

No. 887,894.

PATENTED MAY 19, 1908.

E. S. WILDER.
FEED CUTTER.

APPLICATION FILED NOV. 25, 1906.

4 SHEETS—SHEET 1.

FIG. 1.

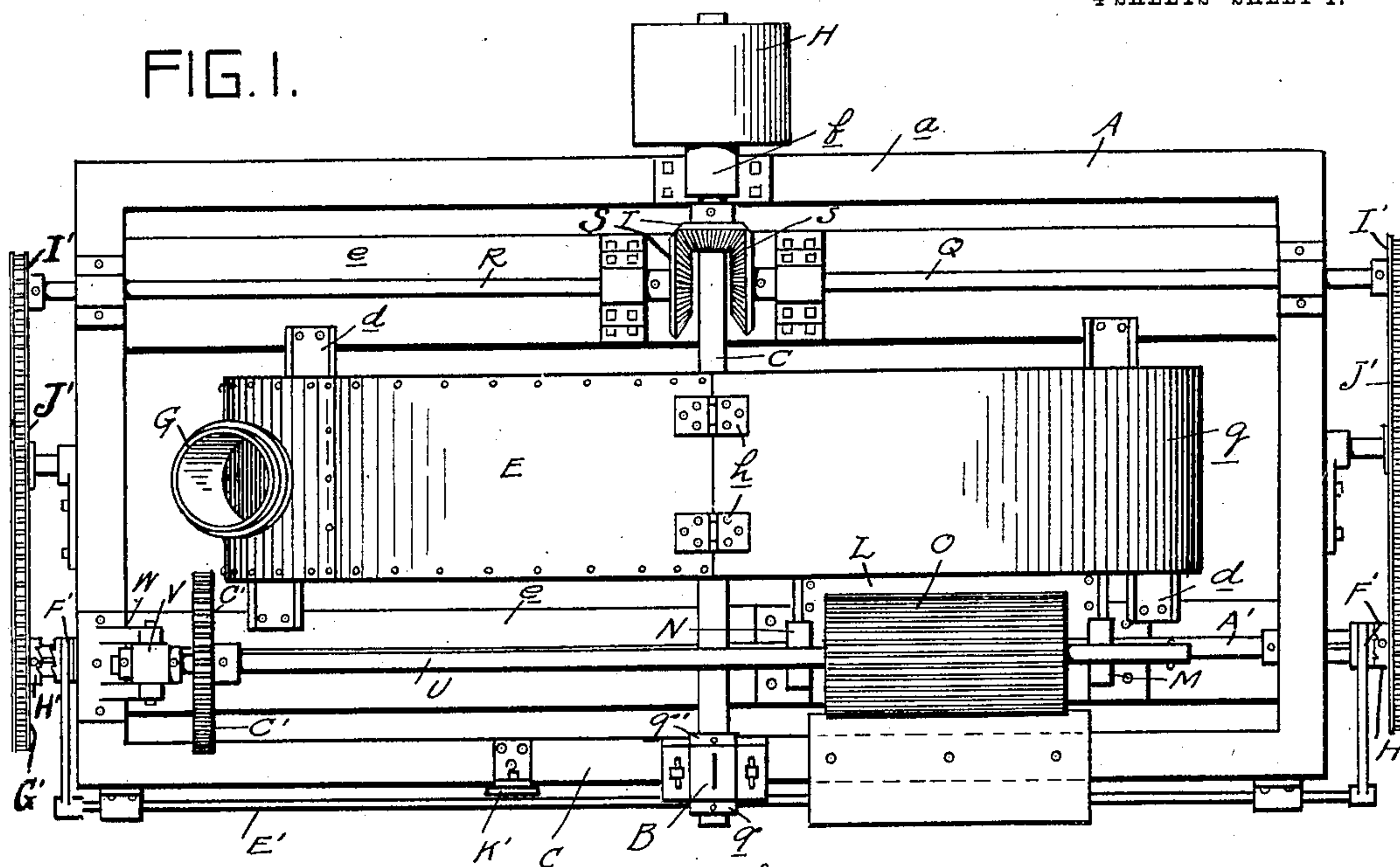
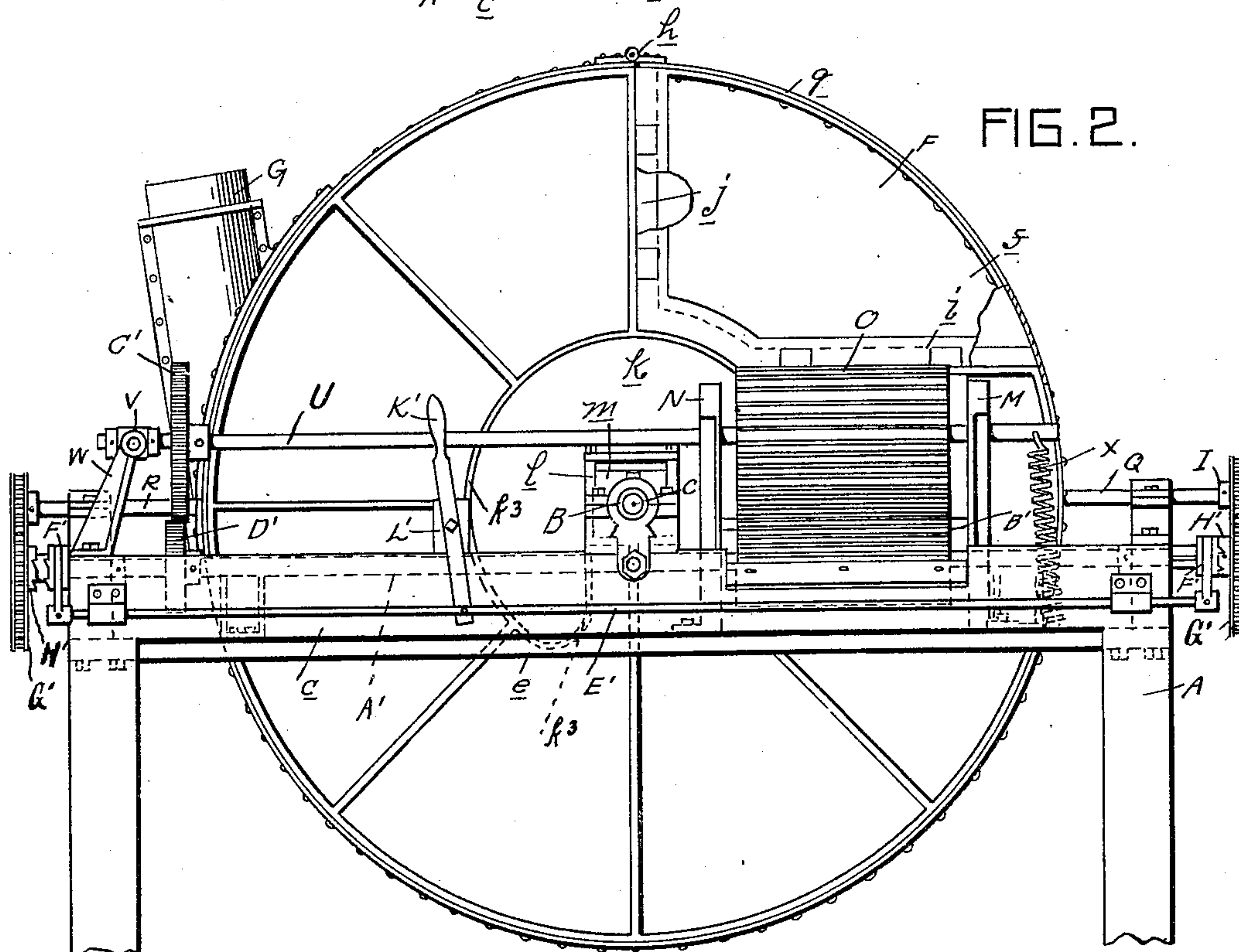


FIG. 2.



