

(No Model.)

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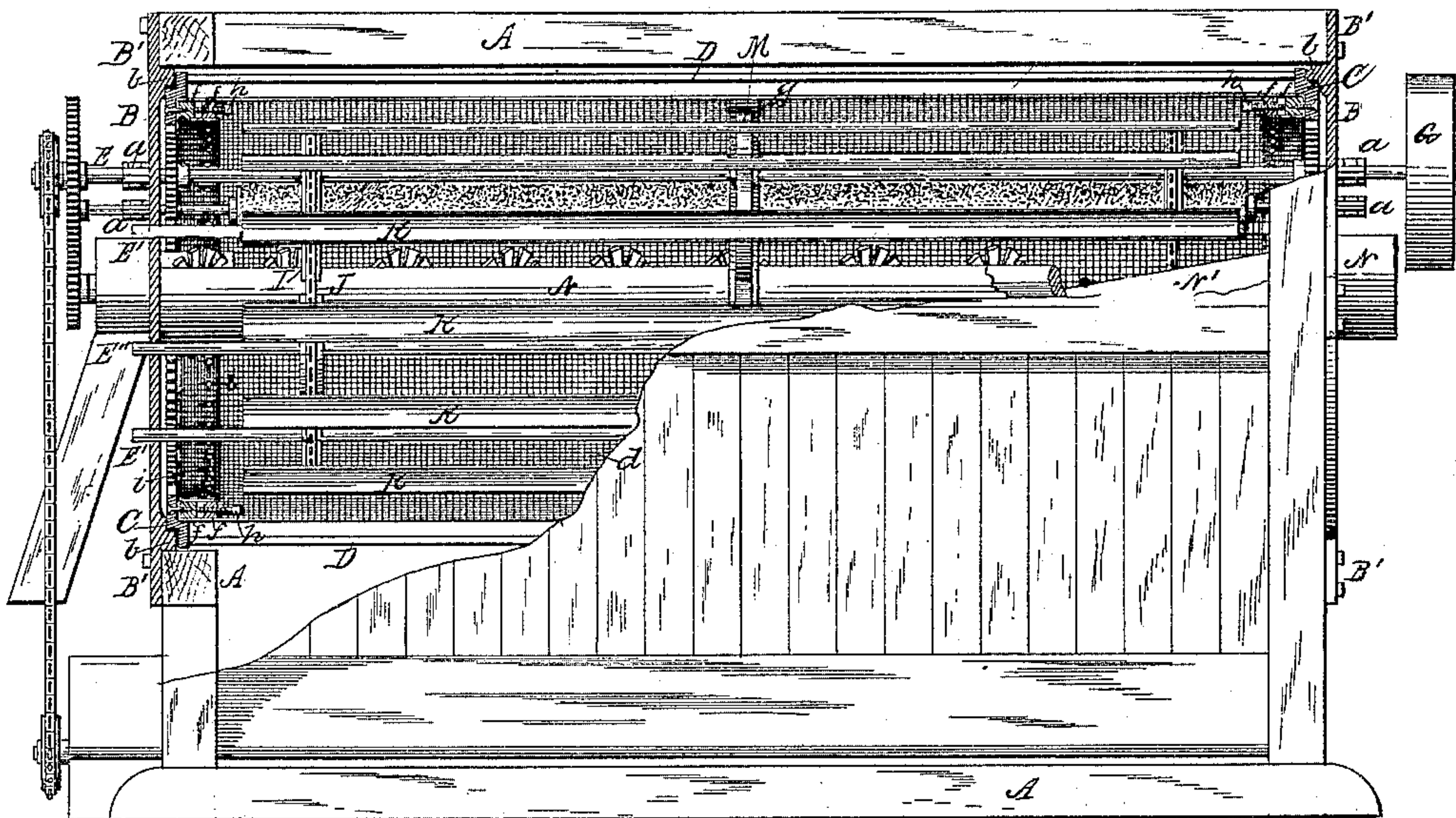
J. H. WALSH.

ROTARY BOLT.

