of the arrow; Fig. 5, a plan view of the follower, the operating-lever, and the lifting-pawls, showing the latter disengaged from the follower; and Fig. 6, a side elevation of a portion of the operating-lever, showing the bearing-block and the wearing-block, and a cross-section through the said blocks and lever.

The letter A designates the body of the lifting-jack, the same being composed, essentially, of the hollow vertical portions A', B and B', at the junction of which a vertical channel, C, is formed for the reception and guidance of the follower. This body is preferably

constructed of malleable iron. In addition to the portions A', B, and B', the body is provided with standards C' and D, as also with vertical ways D' and with vertical receptacles E, composed of the walls E'.

The letter F refers to a follower; constructed of a forging of iron or steel, or it may be cast, provided on its sides with a series of rack-teeth, F' and F'', and provided with a serrated contact-block, G, whose shank fits within the follower, the latter being preferably hollow from end to end. The follower is further provided with a lifting-foot, G', by preference formed integrally with it. The walls E' and E'' are notched at H and provided interiorly with channels H', and the lifting-pawls I are provided with short pins I'', which travel up and down in the channels H', and with a portion, I', which is provided with a series of teeth corresponding in size and shape to those of the follower. It is further provided with a shoulder, J, which constitutes the wearing-surface against which the operating-lever works. A spring, J', serves to maintain the pawl normally in engagement with the follower, the free end of the spring bearing against the portion A', as seen in Fig. 4. The same remarks apply to the opposite side of that figure in which the other operating-pawl is shown.

It will be noticed that while the pawls travel vertically on their pins in the channels H', they are capable of being thrown from and toward the follower, so as to disengage with the follower on their descent, which occurs when the operating-lever is raised, the springs K serving to draw them down.

The fulcrum-pins K' are mounted in the standards D and C', and upon these the operating-lever is secured. This lever is constructed of either metal or wood, and is preferably bored out, for a purpose which will presently appear. The portion L of the lever is composed of a metallic sleeve, L', which receives the lever proper, and of bars, which constitute a yoke, and are provided with recessed fulcrum-blocks M and eccentric wearing-blocks M'. These blocks are secured to the arms in any convenient manner, as by mortising them together, as seen in Fig. 6, and are constructed, by preference, the former of brass and the latter of steel.

The blocks M' operate against the shoulders

J of the pawls I', while the blocks M fit upon the pins K', and by reason of the eccentricity existing between the center of oscillation and the curvature of the blocks M' the pawls are slowly yet positively brought upward by a downward movement of the free end of the lever. A reverse movement of the lever permits the pawls to descend under the influence of the springs K, so as to grasp the follower at a lower point. If the springs are omitted, gravity will descend the pawls.

When it is desired to release the follower to allow it to descend quickly, the pawls are forced away from it by raising the lever sufficiently to break the contact between the pawl-teeth and the teeth of the follower, and then by operating the mechanism presently to be described, which forces the pawls outward and from the follower, leaving the follower supported merely by a detent, to be presently described, which engagement is broken in a manner which will also appear hereinafter. The same mechanism is also used to disengage the pawls from the follower when the former are at their lowest point and it is desired to lower the follower slowly. This mechanism consists of two wedges, N, carried by bars N', united together by a cross-piece, O. A rod, O', is passed through the lever and provided with a hand-piece at its outer end and with a notch, Q, which engages the cross-piece by turning the rod with the notch down. By this means the wedges N can be forced forward and between the ends of the lever and the pawls, which will throw them from the follower, as above described.

The letter Q' designates a vertically-disposed detent mounted upon a heavy trunnion-pin, R, having bearings in the standards C', provided at its upper end with plates R', across which extends a pintle, S. A spiral or other spring, S', serves to keep the detent Q' in normal engagement with the rack-teeth F'' of the follower.

Pivotaly mounted in the portion B of the body of the jack is a bell-crank lever, T, one member of which is adapted to engage with the pintle S and draw the detent from the follower when the other end is actuated downward. There are two ways of actuating this end downward, according to whether the follower is to be slowly or quickly descended. If the former, the chain T' is hooked into an aperture in the end of the rod O', so that by drawing the rod in the direction of the arrow the chain will pull down upon the bell-crank lever T and draw the detent away from the follower. If the latter, the manner of descending the follower is to be accomplished thus: The link U is engaged with the hook U'.