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4 SHEETS—SHEET 2.

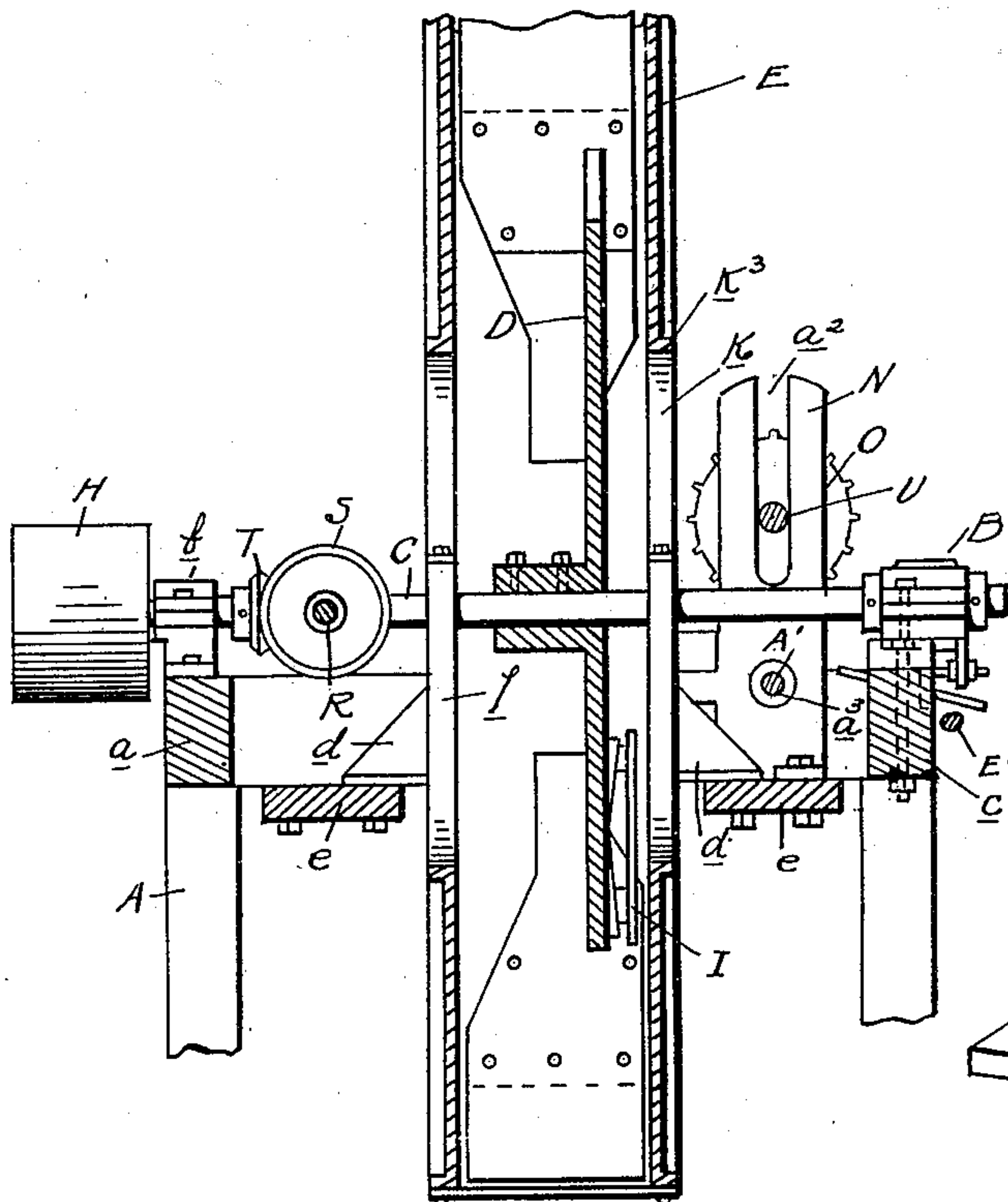


FIG. 3.

FIG. 8.

