

No. 680,895.

Patented Aug. 20, 1901.

E. R. STODDARD.
ELEVATOR ATTACHMENT.

(Application filed Nov. 9, 1900.)

(No Model.)

3 Sheets—Sheet 1.

Fig. 2.

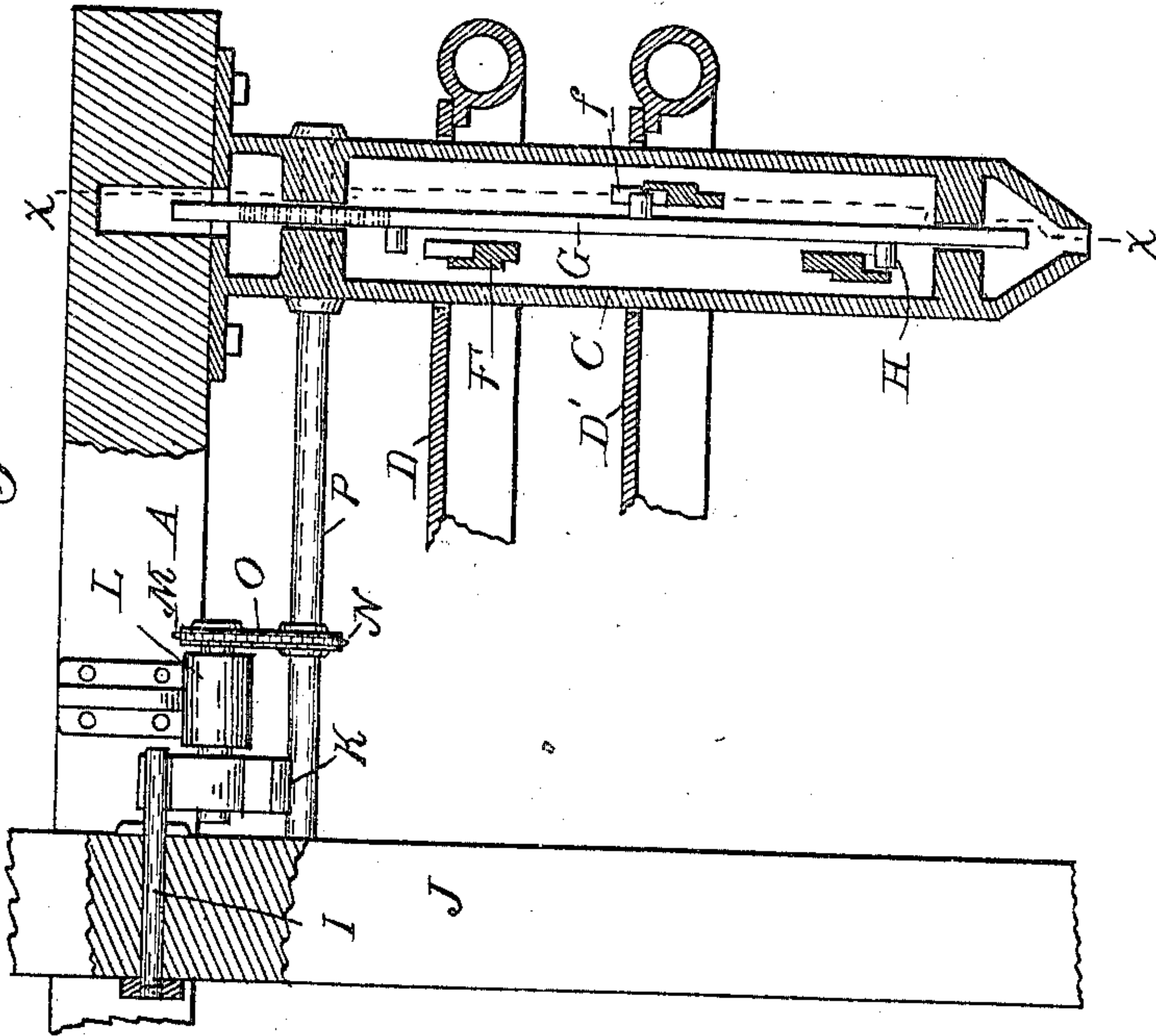


Fig. 1.