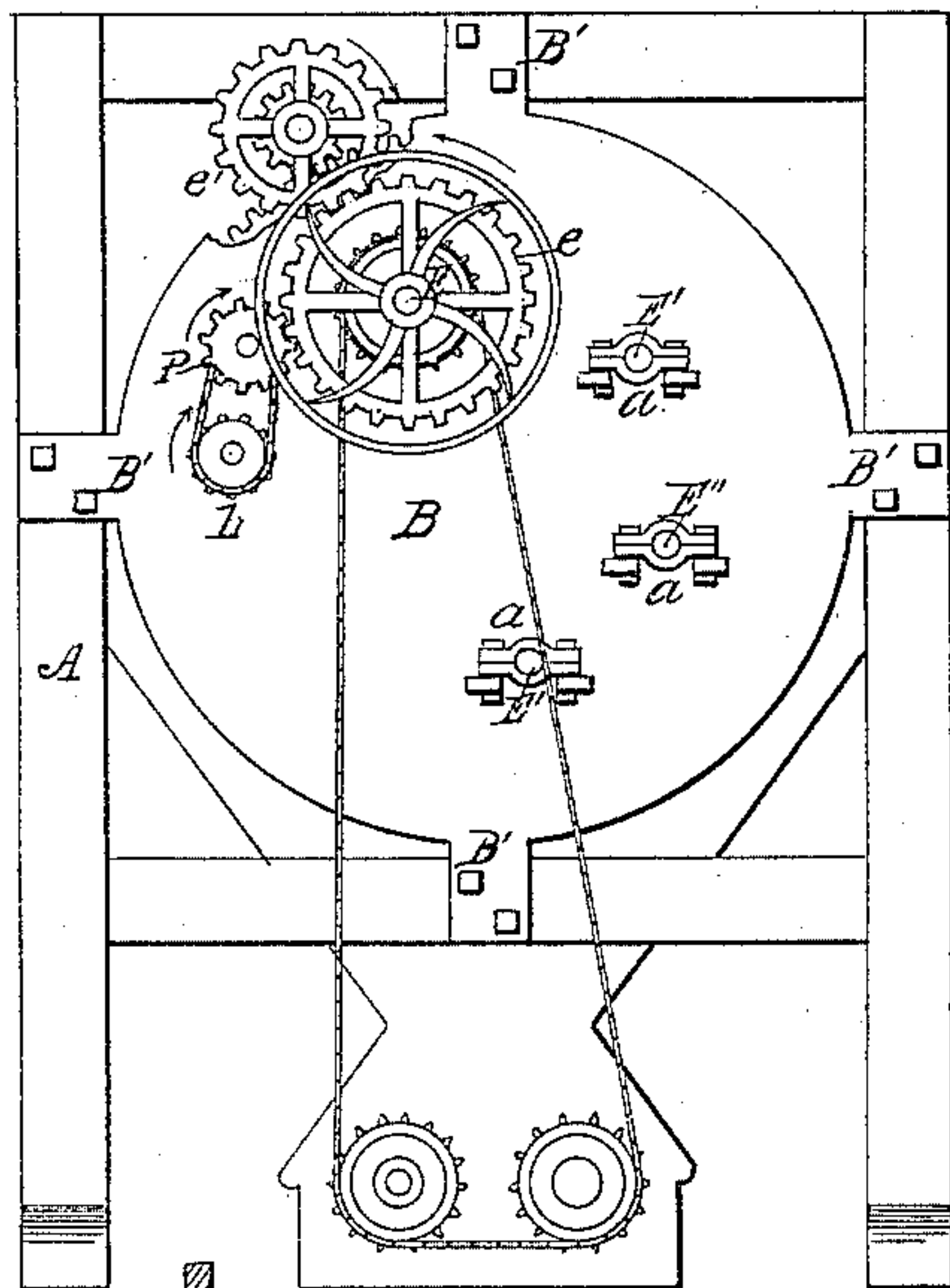
No. 398,478.

Patented Feb. 26, 1889.

