

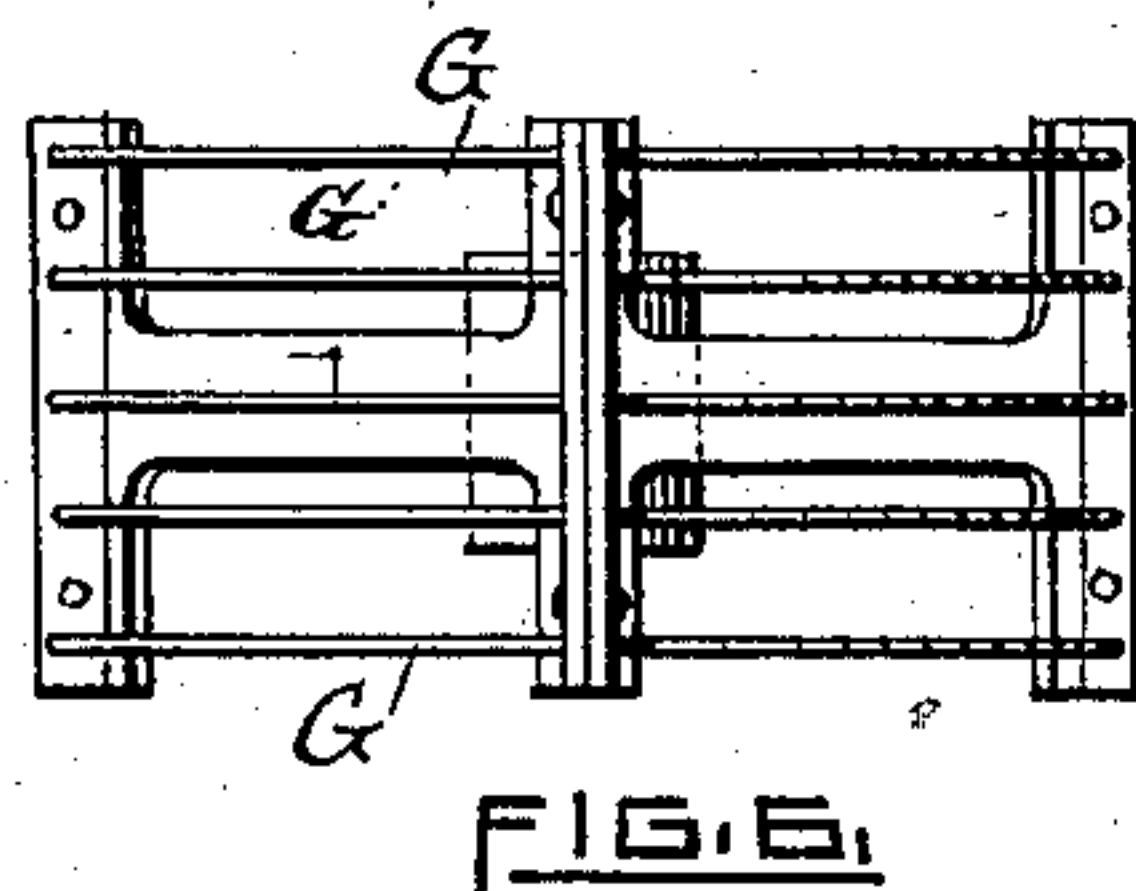
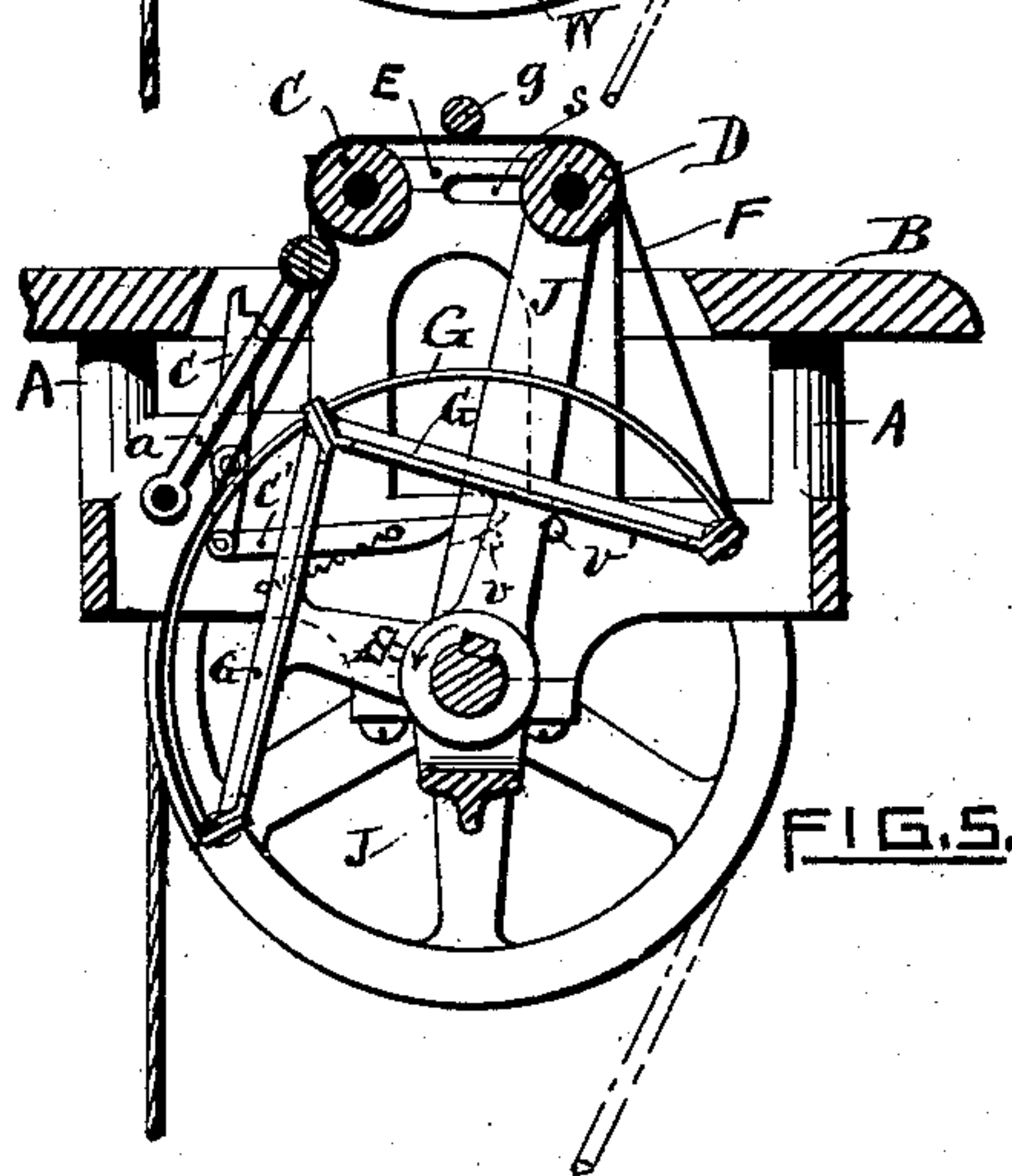