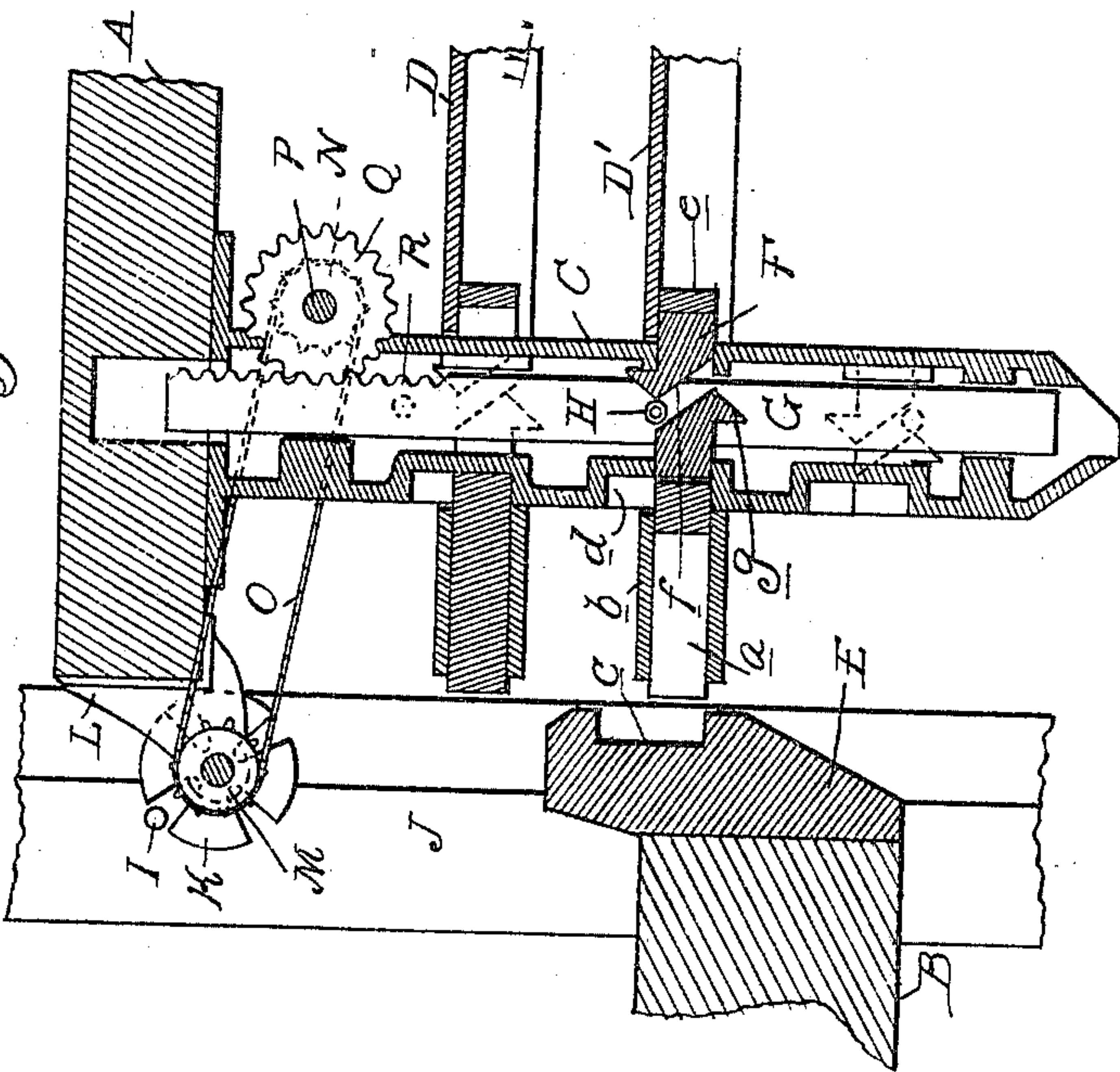
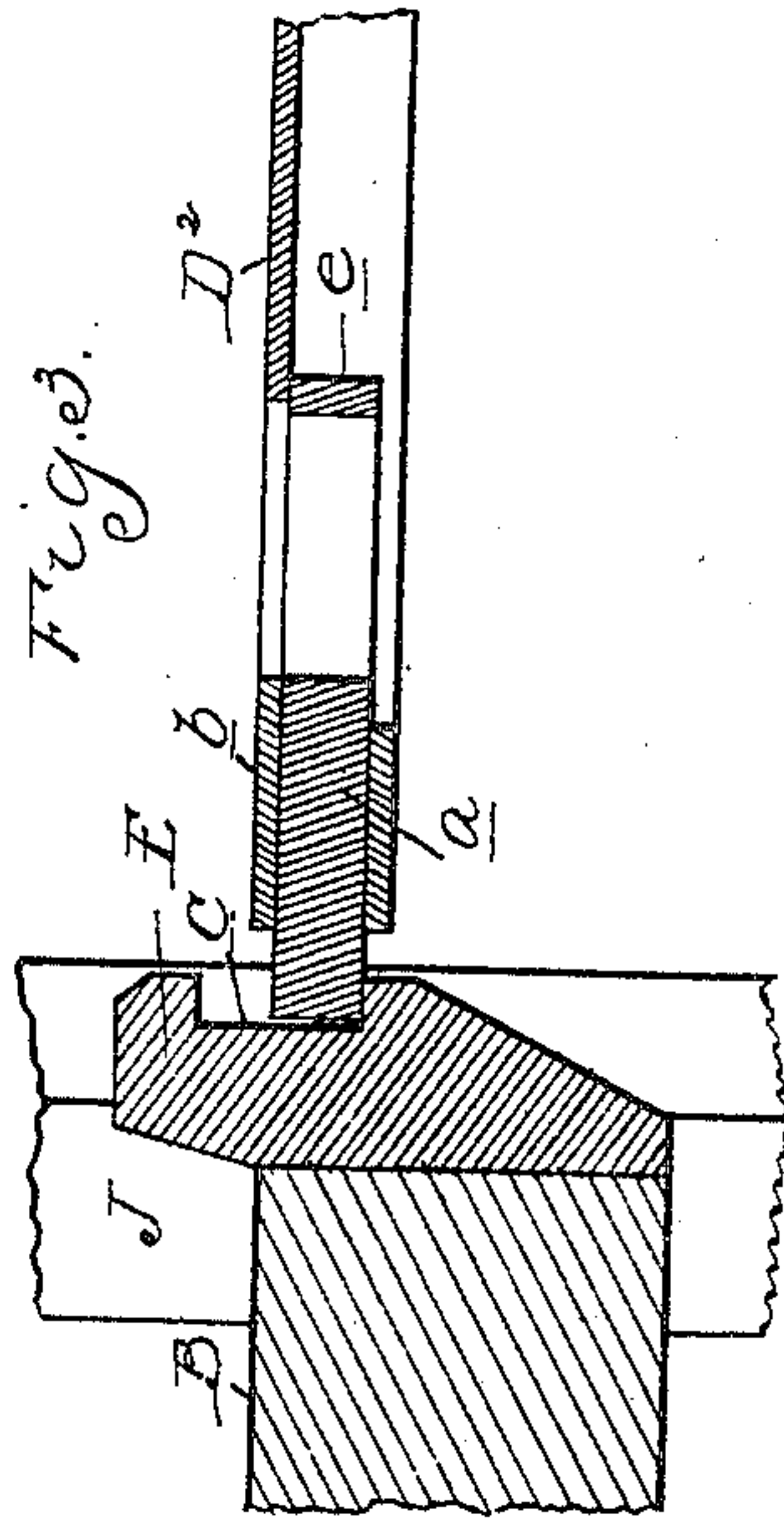


