

(No Model.)

3 Sheets—Sheet 1.

A. B. COSBY.
TOBACCO CUTTER.

No. 510,895.

Patented Dec. 19, 1893.

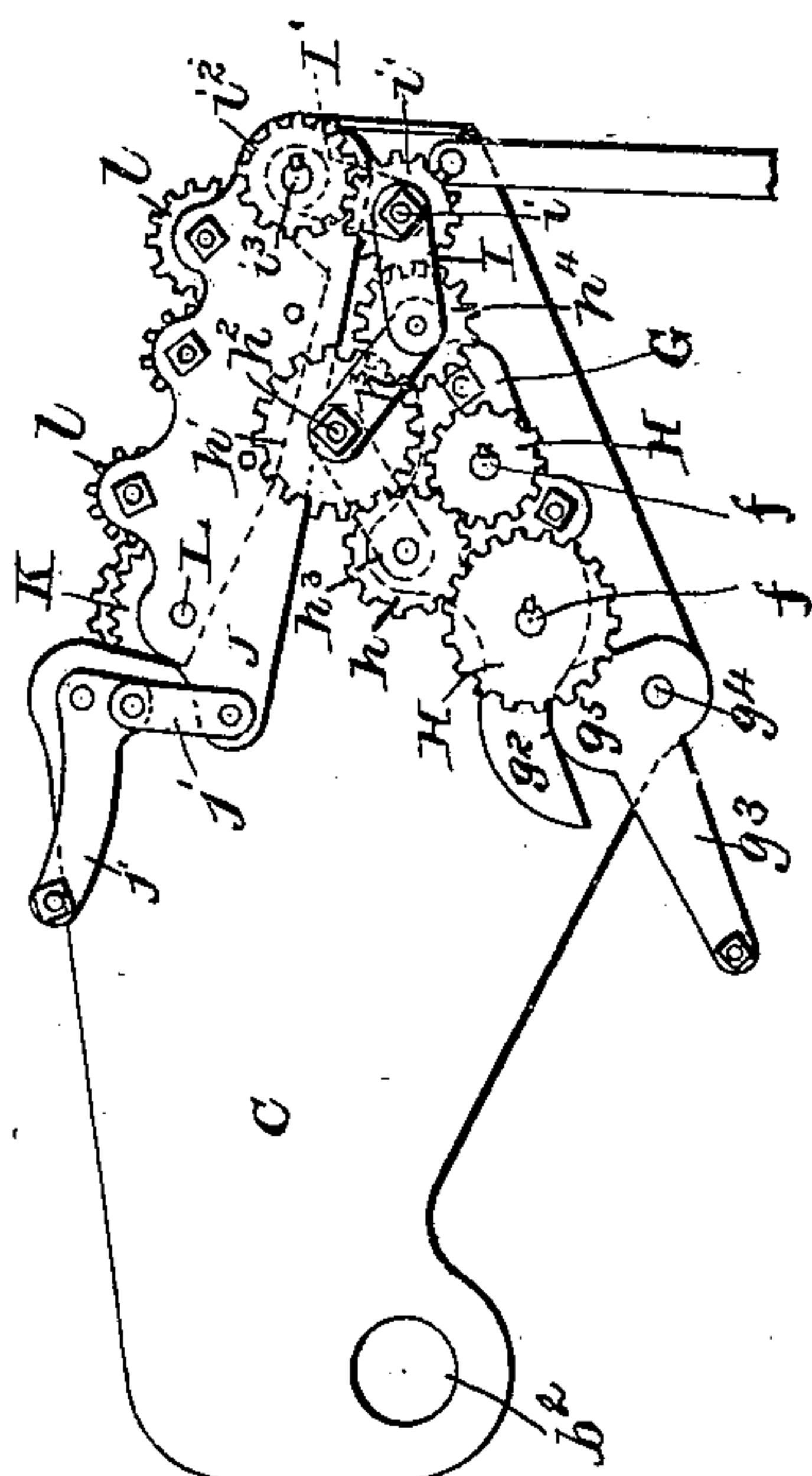
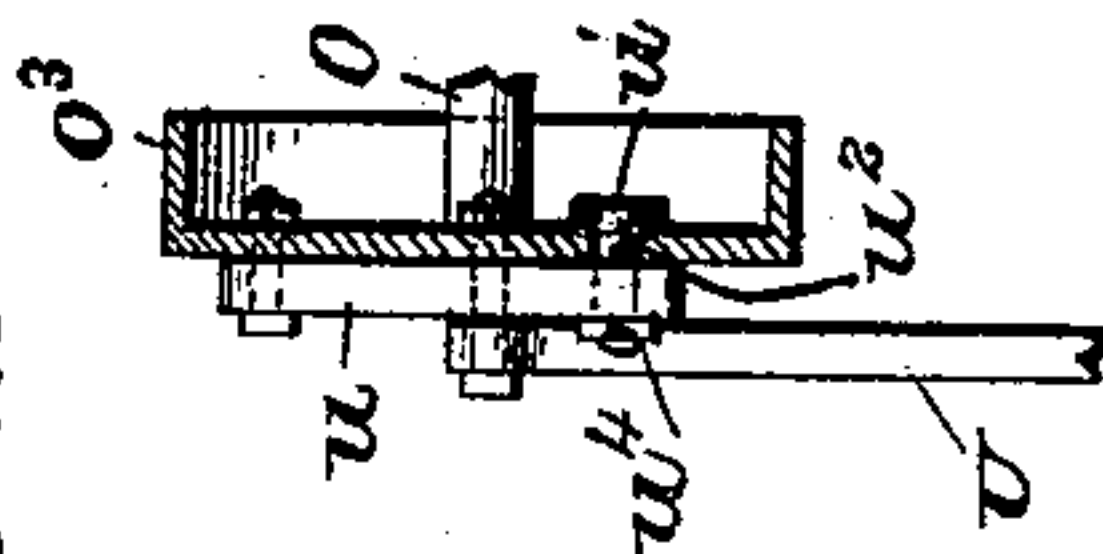


FIG-11.



