

(No Model.)

F. I. JOYCE.  
LIFTING JACK.

No. 548,920.

Patented Oct. 29, 1895.

Fig. 1

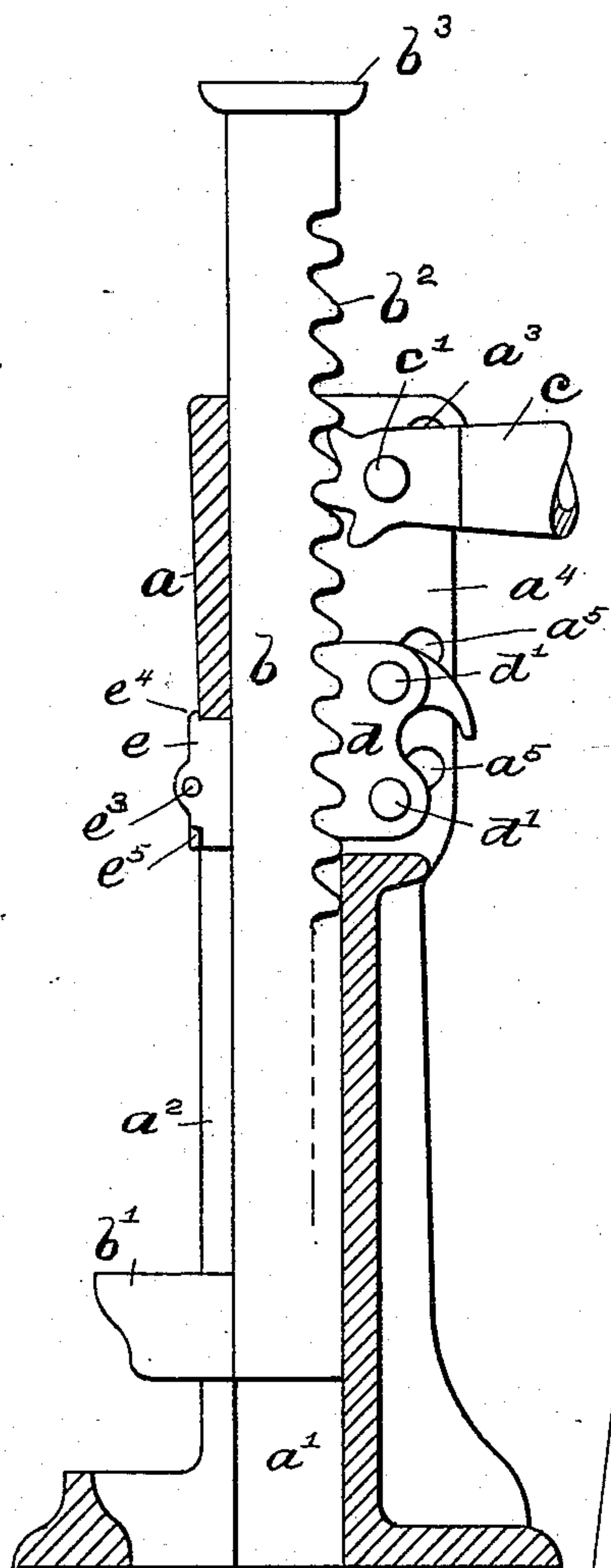


Fig. 3.