Fig. 3.



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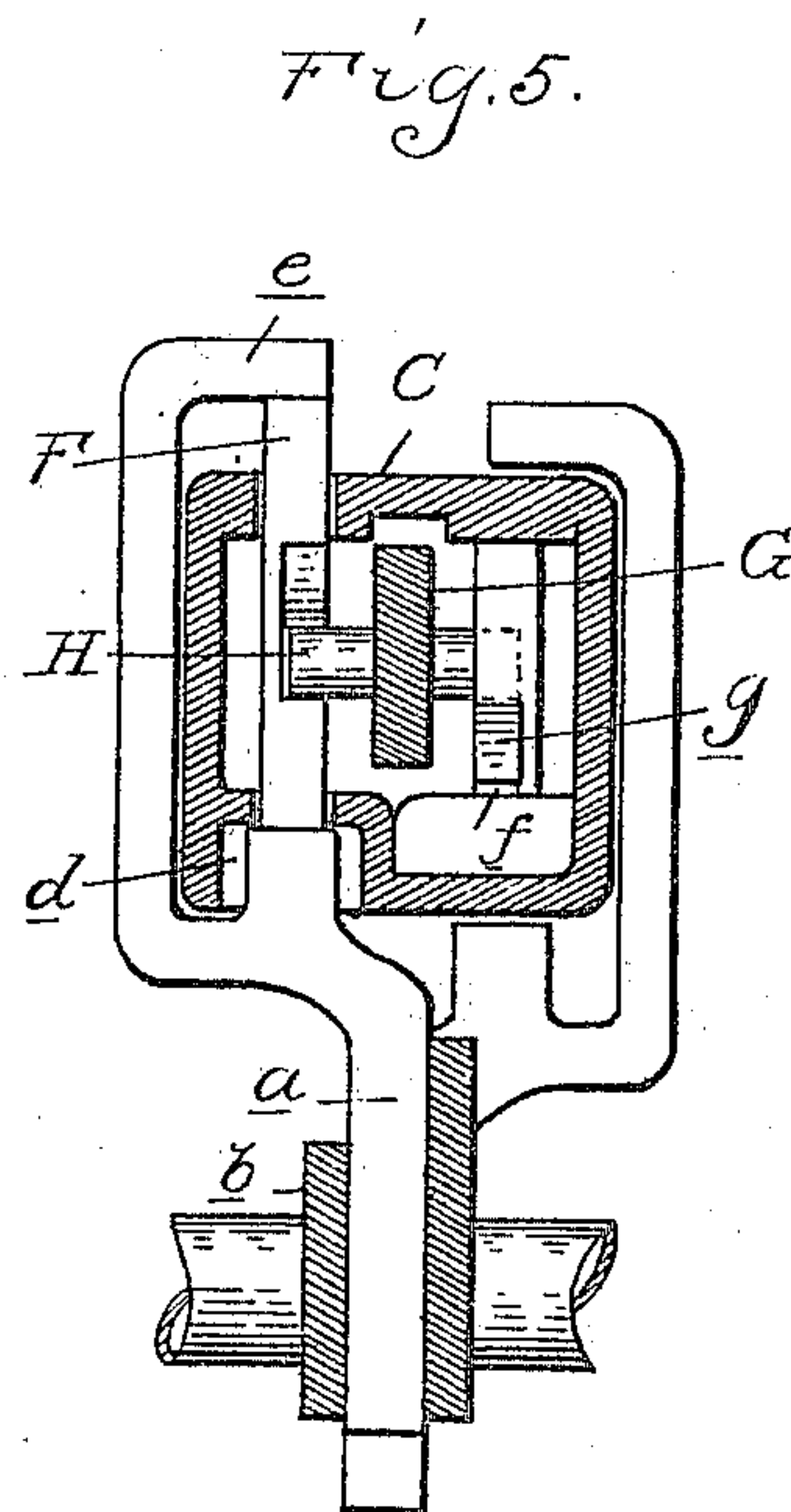
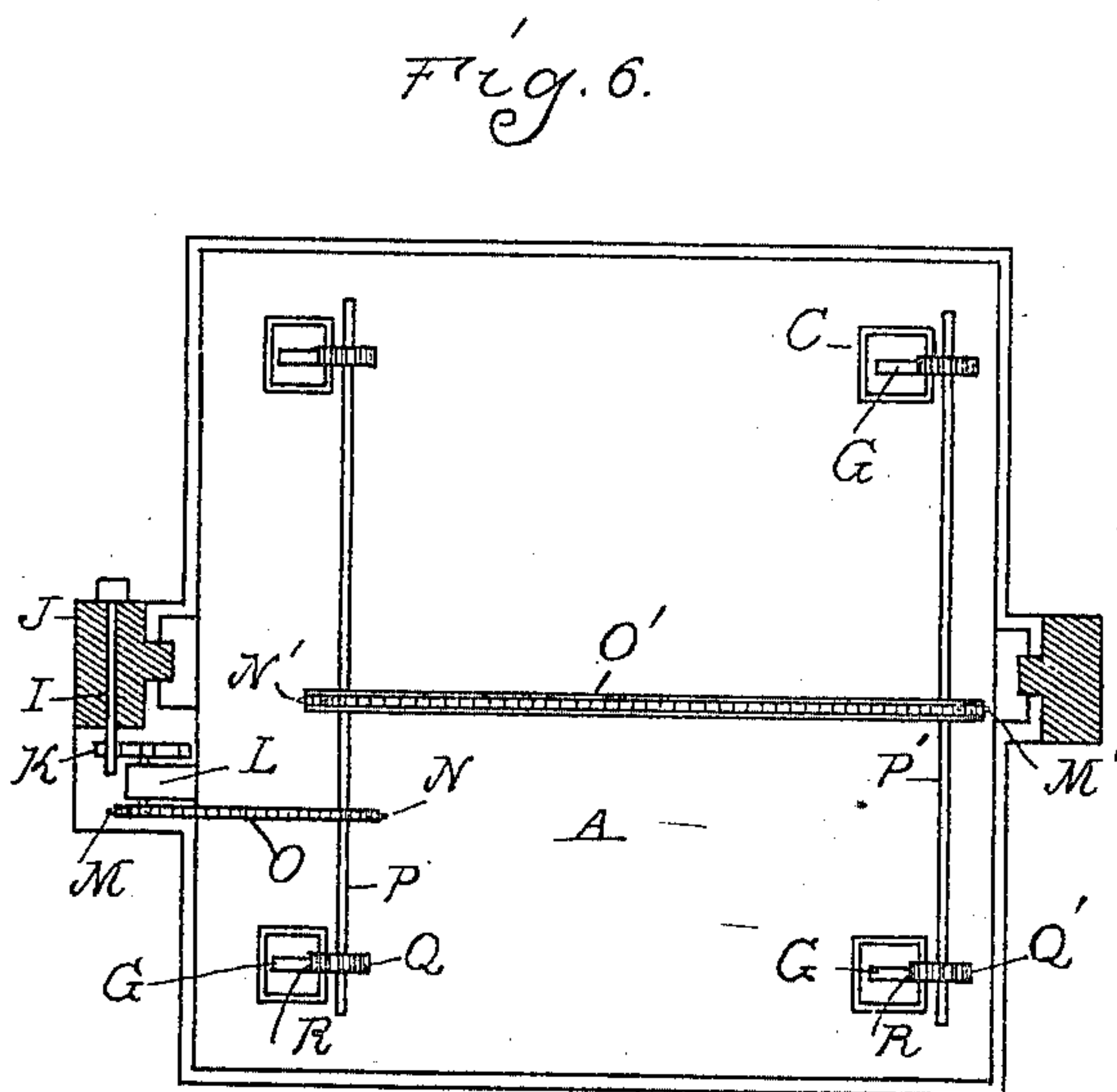