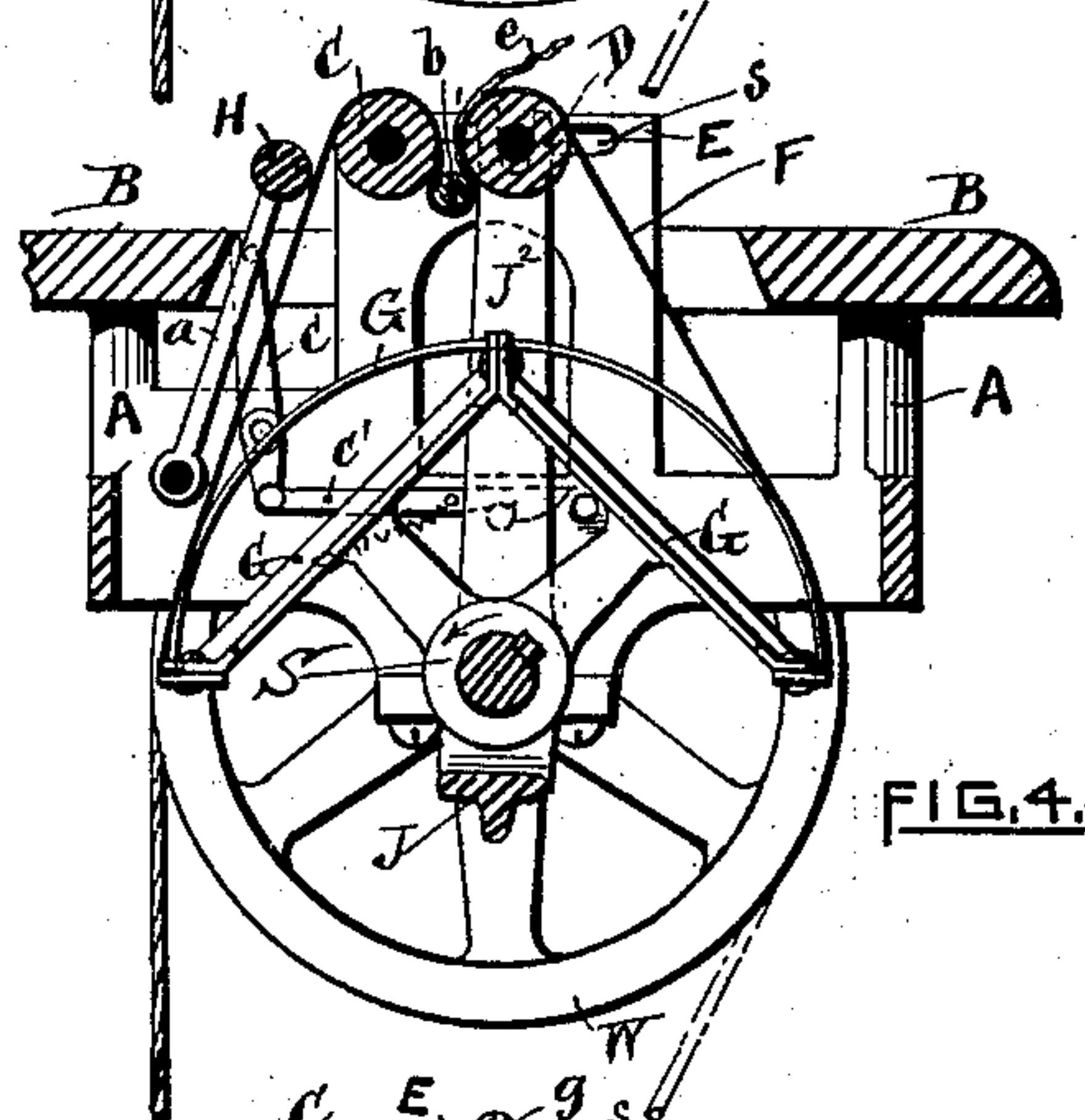
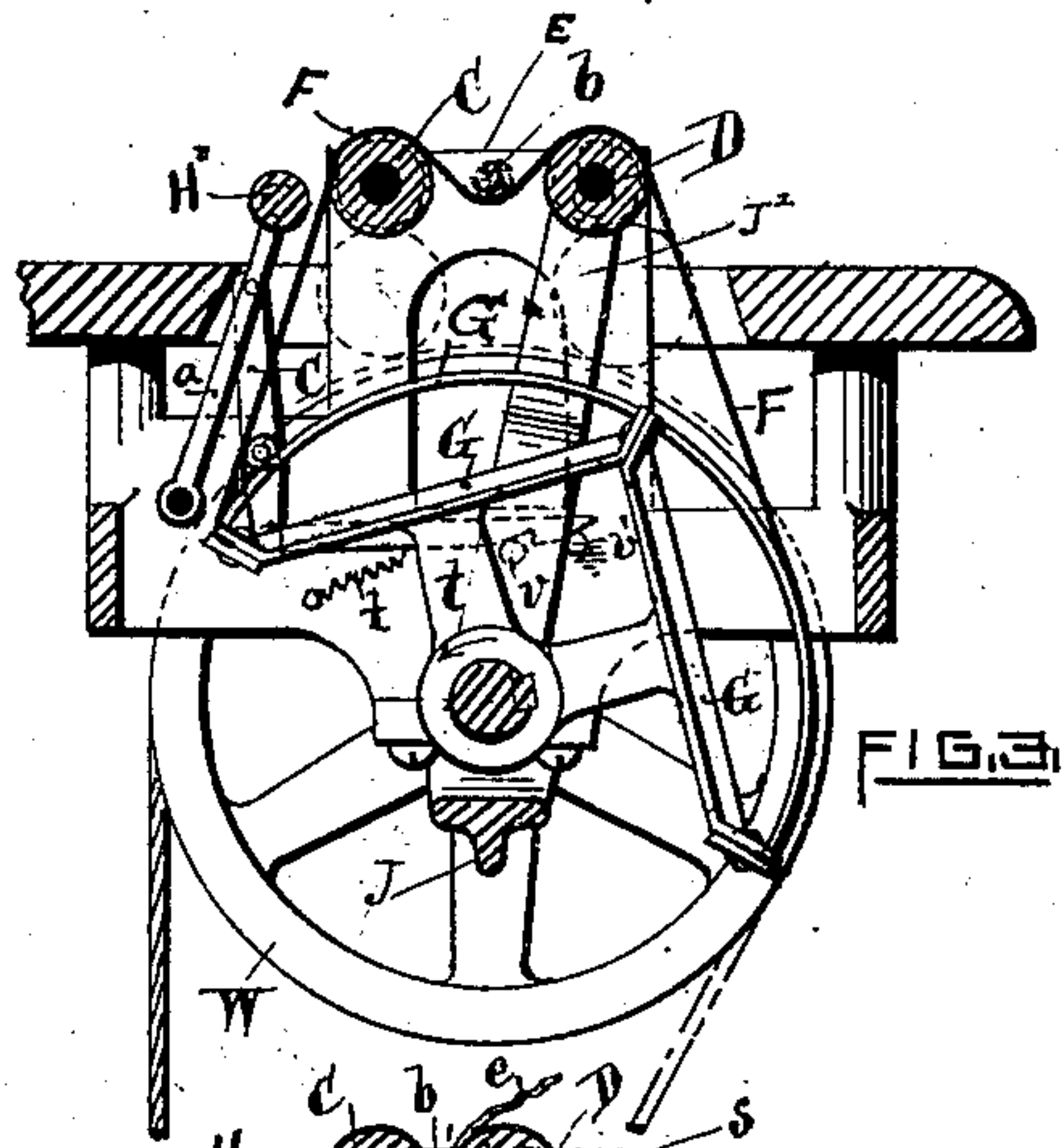