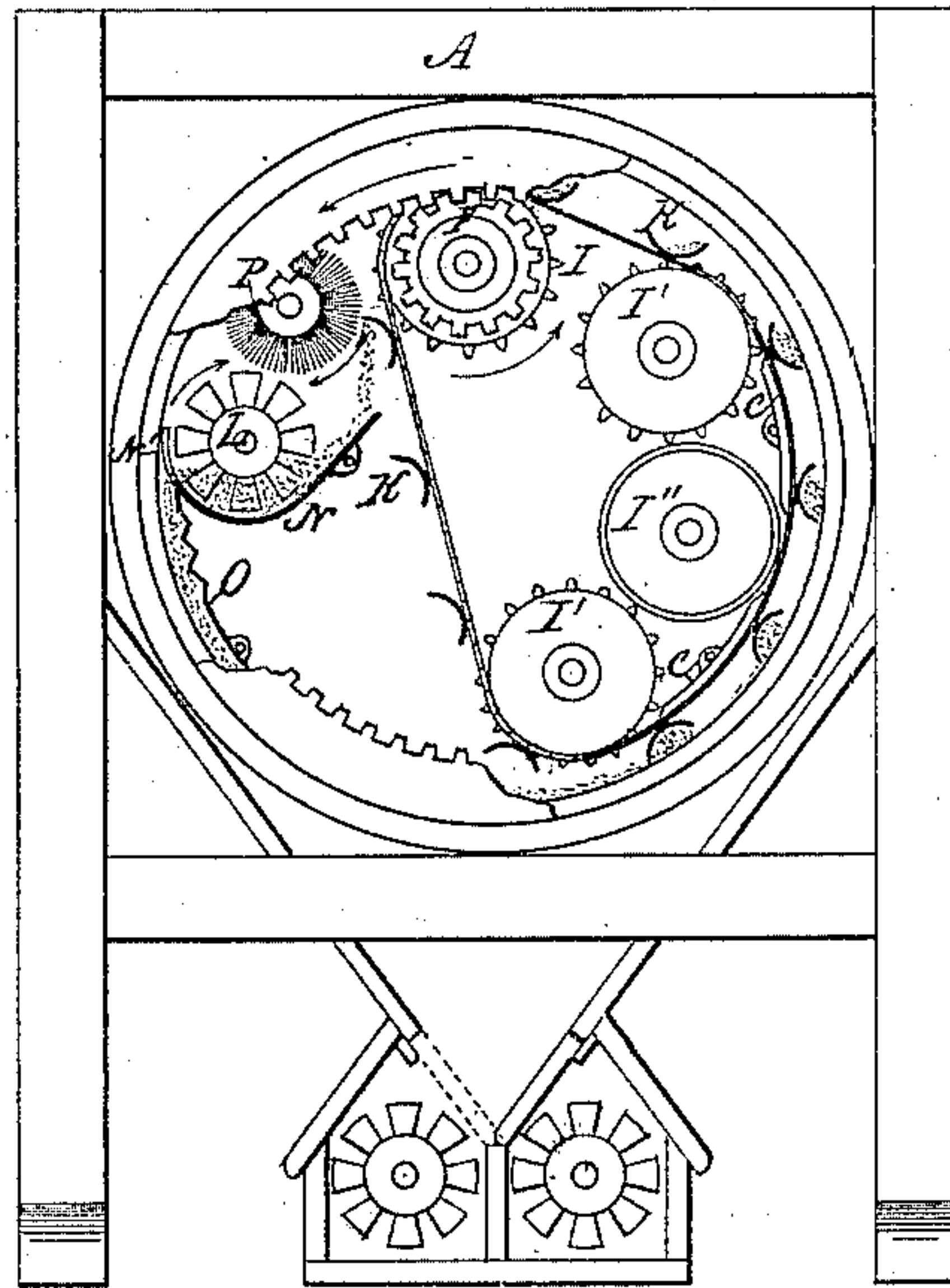
*Fig. 1.*



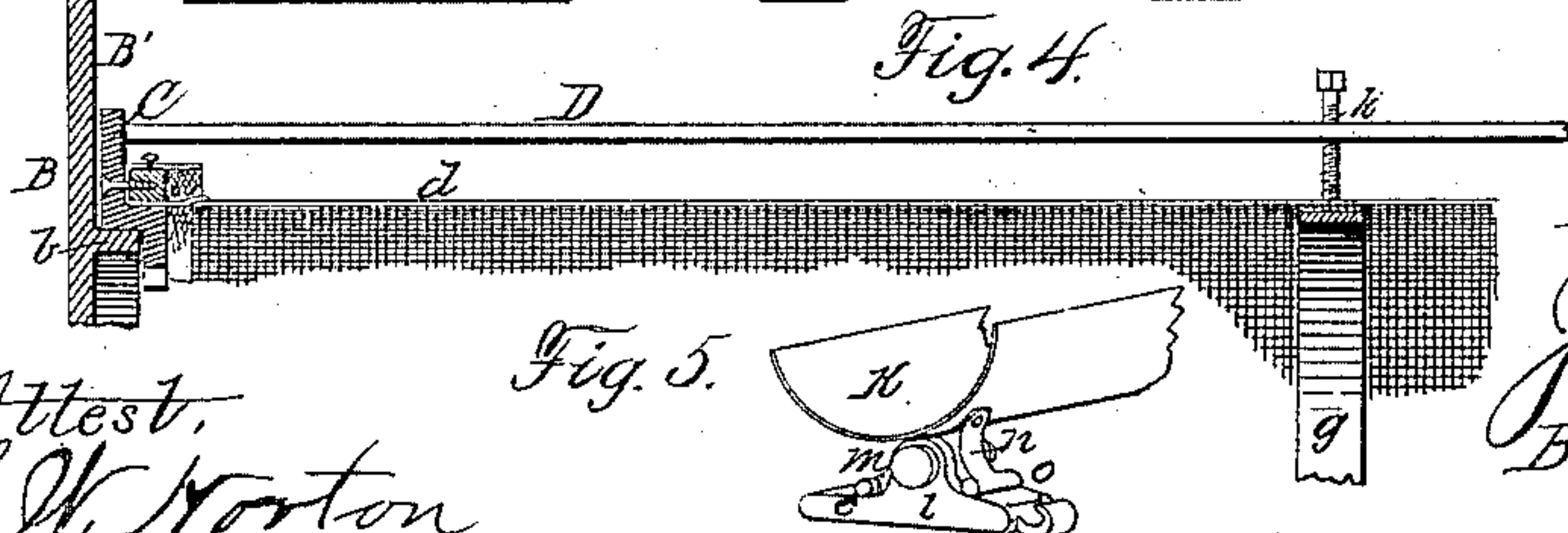
*Fig. 2.*



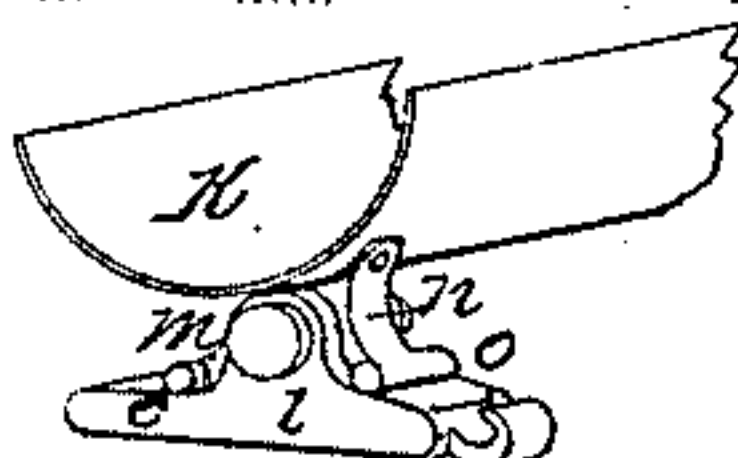
*Fig. 3.*