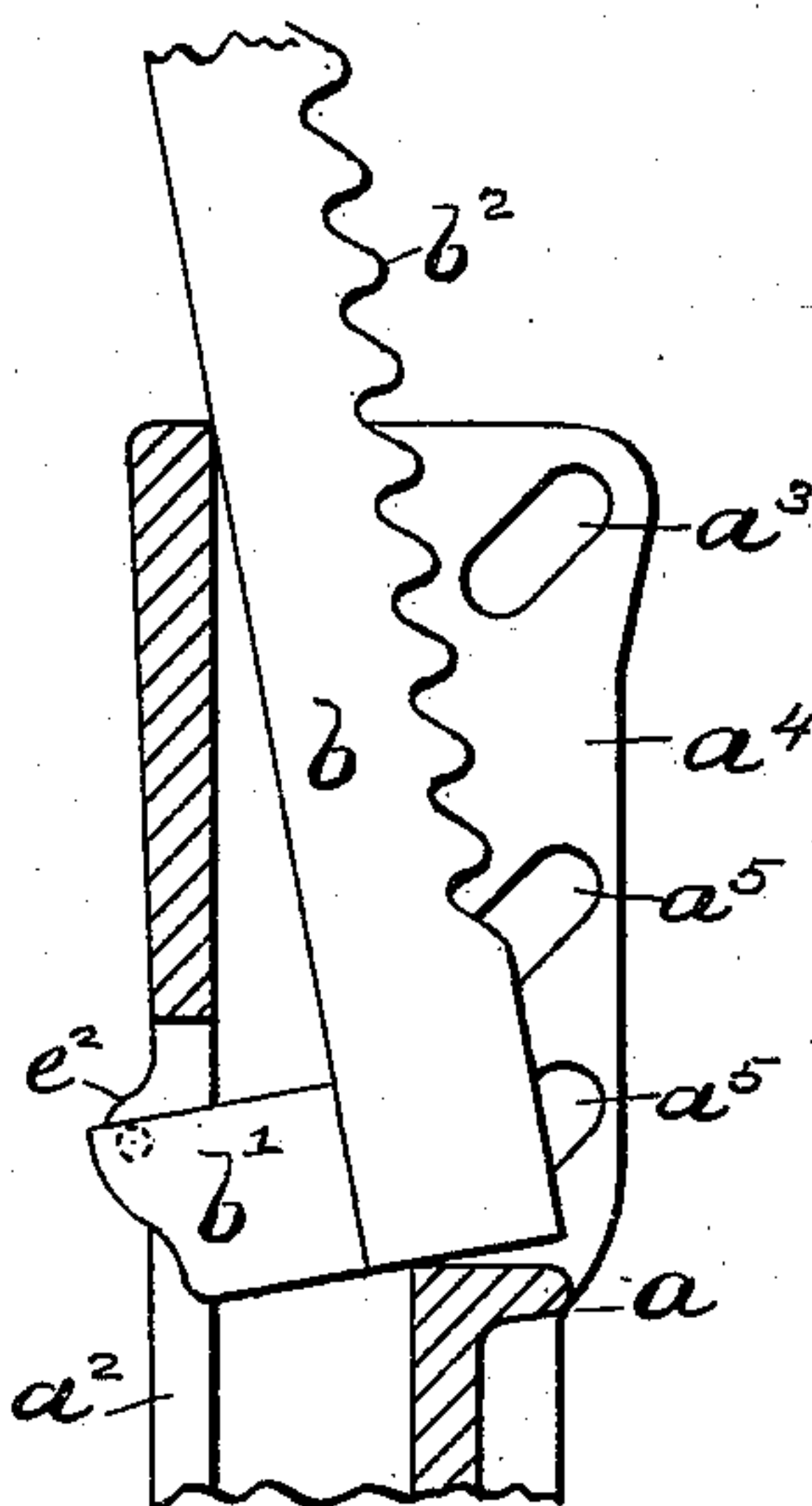


Fig. 4

