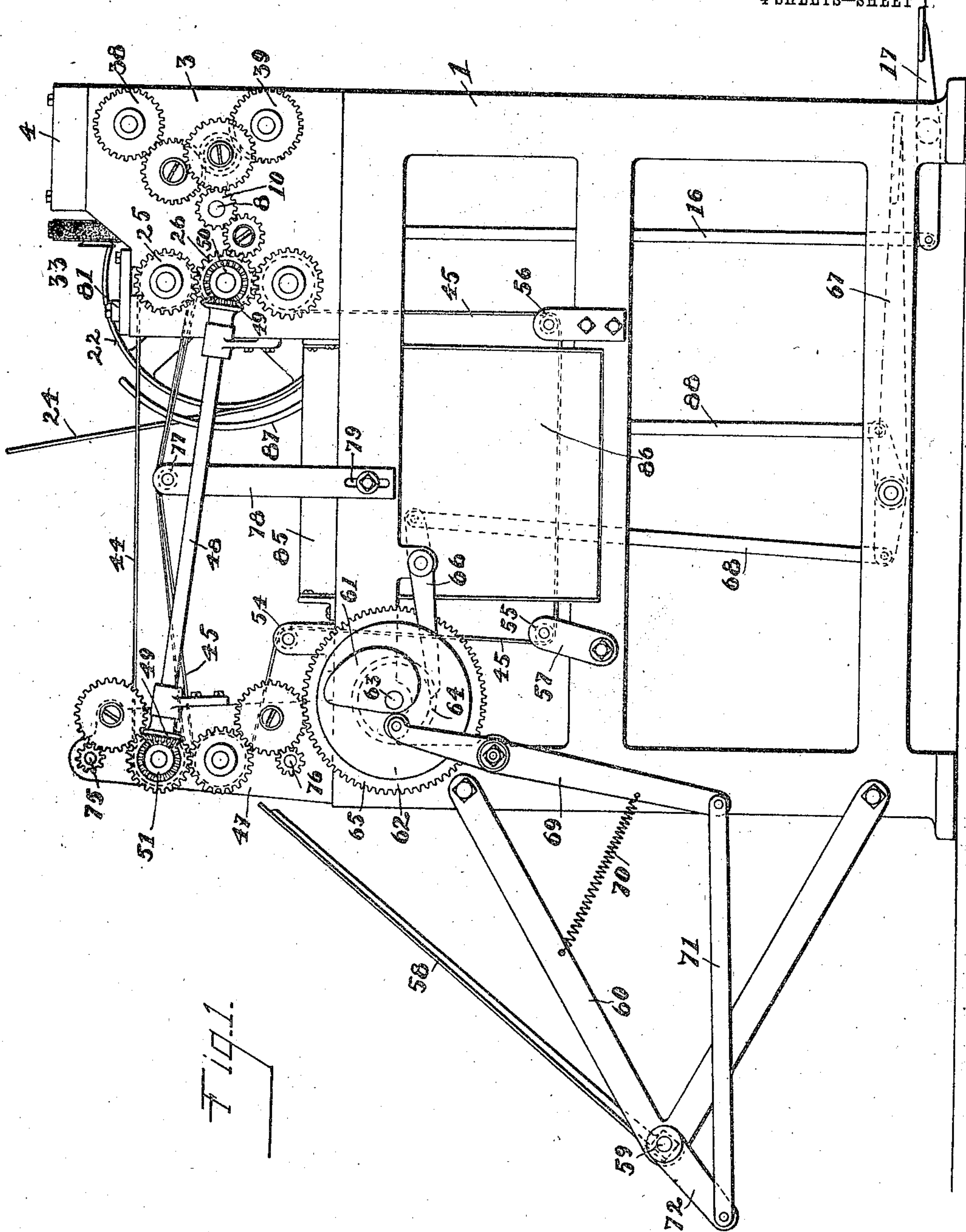


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933,978.

Patented Sept. 14, 1909.