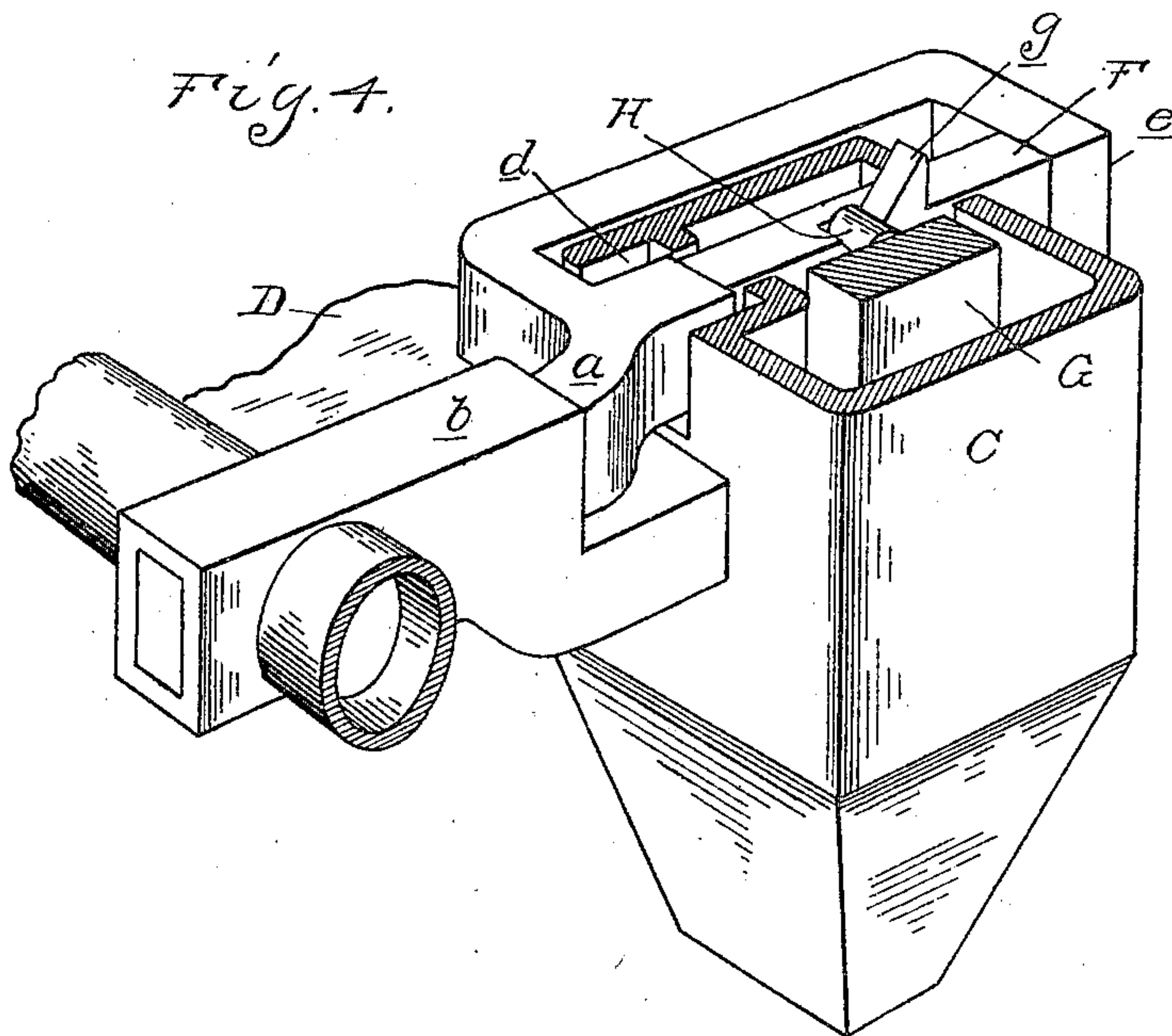
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3 Sheets—Sheet 2.