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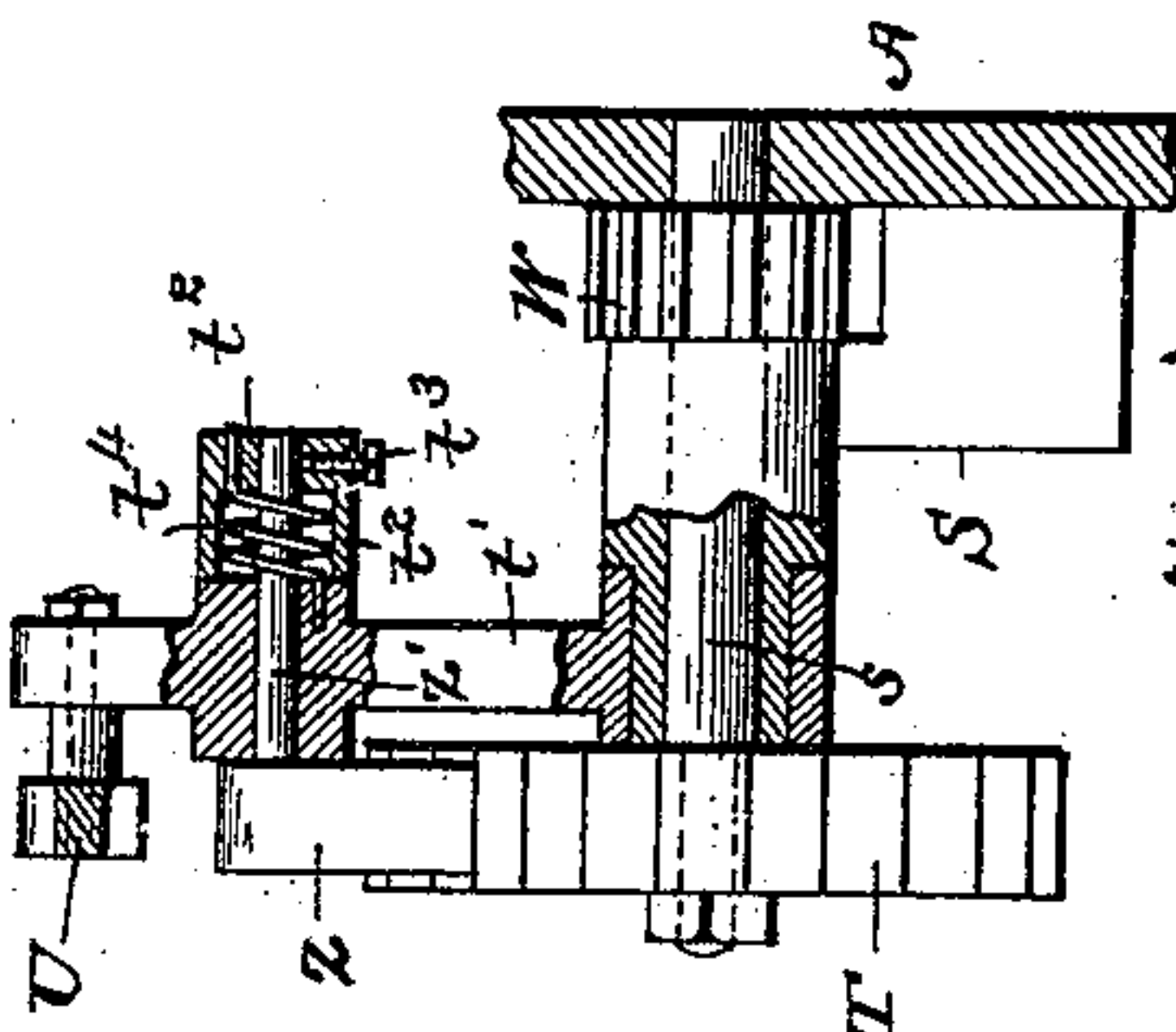