I will now describe one of the two ways of letting down the follower. Let it be supposed that the follower is supporting an object which it is desired to lower. The actuating-lever is raised and the pawls allowed to descend. The rod O' is then actuated so as to force the wedges against the pawls and throw them outwardly be-

yond the teeth F'. The lever is then depressed and the pawls elevated to their highest pitch. The wedges N are then withdrawn and the springs J' allowed to force the pawls back into engagement with the teeth F'. The movement of the rod O' which accomplishes this withdrawal of the wedges also draws upon the chain T', and through the means already described draws the detent from the teeth F'', the latter taking place just after the pawls have re-engaged the teeth F'. The withdrawal of the detent is rendered easy by a slight depression of the actuating-lever, which throws the weight of the follower upon the pawls. This being done, the lever is slowly elevated, allowing the pawls to descend and the follower with them. When they reach their lowest point, the detent is again allowed to engage with the follower and sustain it while the pawls are being thrown out of engagement and again elevated. This operation continues until the follower is let down. When it is desired to drop the follower instantly, the wedges are forced against the pawls while the weight is sustained by the detent, and then the link U is engaged with the hook U', and by the leverage which the lever affords the detent is withdrawn.

This jack is intended to be used especially on railroads, and the necessity of letting the follower drop quickly is felt when the jack is used for elevating cross-ties with the rails upon them when regrading and leveling the road, for it often occurs that a train is heard approaching, and it then becomes necessary to allow the cross-ties to return to the ground as quickly as possible.

The letter V designates handles, of any approved construction, to facilitate in moving the device about from place to place.

It should be observed that the arrangement of the actuating-lever with respect to the pawls brings the fulcrum-point of the lever close to the pawls, which reduces the short end of the lever and gives additional leverage to the longer end thereof. It is also to be noted that the disposition of the actuating-pawls at either side of the follower serves to lift the follower equally from opposite sides and prevents its being swayed over to either side, which is objectionable as consuming power and causing friction.

As seen in Fig. 4, the toothed portion of the pawls is made separate from the remaining portion and secured by dovetail or other joint. The toothed portion is made of steel, so that it can be renewed as occasion may require.

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

1. In a lifting-jack, the combination, with the body and a follower provided with teeth upon three sides, of a detent mounted in the body to engage the teeth at one side of the follower, pawls mounted in the body to engage the teeth upon the opposite sides of the follower, and a lever mounted upon the body and arranged to actuate the pawls.

2. In a lifting-jack, the combination, with the body thereof and the follower provided with teeth upon two or more sides, of a detent and pawls, the latter being at opposite sides of the follower, and a lever fulcrumed in close proximity to said pawls to engage each of them, and mechanism to throw the pawls from the follower and to draw the detent therefrom, whereby the follower may be lowered slowly and sustained by the pawls and the detent alternately.

3. In a lifting-jack, the combination, with the body thereof and a follower provided with teeth upon two or more sides, of the detent, its actuating bell-crank lever, the vertically-moving pawls, the lever mounted in close proximity thereto and having an actuating-surface for each pawl, the wedges and actuating-bars carried by the lever, and the rod connected with the bell-crank lever and adapted to actuate said bars, whereby the follower may be lowered slowly and sustained by the pawls and the detent alternately.

4. In a lifting-jack, the combination, with the body thereof and the follower provided with teeth at opposite sides, of two pawls mounted to travel vertically and to swing outwardly, and a lever fulcrumed in close proximity to said pawls and provided with a wearing-surface for each pawl, which engages them at a point near the follower, and mechanism carried by the lever and adapted to force the detents from the follower.

5. In a lifting-jack, the combination, with the body thereof provided with a receptacle and the walls having channels, of a pawl fitted to said receptacle, and having pins which engage said channels, and provided with a spring to maintain its engagement with the follower and with a spring to cause its descent.

6. In a lifting-jack, the combination, with the

body thereof provided with standards, of a detent mounted in said standards and provided with an engagement-spring, a bell-crank lever, and an actuating-lever adapted to connect with the bell-crank lever to disengage the detent from the follower.

7. In a lifting-jack, the combination, with an actuating-lever, of mechanism carried thereby, one portion of which is constructed to disengage the pawls by throwing them outward, and another portion of which is constructed to disengage the detent by throwing it forward.

8. In a lifting-jack, the combination, with a bored actuating-lever, of wedges and bars carried thereby, and a rod running through the lever and adapted to actuate the said bars.

9. In a lifting-jack, the body thereof provided with a channel for the follower, with vertical walls forming vertical receptacles for the pawls, with vertical standards forming supports for a detent, and with vertical standards forming supports for a lever.

10. In a lifting-jack, an actuating-lever consisting of a hand portion and of two operating members, in combination with curved blocks which are fastened to said members, for the purpose set forth.

11. In a lifting-jack, the combination, with an actuating-lever, of wearing-blocks secured thereto, which engage with the pawls, said blocks having pawl-contact surfaces eccentric to the fulcrum-axis of the lever, and bearing-blocks secured to said lever and constructed to rest upon the fulcrum-pins.

In testimony whereof I affix my signature in presence of two witnesses.

FRANK JORDAN.

Witnesses:

EDWIN L. BRADFORD,  
E. L. WHITE.