4 SHEETS—SHEET 1.



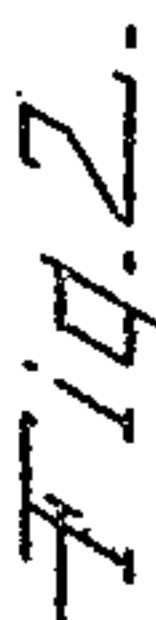
Witnesses  
Homer Bradford.  
Bessie A. Beall.

Inventor.  
Aaron Grodsky  
by Alfred M. Allen  
Att'y

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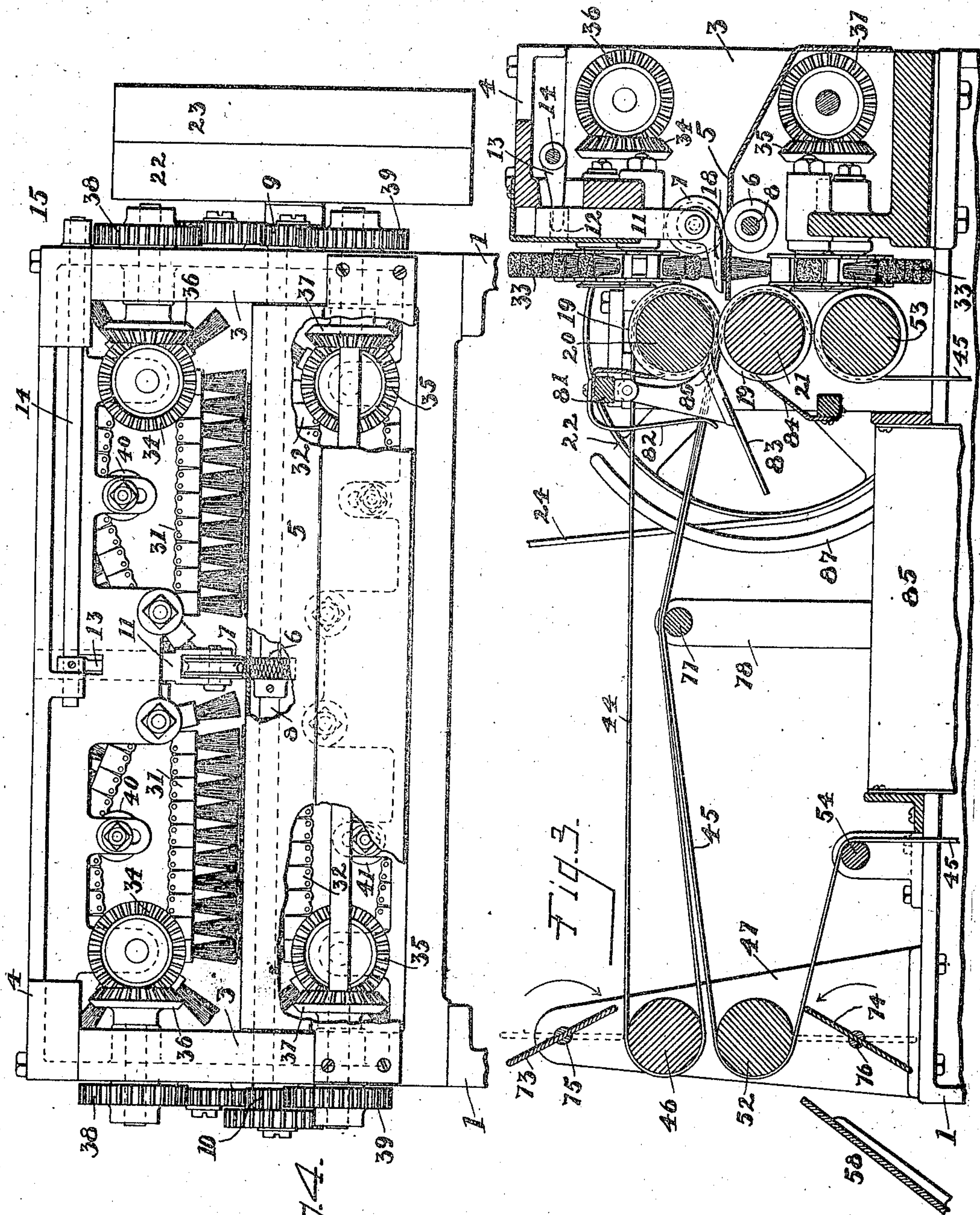
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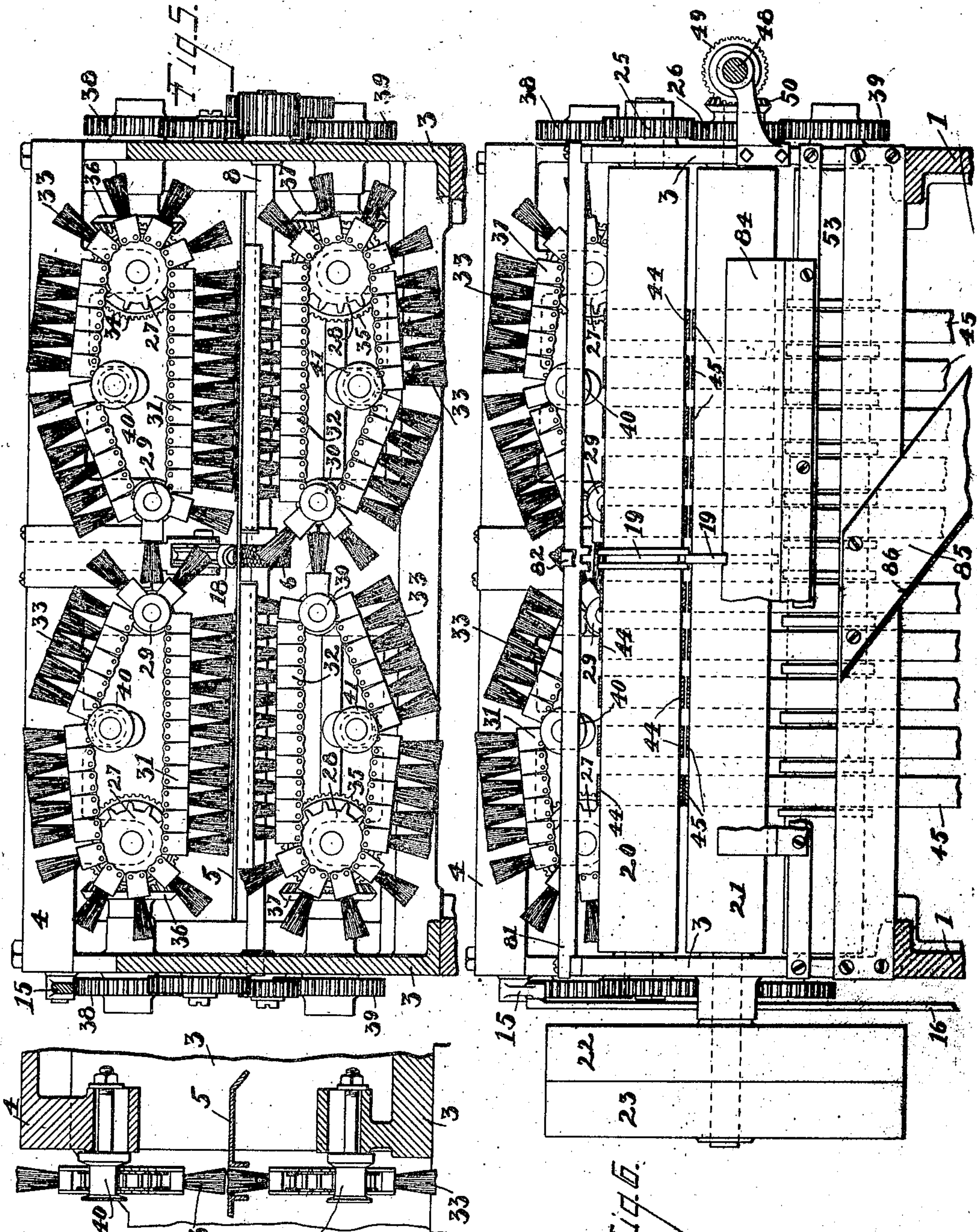


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Fig. 10.

