

(No Model.)

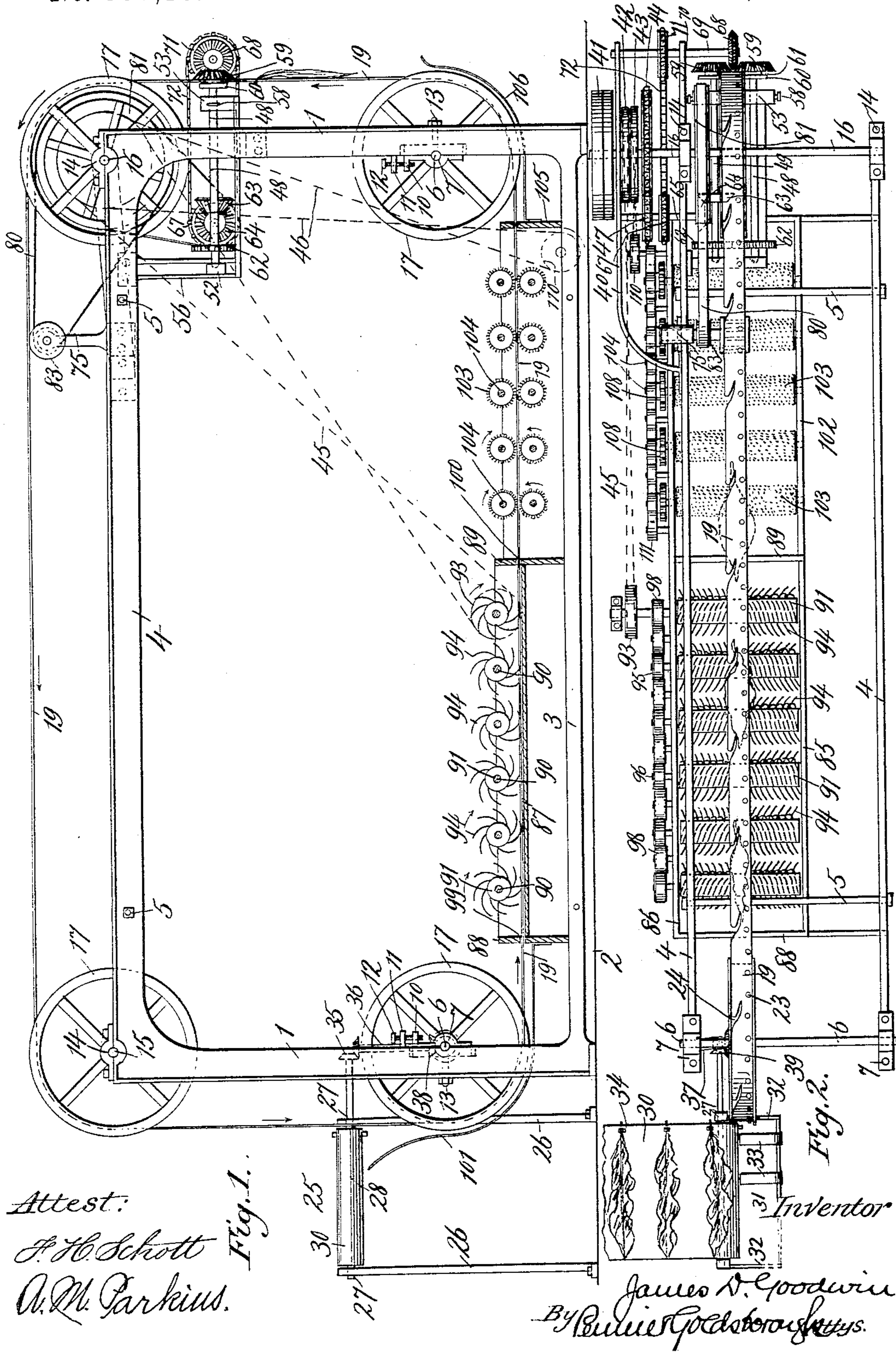
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J. D. GOODWIN.

TOBACCO STEMMING AND GRIT CLEANING MACHINE.

No. 594,152.

Patented Nov. 23, 1897.