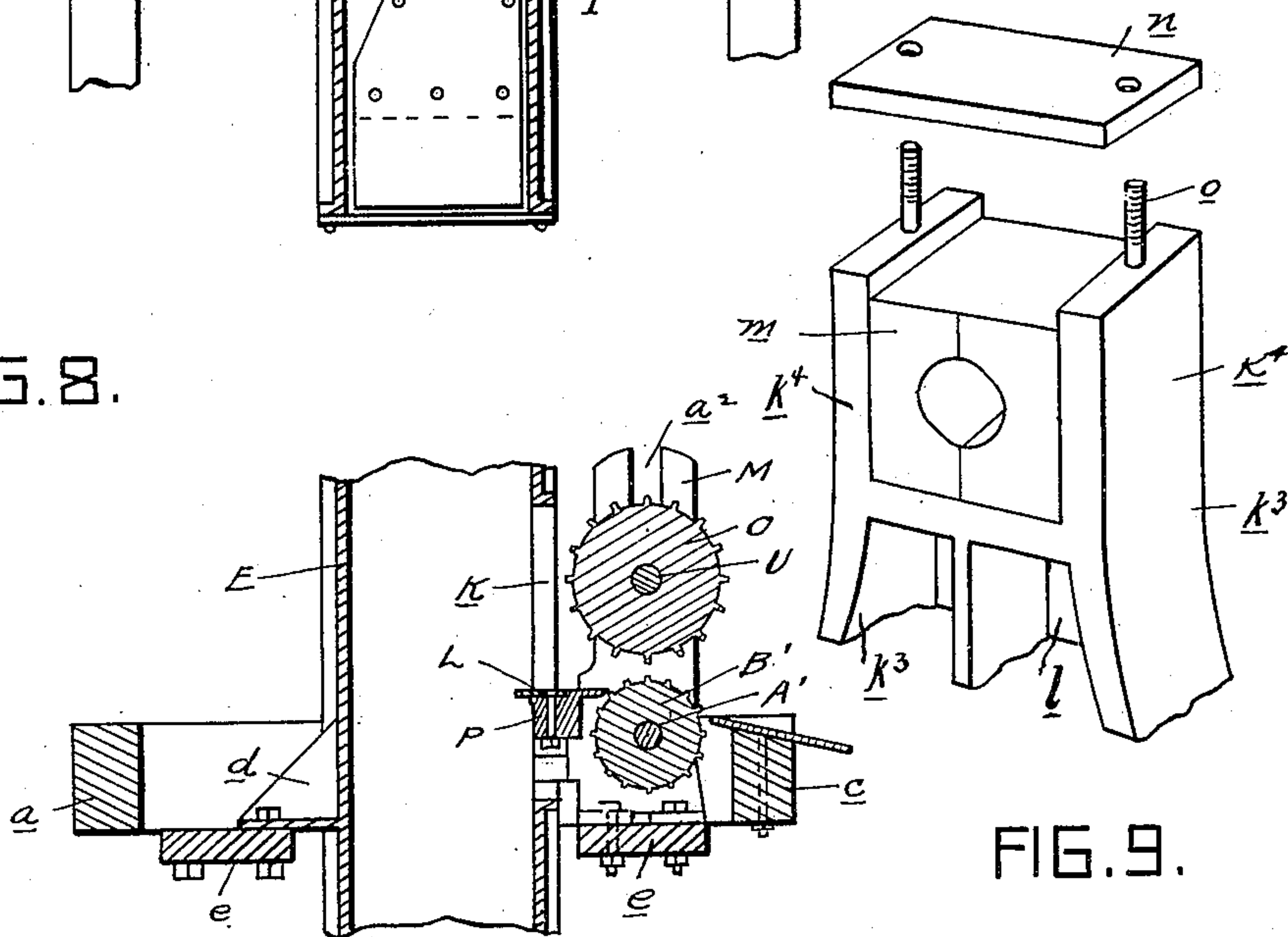


FIG. 9.

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4 SHEETS—SHEET 3.

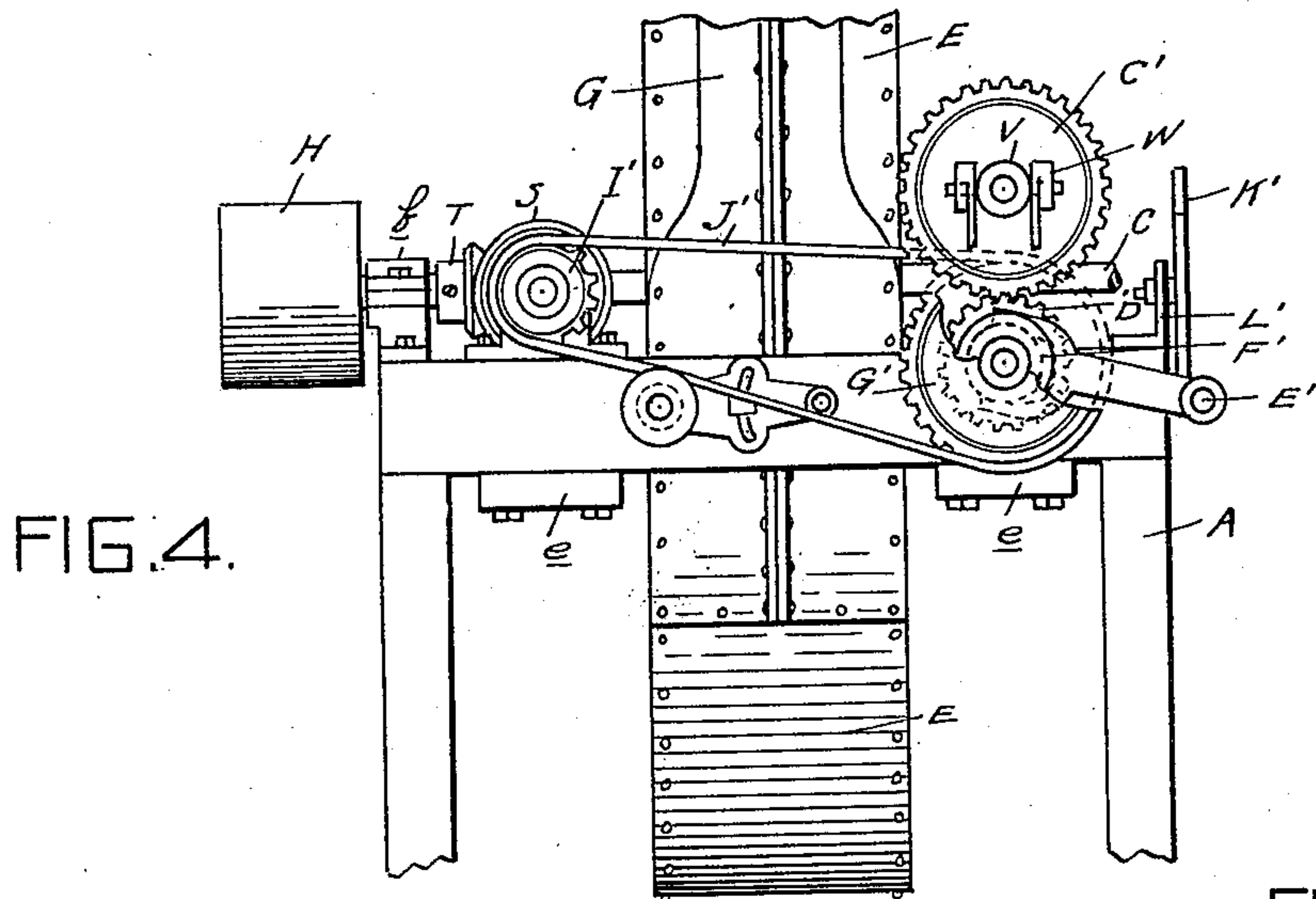


FIG. 4.