Fig. 11.

INVENTOR.  
Aaron Grodsky  
by Alfred M. Allen  
Att'y



# UNITED STATES PATENT OFFICE.

AARON GRODSKY, OF CINCINNATI, OHIO.

TOBACCO-STEMMING MACHINE.

933,978.

Specification of Letters Patent. Patented Sept. 14, 1909.

Application filed June 5, 1908. Serial No. 436,861.

*To all whom it may concern:*

Be it known that I, AARON GRODSKY, a citizen of the United States, residing in Cincinnati, county of Hamilton, and State of Ohio, have invented certain new and useful Improvements in Tobacco-Stemming Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

My invention relates to that certain novel construction and arrangement of parts to be hereinafter particularly pointed out and claimed, whereby the crumpled leaves of tobacco may be readily and easily fed to the machine, to be automatically smoothed out and cleaned of dust and dirt, and the stems accurately cut from the leaf and automatically separated therefrom. Rotating cutters are employed to cut out the stem, and brushes are employed in connection with the rotary cutters to smooth out and clean the leaf from dust and dirt. Heretofore, however, in such machines, no provision has been made to apply the action of the brushes in immediate proximity to the stem, and consequently portions of the leaf next to the stem have not been acted upon and the cutters have been liable to act upon and cut out the central portion of the leaf.

One feature of my invention, therefore, relates to the construction and means for applying the brushes whereby they may be brought to bear upon the leaf, throughout the entire leaf plane, from the central stem outwardly.

Another important feature of my invention consists of the construction employed to automatically separate the stems from the cut leaf, and also to insure the perfect delivery of the leaf smooth and flat, and to prevent the leaf from winding around and becoming entangled with the delivery mechanism.

Numerous other features of novelty and advantage in the construction and operation, will be hereinafter particularly pointed out in the course of the detailed description of the apparatus.

In the drawings Figure 1 is a side elevation of my improved machine. Fig. 2 is a top plan view of same. Fig. 3 is a central vertical section of the machine. Fig. 4 is a front elevation of the upper portion of the machine. Fig. 5 is a cross sectional elevation of the upper portion of the machine

taken on the lines 5, 5 of Fig. 2, looking toward the feed. Fig. 6 is a similar cross sectional elevation taken on the lines 6, 6, of Fig. 2, looking toward the feed. Fig. 7 is a detail view showing the knife for separating the stems from the cut leaf. Figs. 8 and 9 are respectively a side elevation, and a cross section of one of the sprocket chain brushes. Fig. 10 is a detail view showing in vertical section, the sprocket chain brush construction.

The machine mechanism is mounted in a substantial framework, comprising side standards 1, 1 suitably braced with cross braces, and on this framework at the front portion is bolted a supplemental frame comprising side standards 3, 3, with top plate 4, and suitable cross braces to support the brushing and cutting mechanisms and driving gears. Supported horizontally across the middle portion of this supplemental frame is the feed table 5, bent downward in front as shown in Fig. 3, to form a convenient table for the feeding of the leaf. Mounted at the central portion of this table at a suitable slot therein, and with their meeting surfaces in the table plane are the feed rollers 6, 7. The lower feed roller 6, as shown in Fig. 4, is a roller with roughened periphery mounted on the shaft 8, journaled across the frame underneath the table, and provided with the gear 10, at one end in mesh with a train of gears from the driving shaft. The upper roller 7, is a grooved roller as shown in Fig. 4, to engage around the stem of the leaf as it is fed thereto. This upper roller is mounted in a clevis 11, the stem of which is provided with a slot 12, which is engaged by an arm 13, on the rock shaft 14, connected by an arm 15 (Fig. 2) with a rod 16, (Fig. 1) actuated by the foot lever 17. In addition to the roller 7, the clevis 11, also carries a pressure foot 18, which is extended rearward from the feed rollers, and is grooved as shown in Fig. 5, to form a guide for the stem of the tobacco leaf to the cutting knives. These cutting knives, 19, are rotary disks mounted on the rollers 20 and 21, journaled across the machine. Two of these cutting disks 19, are mounted on the upper roller 20, spaced apart about the thickness of the tobacco stem and the lower roller carries one cutting disk engaging between the two upper disks. The roller 21, carries at one end the tight and loose pulleys 22, 23, through which power is