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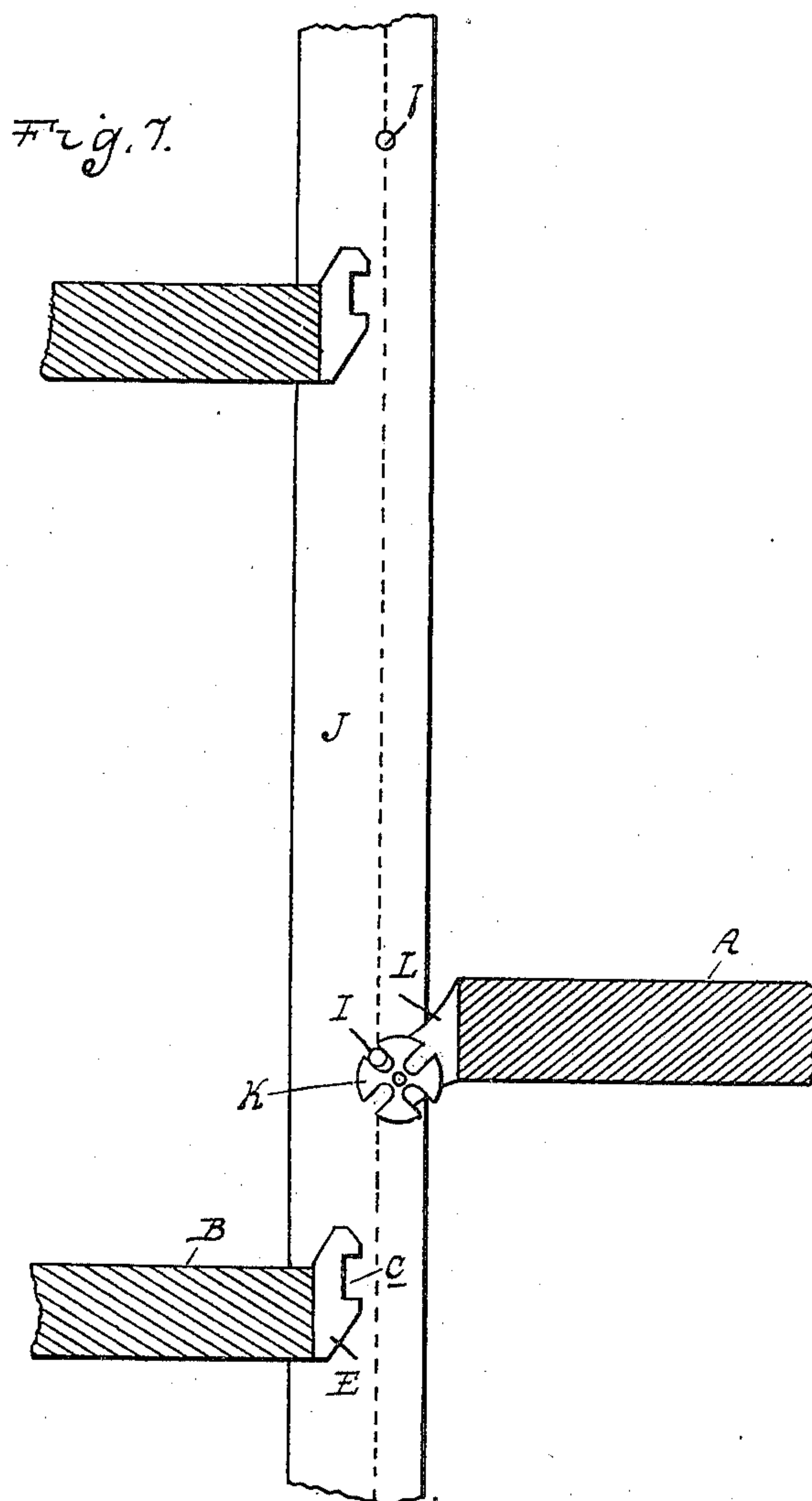
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UNITED STATES PATENT OFFICE.