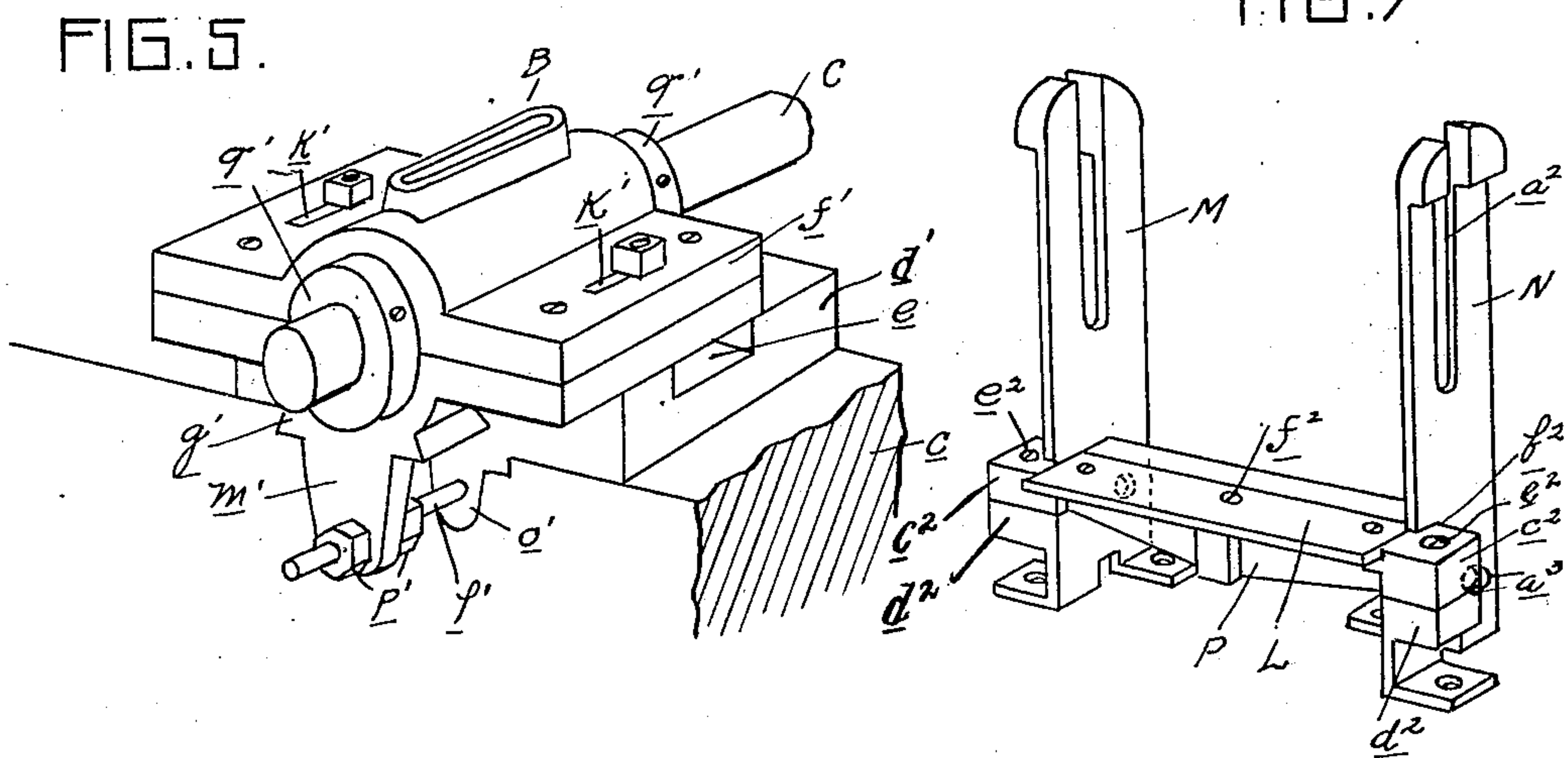
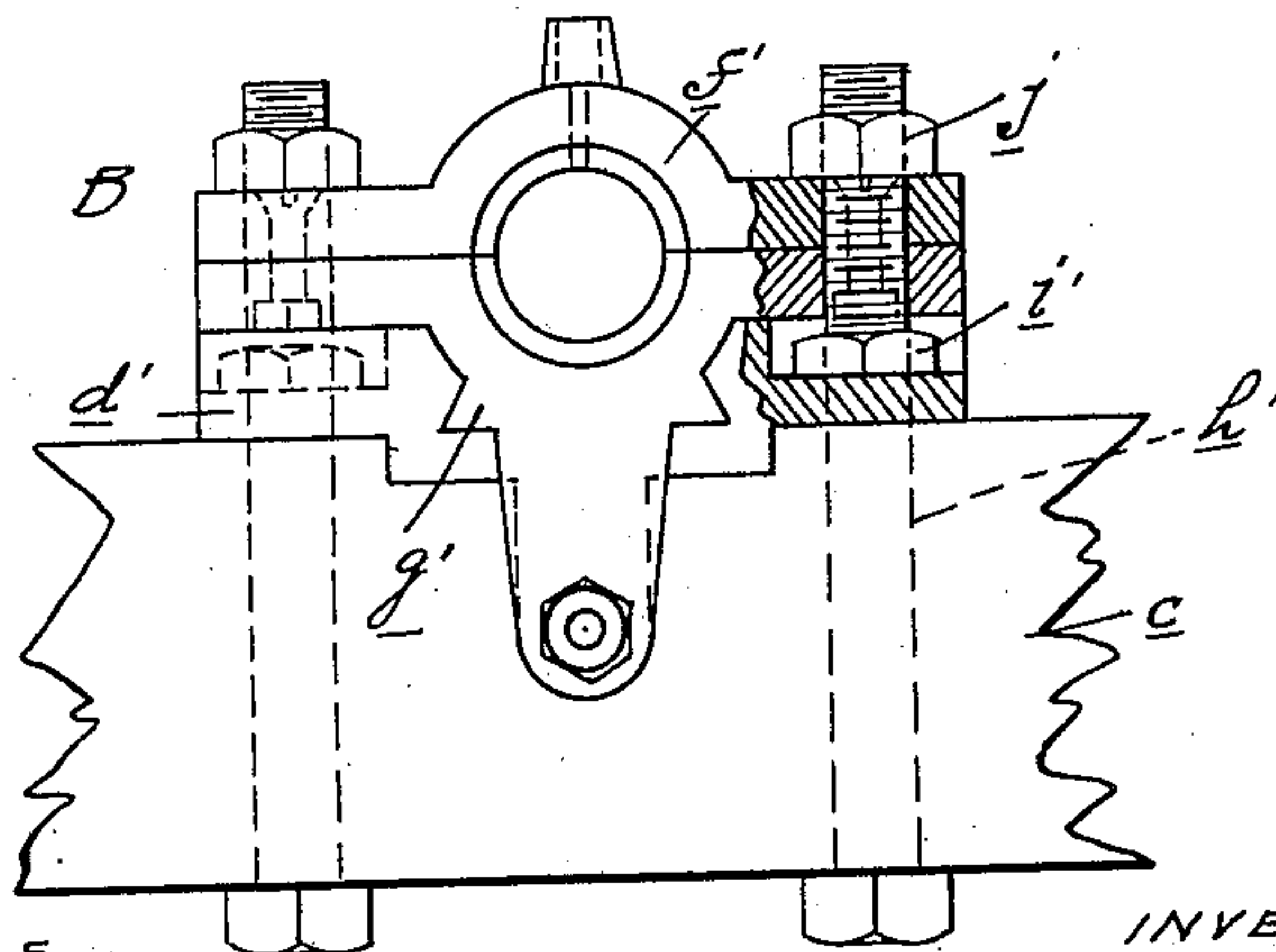


FIG. 5.

FIG. 7

FIG. 6.



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4 SHEETS—SHEET 4.