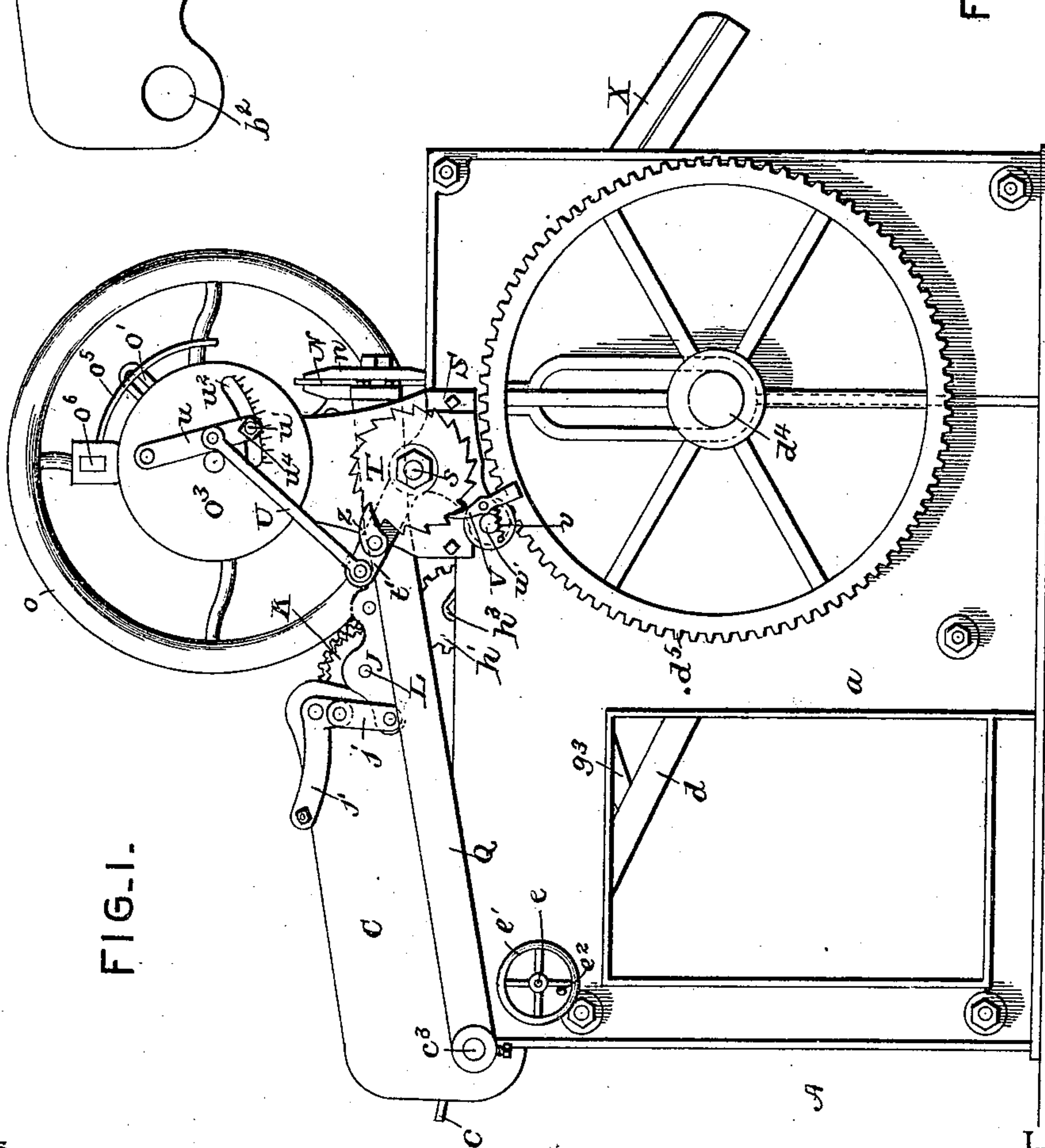
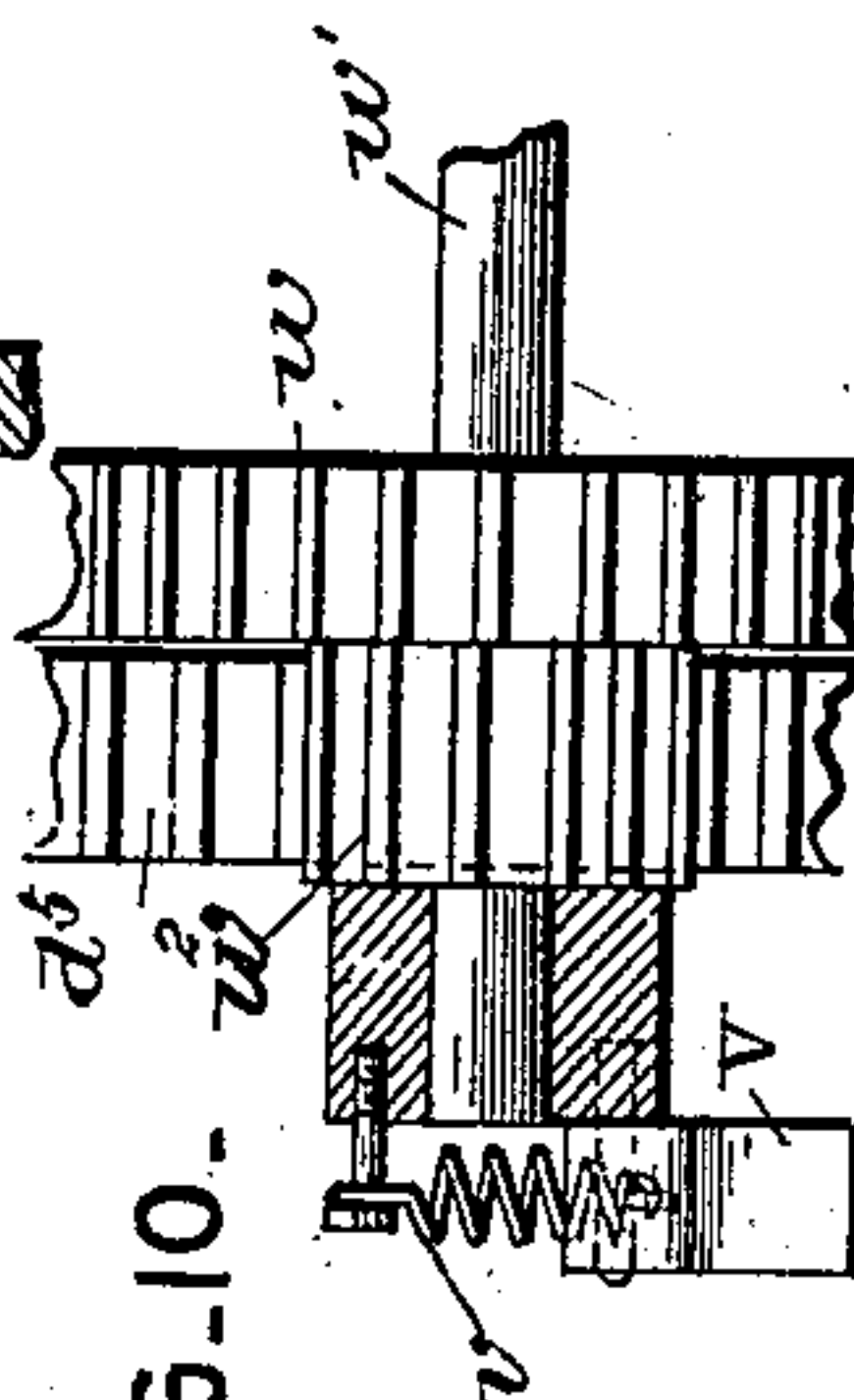