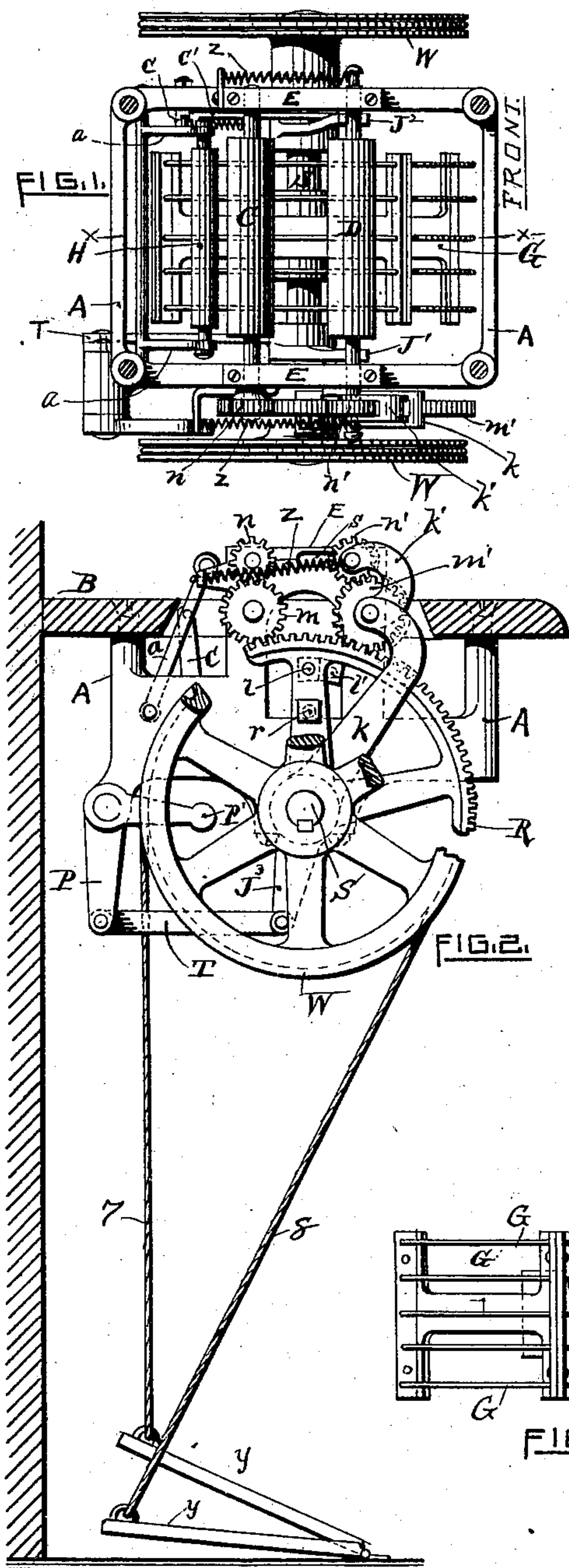
(No Model.)