EDGAR R. STODDARD, OF DETROIT, MICHIGAN.

ELEVATOR ATTACHMENT.

SPECIFICATION forming part of Letters Patent No. 680,895, dated August 20, 1901.

Application filed November 9, 1900. Serial No. 35,973. (No model.)

To all whom it may concern:

Be it known that I, EDGAR R. STODDARD, a citizen of the United States, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Elevator Attachments, of which the following is a specification, reference being had therein to the accompanying drawings.

The invention relates to safety appliances for elevators of that class in which the hatch-openings of the various floors are normally closed by hatch-covers, said covers being automatically disengaged and taken up by the car in its movement in one direction and again deposited in their respective positions by the opposite movement of the car.

The invention consists in the improved means hereinafter described and claimed employed for changing the engagement of said covers from the landings to the supports on the car, or vice versa.

The invention further consists in the peculiar construction, arrangement, and combination of parts, as hereinafter described and claimed.

In the drawings, Figure 1 is a section substantially on line $x-x$, Fig. 2, through a portion of the elevator-car platform and one of the landings, showing the mechanism for transferring the hatch-covers to the landings. Fig. 2 is a sectional elevation at right angles to Fig. 1. Fig. 3 is a section showing one of the hatch-covers in engagement with the landing. Fig. 4 is a sectional perspective view of a portion of one of the carrying-supports and the mechanism contained therein. Fig. 5 is a horizontal section through said support. Fig. 6 is a diagram of the actuating mechanism carried by the car. Fig. 7 is a sectional elevation illustrating two landings and the mechanism for depositing the covers thereat.

A is the elevator-car platform, and B is one of the landings. As the general construction of the car or elevator-shaft forms no part of my present invention, I have deemed it unnecessary to further illustrate the same. Depending from the platform A are a series of supports or hangers C, on which the hatch-covers are carried. I preferably provide the

car with four of these depending supports, arranged, respectively, at the four corners of the platform; but inasmuch as the construction and operation of the mechanism contained in each of these supports are the same I have shown but one of them in the drawings.