FIG. 10.



Witnesses

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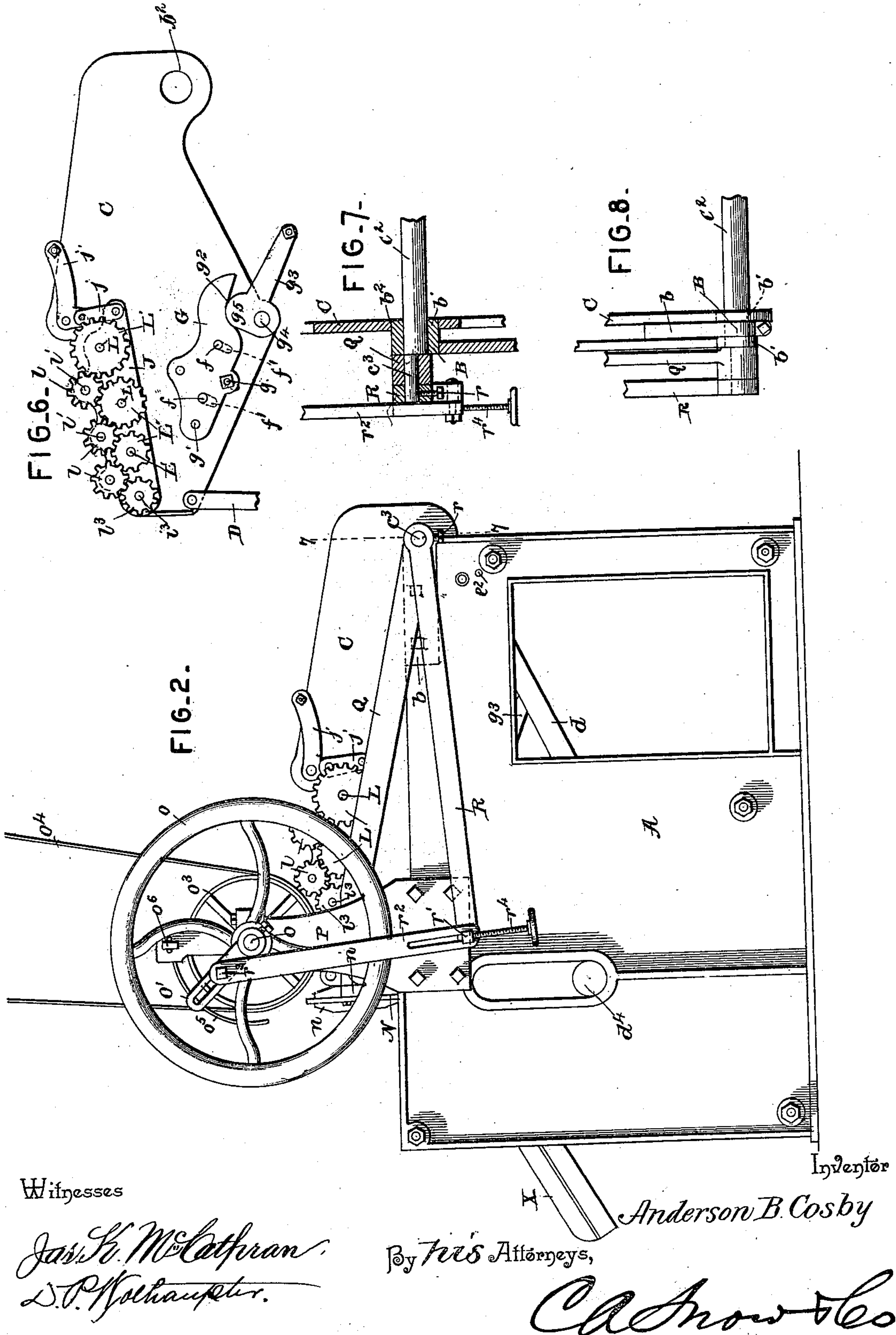
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3 Sheets—Sheet 2

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(No Model.)

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FIG. 4.