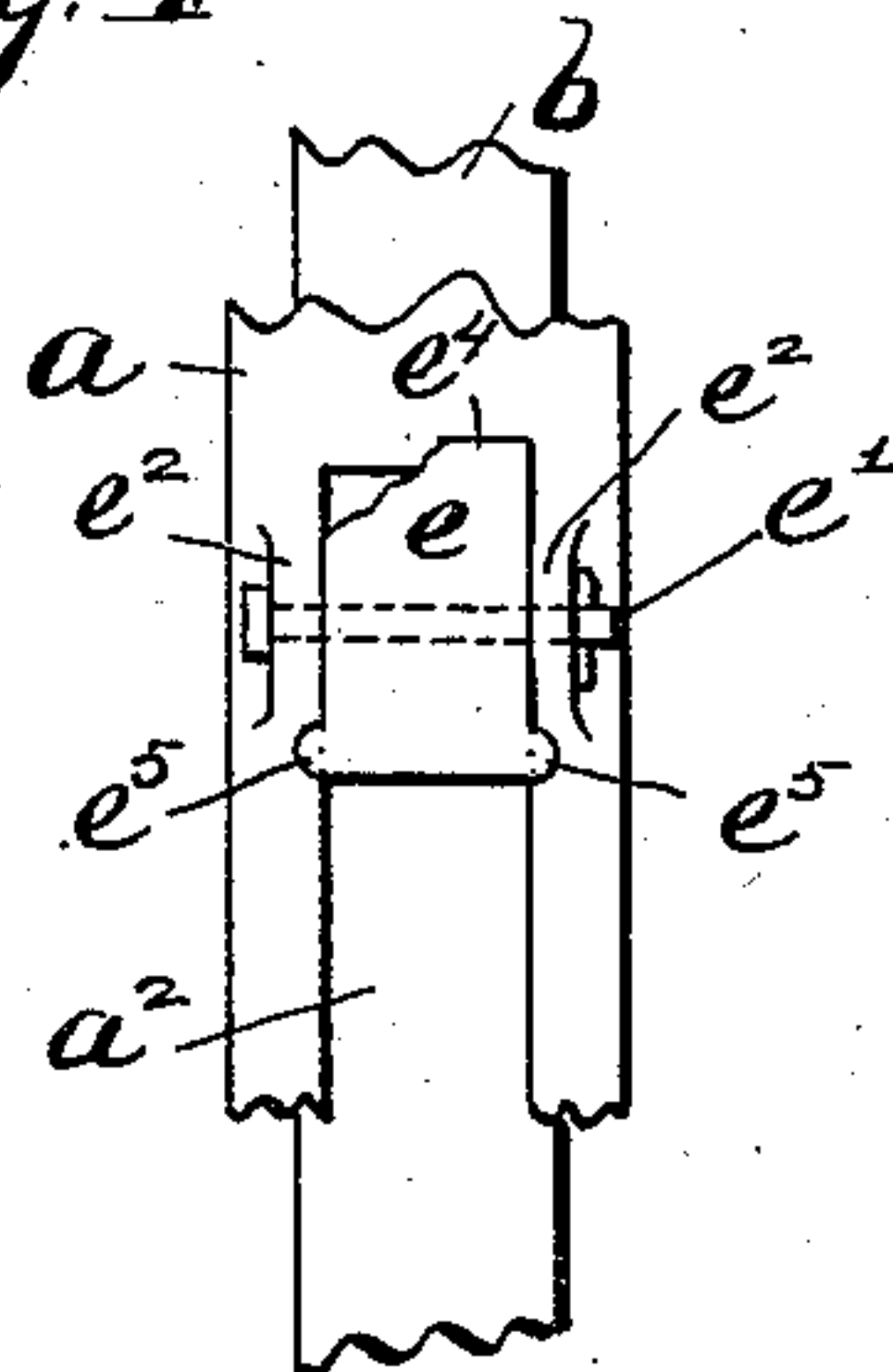
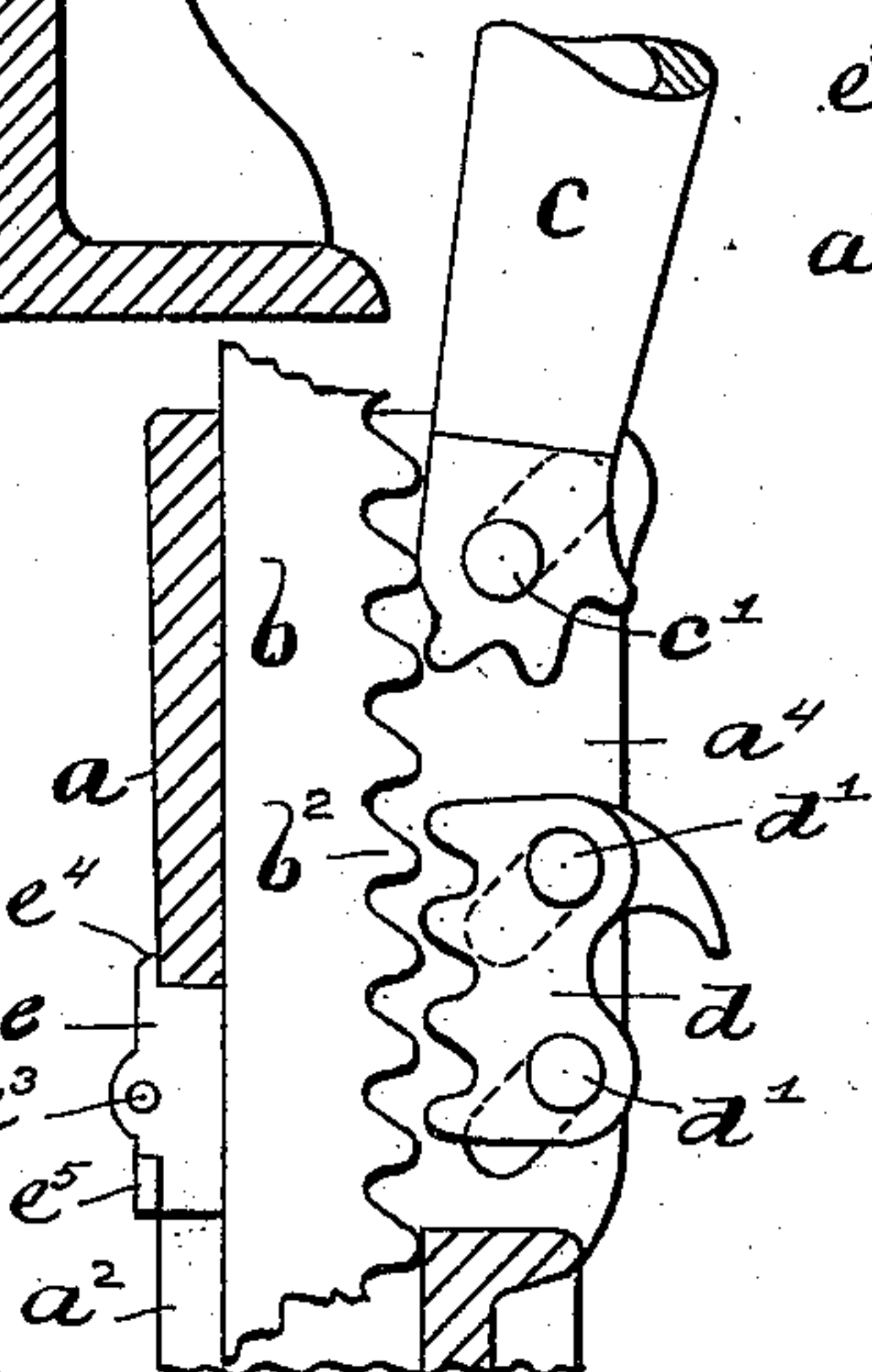