2 Sheets—Sheet 1.

M. M. GARDNER.
CIGAR BUNCHING MACHINE.

No. 364,815.

Patented June 14, 1887.



WITNESSES.

Marston Lincoln
Simon P. Lapham

INVENTOR.

M. Morris Gardner
By his Atty.
O. Lapham

(No Model.)

2 Sheets—Sheet 2.

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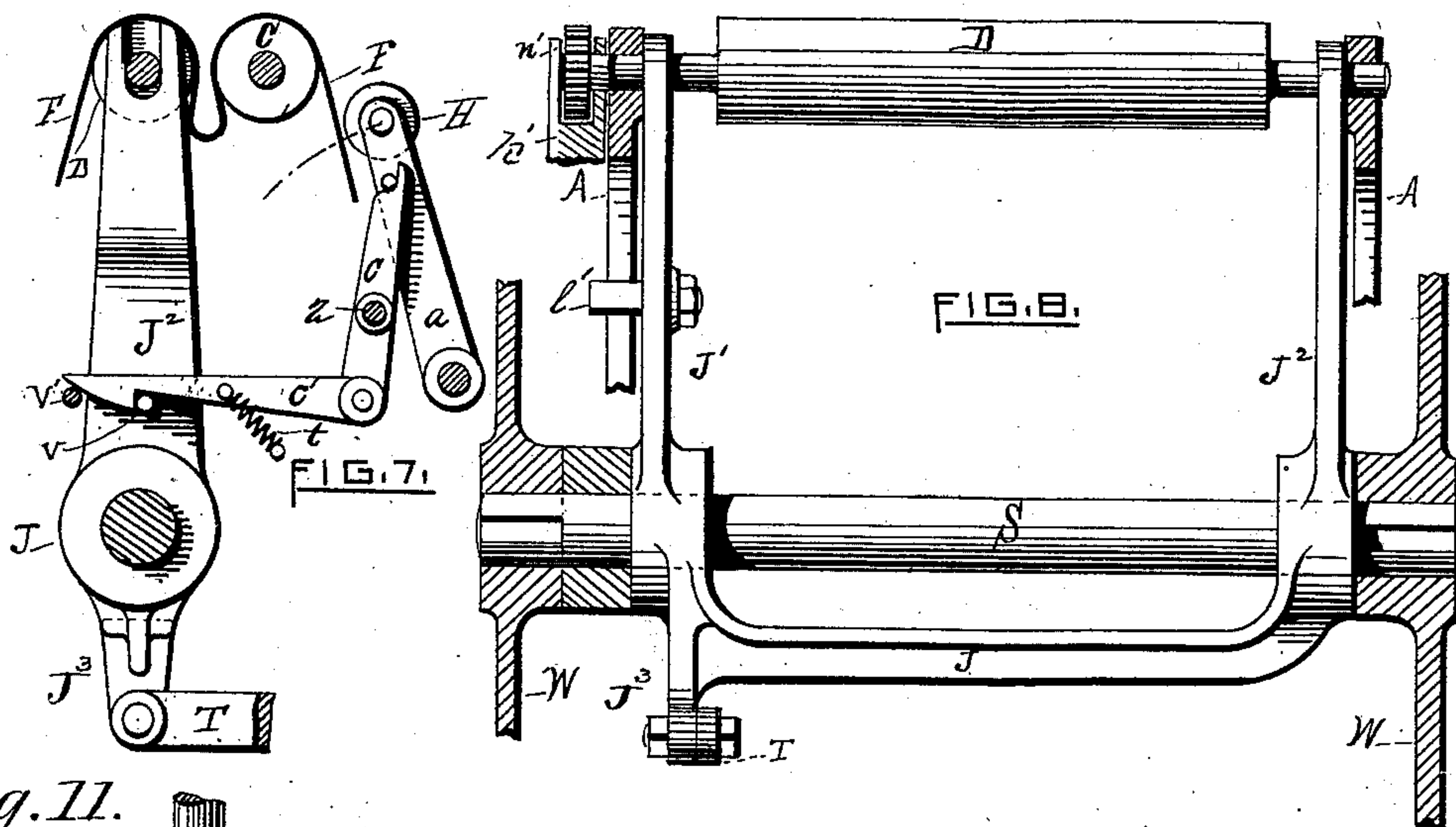


Fig. 11.