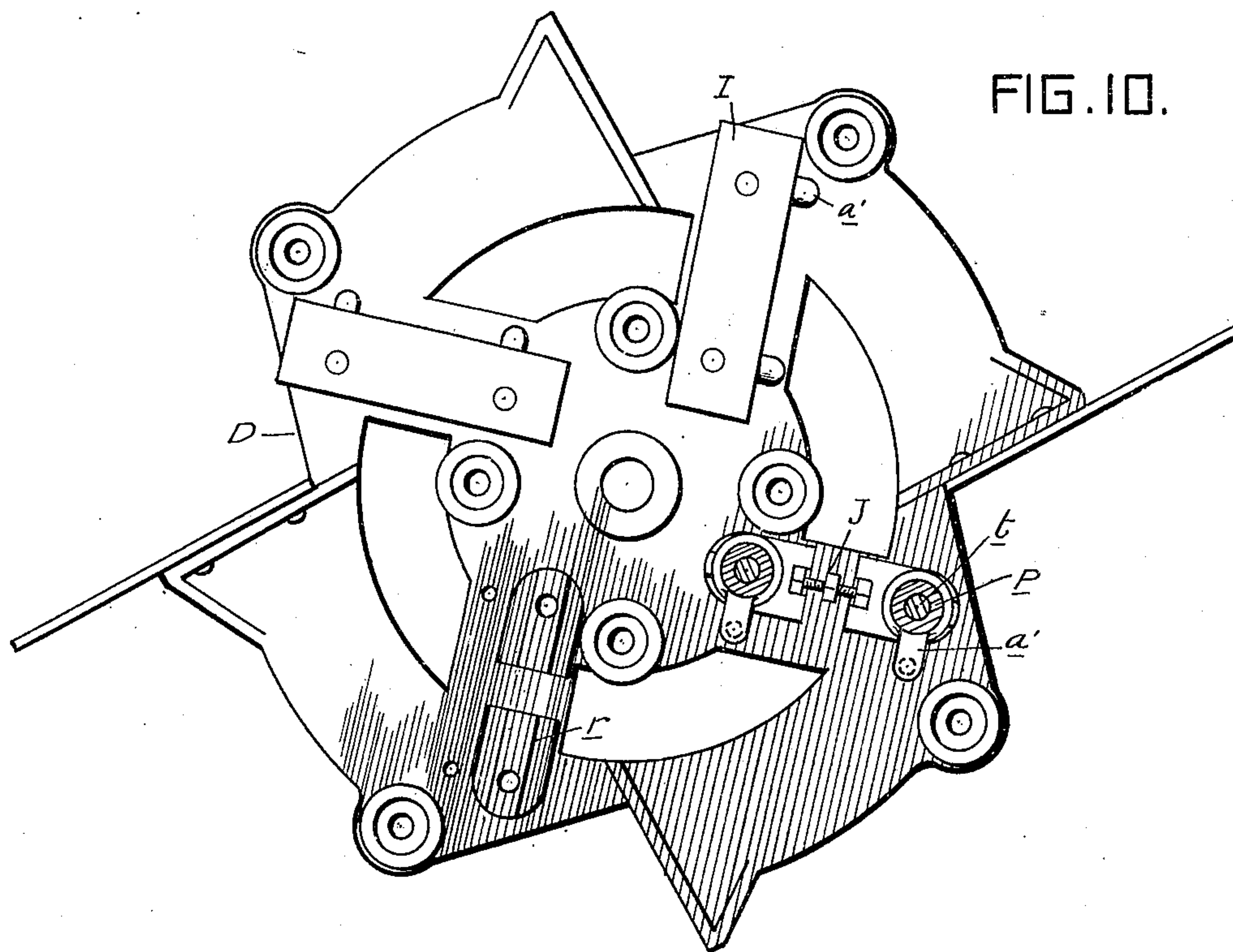


FIG. 10.

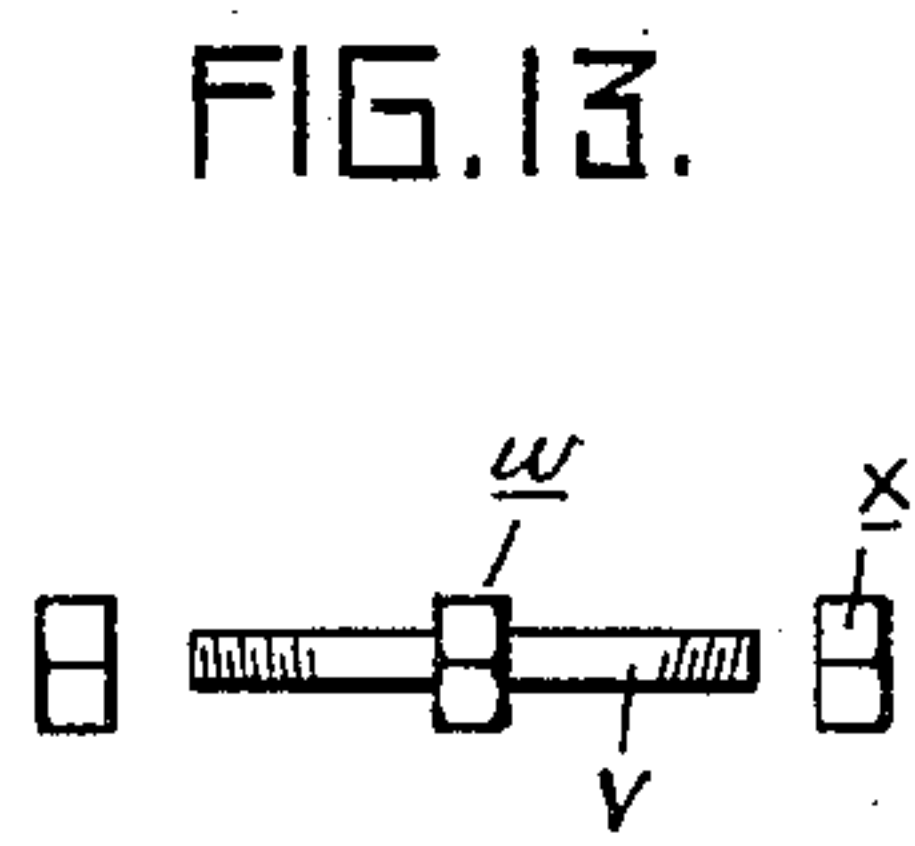


FIG. 13.