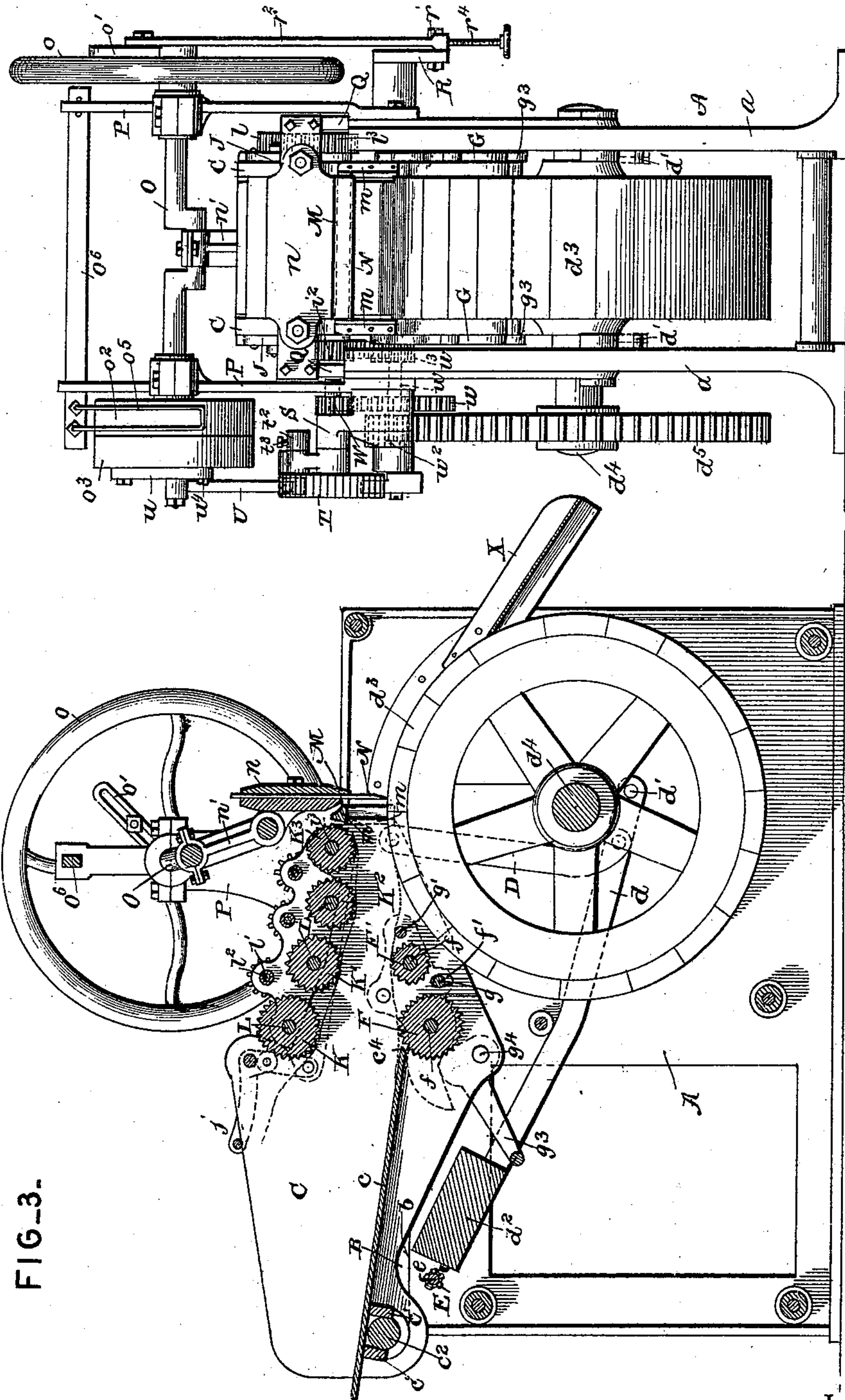


FIG. 3.

Witnesses

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TOBACCO-CUTTER.

SPECIFICATION forming part of Letters Patent No. 510,895, dated December 19, 1893.

Application filed December 16, 1892. Serial No. 455,367. (No model.)

To all whom it may concern:

Be it known that I, ANDERSON BLACKWELL COSBY, a citizen of the United States, residing at Richmond, in the county of Henrico and State of Virginia, have invented a new and useful Tobacco-Cutter, of which the following is a specification.

This invention relates to tobacco cutters; and it has for its object to provide certain improvements in that class of machines whereby either plug or leaf tobacco can be cut into fine pieces or "cuts," for the purpose of smoking or chewing.

To this end the invention primarily contemplates an improved tobacco cutter having special feed-devices and adjustments whereby various cuts can be accurately had.

With these and other objects in view which will readily appear as the nature of the invention is better understood, the same consists in the novel construction, combination and arrangement of parts hereinafter more fully described, illustrated and claimed.

In the accompanying drawings—Figure 1 is a side elevation of a tobacco cutter constructed in accordance with this invention. Fig. 2 is a side elevation from the side opposite to that shown in Fig. 1. Fig. 3 is a central vertical longitudinal sectional view of the machine. Fig. 4 is an end view. Fig. 5 is an enlarged elevation of one of the side plates of the movable feed box or trough, corresponding to the one shown in Fig. 1. Fig. 6 is a similar view of the opposite side plate of the feed box or trough plate corresponding to the one shown in Fig. 2. Fig. 7 is a detail sectional view on the line 7—7 of Fig. 2. Fig. 8 is a detail plan view of the construction shown in Fig. 7. Fig. 9 is a detail sectional view partly in elevation of the pawl-actuating mechanism. Fig. 10 is a detail view of the lower positive stop or check pawl. Fig. 11 is a detail sectional view of the fast pulley and the connections therewith.

Referring to the accompanying drawings:—A represents a suitably connected metallic frame, or casing comprising the opposite inclosing side frame pieces *a*, which support and accommodate the various parts of the machine.

Arranged at the upper corners of the side frame pieces *a*, and at one end of the same

are the opposite removable bearings B. The bearings B, have the extended plates *b*, bolted to the inside of the frame pieces *a*, and are further provided with the laterally extended bosses *b'*, the inner ones of which loosely receive the outer perforated ends *b²*, of the opposite hinged feed-box or trough plates C. The opposite box plates C, are thus pivotally mounted or hinged at their outer ends to the opposite bearings B, so as to leave their inner ends free to move up and down, and said plates C, are held spaced from each other and securely on their points of pivot so as to be free to move up and down within the frame A, by means of the feed table *c*. The feed table *c*, is provided near its outer end with the opposite cleats *c'*, which embrace the transverse oscillating eccentric shaft *c²*, the opposite ends of which find a bearing in the opposite bearings B, and which is further provided at its opposite ends with the extended reduced spindles *c³*, the function of which will be hereinafter more fully described. The feed table, *c*, referred to, has its inner end beveled as at *c⁴*, so as to loosely rest on one of the feeding rolls to be described, and it will be apparent that the said feeding table together with the opposite plates C, form an inclosed feed box or trough which serves to feed the plugs or tobacco leaves to the cutting devices.

To the inner ends of the opposite box-plates C, are pivotally connected the upper ends of the lever links D, the lower ends of which are pivoted to the opposite weighted lever arms *d*, near their points of pivot at *d'*. The said opposite weighted lever arms *d*, are pivoted at one end to the opposite frame pieces *a*, at *d'*, and have their outer swinging ends connected by the weight *d²*, which normally depresses the free ends of said lever arms and through the medium of the links D, normally holds the inner end of the feed box or trough on the rotary chopping block *d³*, in the manner to be described. Said rotary chopping block *d³*, has the usual wooden periphery and is mounted on the revolving shaft *d⁴*, journaled in opposite sides of the frame pieces *a*, and carrying at one end thereof the large gear wheel *d⁵* through which motion is transmitted to the block, when the machine is in operation. When cleaning the machine, the

inner connected ends of the feed box or trough can be lifted above the chopping block, and held so, by means of the lifting chain E, connected at one end to the weight d^2 , and at the other end to the transverse winding shaft e , which shaft is journaled transversely through the frame A, and carries at one end the hand wheel e' , by means of which the shaft can be turned, and which may be held from turning by means of a suitable pin e^2 , passed between its spokes into a perforation or opening in one of the frame pieces a .

Within the feed box or trough at the inner end of the bottom or feed table c , are the bottom feed rolls F and F', respectively, the first feed roll F, being larger than the feed roll F', and in a slightly lower plane than the same, so that the tobacco passes directly from the table c , onto the larger feed roll F, and from thence is elevated to a higher plane over the smaller higher roll F', which serves, together with the other feeding devices to be described, to bring the tobacco into a proper position to be received by the chopping block and be carried to the cutting devices. Both of the lower feed rolls F and F', are longitudinally corrugated and each is mounted on a transverse shaft f , the opposite ends of which project through slots f' , in the box plates C, and are journaled in suitable bearing openings in the opposite adjustable lower roller plates G. The opposite lower roller plates G, are suitably connected and braced by a stay rod g , and the hinge or pivot rod g' , which connects one end of said plates, and serves to pivot the same at such end on the outside of the plates C, thereby leaving the other ends free to move, and such other ends are provided with curved under edges g^2 , against which work the opposite adjusting cam levers g^3 . The opposite adjusting cam levers g^3 , are provided with suitable handle ends by which the same are manipulated, and are pivoted to the box sides c , at g^4 , said levers having at their pivoted ends the laterally extended eccentric portions or heads g^5 , which contact with the under curved ends of the lower roller plates, so that as the said eccentric heads are thrown to either side of the center or point of pivot, the said lower roller plates are correspondingly raised or lowered so as to properly adjust the lower feed rolls with respect to the upper feeding devices.