*Fig. 4.*



*Fig. 5.*



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(No Model.)

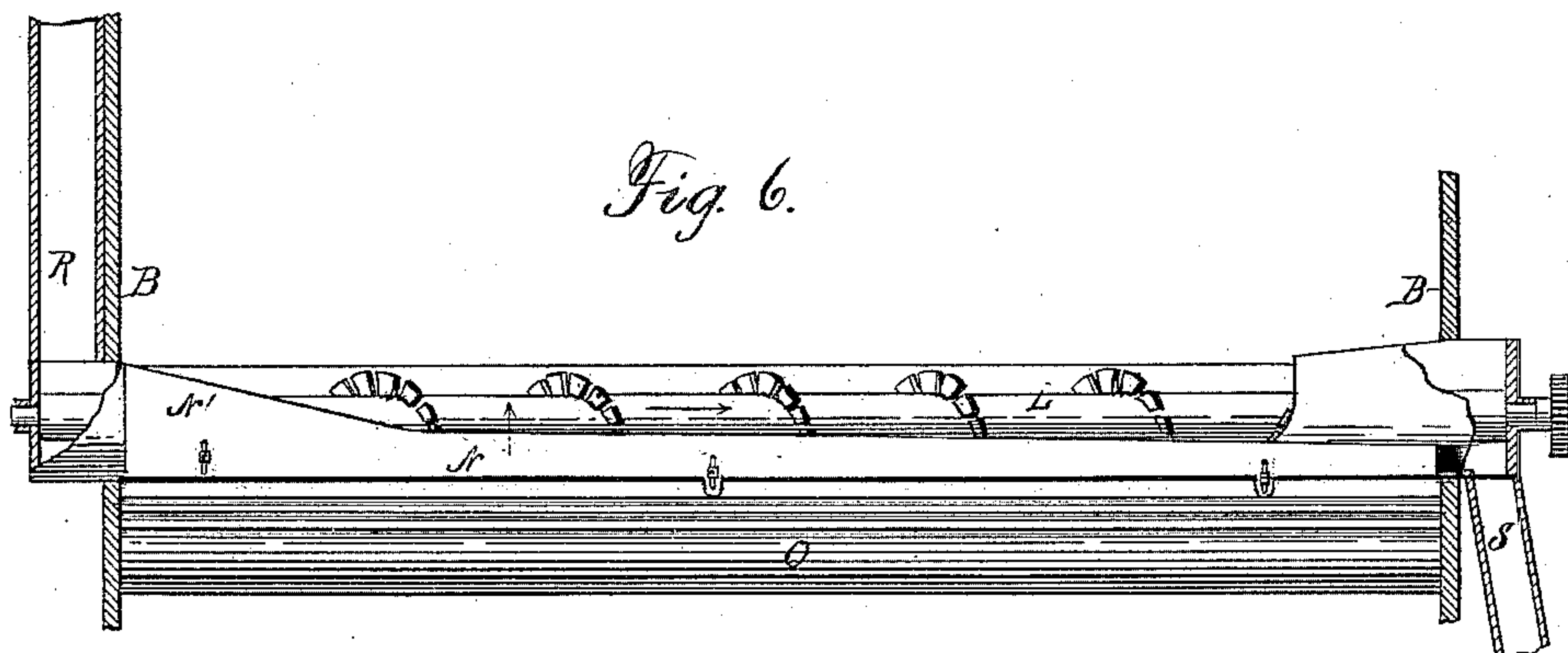
2 Sheets—Sheet 2.