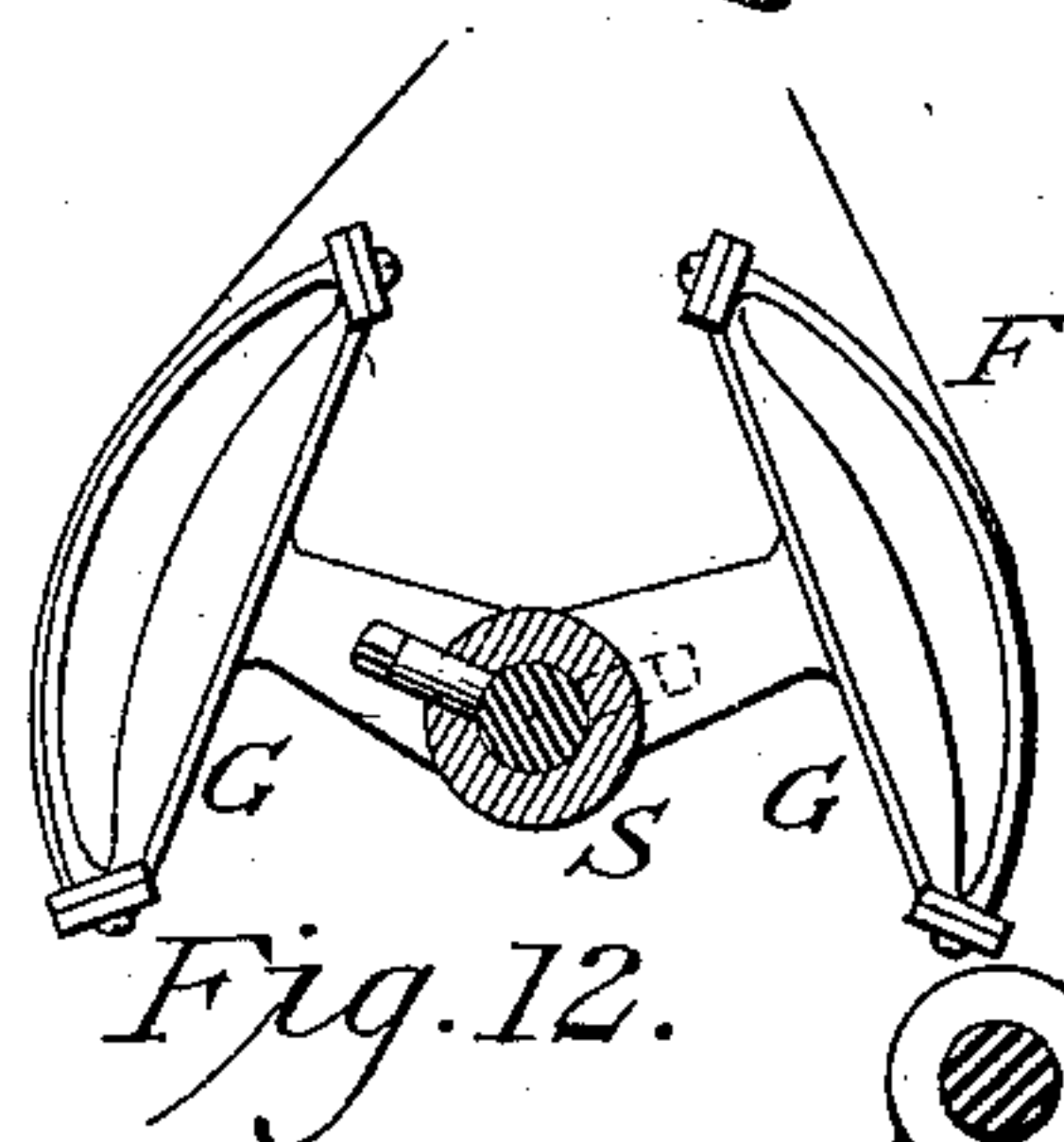
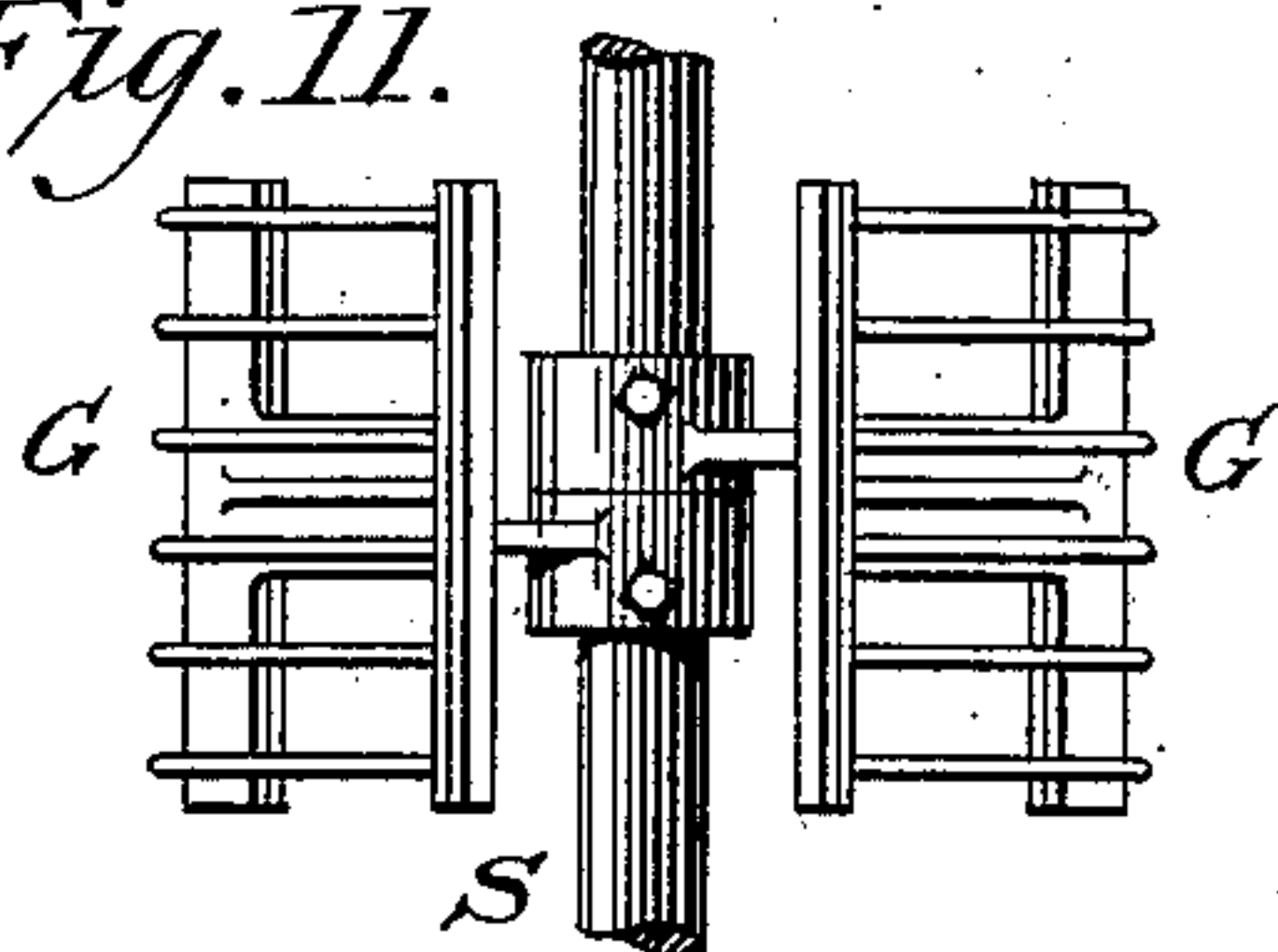


Fig. 12.

Fig. 9.