At one end of the roll shafts f , are secured the adjacent gears H, which are connected by an intermediate connecting gear h , which is arranged above and between both of the roll gears and is mounted on a suitable journal projecting from one of the plates G, and said intermediate gear h , also meshes with a supported gear h' , which is journaled on the connecting pin or bolt h^2 , which connects the upper ends of the gear supporting links h^3 , the lower end of one of which is pivotally connected to the plate G, back of the intermediate gear h , while the lower end of the other

link is designed to be loose on the bearing of the second, intermediate or auxiliary gear h^4 . The second intermediate gear h^4 , meshes with the supported gear h' , and is mounted on a suitable stud, journal or rod, extending from one side of one of the box plates C, and arranged in front of said second intermediate gear is one end of one of the suspending links I, I'. The link I, in front of the gear h^4 , overlaps and is connected to the same point as one end of one of the links h^3 , and the other end of said link is connected to the lower end of the link I', by means of the journal pin i , on which is mounted the suspended gear wheel i' . The gear wheel i' , meshes with the wheel h^4 , and the upper stationary gear wheel or pinion i^2 . The upper stationary gear wheel or pinion i^2 , is mounted on one end of the transverse drive shaft i^3 , the bearing at one end of which forms a pivotal support for the upper end of the link I'. Motion is communicated to these several gears through the ratchet mechanism hereinafter described, and by reason of the two link connections for the supported and suspended gears it will be seen, that, as the lower feed rolls are adjusted, as described, and as the feed box or trough adjusts itself, the several intermeshing gears adjust themselves to each other without any unnecessary binding or friction to interfere with the free operation of the machine.

Pivotally mounted at their innermost perforated ends on the outside of the opposite bearings for the transverse shaft i^3 , are the opposite adjustable upper roll plates J. The upper roll plates J, are thus pivotally mounted or hinged at one end so that their other ends are free to move outside of the opposite box plates C, above the lower roll plates, and such other free ends are pivotally connected, by means of the links j , to the eccentric heads of the eccentric lever arms j' , similar in construction to the lever arms g^3 , and adapted when thrown to either side of their centers or points of pivot, to raise and lower said plates and the several upper feed rollers K, K', K² and K³, respectively. The several upper feed rolls are longitudinally corrugated similar to the lower feed rolls, and are mounted on the transverse shafts L, which have their ends journaled in the opposite roll plates J, and are adapted to be arranged above the upper edge of the opposite box plate C, so as to have a free vertical adjustment, and said shafts carry upon one end thereof, outside of one of the movable roll plates J, the adjacent gear wheels L', between which are arranged the intermeshing gears l . The intermeshing gears l , are journaled upon one end of the stay rods l' , which connect the two upper roll plates with each other and accommodate the spacing sleeves l^2 , usually placed upon stay rods, and one of said intermeshing gears l , also meshes with the fixed gear wheel l^3 , mounted upon one end of the drive shaft i^3 , on the end opposite the stationary gear wheel or pinion i^2 , which receives its motion from

the gear wheel i' , before referred to. When the train of gearing just described is in motion, the upper and lower rolls turn in the same direction so as to positively and accurately feed the tobacco toward the cutting devices, and by reference to Fig. 3 it will be seen that the upper rolls K and K', are in different planes corresponding to the disposition of the lower rolls F and F', and are arranged directly above such lower rolls so as to form a narrowing passage for the tobacco, and to insure the feed therefrom positively between the nearest rollers K', and F'. The other upper feed rollers K² and K³ are practically in the same plane with each other but in a lower plane than the rolls K and K', and are adapted to work over the portion of the rotary block in front of the cutting devices, so that, together with said block, the said feed rolls serve to force the tobacco under the ledger bar or blade M, normally resting on the top of the rotary block, and between which and such block the tobacco is fed, the weight depressed box or trough lifting to accommodate the tobacco as will be apparent.

The ledger blade or bar M, connects the inner ends of the opposite box plates C, and is provided with the opposite right angularly disposed flanges m , bolted to said plates, and said blade or bar, as stated, is normally held in contact with the wooden chopping block by means of the weight d^2 . The said stationary blade or bar carried by the weight depressed feed box or trough is smoothed at its front edge as at m' , and beyond which the feeding devices project the tobacco so as to be cut by the knife N, traveling against and in front of said blade or bar. The knife, is clamped in a suitable knife head or stock n , to one side of which is pivotally attached the connecting links n' , the other end of which engages the central crank of the knife crank shaft O, which serves to reciprocate or give the knife its up and down movement. The said shaft carries upon one end the balance wheel o , and at the same end the slotted crank arm o' , while to the other end of the shaft is attached the loose and fast pulleys o^2 and o^3 , respectively, which are designed to receive the drive belt o^4 , which passes through an adjacent U-shaped belt guide o^5 , attached to one end of a suitable bar o^6 . The crank shaft O, is journaled in suitable bearings at the upper ends of the opposite bearing arms or uprights P, extended from the opposite side frame pieces a , and as the same revolves it communicates a reciprocating motion to the knife, so that the same travels up and down in front of the ledger blade or bar, to shave off the tobacco as fine as desired, which is regulated by the feeding devices of the movable feed box or trough. The knife N, is held steady in its reciprocations and out of interference with the inner end of the feed box or trough by means of the opposite swinging knife arms Q. The free ends of the knife arms Q, are pivotally attached to opposite sides of the