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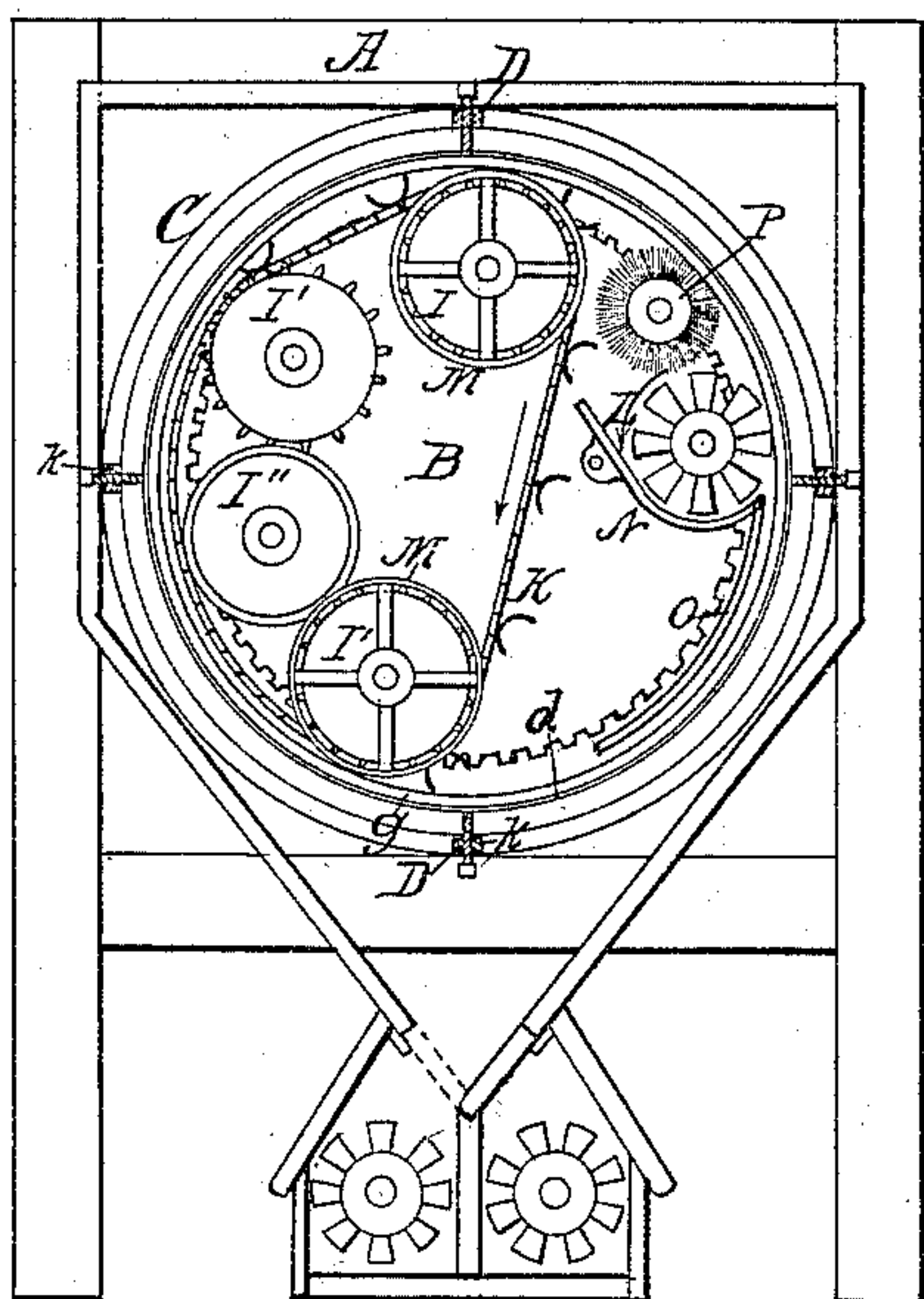
ROTARY BOLT.