transmitted to the machine by the belt 24. On the opposite ends these rollers are provided with intermeshing gears 25, 26.

Between the cutting knives and their rollers and the feed rollers, and mounted on the sprocket wheels 27, 27 and 28, 28, for their outer portions, and the guide rollers 29, 29, and 30, 30, for their inner portions, are two pairs of sprocket chains 31, 31, and 32, 32. These sprocket chains carry for each alternate link of its respective chain, brushes 33, and the two sets of chain brushes are so disposed that the brushes of the upper set shall contact with the brushes of the lower set, and that this contact shall be at the plane of the table 5, the table being slotted lengthwise at these points of contact. The shafts of the sprocket wheels 27, 28, are journaled in suitable hangers and supports from the supplemental frame, and these shafts carry on their front ends the beveled gears 34, 34 and 35, 35, which in turn mesh with the beveled gears 36, 36 and 37, 37, mounted in the side standards 3, 3, and provided with gears 38, 38 and 39, 39, outside the standards, and these gears are in mesh by a suitable train of gears and pinions with the driving gears 26, on the driving shaft roller 21. This train of gears is so arranged that the upper set of sprocket wheels 27, 27, shall be rotated in opposite directions toward each other so as to carry the upper set of chain brushes for the upper portion toward each other, and for the lower portion, away from each other. The sprocket wheels 28, 28, are in the same way rotated in opposite direction so as to carry the lower portion of the chain brushes toward each other, and the upper set away from each other. Inasmuch as each link of each sprocket chain carries a brush, we will with this construction when the machine is in operation, have a constant series of brushes on each side of the middle portion of the leaf, and for the entire plane of the leaf, contacting with the leaf both above and below, and acting thereon at right angles to the plane of the feed of the leaf by the feed rollers to the cutting knives.

Mounted intermediate the respective sprocket wheels at one end, and the guide rollers at the other, which carry the sprocket chain brushes for the upper set above and for the lower set below, engaging the sprocket chains, are the guide rollers 40, 40 and 41, 41. These guide rollers are adjustably mounted so as to regulate the proper tension of the chain brushes, and also to cause an incline of the moving chain in the direction of the line of movement toward the center, and the inner guide rollers 29, 29 and 30, 30, are set so close together, and the chains are so mounted on the sprocket wheels, that in their movement in passing the center, they will overlap the brush of one upper chain, coming in between the two brushes of

the opposing set of brushes in the same plane. By this construction I am enabled to bring the sets of chain brushes very close together so that they will contact with the leaf very close to the central stem, and thus the leaf will be smoothed out and cleaned of the dirt and grit throughout the entire leaf plane from the middle portion to the outer edge. This construction for overlapping the brushes forms an important feature of my present invention.

I show in Figs. 8 and 9, my construction for mounting the brushes 33, on the sprocket chains. Each alternate link of the sprocket chain consists of a pair of side plates 141, 141, and the bristles for each brush are gathered in a tuft and inserted in a rectangular box 142, provided with projecting flanges 143, 143, on the front and rear. The box is then inserted between the side plates 141, 141, with the flanges of the box resting on the upper edge of the side plates and the boxes are locked in place by the staples 144, 144. In this way each brush is separate from the other brushes of the chain and any brush can be removed for repairs or renewal readily and easily.