knife stock while the other ends thereof are loosely mounted on the reduced spindle ends c^3 , of the oscillating eccentric shaft c^2 , journaled in the frame bearings B. The swinging knife arms Q, not only swing to hold the knife to its reciprocating movement, but also have a longitudinal vibratory movement which is imparted to the same by the oscillation of the eccentric shaft c^2 . An oscillating motion is communicated to the eccentric shaft by means of a swinging or vibrating arm R, one end of which is adjustably bound to the extremities of the spindles c^3 , by means of the set screw r , while the other free end of the arm carries the sliding stud r' , working in the lower slotted end of the connecting bar r^2 . The connecting bar r^2 , is adjustably connected to the slotted crank arm o' , at one end of the crank shaft O, by means of the bolt r^3 , and the other end of said connecting bar is threaded to receive the adjusting screw r^4 , which is loosely connected to the stud r' , so as to adjust the free end of the arm R, on said connecting bar. Now it will be readily seen, that, as the crank shaft rotates, and carries the slotted crank arm therewith, the connecting bar r^2 , raises and lowers the free end of the arm R, which thereby oscillates the eccentric shaft back and forth to give the knife arms a reciprocating or longitudinal vibratory movement. This additional movement of the knife arms, serves to impart a lateral vibration of the knife to and away from the ledger blade or bar in addition to its reciprocating movement. The knife is therefore given a combined vertical-reciprocating and lateral-vibratory movement, so that just before the knife begins to descend, the same is drawn toward the ledger blade or bar so as to work there-against to cut the tobacco, and after having passed through the tobacco and against the chopping block, the eccentric has turned so as to throw the knife away from the ledger blade or bar during its ascent. The extent of this lateral vibration of the knife can be regulated by adjusting the bar r^2 , in the crank arm, which serves to increase or reduce the throw of the eccentric. As the ledger blade or bar wears away the throw of the eccentric can be shifted to oscillate from a different position in its bearings, by means of adjusting the connection of the arm R, with the bar r^2 . This will be apparent.

Journaled in a bracket extension S, at one side of the frame A, is the ratchet wheel shaft s , carrying at its outer end the actuating ratchet wheel T. Motion is communicated to the ratchet wheel T, by means of the spring actuated pawl z , carried by the swinging pawl arm t' . The swinging pawl arm t' loosely embraces the bearing for the shaft s , alongside of the wheel T, and accommodates the turning pawl rod z' , carrying at one end the pawl z , and at its other end the spring box or housing t^2 , secured on said rod by means of the set screw t^3 . A pawl actuating spring t^4 , is entirely inclosed within the box t^2 , so as to be

free from dirt, grit and dust, and has one end thereof fastened to said box and the other end to the pawl arm so that the pawl z , is always positively in engagement with the teeth of the ratchet wheel. The free end of the pawl arm t' , has pivotally connected thereto the connecting arm U , the other end of which is pivoted to the feed adjusting bar u . The feed adjusting bar u , is pivoted at one end to the outer face of the fast pulley o^3 , and carries at its other end a flanged stud bolt u' , adapted to work in the graduated curved slot u^2 , in the outside face of the fast pulley o^3 . The outer end of the flanged stud bolt receives the binding nut u^4 , which serves to bind the bar u , tightly against the face of the fast pulley to hold the same in any adjusted position and thereby regulate the swing of the pawl arm, and therefore the feed of the ratchet wheel. When the pawl, z , is securing a new hold on the ratchet wheel, the same is prevented from slipping by means of the positive stop or check pawl V . The stop or check pawl V , is pivoted at one end to a suitable point of attachment at one side of the frame a , below the ratchet, and is normally held in engagement therewith by means of the spring v , connected thereto and to a suitable point of attachment.

The ratchet wheel shaft s , carries at its inner end the pinion W , which pinion meshes with an adjacent gear wheel w , which is mounted on a counter-shaft w' . The counter-shaft w' , is mounted in suitable bearings below the ratchet wheel shaft and carries on both sides of the gear wheel w , the pinions w^2 and w^3 , the first of which, w^2 , meshes with the large gear wheel d^5 , which communicates motion to the rotary chopping block, while the other pinion meshes with the gear wheel i' , so as to communicate motion to the several feed roll gears herein described. It will of course be understood that different sizes of ratchet wheels T , may be employed according to the nature of the work to be accomplished.

From the foregoing it is thought that the construction, operation and many advantages of the herein-described tobacco cutter will now be apparent. It will be seen that the tobacco which is fed onto the feed table of the feed box or trough passes between the several corrugated feed rolls, on the line shown in Fig. 3 as the feed line, and as the ratchet devices intermittently turn the several feed rolls and the chopping block, a certain amount of tobacco is forced between the ledger blade or bar, resting upon the chopper block, and such block, and is projected, according to the adjustment of the feed, a certain distance beyond said ledger blade or bar, so that as the knife comes down it shaves or cuts the tobacco as desired. The cut tobacco is carried by the rotary chopping block to the chute blade X , arranged at an angle at one end of the frame A , and against said chopping block to scrape the tobacco therefrom.

The various adjustments of the knife and feeding mechanism has been set forth.

Changes in the form, proportion and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of this invention.

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

1. In a tobacco cutter, the frame or casing, the rotary chopping block and cutting devices arranged in the frame, a movable feed box or trough pivoted or hinged at one end within the frame leaving the other end free to move and normally rest on the chopping block, a removable feed table arranged in said box or trough, opposite lever arms pivoted at one end to opposite sides of the frame, links connecting said arms with the inner end of the box or trough, a weight connecting the free ends of said lever arms to normally depress the same to hold the inner end of the box or trough on the chopping block, and means for independently raising the weight end of said lever arms, substantially as set forth.

2. In a tobacco cutter, the combination with the frame, the rotary chopping block and the cutting devices working thereover; of a movable feed box comprising opposite box sides hinged or pivoted at one end within the frame and a removable feed table arranged between said sides, lower feed rollers adjustably mounted within said box, and a set of upper feed rolls correspondingly adjustable therein, substantially as set forth.