Fig. 2

WITNESSES:

*G. M. Gridley*  
*Chas. J. Welch*



INVENTOR

*Frank I. Joyce*

BY

*Samuel A. Phelps*

ATTORNEY



# UNITED STATES PATENT OFFICE.

FRANK I. JOYCE, OF DAYTON, OHIO.

## LIFTING-JACK.

SPECIFICATION forming part of Letters Patent No. 548,920, dated October 29, 1895.

Application filed June 1, 1895. Serial No. 551,388. (No model.)

*To all whom it may concern:*

Be it known that I, FRANK I. JOYCE, a citizen of the United States, residing at Dayton, in the county of Montgomery and State of Ohio, have invented certain new and useful Improvements in Lifting-Jacks, of which the following is a specification.

My invention relates to improvements in that class of jacks which are especially adapted for railway-work, although capable of any work which the ordinary lifting-jack is adapted to perform.

The object of my invention is to provide a lifting-jack of an extremely simple construction, the parts of which can be readily assembled and which in operation can be tripped, so as to permit the lifting-bar and its load to descend without the necessity of operating the jack in the opposite direction. I attain these objects by the constructions shown in the accompanying drawings, in which—

Figure 1 is a sectional elevation of a device embodying my invention. Fig. 2 is a similar view of a portion of the same, showing the parts in a different operative position. Fig. 3 is a similar view illustrating the manner of assembling the parts. Fig. 4 is a detail view of the rear portion, showing the adjustable frame-stop.

Like parts are represented by similar letters of reference in the several views.

In the said drawings,  $a$  represents the main frame, which is preferably cast in a single piece, cored out, as shown at  $a'$ , to receive the lifting-bar  $b$ , which is provided with the usual projecting lug  $b'$ , which extends through a slotted opening  $a^2$ , formed in the frame in the usual manner. The bar  $b$  is further provided with teeth or projections  $b^2$ , adapted to be engaged by similar teeth or projections on a pivoted lever  $c$ , having trunnions  $c'$ , which engage in slotted openings  $a^3$  in the sides of the frame  $a$ , the frame being constructed with an opening  $a^4$  at the top and one side to permit the insertion of the lever  $c$  and the usual holding-pawl  $d$ . This pawl  $d$  is also provided with projections or trunnions  $d'$ , which operate in inclined slotted openings  $a^5$ , formed in the sides of the frame.