No. 398,478.

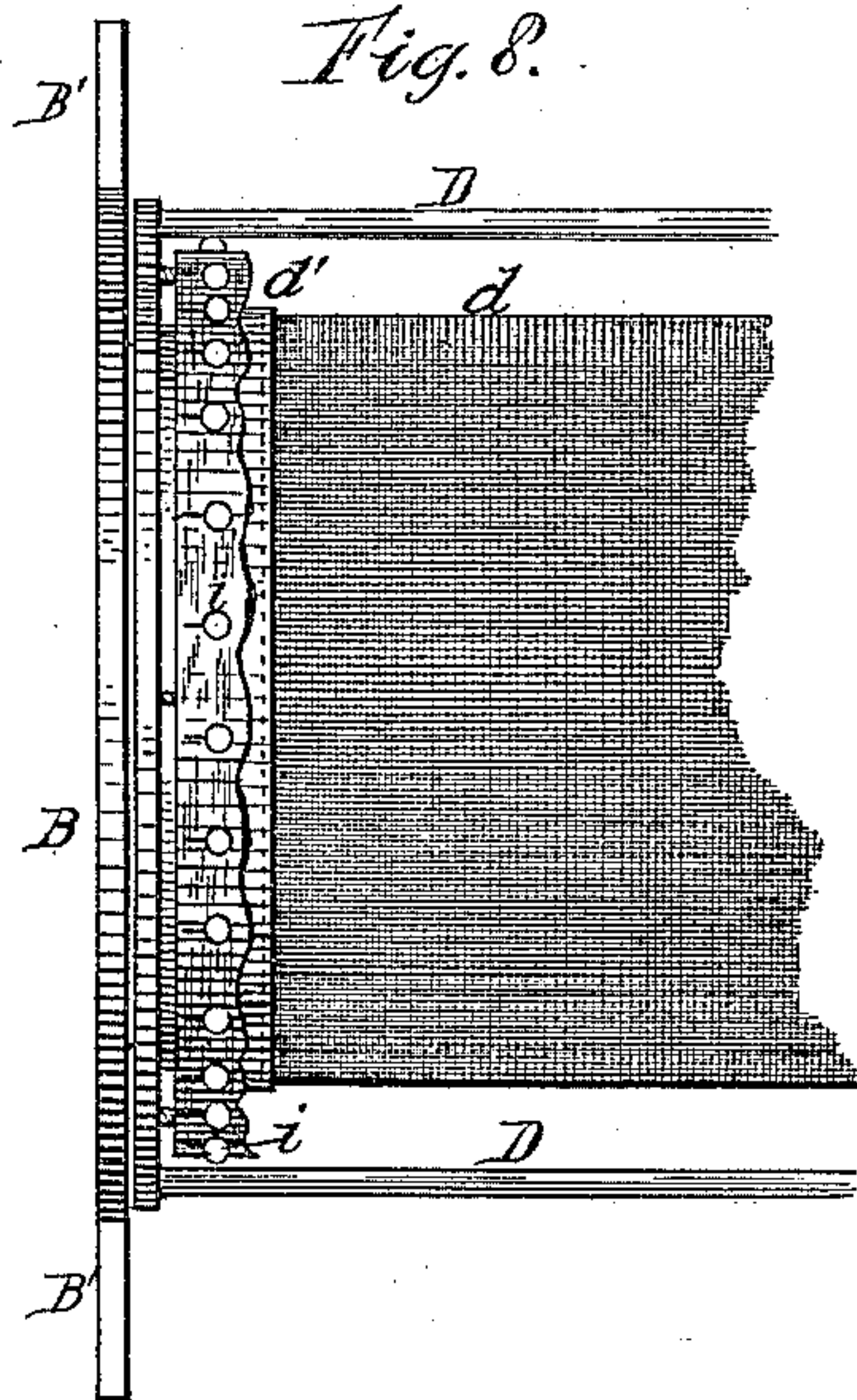
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*Fig. 7.*



*Fig. 8.*



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# UNITED STATES PATENT OFFICE.

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## ROTARY BOLT.

SPECIFICATION forming part of Letters Patent No. 398,478, dated February 26, 1889.