3. In a tobacco cutter, the combination with the frame, the rotary chopping block and the cutting devices working thereover; of a movable feed box or trough pivoted or hinged at one end within the frame, a fixed ledger blade or bar connecting the inner ends of the box sides and adapted to normally rest upon the chopping block, and correspondingly adjustable upper and lower feed rolls mounted within the feed box or trough, substantially as set forth.

4. In a tobacco cutter, the combination with the frame, the rotary chopping block and the cutting devices; of the opposite box sides pivoted or hinged to opposite sides of the frame, a ledger blade or bar connecting the inner ends of said sides, weighted levers connected with the inner ends of the sides to hold the ledger blade on the chopping block, opposite upper and lower roll plates adjustably mounted on said box sides, and corrugated feed rolls journaled in said plates and extending transversely between the box sides, substantially as set forth.

5. In a tobacco cutter, the combination with the frame and the cutting devices therein; of a weight-actuated movable feed box having opposite sides provided with slots, lower roll plates pivoted at one end upon the outside faces of said box sides and provided at their other ends with under curved edges, adjust-

ing cam levers pivoted to said box sides adjacent to said plates and engaging said under curved edges, roll shafts journaled at their ends in said opposite adjustable roll plates and working in the slots of the box side, different sized corrugated feed rolls mounted on said shafts within the feed box and in different planes, and a set of upper feed rolls adjustably mounted within said feed box, substantially as set forth.

6. In a tobacco cutter, the combination with the frame and the cutting devices therein; of a movable feed box having opposite sides, lower feed rolls adjustably mounted within said box, upper roll plates pivoted or hinged at one end to the opposite box sides and working outside of the same, eccentric levers pivoted to the opposite box sides near the free ends of the upper roll plates, links connecting said levers with such free ends, roll shafts connecting and journaled in the opposite roll plates, and a series of corrugated feed rolls mounted on said shafts, substantially as set forth.

7. In a tobacco cutter, the combination with the frame and the cutting devices therein; of the opposite box sides pivoted at one end within said frame and having a ledger blade or bar connecting their free ends, opposite upper and lower roll plates adjustably mounted on said box sides, feed rolls mounted between said plates and having their shafts extending therethrough at one end, gear wheels mounted on the extended shaft ends outside of the plates, intermeshing gears between the feed roll gears, and yieldingly supported gears connecting the intermeshing gears of the upper and lower set of feed rolls, and a suitable ratchet feed connected with said gearing, substantially as set forth.

8. In a tobacco cutter, the combination with the frame and the cutting devices therein; of the opposite box sides pivoted at one end within said frame, opposite upper and lower roll plates adjustably mounted on said box sides, upper and lower sets of feed rolls mounted between said plates and having their shafts extended therethrough at one end, gear wheels mounted on the extended shaft ends outside of the plates, intermediate gears arranged between the gear wheels for the upper and lower sets of rolls, a gear drive shaft \bar{v}^3 , journaled in the free end of the box sides and carrying gear wheels at both ends, one of which meshes with one of the intermediate gears for the upper set of feed rolls, a second or auxiliary intermediate gear journaled adjacent to the gears for the lower feed rolls, gear supporting links loosely connected at their lower ends to one of the supports for the lower rolls, and to one of the box sides and connected at their upper ends by a pin or bolt h^2 , a gear wheel journaled on said bolt and meshing with the auxiliary gear and a lower feed roll gear, corresponding gear suspending links suspending a gear wheel at

their connection and which meshes with the auxiliary gear and one of the wheels at one end of the drive shaft \bar{v}^3 , and a suitable ratchet feed connected with said gearing, substantially as set forth.

9. In a tobacco cutter, the combination of the frame, the rotary chopping block mounted within the frame, the movable feed box having a ledger blade or bar at its free end and normally resting on said chopping block, upper and lower sets of adjustable feed rolls in said box a crank shaft mounted above the frame, a reciprocating cutting knife connected with said crank shaft and adapted to be reciprocated thereby in front of the ledger blade or bar, and means for imparting a lateral vibratory movement to the knife to and away from said ledger blade or bar, substantially as set forth.

10. In a tobacco cutter, the combination of the frame having bearings at one end, a feed box or trough hinged at one end on said bearings, feed devices arranged in said feed box or trough, a rotary chopping block, a crank shaft supported above the same and said chopping block and having a slotted crank arm at one end, an oscillating eccentric shaft journaled in said frame bearings and provided with reduced spindles at one end projected beyond said bearings, a knife connected with said crank shaft, opposite swinging knife arms loosely connected at one end to opposite sides of the knife and at their other ends loosely embracing the reduced spindles of said eccentric shaft, a swinging connecting bar adjustably connected at one end to the slotted crank arm and provided at its other end with a slot, and a swinging or vibrating adjusting arm adjustably clamped at one end to one of the reduced spindles alongside of one of the knife arms and adjustably attached at its other end to the slotted end of said connecting bar, substantially as set forth.

11. In a tobacco cutter, the combination with the rotary chopping block having a gear wheel at one end, the adjustable feed devices and the gearing therefor, and the adjustable cutting devices; of a crank shaft connected with said cutting devices and having a wheel or pulley at one end, a ratchet wheel shaft carrying a ratchet wheel at one end and a pinion at its other end geared with the chopping block wheel and the gearing for the feed devices, a spring actuated stop or check pawl arranged below and in engagement with the ratchet wheel, a swinging pawl-arm carrying a pawl engaging said ratchet wheel, and a connecting arm pivotally connected to said pawl arm and adjustably to said wheel or pulley, substantially as set forth.

12. The combination with gearing; of a ratchet wheel shaft carrying a pinion at one end in mesh with said gearing and at its other end a ratchet wheel, a swinging pawl arm loosely mounted on the bearing for the ratchet wheel shaft, a turning spring-actuated pawl

rod mounted in said pawl arm and carrying a
pawl at one end engaging said ratchet wheel,
a spring box or housing removably clamped
on the other end of said rod, and a pawl actu-
5 ating spring inclosed within said box and fas-
tened at one end to said box and at the other
end to the pawl arm, substantially as set forth.

In testimony that I claim the foregoing as
my own I have hereto affixed my signature in
the presence of two witnesses.

ANDERSON BLACKWELL COSBY.

Witnesses:

O. H. FUNSTEN,
EUGENE JONES.