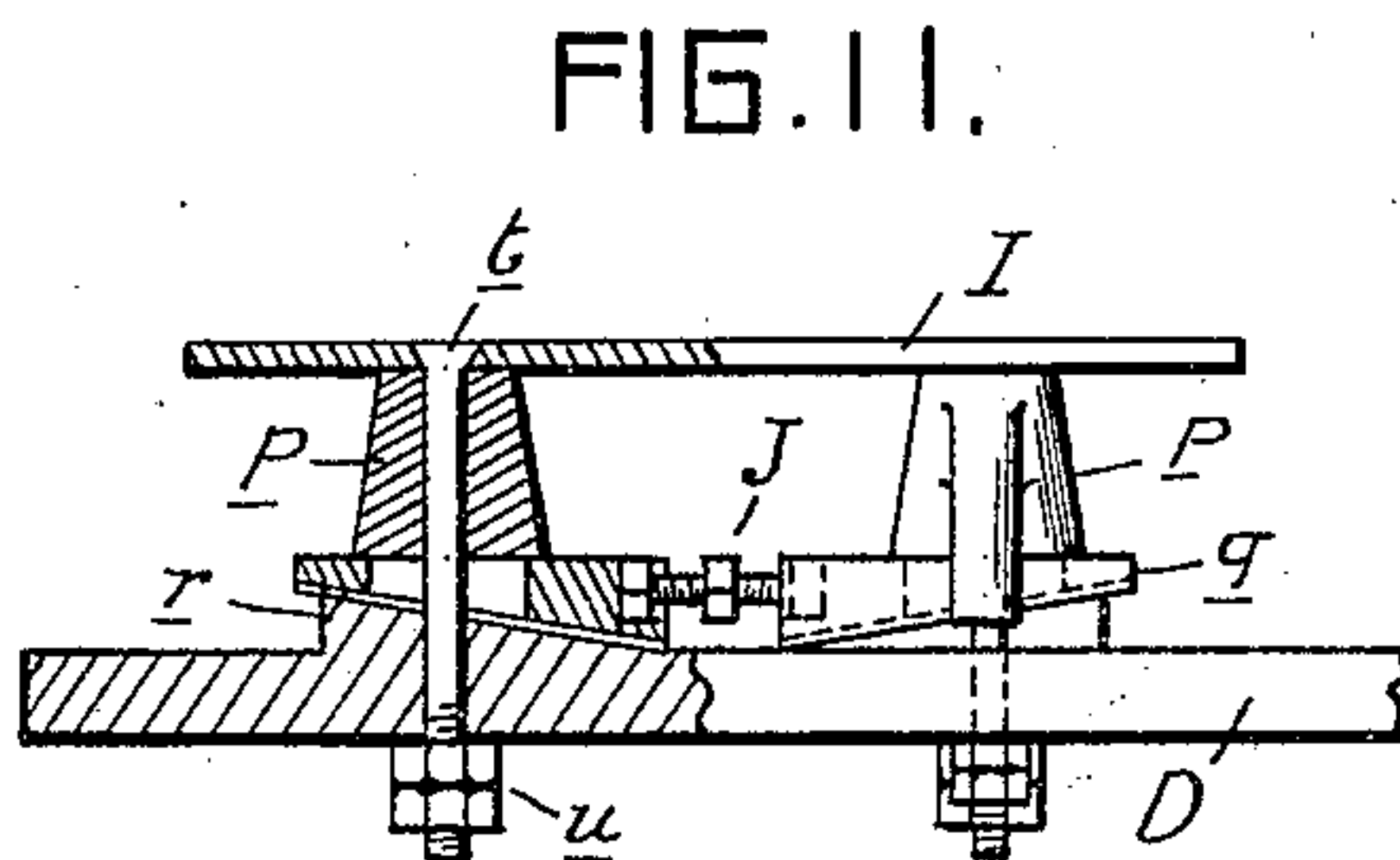


FIG. 11.

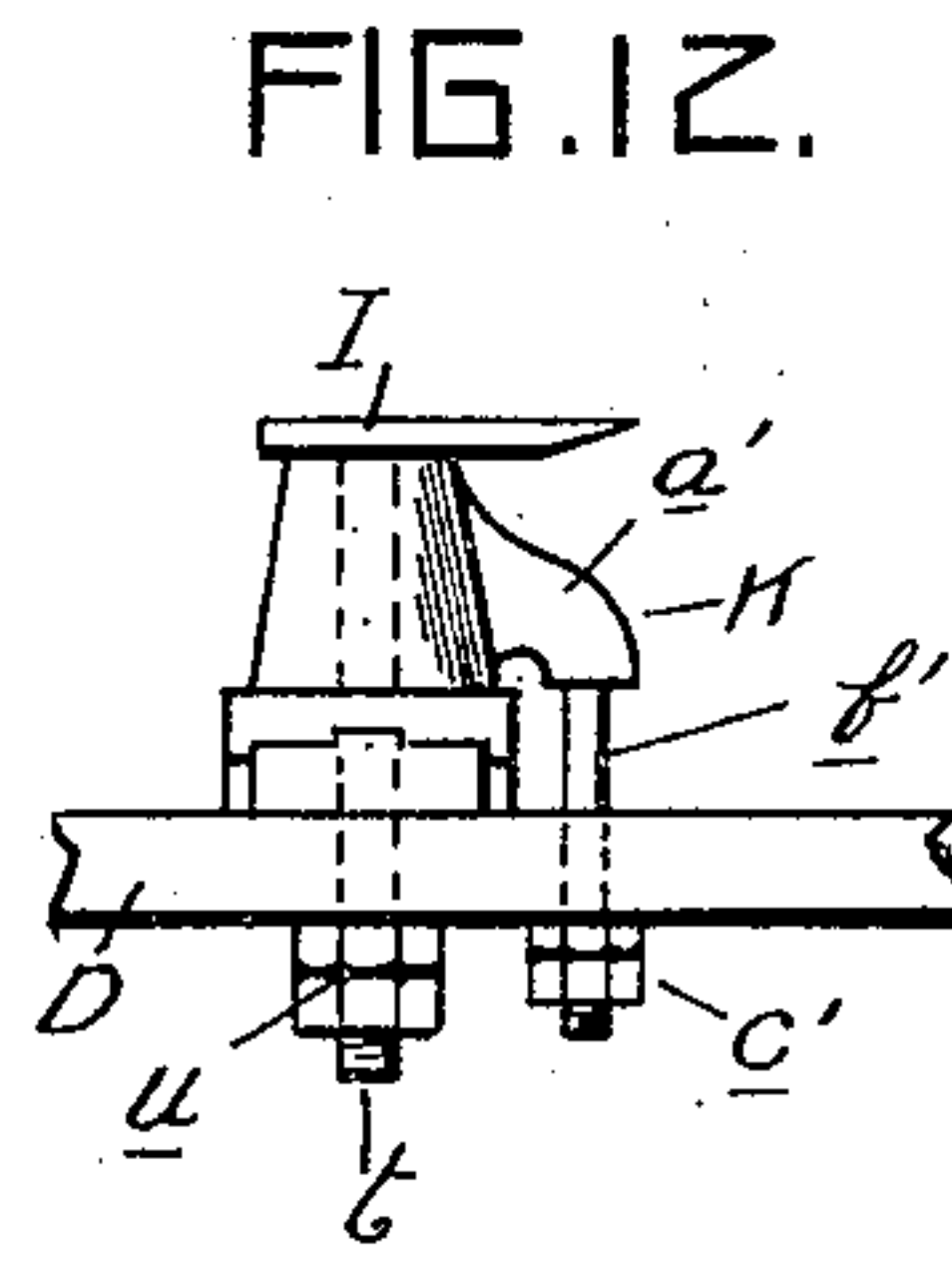
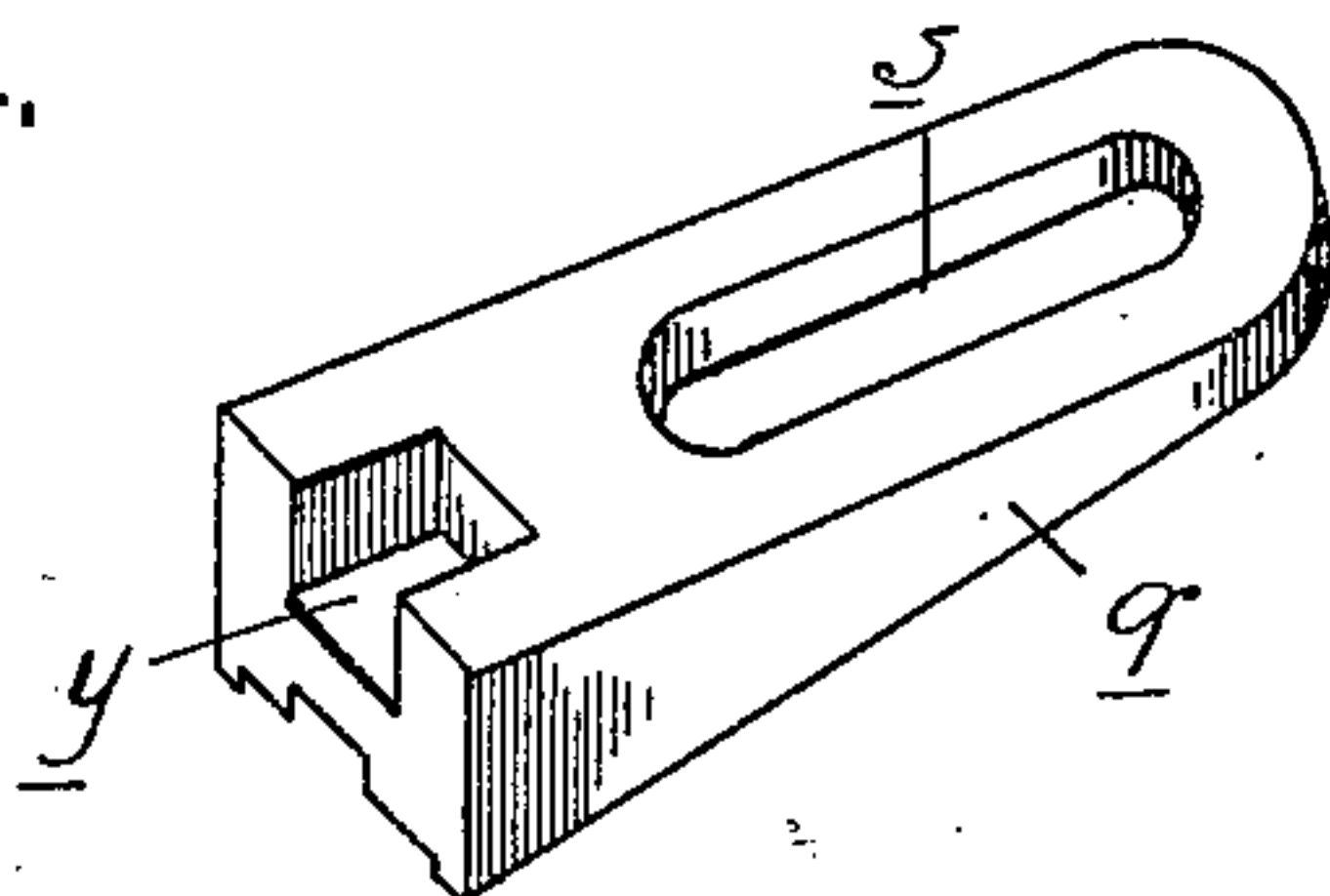