D D' D² are hatch-covers adapted to be carried by said hangers and to be successively deposited in the hatch-openings at the landings in the upward movement of the car. The construction of these hatch-covers is also immaterial to my present invention excepting so far as it relates to means for engaging the covers to their carrying-supports or to the landings, the construction of said engaging means being as follows: a is a bolt or locking-bar slidably secured in bearings, such as b , on each of the hatch-covers. The outer end of this bolt is adapted to engage with the keeper at the landing, which keeper is shown as consisting of a casting E, screwed or otherwise secured to the landing and provided with a recess c for the engagement of the bolt. The opposite end of the bolt a is adapted to engage with a recess d , formed in the depending hanger C, the arrangement being such that when the bolt is in full engagement with the keeper E it is wholly withdrawn from the recess d and, on the other hand, when it is in full engagement with the recess d it is wholly withdrawn from the recess c in the keeper.

F is an actuating member for the bolt a , which is permanently carried by the car and adapted to engage or disengage from said bolt by a vertical movement. As shown, this member is slidably secured in bearings formed in the hanger C, which latter is hollow and contains the mechanism for operating said member. The length of this member is such that in one position it is wholly contained within the horizontal section of the hanger C and in such position is adapted to press the bolt a out of engagement with the recess d , thereby disengaging the hatch-cover from the hanger. The member F is also employed for drawing the bolt into engagement with said recess d , and to this end said bolt a is provided with an extension e , which passes around the hanger and engages with

the opposite end of the member F, as plainly shown in Fig. 4.

The hatch-covers $D D' D^2$ are arranged in vertical series on the hangers C, it being of course understood that there are as many covers as hatch-openings at the various landings to be filled. In the upward movement of the car these covers must be successively disengaged from their hangers and deposited in the hatch-openings, while in the downward movement they are taken up in the reverse order. Thus the members F must be successively operated, and this is accomplished by the following mechanism:

G is a bar arranged to slide vertically in bearings within the hanger C. H represents lateral projections on said bar, preferably in the form of antifriction-rolls, and adapted to respectively engage with cams or inclosures f on the members F. The rollers H are differentially arranged in relation to the respective members F, so that in the downward movement of the bar G the lowest roll H will first engage with the cam f and actuate its corresponding member F, and in the further downward movement of said bar the rollers will successively engage with said cams. The effect of the movement of the roll in relation to its cam is to cause the member F to be moved laterally, and thereby to impart a similar movement to the bolt a . As shown, the cams f are formed by the opposite sides of an inclined groove formed on the inner face of the member F, and respectively above and below said member are guide-lugs g , formed with opposite inclines, the latter serving to insure the entering of the roll into the inclined groove.

The bar G receives its movement from the movement of the car in relation to fixed pins or operating devices, such as I, on the elevator-shaft, suitable intervening mechanism being provided to cooperate with said pins and impart a vertical movement to the bar. The pins I may be arranged in any suitable position on the elevator-shaft where they are adapted to impart a suitably-timed intermittent movement to bar G. I preferably, however, arrange these pins in vertical alinement and secure them to the side of the guide-post J of the elevator.

The mechanism for cooperating with the pins I, I have shown as comprising the star-wheel K, journaled in a bearing-bracket L, secured to the car-platform and connected by suitable gearing, such as sprockets M and N and chain O, with the shaft P, which shaft has a pinion Q thereon, meshing with the rack R, formed on the bar G. Any other suitable mechanism may be substituted for the one above described, and the bars G of the various hangers may be operated either from one common mechanism, or each may be provided with an independent mechanism engaging with an independent series of pins I. I preferably actuate all of the bars G from a common mech-

anism, and to this end the shaft P is extended into proximity to two of the hangers and is provided with two pinions Q in engagement, respectively, with the racks of the two bars G, and a similar shaft P' is provided on the other side of the platform, extending into proximity with the other two posts and having pinions Q' thereon similarly engaging with the racks on the bars G. The shaft P' is connected by gearing comprising the sprockets M' and N' and the chain O' with the shaft P.

The device being constructed as above described, the operation is as follows: The hatch-covers $D D' D^2$, &c., are all carried by the hangers C when the car is in its lowest position. In the upward movement of the car the star-wheel K will first come into engagement with the lowest one of the pins I. This in the continued upward movement of the car will impart a partial rotation to said wheel and through the connecting-gearing will rotate the shafts P and P' and the pinions Q and Q' thereon. The latter will impart a corresponding movement to the bars G, which will cause the lowest roll H to travel downward past the cam f of the lowest sliding member F. In the initial position this member G is arranged to hold the bolt a in engagement with the recess d and out of the path of the keepers E. As soon, however, as the bar G is moved downward and the pin H traverses the inclined groove forming the cam f said member F will be moved laterally to press the bolt a out of engagement with the recess d and into engagement with the recess c of the keeper E. The pin I is so positioned that the initial movement is imparted to the member F just as the outer end of the bolt a comes into registration with the recess c . As, however, the car continues to travel during the movement of the member F, and thus carries the latter, together with the bolt a , upward, it is necessary to elongate the recesses c and d . Thus as the car continues to move the star-wheel K will be rotated and through the mechanism described will move the member F laterally, pressing the bolt a out of engagement with the recess d and into engagement with the recess c . Before the upper shoulder of the recess c is reached the bolt will be completely withdrawn from the recess d , which will permit the cover to fall until said bolt rests on the lower shoulder of the recess. The cover being thus freed from the car, the latter in its continued upward movement will withdraw the hanger C from the apertures in the cover, leaving the latter securely locked to the landing. When another landing is reached, the star-wheel K will engage with the succeeding pin I, and the operation will be repeated to deposit the hatch-cover in the hatch-opening, and so on until the highest landing is reached. In the descent of the car the operation will be reversed, the engagement of the star-wheel with the pin rotating the former in the oppo-