Application filed April 25, 1887. Serial No. 236,004. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN H. WALSH, a citizen of the United States, residing at Mason City, in the county of Cerro Gordo and State of Iowa, have invented certain new and useful Improvements in Flour-Dressers, of which the following is a specification.

This invention relates to flour-dressing machinery of the class commonly known as "flour bolts;" and my object is to so improve the construction of such machine as to secure a more perfect and economical bolting of the flour, and by means comparatively cheap and simple.

The invention consists in the novel construction and combination of parts hereinafter described, and pointed out in the claims.

In the accompanying drawings, forming a part of this specification, Figure 1 represents a side elevation of a machine embodying my invention with a portion of the upper part removed, showing the interior arrangement of the reel and connected apparatus; Fig. 2, an end view of the same, but with a modified form of actuating mechanism; Fig. 3, a similar view of Fig. 1, the outer head or disk of the frame being removed and portions of the internal gear of the cylinder-ring broken away to show the arrangement of the parts inside; Fig. 4, a fragmentary view of a modification in the construction of the reel and connected parts, showing also an intermediate stay-ring and the adjustment of the same; Fig. 5, detail of the chain-belt connection with the elevators; Fig. 6, an elevation of the conveyer and its immediate connections from the side nearest the bolting-cloth; Fig. 7, a transverse sectional view looking toward the tail of the machine, and Fig. 8 a fragmentary view showing the attachment of the bolting-cloth to its end ring in detail.

Similar letters of reference indicate corresponding parts.

The frame A is in the main similar to those in common use and need not be particularly described. To each end of this frame is attached a head or disk, B, by means of suitable lugs or flanges, B' B'. An annular flange, b, projects inwardly and is turned perfectly true.

In the construction of the reel I use two rings, C C, for the ends of the reel, connected and held by suitable rods, D D. These rings

are fitted to the annular flange of the head B and may be arranged to turn inside or outside of said flange, as shown in Figs. 1 and 4. The rings are actuated by suitable gearing, and for this purpose are provided with internal or external gear-teeth, as may be desired. In practice I prefer to use an internal gear on the ring, because a single pinion meshing with it revolves the cylinder in the proper direction, whereas in the case of external gearing the number of wheels must be increased, as shown in Fig. 2.

In suitable boxes, a a, which may be permanently or adjustably attached to the heads B B, are mounted shafts E E' E' E'', which extend through the entire length of the reel. To one of these shafts—preferably E—is secured a pinion, F, which, meshing with the internal gear of the ring C, actuates the same as the shaft is revolved by the pulley G. Within the reel and a short distance back from the end rings sprocket-wheels I I' I' are mounted on the shafts E E' E' and carry chain belts J J. Through that arc of the circle intersecting the periphery of the sprocket-wheels nearest the bolt-cloth the chain belts are distended to the same relative curve as the adjacent inside of the cylinder by means of guides c c, secured to the inner face of the heads B B. The friction of the chain belts on the face of these guides is relieved by the intermediate travelers, I''. At suitable distances along these chain belts are attached elevators K K, which are in the nature of troughs, as shown, and extend the whole length of the interior bolting-surface of the reel. The elevators are set about half an inch from the bolt-cloth through a considerable part of their circuit, as shown, and as the reel revolves in the direction indicated by the arrows gather up the stock in the bottom of the reel and carry it upward in the same direction, depositing it gradually along the inner surface of the bolt-cloth d. Any stock that may remain in the elevators after passing above the horizontal center of the reel is carried over and deposited in the trough of the conveyer L, to be moved farther toward the tail of the machine and, as worked out of the conveyer-trough, carried around with the reel until thoroughly bolted.

It is desirable that the elevators should



move with the same speed as the bolt-cloth, so that the bolting may be as gentle as possible, and neither hastened nor retarded by the action of the elevators beyond the natural capacity of the bolt-cloth to properly sift the flour. To secure this result in the case of the construction shown in Figs. 1 and 3 requires that the pinion *F* should be somewhat smaller than the sprocket-wheels *I I' I'*, the exact relative size of the wheels and gearing being determinable by careful mathematical calculation; but where, as in the case of the construction shown in Fig. 2, intermediate gearing is used to actuate the reel the size of the pinion is not very material, the proper speed being easily secured by the comparative size of the intermediate gears, *e e'*. Of course these gears may mesh directly or be connected by chain belt, provision being made for the corresponding change in the direction of their revolution.