FIG. 12.

FIG. 14.



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FEED-CUTTER.

No. 887,894.

Specification of Letters Patent.

Patented May 19, 1908.

Application filed November 25, 1905. Serial No. 289,117.

To all whom it may concern:

Be it known that I, EDWARD S. WILDER, a citizen of the United States of America, residing at Monroe, in the county of Monroe and State of Michigan, have invented certain new and useful Improvements in Feed-Cutters, of which the following is a specification, reference being had therein to the accompanying drawings.

The invention relates particularly to a combined cutter and blower and consists in the novel and simple construction of the machine and in the peculiar arrangement and construction of its parts as will be more fully hereinafter set forth and illustrated.

In the drawings, Figure 1 is a top plan view of the fodder cutter. Fig. 2 is a side elevation thereof partly in section. Fig. 3 is a sectional view of the cutter illustrating its interior and the feed mechanism. Fig. 4 is a partial end view. Fig. 5 is a detached perspective view of the adjustable shaft bearing. Fig. 6 is an end view thereof. Fig. 7 is a detached view in perspective of the feed roller support. Fig. 8 is a sectional view, illustrating the arrangement of the shear plate. Fig. 9 is an enlarged perspective view of the casing bearing. Fig. 10 is a side elevation, partly in section, of the balance wheel and knife blades. Fig. 11 is a view in section and partly in elevation of the adjusting mechanism for the blades. Fig. 12 is an end view thereof. Fig. 13 is a view in elevation of the adjusting device for the wedge blocks, and Fig. 14 is a perspective view of one of said blocks.

In the drawings thus briefly described the reference letter A designates a supporting frame preferably of wood, on which the various parts of the cutter are mounted. Upon one of the side sills *a* of the frame is a bearing of ordinary construction *b* and upon the opposite sill *c* an adjustable bearing B, which support the main drive shaft C of the machine.

D represents the fly or balance wheel fixedly secured to the shaft described, and E is a casing inclosing the wheel mounted upon the supporting frame A. Preferably the blower casing, as it will be hereinafter termed, is provided at its sides with brackets *d* bolted upon longitudinal beams *e* on the main frame below the side sills. The casing is preferably

circular in form and is provided with a sectoral hinged portion F which allows access to its interior to permit of repair or removal of parts. As shown, the hinged section is composed of complementary sectoral portions *f* of the casing sides, and a peripheral portion *g* connecting the side segments, the entire section being secured to the casing proper by hinges *h h* at the top. The sides are also provided with horizontally extending ribs *i* which support the hinged section when in its closed position, and flanges *j* (Fig. 2) over which the section engages in closing thus forming a tight joint between the parts.

Each side of the blower is provided with an opening axially thereof constituting an air inlet *k* and with a portion *l* projecting upwardly into said opening. The edges of the openings forming the air inlet *k* are reinforced by ribs or flanges *k*³, preferably formed integral with the sides of the casing, which flanges also extend upwardly along the sides of the portion *l* and project above the tops thereof, the upwardly projecting ends of said flanges forming spaced uprights *k*⁴ which constitute journal boxes. Within each box is placed complementary bearing blocks *m*, preferably at a distance below the box top and *n* is a cap plate for each box apertured to receive bolts *o* forming the securing means for the cap. The boxes thus described are utilized for the purpose of retaining the casing in its proper position upon the supporting frame.

G represents the usual discharge pipe for the blower casing and H is a drive pulley fixed upon the main drive shaft C.

The balance wheel D in this instance constitutes the fan being provided with fan blades suitably secured to its periphery and also carrying upon one of its sides a number of knife blades I. As shown each knife blade is spaced from the fly wheel and means are provided whereby it may be adjusted to or away from the wheel for the purpose of bringing it into proper relation with the shear plate.

As here shown a pair of post members *p* constitute the support for each blade. These posts are mounted upon wedge blocks *q* which in turn are arranged upon and have a sliding engagement with inclined portions *r* formed preferably integral with the balance

wheel. A tubular opening is formed in each post while the wedge blocks or members q are longitudinally recessed at s for the purpose of receiving therethrough a bolt t constituting the securing means for the parts including the blades I through which the bolts pass as plainly shown in Fig. 11.

u are lock nuts upon the projecting bolt ends and J is an adjusting device for operating each pair of wedge blocks. It consists in this instance of a bar v having a right and left hand thread formed upon its extremities, a wrench hold w at its center, and nuts x engaging its ends. These nuts lie in recesses y formed in the wedge blocks for that purpose and form an operative connection between the blocks and the threaded bar.

The desired adjustment of the knife blades is obtained by first loosening the posts and then turning the adjusting bolt v to either spread the wedges or to permit of the latter being forced together the desired amount. After the desired adjustment is effected the lock nuts on the post bolts are tightened and the blades are in readiness for operation.

To resist the strains that are necessarily imposed upon the blades during the operation of cutting, I have provided a reinforcement for each blade post in the form of a tension member K consisting of an arm a' projecting from the post in the direction of the cutting edge of the blade and a finger or bar b' preferably integral with the extension a' which projects through an aperture formed in the balance wheel in a manner similar to the bolt t . Lock nuts c' are provided for the finger b' to lock the same from movement.