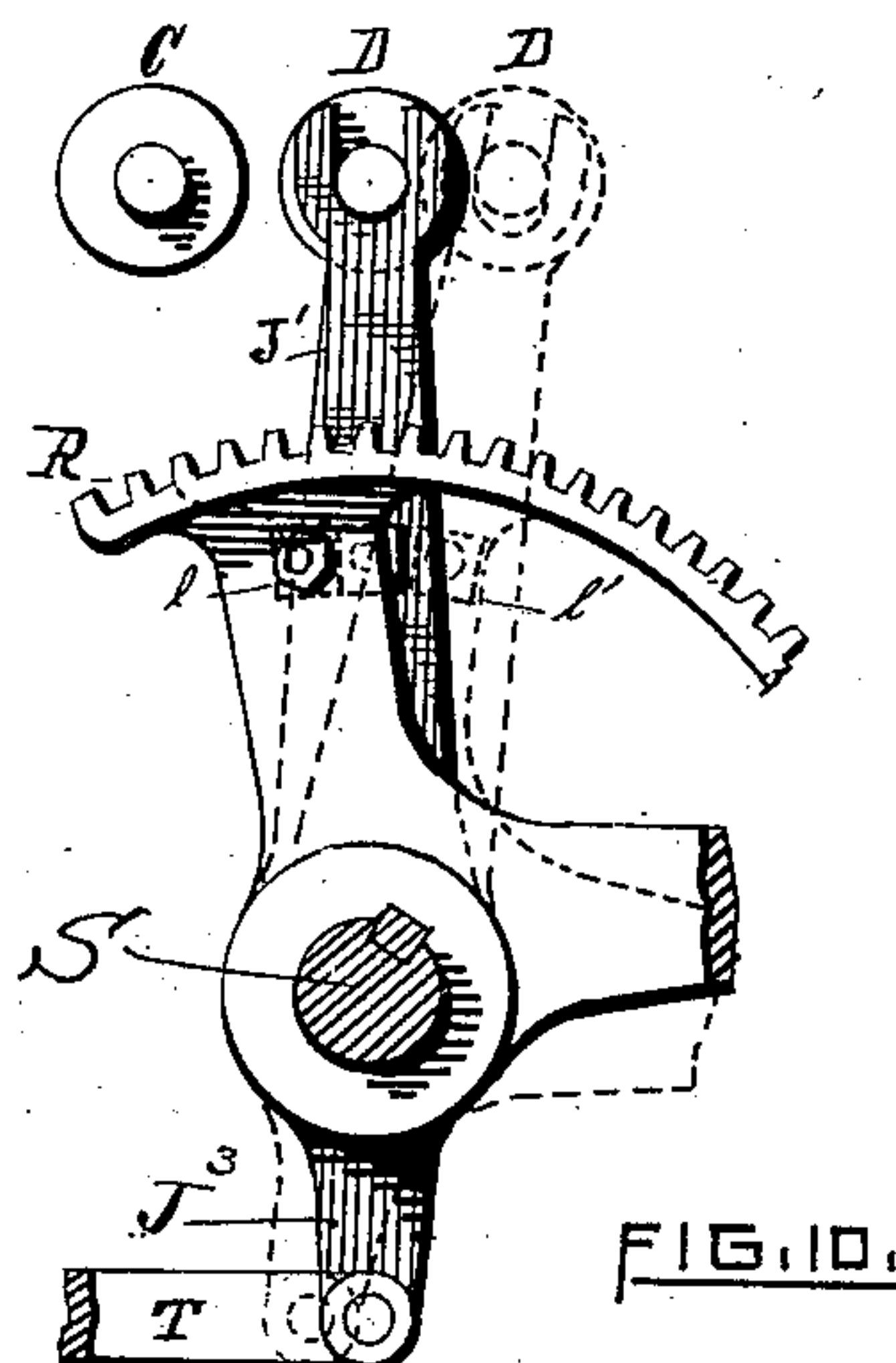
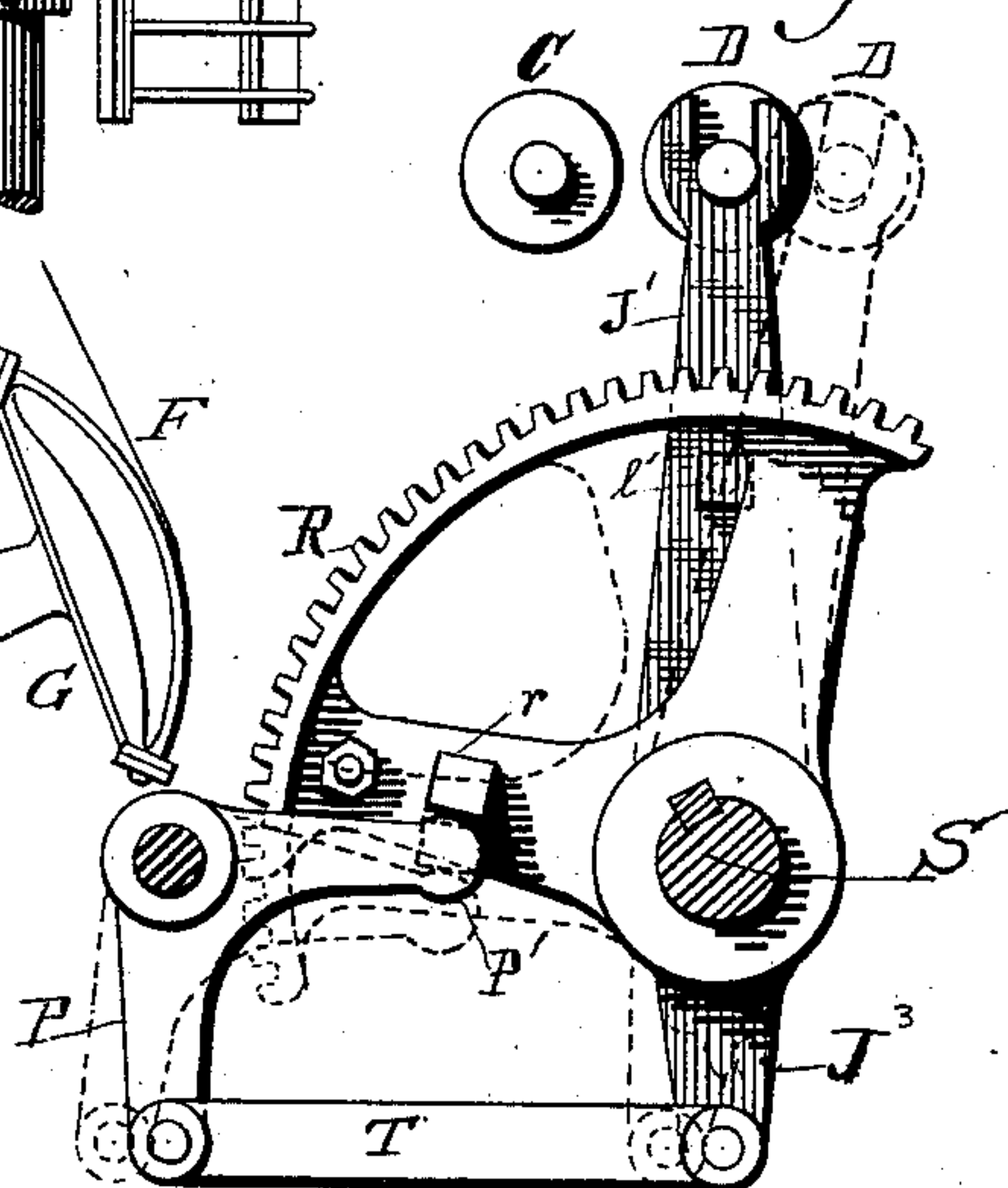


FIG. 10.

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UNITED STATES PATENT OFFICE.

M. MORRIS GARDNER, OF PROVIDENCE, RHODE ISLAND.

CIGAR-BUNCHING MACHINE.

SPECIFICATION forming part of Letters Patent No. 364,815, dated June 14, 1887.

Application filed October 17, 1884. Serial No. 145,759. (No model.)

To all whom it may concern:

Be it known that I, M. MORRIS GARDNER, a citizen of the United States, residing in the city and county of Providence, in the State of Rhode Island, have invented a new and useful Cigar-Bunching Machine, of which the following is a specification.

My invention relates to a cigar-bunching machine, in which there are an oscillating and a stationary roll journaled in the frame of the machine, and rotated by pinions and spur-wheels geared into a segment-rack keyed to the motive shaft, a U-shaped lever loosely sleeved upon said shaft, and provided with two upright forked arms engaging the gudgeons of the oscillating roll and operating in conjunction with said segmental rack, and a series of auxiliary levers to oscillate said roll horizontally in a right line in elongated slots in its journal-boxes, and a segmental drum adjustably secured upon said motive shaft and combined with an apron, to which it imparts a reciprocating movement over said rolls. There are also means provided for taking up the slack or throwing out the pocket formed between the rolls, whereby the bunch is discharged from the machine.