site direction, and thereby causing the bolt to be withdrawn from the recess *c* and engaged with the recess *d*. As above stated, the recess *d* is sufficiently elongated to permit the continued traveling of the car during the operation of releasing the bolt from the keeper *E*.

It will be noticed that with the device above described a single operating mechanism is employed for depositing or taking up all of the covers and that this operating mechanism is itself operated by a single series of pins arranged in vertical alinement with each other. Thus the entire area of the hatch-opening may, if desired, be filled by the hatch-cover with the exception of a sufficient opening to permit the covers to pass the pins *I*. This construction has an obvious advantage over those in which the separate covers are operated by separate mechanisms, and especially so where said mechanisms are secured to the landings and are out of vertical alinement with each other. It will be further seen that each cover carries its own locking means, and that the actuating means therefor is permanently carried by the car, and also that said actuating means automatically engages with said locking means by a vertical movement, while in its operation the movement of the locking mechanism is lateral. The result of this construction is that the hatch-covers are relieved from all vertical pressure during the sliding of the bolts, and thus said bolts easily engage or disengage from the keepers and locking-recesses in the carrying-supports. It will also be observed that as a single actuating mechanism is employed for the entire vertical series of covers the number of parts of the entire mechanism is greatly reduced.

What I claim as my invention is—

1. In an elevator, the combination with the car, of a hatch-cover, means for alternatively locking the same to the car or to the landing, and an actuating member for said locking means permanently carried by the car, said member being movable in the same direction as said locking means in its locking and unlocking movement.

2. In an elevator, the combination with the car, of a hatch-cover, a carrying-support for said cover depending from said car, means carried by said cover for alternatively locking the same to said depending support or the landing, a laterally-movable member permanently carried by said support, having a vertical coupling engagement with said locking means, and mechanism for actuating said member and thereby operating said locking means.

3. In an elevator, the combination with the car, of a hatch-cover, a carrying-support therefor depending from the car within the area of said cover and vertically engaging an aperture in the latter, means carried by said cover for laterally engaging said carrying-support or the landing, alternatively, to lock

the cover to either one or the other, and an actuating device for said locking means adapted to be withdrawn within said carrying-support when the latter engages or is withdrawn from the aperture in said cover.

4. In an elevator, the combination with the car, of a plurality of hatch-covers carried thereby, means for locking each of said covers alternatively to the car or to their respective landings, an actuating member for each of said locking means and movable in the same direction as the locking means in its locking and unlocking movements, and a common actuating mechanism for said actuating members.

5. In an elevator, the combination with the car, of a plurality of covers, a carrying-support therefor depending from the car, means for locking said covers in different positions to said carrying-support or alternatively to their respective landings, and a common actuating mechanism permanently carried by said car adapted to successively actuate the locking means of said covers by a substantially horizontal movement.

6. In an elevator, the combination with the car, of a hatch-cover, a carrying-support therefor depending from the car, a plurality of laterally-movable bolts for locking said cover to its landing, or alternatively to said carrying-support mechanism carried by the car for simultaneously operating all of said bolts and a single stationary cooperating member for actuating said mechanism in timed relation to the movement of the car.

7. In an elevator, the combination with the car, of a hatch-cover, a support therefor on the car, a laterally-slidable member carried by said support and adapted to engage or disengage the cover therefrom, and means for actuating said member in timed relation to the movement of the car.

8. In an elevator, the combination with the car, of a plurality of hatch-covers, a carrying-support for said covers on the car, a plurality of laterally-slidable members carried by said support and adapted to respectively engage or disengage said covers therefrom and a common mechanism for successively actuating said slidable members.

9. In an elevator, the combination with the car, of a plurality of hatch-covers, a hollow carrying-support therefor depending from the car, a plurality of members laterally slidable in said depending support and adapted to respectively engage or disengage said covers therefrom, a vertically-slidable bar within said standard having a cam engagement with said laterally-slidable members adapted to successively operate the same in the vertical movement of the bar, and means for actuating said vertical bar in timed relation to the movement of the car.

10. In an elevator, the combination with a car and a series of hatch-covers carried there-

by, of mechanism carried by the car for successively depositing said covers at their respective landings, in the upward movement of the car, and for reengaging them with the
5 car in the downward movement thereof, and a series of stationary members for cooperating with said mechanism, to successively actuate the same, the engaging portions of said

stationary members being in vertical alignment.

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

EDGAR R. STODDARD.

Witnesses:

M. B. O'DOHERTY,

H. C. SMITH.