After the leaf has been fed by the feed rollers 6 and 7, the body of the leaf is smoothed out and cleaned by the chain brushes, the stem of the leaf guided by the pressure foot 18 to the cutting disks, and the leaf severed on each side of the stem by the cutters, the leaf is carried to the delivery end of the machine between a series of traveling belts 44, 45, the endless belts 44, are arranged parallel to each other running over the roller 20, at the inner end, and the roller 46 at the delivery end. This roller 46, is mounted in the standards 47, 47, and is driven at the same rate of speed with the roller 20, by the counter-shaft 48, which carries at each end the beveled gears 49, 49, meshing at one end with the beveled gear 50, on the shaft of the roller 21, and at the other end with the beveled gear 51, on the shaft of the roller 46. The other series of endless belts 45, are carried by the roller 21, at the inner end, and the roller 52, mounted at the delivery end in the standards 47, underneath the roller 46, and both of these rollers are driven at the same rate of speed as the rollers 46 and 20, by inter-meshing gears on the ends of the respective shafts. In order that the belt 45, may be carried below the delivery trough for the stems, to be hereinafter described, the belt is run over the idler rollers 53, 54 and 55, 56, as shown in Fig. 1. One of these rollers as 55, is mounted on arms 57, capable of a swinging adjustment to regulate the tension of the belt 45.

The tobacco leaves after the stem is severed therefrom are carried by the belts 44 and 45, and delivered to the rocking plate 58, which is secured to the rock shaft 59,



mounted on the arms 60, secured to the frame of the machine. This rock shaft 59 and the plate 58, are rocked intermittently by the cam 61, mounted on the disk 62, which is loosely mounted on the shaft 63, and provided with a clutch device 64, indicated by dotted lines in Fig. 1, by means of which at desired intervals, as the leaves are delivered, the clutch may be actuated to couple the disk 62, and the cam 61, to the shaft 63, upon which is keyed the gear 65, driven by a train of gears from the roller shaft 62. This clutch is preferably actuated by the lever 66, connected with the foot treadle 67, by the connecting bar 68, so that the operator by depressing the foot treadle 67, may couple the cam 61, to the constantly rotating shaft 63. A roller on the upper end of the cam lever 69, is held in engagement with the cam by the spring 70, and when the cam 61, rotates, the rock shaft 59, and the plate 58, will be rocked by the connecting bar 71, coupling the cam lever 69, with an arm 72, on the rock shaft. Thus as the tobacco leaves are delivered from the machine by the belts, the operator actuates the plate 58, to pile up the leaves in a suitable pile.

In order to prevent any leaf from adhering to either of the belts 44 or 45, rotating plates 73, 74, are provided which are mounted on shafts 75, 76, and rotated in the direction of the arrows shown in Fig. 3, by the train of gears from the gears on the rollers 46 and 52.

In order to adjust the tension of both belts 44 and 45, I provide the roller 77, mounted on the vertically adjustable arms 78, 78, secured to the main frame by bolts engaging slots 79, in the lower end of the arms.

In order to separate the tobacco stems from the leaf as they are cut therefrom by the rotary cutters 19, 19, I provide a stripping knife 80, pivoted to a cross bar 81, the narrow inner end of which knife enters in between the pair of rotary cutters, and is held against the surface of the roller 20, between the knives by the spring 82. The knife 80, carries a guard plate 83, and as the stems are cut they are carried down between the guard plate 83, and the shield plate 84, and into the trough 85. The upper edge of the shield plate 84, is also caused to bear against the surface of the roller 21, to keep same clean and prevent any loose ends from wrapping around this roller. The trough 85, has an inclined bottom 86, to discharge the cut stems from the side of the machine, where they are piled up and can be removed as they accumulate.

87 is the belt shifter engaging the driving belt 24, to throw same from the tight to the loose driving pulleys 22, 23, to start and stop the machine, and this belt shifter is operated by the connecting rod 88, connect-

ing same to a third foot treadle that is not shown in the drawings.