Structurally, my invention may be divided into three systems of mechanism—namely, mechanism for rotating the rolls and operating the carrying-apron, mechanism for oscillating the movable roll horizontally in a right line to separate the rolls for the insertion of the filler or the discharge of the completed bunch, and mechanism or means for taking up the slack of the apron to discharge the bunch.

Heretofore in forming a cigar-bunch by a machine it has been necessary after rolling one bunch to reverse the machine and start from the original position to roll the next bunch. In my invention a complete bunch with its binder is rolled with each forward or backward movement of the apron and its carrying mechanism, thus rolling alternately a right-hand binder and a left-hand binder, the machine opening always toward the front thereof at the end to each forward or backward movement to discharge a complete bunch and receive the filler and binder for a second bunch.

So far as I am aware, drums in cigar-bunching machines have always been heretofore

made with closed surfaces, and great difficulty has been experienced from the accumulation of scraps and refuse upon the surface of the drum underneath the apron, thereby diminishing the capacity of the pocket and reducing correspondingly the size of the cigar-bunch, producing bunches of variable size. These difficulties are wholly avoided by making the drum sufficiently open upon its surface to allow all substances falling upon it to drop through, thus keeping the surface at all times clear and insuring a product uniform in size and density. Special reference is therefore made to the skeleton open form of the drum G.

The accompanying drawings form a part of this specification, and represent what I consider the best means of carrying out my invention.

Sheet 1, Figure 1, is a plan view of the machine with its supportable table removed and its rolls separated. Fig. 2 is a view of the left end of the machine, the supporting frame or table being shown in section. Fig. 3 is a cross-sectional view on line *x x* of Fig. 1, looking toward the right of the machine, showing the filler and its binder just placed in the pocket preparatory to being rolled. Fig. 4 is a similar cross-sectional view showing the filler and its binder in process of being rolled to form a bunch. Fig. 5 is a cross sectional view showing the rolls separated, the slack of the apron being taken up to discharge the completed bunch, which is shown resting upon the top of the apron. Fig. 6 is a top view of the skeleton drum or apron-carrier. Sheet 2, Fig. 7, is a partial view from the left-hand side of the machine, showing the rolls, roll-lever, weighted apron-roll, and its locking and tripping device. Fig. 8 is a front view of the driving shaft, roll-lever, and roll, the driving-wheels and some of the other parts being in section and broken away. Fig. 9 is a partial left-hand view showing the device for oscillating the movable roll on the backward movement of the rack. Fig. 10 is a similar view showing the oscillating device on the forward movement of the rack. Figs. 11 and 12 are respectively a side and plan view of the skeleton drum, showing the sections separated.

Similar letters denote like parts in all the figures in which they occur.

The reciprocating roll D and stationary roll C, whose gudgeons are journaled in the upper part of the frame A A, are rotated by pinions $n n'$ upon their ends, meshing into spur-wheels $m m'$, which in turn mesh with a segmental rack, R, keyed to a motive shaft, S, journaled upon the side of the frame A. The spur-wheel m' is journaled in the short arm of the bifurcated bent lever K, and the arrangement is such as to keep the pinions $n n'$ always in mesh with the segmental rack. A segmental drum, G, is adjustably secured upon the said motive shaft by set-screws, as shown clearly in Figs. 11 and 12. To this drum is attached by each end, to oscillate with it, an apron, F, which passes over the two rolls C D, and is made of sufficient length to be crowded down between them to form a pocket. This drum is made in skeleton form to allow dust or tobacco scraps falling from the rolls or the apron to pass through it, and thus prevent their accumulation under the apron, which would tend to take up the slack in the apron, reduce the size of the pocket, and produce irregular work.

It will be observed from an inspection of Figs. 11 and 12 that the drum G is formed of two sections (each of which is a quadrant) carried upon the main driving-shaft by means of sleeves and set-screws. From this construction the positions of the sections may be varied with relation to each other, so that the pocket may be made of any desired size. The reciprocating roll D is adapted to move in the elongated slots $s s$ in the frame A A. It is parallel with the roll C, and its gudgeons, together with those of the roll C, are journaled in the boxes E E. The horizontal reciprocation of the roll D in the slots is accomplished as follows: The gudgeons of the said roll are engaged by the forked ends of the two upright arms $J' J''$ of a U-shaped lever, J, adapted to work loosely on the shaft S. One of the arms, J' , of the U-shaped lever is provided with the lug l' , so positioned as to engage with a similar lug, l , on one of the radial spokes of the segmental rack, whereby, in the forward oscillation of said rack, the arm J' will be moved, carrying with it the roll D. This movement continues until the said roll is sufficiently separated from the roll C to allow the apron to be pushed down between them by the hand of the operator to form a loop or pocket. The rack is then oscillated in the opposite direction, and the springs Z Z act meantime to return the roll D to its normal position, where it, in conjunction with the roll C, forms a bight in the apron. After the bight has been completed the rack, continuing its backward movement, brings a second lug, r , on its spoke into engagement with a bell-crank lever, P P', which, through the link T, draws upon the downhanging arm J'' of the lever J', and thus throws forward the upper end of the said lever and separates the rolls. The roll D is again moved to the roller C by springs Z Z, to

form the pocket while the rack is moving forward, and remains in its normal position until the lugs $l l'$ again meet. In this manner two pockets are formed with each oscillation of the rack; or, in other words, the rolls C and D are brought into position for forming a complete bunch once with each forward or backward movement of the rack. By this arrangement no time is lost, as in other machines, where it is necessary to return the mechanism to start from its normal position.

The oscillating movement is imparted to the shaft S, rack, &c., by means of the driving-wheels W W and the treadles $y y$. The rope or band 7 from one of the treadles passes to the left and over one of the pulleys, to which it is fastened at a point to the right. The rope 8 from the other treadle passes to the right and over the other pulley in the opposite direction, being secured thereto at a point to the left. Obviously, to move the rack, &c., to the right, it is only necessary to draw upon the rope 8 and to move it to the left. The other rope is then brought into use. The roll D is retracted to and held in the closed position near the roll C by coil-springs Z Z, extending from its gudgeons to pins or lugs on arms attached to the side of the frame and projecting back beyond the stationary roll.