In constructing my improved jack I form the lifting-bar  $b$  of a single piece of steel, the projection  $b'$  and the head  $b^3$  being formed

integral therewith. To provide for assembling the parts when thus constructed, I extend the slotted opening  $a^2$  in the side of the frame from the bottom upwardly to a point opposite the opening  $a^4$  in the opposite side of the frame, which, as before stated, extends from the top downwardly, so that for a short distance the slotted openings  $a^2$  and  $a^4$  overlap, making at this point an opening entirely through the frame, the distance from the top of the opening  $a^2$  and the bottom of the opening  $a^4$  being preferably slightly greater than the height of the lug or projection  $b'$  on the lifting-bar. This construction permits the lifting-bar to be inserted into the frame through the opening  $a^4$  at the top by extending the lug  $b'$  through the slotted opening  $a^2$ , as indicated in Fig. 3, until the bar comes into the central core or channel  $a'$ . After the bar is in place that portion of the opening  $a^2$  which is opposite the opening  $a^4$  is closed by a movable frame-stop  $e$ , which is inserted into the top of said opening and held in place preferably by means of a pin  $e'$ , passing through suitable lugs  $e^2$  on the side of the frame and an opening  $e^3$  in said stop, the said stop being preferably provided with laterally-extending flanges  $e^4$   $e^5$ , which engage on the outer surfaces of the frame, so as to cause the inner surface of said stop to stand flush with the inside of the central opening or bore  $a'$ . This frame-stop prevents the bar from being lifted to a point which would permit the lower portion of the bar to pass out of the opening  $a^4$  or engage with the bottom of said opening.

In order to provide for tripping the jack—that is, to permit the load to be dropped without the necessity of a backward operation—I arrange the lever  $c$  near the top of the frame and above the pawl  $d$ . I further construct the lever so that when turned to a substantially vertical position (which it may assume by reason of its location in the upper part of the slotted opening  $a^4$ ) the teeth on said lever will be entirely disengaged from the teeth on the lifting-bar, and thus allow the bar and its load to descend by gravity. The latter construction consists, essentially, in forming the lever  $c$  without teeth on the upper side when in a horizontal position, the teeth being constructed at the end of the lever with the



first tooth substantially in line with the upper side of the lever, so that when turned to a substantially vertical position the upper side of said lever will stand substantially  
5 parallel with the bar and removed from the ends of the teeth in the bar, which shall be completely disengaged by the lever.

The operation of raising and holding the bar does not differ materially from other jacks  
10 now in use. The inclined slotted openings in which the lever *a* and pawl *d* are journaled and supported, respectively, permit the said parts to engage and disengage the teeth of the bar to raise and hold the same in any de-  
15 sired position. To trip the jack, however, it is only necessary to support the load on the lever *c* in the position shown in Fig. 1, withdraw the pawl *d* to the position shown in Fig. 2, and then turn the lever upwardly to a sub-  
20 stantially vertical position, as shown in Fig. 2, when the bar will be completely disengaged and allow the bar and load to fall by gravity to the normal position.

It will be seen that as above constructed I  
25 provide a jack of the fewest parts possible and one which is capable of performing all the operations of much more complex and expensive jacks. The arrangement of the lifting-lever at the top of the slotted opening,  
30 with the pawl below the lever, permits of the tripping of the jack, which cannot be accomplished when the position of these parts is reversed.

Having thus described my invention, I  
35 claim—

1. In a lifting jack, the combination of a

frame formed with a side opening extending from the top downwardly, a lifting bar having teeth exposed through said opening, and  
40 a lifting lever having teeth to engage said bar and journaled in inclined slots in the sides of said frame, said lever having its teeth arranged at the end thereof so that the upper side of said lever shall be substantially plain  
45 and without teeth, a pawl in said frame arranged below said lever and adapted to engage with the teeth in said bar, the construction being such that the lifting lever, when raised to a substantially vertical position in  
50 said side opening, will completely disengage said bar, substantially as specified.

2. The combination of a frame formed from a single piece and having an upper side opening extending from the top downwardly, and  
55 an oppositely-arranged slotted opening extending from the bottom upwardly, the openings being extended so as to overlap, as described, a lifting bar formed integral with a head and lifting projection, a pivoted lever  
60 and pawl in the upper frame opening, a removable stop at the upper end of the lower slotted opening, said lever being arranged above said pawl and adapted to be turned to  
65 a substantially vertical position in said frame opening, substantially as and for the purpose specified.

In testimony whereof I have hereunto set my hand this 28th day of May, A. D. 1895.

FRANK I. JOYCE.

Witnesses:

JOHN L. H. FRANK,  
GEO. W. FRANK.