The bolt-cloth *d* is attached to wooden or metallic rings *f f*, secured by screws or bolts to the rings *C C*. In practice I attach the bolt-cloth in the following manner: Strong canvas, *d'*, or other like suitable material, is sewed to each end of the bolt-cloth and provided with button-holes. The interior or periphery of the ring, as the case may be, is provided with a series of studs or buttons, *i i*, and the canvas end of the cloth is brought around the ring and buttoned thereon. By means of set-screws *h h* the bolt-cloth may then be stretched to any desired extent. One or two rings may be used at each end, as shown. Where two are used, as shown in Fig. 1, the outer ring is of course not drawn tightly to its place until the cloth is stretched by the inner one.

The middle portion of the reel is made perfectly true by the use of one or more stay-rings, *g*, the periphery of which is faced with felt or the like and the inside turned perfectly true. The bolt-cloth is sewed to this felt, and the position of the ring is adjusted by the set-screws *k* in the rods *D D*. On one or more of the shafts carrying the sprocket-wheels—preferably the upper and lower ones—travelers *M* are loosely mounted, and, following this ring, serve to support and steady the middle of the reel.

The flour-conveyer *L* is mounted within and at the descending side of the reel, and revolves in a direction opposite thereto, working the flour over the outward edge of the trough *N* and toward the tail of the machine, which is at the left in Fig. 1 and at the right in Fig. 6. The stock is admitted to the conveyer by and through the inlet-spout *R*, Fig. 6, flows over the edge of the conveyer-trough in a thin sheet, and falls between the bolt-cloth and an apron, *O*, corresponding practically to the curvature of the reel and extending from the edge of the trough to near the bottom of the reel. As before stated, the unbolted portions of the stock are carried over by the elevators and

redeposited in the conveyer, where the action of the conveyer-flights tends to break up any balls or lumps that may have accumulated, especially in the case of moist flour. The middlings pass out through the tail-spout *s*. This and other features of the invention already described render it of special value in the matter of rebolting where the first process has been imperfect.

The flow of the stock toward the tail of the machine is regulated by the relative height and inclination of the outer edge of the trough *N'*. At the head of the machine this should be high enough to prevent the stock being thrown over the edge until some distance from the head, and for this reason the outer edge of the trough is quite sharply inclined here, as shown in Fig. 1. For the remainder of the operative length of the trough the incline may be very gradual, or the edge of the trough may be made quite horizontal, as may be found desirable. This part of the machine may be made adjustable by making that part of the trough that serves for the outer edge of a separate piece suitably bolted to the trough itself.

Above the conveyer is mounted a revolving brush, *P*, mounted in the same manner as the shafts before referred to. This should revolve in the opposite direction from the reel, and serves to clear the bolt-cloth of adhering flour. By an adjustment of its journals its distance from the bolt-cloth may be regulated.

A simple manner of attaching the elevators to the chain belt is shown in Fig. 5. The link *l* is of a common form, having lateral lugs to receive a pin, *m*. To the under side of the elevator *K* is attached a lug, *n*, engaging with those of the link. The elevator is prevented from turning on the link by the projections *o o*, resting on the top of said link.

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

1. In a flour-dresser, the combination of a cylinder or reel, substantially as described, stationary heads upon which the reel revolves, shafts mounted in said heads and provided with sprocket-wheels, chain belts carried by said sprocket-wheels, elevators mounted on said chain belt within said reel, and mechanism, substantially as described, adapted to rotate the reel and carry said elevators in proximity to a portion of its interior, substantially as and for the purpose set forth.

2. In a flour-dresser, the combination of the closed heads *B B*, the open-ended reel, substantially as described, mounted thereon, sprocket-wheels *I I' I'*, chain belts *J J*, and elevators *K K*, substantially as and for the purpose set forth.

3. In combination with an open-ended flour-bolting reel, substantially as described, the sprocket-wheels *I I' I'*, traveler *I''*, guides *c c*, elevators *K K*, chain belts *J J*, and mechanism, substantially as specified, whereby



simultaneous motion is imparted to the reel and the elevators, as set forth.

4. In combination with the reel of a flour-dresser and with suitable feed and discharge spouts, an internal conveyer adapted to discharge the stock at one side of the reel, and a trough for said conveyer, having its discharge side inclined, whereby the flow of the stock over the edge of the trough is made uniform, substantially as specified.

5. In combination with the reel of a flour-dresser and with suitable feed and outlet spouts, an internal conveyer, adapted to discharge the stock at one side of the reel, and

a trough for said conveyer, having the discharge side thereof vertically adjustable, whereby the flow of the stock is regulated, substantially as set forth.

6. In a flour-dresser, the combination of the open-ended reel, the feed-spout R, and discharge-spout S, the conveyer L, trough N, and apron O, substantially as described.

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

JOHN H. WALSH.

Witnesses:

S. W. BRAINERD,  
S. W. NORTON.