After the bunch has been formed and the rolls separated it is necessary to take up the slack in the apron, as before stated, for the purpose of discharging the bunch; and for this purpose I have provided two methods—first, by the hand of the operator, as before described, and by the following device: A weighted roll, H, is journaled in arms of a stirrup-shaped frame, a , which has gudgeons journaled in the sides of the machine-frame in such position as to bring the roll over the apron and a little behind and below the stationary roll C, before described. An upright catch, c , pivoted to the inner side of the frame of the machine, engages a projecting pin on said stirrup-shaped frame to keep the weighted roll suspended above the apron. This catch is joined to a horizontal-acting latch, c' , hooking onto a projecting pin, v , on the outer side of the right-hand arm of the U-shaped lever before mentioned. To the frame of the machine, on its inner side, nearer the front of the machine, and in the line of travel of the latch, is another projecting pin, v' . As the arm of the U-shaped lever J travels toward the front of the machine to reciprocate the movable roll, as before described, it draws the latch c' with it and trips the catch to release the weighted roll, allowing it to fall upon the apron and draw up the slack therein. There the continuance of the forward movement of the lever-arm causes the latch to ride on the second pin, releasing the latch, which is then drawn back by a spring, t , (extending at an angle in a downward direction from it to a lug on the inner side of the machine-frame,) thus bringing the catch into position to engage its pin,

when the weighted roll is thrown up from the apron in forming the pocket.

To practically operate my invention, suppose the rolls apart and the segmental rack at the extreme limit of its forward movement. 5 The apron will then be taut, its slack having been taken up by the weighted roll or the hand of the operator, as described. The operator places his hand upon the apron between 10 the rolls, and by a downward movement forms the pocket, and by the same movement either throws up the weighted roll to engage with its catch or takes up the slack between the rolls D and C. The pocket being formed, the filler 15 is placed therein with a binder laid upon it, the operator relieves the pressure upon the treadle and rope 8 and allows the springs Z Z to exert their force and move the roll D up to 20 the treadle *y*, which draws upon the rope 7 and imparts to the shaft, rack, and skeleton drum their backward oscillation, which movement causes the apron to travel about the rolls, and also gives the necessary rotation to the 25 rolls themselves through the pinions *n n'* and spur-wheels *m m'*. The roll D remains in the position it has now assumed, operating in connection with the roll C to form the bunch until the rack in its continued backward movement 30 brings the lug *r* on its spoke into engagement with the arm P' of the bell-crank lever. The bunch has now been completely formed, and is in proper shape to be discharged from the machine. The lug *r* pressing upon the bell- 35 crank lever causes it to draw upon the link T, which, through the depending arm J³, throws forward the upper part of the lever J and separates the rolls. The completed separation of the rolls being effected, the operator places his 40 hand upon the apron at a point between the rolls C and D, and by a downward pressure takes up the slack between the rolls C and D, and thus discharges the bunch from the machine, or, should the automatic mechanism be used, the 45 slack is taken up by it, as before described. After the discharge of the bunch the operator again forms a pocket between the rolls C and D, and then releases the treadle, allowing the roll D to move back by the force of the springs. 50 The machine is now in position for forming a bunch on the return or forward oscillation of the shaft, rack, and drum, and the operator accomplishes this by placing his foot upon the treadle to draw upon the rope 8. The forward 55 oscillation is accompanied by the same effect, namely, the rolling of the bunch, which continues until the lug *l* strikes against the corresponding lug *l'* on the lever J, when the rolls will be again separated and the bunch dis- 60 charged, as described above.

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

1. An oscillating rack, a drum oscillating 65 therewith, a pair of rolls, and an apron on the drum and rolls, one of the rolls being mounted

in arms pivoted to oscillate and move the roll which they carry toward or from the fixed roll, in combination with a device moved by the oscillating drum, adapted to come in con- 70 tact with the devices carrying the moving roll when the drum is oscillated forward, means for closing the roll when the drum is oscillated backward, and the device moved by the oscillating wheel in its further backward move- 75 ment, adapted to come in contact with mechanism connected with the arms carrying the moving roll, and to move said roll from the fixed roll, all substantially as described.

2. In a cigar-bunching machine, the combination of the oscillating rack R, an oscillating drum, an apron secured thereto, a pair of rolls for forming a bight in said apron, one of said rolls being fixed and the other carried upon a pivoted lever, J, said rolls being rotated by 80 the oscillating rack R, mechanism for operating the upper arm of the said lever J in its forward oscillation, the described means for returning the lever and its roll after each oscillation, whether forward or backward, and 85 mechanism, substantially as described, adapted to be actuated by the rack R in its forward oscillation, whereby the lower arm of the lever is drawn upon and the roll again thrown forward, substantially as described. 90

3. In a cigar-bunching machine, and in combination, the fixed roll C, the movable roll D, the lever J, carrying said roll and having the arm J³, the oscillating drum, an apron carried thereon, a rack adapted to oscillate 95 and rotate the said rolls, a bell-crank lever, P P', and a link, T, connecting the bell-crank with the short arm J³ of the lever, and springs Z Z, substantially as described. 100

4. In a cigar-bunching machine, a fixed 105 roll, a movable roll, mechanism for rotating them, an oscillating drum, an apron actuated by said drum and passing over the rolls, mechanism for sliding the movable roll, and a weighted roll, H, arranged to one side in 110 proximity to the apron, whereby the slack may be taken up from between the rolls after they are separated, all combined substantially as described, and for the purpose set forth.

5. In a cigar-bunching machine, an oscillating rack, a stationary roll and a sliding 115 roll, said rolls being rotated from said rack by intermediate gears, levers supported on the main shaft adapted to slide said movable roll outward, devices for retracting said rolls 120 after each outward movement, and an oscillating drum carrying an apron, the parts being combined as set forth.

6. In a cigar-bunching machine, a segmental drum formed in two parts, each part being ad- 125 justable upon the motive shaft independently of the other part, combined with the apron connected thereto, substantially as shown and described.

7. In a cigar-bunching machine, the combination of a motive shaft, S, with a segmental 130 skeleton drum, G, formed in two parts, ad-

justably secured upon said shaft, and an apron, E, attached by each of its ends to said drum and passing over suitable rolls for forming a bight, substantially as described.

5 8. In a cigar-bunching machine, an apron-drum in a skeleton form, adapted to allow dust and tobacco scraps to fall through the same, thereby preventing their accumulation upon the surface of the drum underneath the apron,
10 all substantially as described.

9. In a cigar-bunching machine, the combi-

nation of an oscillating rack, an oscillating drum, an apron secured thereto, a pair of rolls for forming a bight in said apron, and mechanism, substantially as described, operated at the end of both forward and backward oscillations of the rack, for separating the rolls, all substantially as described. 15

M. MORRIS GARDNER.

Witnesses:

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MARSTON LINCOLN.