The operation of my improved tobacco stemming machine will be clear from the foregoing description. The machine being started, the operator takes one leaf at a time and places the outer end of the stem on the feed table 5, between the feed rollers 6 and 7, the upper grooved roller and the guiding foot 18, resting on the stem by the weight of the parts, although, of course, a spring could be employed bearing on the upper end of the supporting clevis 11, to hold the upper feed roller to its work, if desired. Should the stem become displaced or any material clogged behind the feed rollers, the operator can instantly raise the upper feed roller and the guiding foot by rocking the shaft 14, by the foot treadle. The leaf is carried with the stem, guided and held in position by the guiding foot, between the sets of chain brushes, which as described, are acting both above and below the leaf plane on each side of the stem, and is smoothed out and cleaned of dust and dirt. At the same time the stem is accurately guided between the pairs of cutting knives, and the stem severed from the two halves of the leaf. The stem as it is cut is separated from the leaf, and delivered into the trough 85, while the two halves of the leaf are carried along by the belts 44 and 45, and delivered smoothed and flattened out to the folding plate 58, and as the leaf reaches this plate the operator by the foot treadle couples up the cam 61, with the rotating gear 65, and the leaves are deposited one after another in a convenient pile at the rear of the machine.

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

1. In a tobacco stemming machine, in combination with cutting knives to sever the stem from the leaf of a plurality of sets of brushes arranged in a plurality of series on opposite sides of the leaf stem, and constructed to engage the leaf substantially along its medial line and transverse to the feed of the leaf to the cutters with means for actuating said brushes to spread out the leaf from its medial line laterally in opposite directions.

2. In a tobacco stemming machine, in combination with cutting knives to sever the stem from the leaf of a pair of endless flexible carriers with brushes mounted thereon arranged on opposite sides of the leaf stem and means for actuating said brushes to engage the leaf substantially along its medial line and transverse to the feed of the leaf to the cutters.

3. In a tobacco stemming machine, in combination with cutting knives to sever the stem from the leaf of a pair of sprocket chains with brushes mounted on the links



thereof, said sprocket chains arranged on opposite sides of the leaf stem and means for actuating said brushes to engage the leaf substantially along its medial line and transverse to the feed of the leaf to the cutters.

4. In a tobacco stemming machine, in combination with cutting knives to sever the stem from the leaf, of a plurality of brushes arranged in pairs above and below the leaf plane and on opposite sides of the leaf stem and means for actuating said brushes to engage the leaf substantially along its medial line and transverse to the feed of the leaf to the cutters.

5. In a tobacco stemming machine, in combination with cutting knives to sever the stem from the leaf of two pairs of endless flexible carriers, with brushes mounted thereon said carriers arranged in pairs above and below the leaf plane and on opposite sides of the leaf stem, and means for actuating said brushes to engage the leaf substantially along its medial line and transverse to the feed of the leaf to the cutters.

6. In a tobacco stemming machine, devices to engage the surface of the leaf from the medial line outwardly comprising a pair of flexible endless carriers with brushes mounted in an endless series thereon, said carriers arranged on opposite sides of the leaf stem with their inner portions so disposed as to permit the brushes of one carrier to overlap

the brushes of the other carrier, and means for actuating said carriers to cause the brushes to engage the leaf substantially along the medial line.

7. In a tobacco stemming machine the combination with mechanism for brushing out and severing the stem from the leaf, of feed rollers to feed the leaf to the brushes and knives, the lower feed roller having a roughened periphery and the upper roller being yieldingly mounted and grooved to engage the leaf stem, and a presser foot correspondingly grooved and mounted to guide the leaf stem and extending between said brushing devices.

8. In a tobacco stemming machine feed rollers to feed the leaves to the machine, disk knives to sever the stem from the leaf and rollers to carry the leaf between the knives with endless belts carried by said rollers to prevent the severed leaf from winding around said rollers and to deliver the cut leaf from the machine, with fan plates at the delivery end of said belts and means for rotating same in contact with said endless belts to prevent the leaf from adhering to the belts.

AARON GRODSKY.

Witnesses:

BESSIE A. BEALL,  
ARTHUR H. EWALD.