It will be observed that the reinforcement described not only acts as a tension member preventing the post from being forced backwardly during the operation of cutting but also affords means whereby the cutting edge of the blades may be brought into slightly angular relation with the fly wheel body which is sometimes desirable to obtain a fine adjustment between the blades and the shear plate. Further means are provided that will permit all of the blades to be adjusted simultaneously and this while the machine is in operation. The mechanism for that purpose is the adjustable bearing B previously referred to, which when operated causes the fan proper, together with the blades thereon, to move in closer proximity to or further away from the shear plate. In construction the bearing comprises a bed plate d' mounted upon the sill c and recessed as at e' , a journal box f' formed of connected bearing members each slotted as at k' the lower of which is provided with a dovetail section g' engaging a dovetail groove in the bed plate, bolts h' extending through the sill, bed plate and

box, nuts i' for securing the bed plate to the sill arranged within the recesses e' , and nuts j' on the bolt ends.

The adjusting is effected by a threaded bolt l' extending through a depending section m' on the lower box member and engaging a bearing o' on the bed plate, and lock nuts p' upon the adjusting bolt upon opposite sides of the extension m' .

q' are collars fixed on the main shaft C on opposite sides of the box.

The operation of the adjustable bearing will be obvious from its construction, the movement of the box proper causing a corresponding movement of the shaft and consequently of the fan with the blades thereon.

The shear plate L is supported upon the main frame of the fodder cutter independently of the blower casing so that the latter will be free from any and all strains that are necessarily imposed upon the shear plate during the operation of the cutter. The preferable construction and manner of mounting the shear plate is as follows: M and N designate uprights upon the sill member e opposite the feed opening in the blower casing. These standards are slotted in their upper portions as at a^2 to receive the journals of the upper feed roll O, and as at b^2 to receive the ends of the cutter bar P. This bar is provided with bearing portions c^2 resting upon corresponding bearings d^2 upon the standards, the bar being held in place by screws or bolts e^2 passing through the bearings as indicated in Fig. 7. The bar P described has a recess formed in the top portion thereof in which is seated the shear plate L held in place by suitable securing devices f^2 and readily detachable for the purpose of repair or removal.

The drive mechanism for the feed rollers comprises counter shafts Q and R mounted in bearings on the ends of the frame and on one of the sill members e upon opposite sides of the main drive shaft C, the counter shafts carrying at their meeting ends bevel gears S that engage a bevel pinion T upon the shaft C as plainly shown in Fig. 1.

U represents the drive shaft for the upper feed roller O, the portions of the shaft constituting the roller journals engaging the slotted standards M and N while the opposite end is mounted in a rocking bearing V supported on a bracket W on the main frame. X represents a spring connecting the free end of this shaft to the frame work and forming the usual yielding connection between the parts.

A' is the drive shaft for the lower roller B' journaled in bearings a^3 in the uprights and at its ends in suitable bearings on the frame A.

C' and D' are the usual intermeshing gear

wheels upon the drive shafts and E' is a shifting bar journaled in bearings on the frame and carrying at each end clutch members F' arranged upon the drive shaft A' for independent sliding movement.

G' are sprocket wheels loosely sleeved upon the ends of shaft A' carrying clutch sections H' adapted to engage with the clutches operated by the shifting bar. I' are similar sprockets fixed upon the ends of the counter-shafts Q and R and connected by chains J' with the sprockets G'.

K' represents an operating lever pivoted upon an upright L' upon the main frame, and having a pivotal connection with the shifting bar E'.

It will be seen from the description of the drive mechanism that two gear trains are provided one on each side of the main drive shaft, for driving the rollers in either a forward or reverse direction, the drive mechanism being equally balanced upon the main frame and under the control of a single operating lever.

What I claim as my invention is:—

1. In a fodder cutter, the combination with a supporting frame, of the fan casing provided with inlet and discharge openings, the fan therein carrying knife blades, uprights upon the frame opposite the casing inlet, a transverse cutter bar independent of the casing fitted within openings formed in the lower portions of the standards and detachably secured in place, and a shear plate detachably connected to the cutter bar.

2. In a fodder cutter, the combination with a fly wheel, of the knife blades, a pair of posts upon the wheel upon which each blade is mounted, a pair of wedge blocks intermediate the posts and fly wheels provided with oppositely threaded openings, and a bolt having its ends oppositely threaded and engaging said openings.

3. In a fodder cutter, the combination with the supporting frame, of a main drive shaft journaled transversely of and in suitable bearings upon said frame, counter shafts extending from opposite sides of and having direct operating connections with the main shaft, the feed rollers, driving shafts therefor, rotary members loosely sleeved upon the extremities of one of the driving shafts, clutches upon said shaft for engaging the rotary members, drive connections between the counter shaft and said rotary members, an operative connection between the driving shafts, a shifting device for the clutches, a cutter carried by the main drive shaft, and a shear plate arranged to cooperate with said cutter.

4. In a fodder cutter, the combination with a supporting frame, of the main drive

shaft journaled transversely thereon, the feed rolls, gear trains for operating the rolls, lying upon opposite sides of and having each a direct drive connection with the main shaft, a clutch mechanism for connecting either of the gear trains with the rolls, a single operating device for actuating the clutch mechanism, a cutter carried by said main drive shaft and a shear plate arranged to cooperate with said cutter.

5. In a fodder cutter, a fan casing having an inlet opening formed in its sides, a supporting section extending upwardly within the inlet, and spaced uprights projecting vertically beyond the supporting section forming the journal box.

6. In a fodder cutter, a fan casing having an inlet opening formed in its side, a supporting section extending upwardly within said inlet, spaced uprights projecting vertically within the opening beyond the supporting section, complementary bearing blocks mounted upon the supporting section between the uprights, and a cap plate detachably arranged upon the uprights.

7. In a fodder cutter, the combination with a casing having one of its sides cut away to form an air inlet and a supporting section projecting upwardly within said inlet, of a rib or flange extending about the inlet and upon opposite sides of and upwardly beyond the supporting section, forming a journal box.

8. In a fodder cutter, the fan casing having one of its sides cut away or recessed to form an inlet opening, and a supporting section projecting upwardly therein, said side having spaced integral portions thereof rising from the supporting section and extending upwardly therebeyond for a considerable distance, forming a journal box.

9. In a fodder cutter, the combination with a supporting frame, of a transverse cutter shaft journaled therein, oppositely driven counter shafts geared to and extending from said cutter shaft, the feed rolls, a drive shaft therefor, gearing connecting the oppositely driven counter shafts and the feed roll drive shaft, a cutter carried by the cutter shaft, and a shear plate arranged to cooperate with said cutter.

10. In a fodder cutter, the combination with a balance wheel, of adjustable knife supports thereon, the knives, reinforcements for the supports projecting from the latter in the direction of the knife edges to the wheel and extending through and beyond the latter, and lock nuts upon the projecting portions of the reinforcements.

11. In a fodder cutter, a frame, a transverse cutter shaft journaled therein, a pair of oppositely driven counter shafts geared

to and extending in opposite directions from
said cutter shaft, a pair of feed rolls, a drive
shaft therefor; a pair of sprocket wheels
loosely mounted on the drive shaft for the
5 feed rolls, chains connecting said sprocket
wheels with oppositely driven counter shafts,
means for causing either of said sprocket
wheels to rotate with the shaft, a cutter

carried by said cutter shaft, and a shear plate
arranged to cooperate with said cutter. 10

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

EDWARD S. WILDER.

Witnesses:

JAMES P. BARRY,
AMELIA WILLIAMS.