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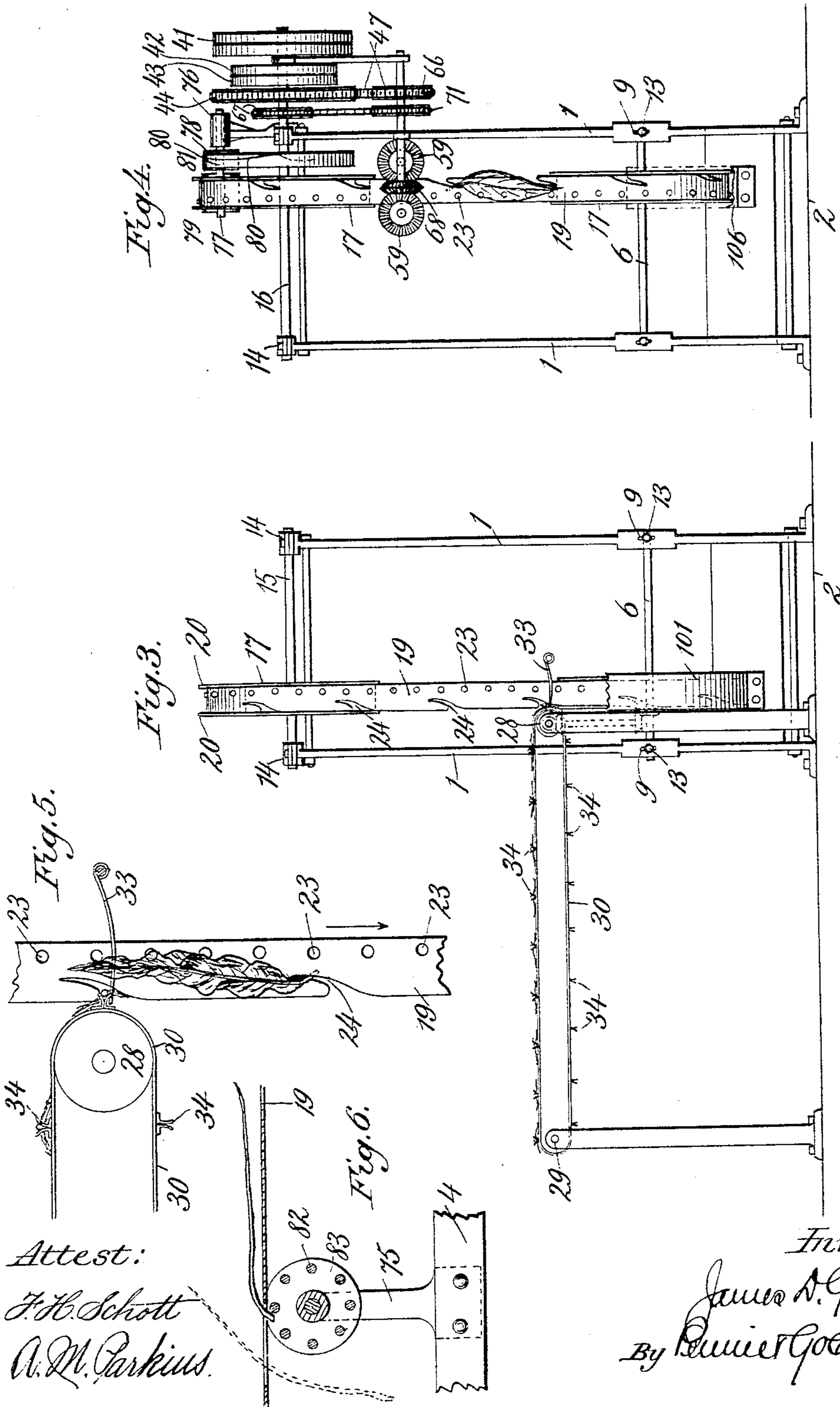
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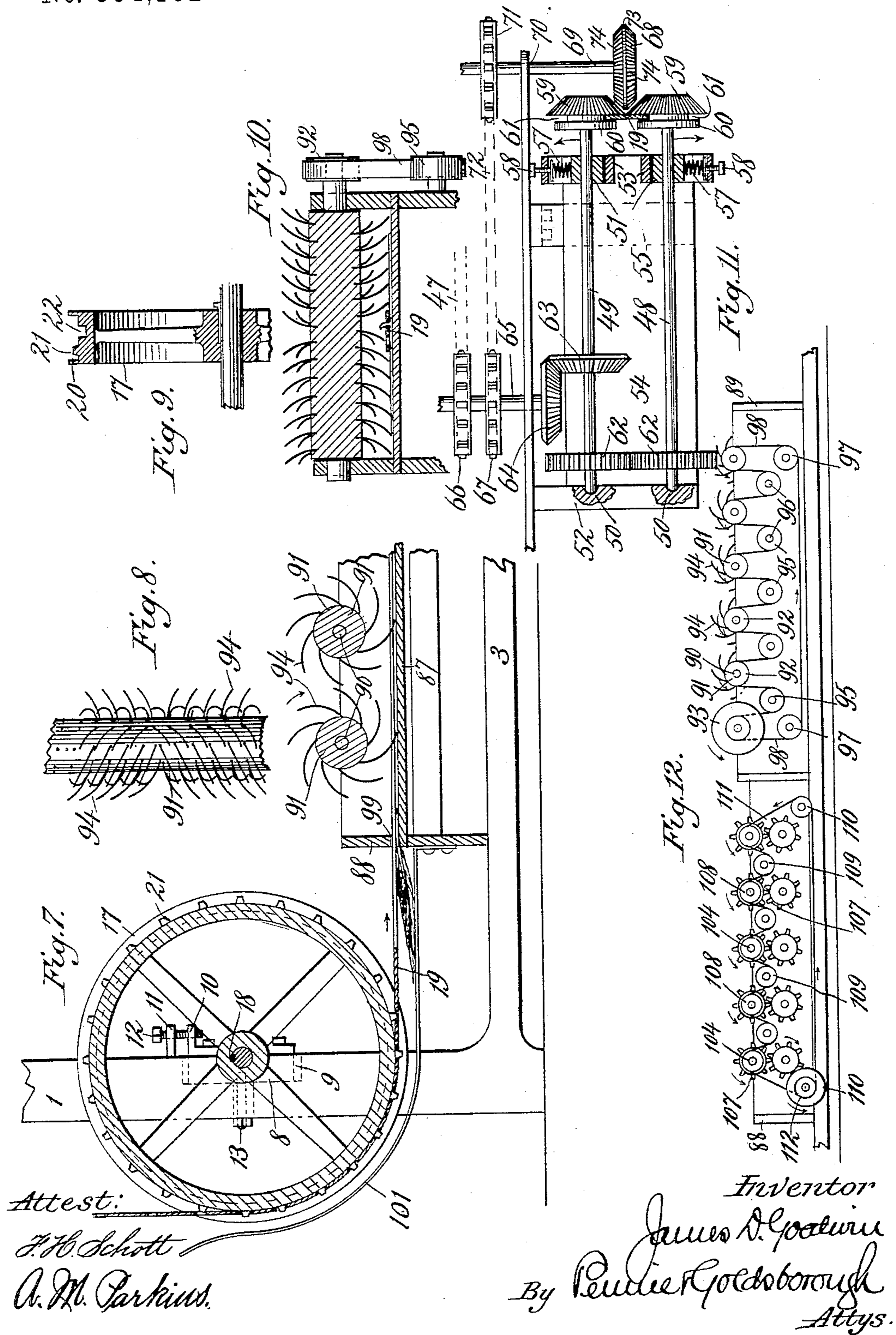
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3 Sheets—Sheet 3.

TOBACCO STEMMING AND GRIT CLEANING MACHINE.

Patented Nov. 23, 1897.



UNITED STATES PATENT OFFICE.

JAMES D. GOODWIN, OF RICHMOND, VIRGINIA, ASSIGNOR OF ONE-HALF
TO THE CARDWELL MACHINE COMPANY, OF SAME PLACE.

TOBACCO-STEMMING AND GRIT-CLEANING MACHINE.

SPECIFICATION forming part of Letters Patent No. 594,152, dated November 23, 1897.

Application filed December 6, 1895. Renewed September 21, 1897. Serial No. 652,482. (No model.)

To all whom it may concern:

Be it known that I, JAMES D. GOODWIN, a citizen of the United States, residing at Richmond, in the county of Henrico and State of Virginia, have invented certain new and useful Improvements in Tobacco-Stemming and Grit-Cleaning Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to machines for the treatment of tobacco in the leaf, and more particularly to apparatus for removing the stem from the leaf and for cleaning the leaf from grit and dirt.

Tobacco-leaves before being stripped of their stems, or "stemmed," as it is called, are in a more or less crumpled or rolled condition and require to be smoothed out before being subjected to the action of the stripping-rollers. Moreover, there is found upon the leaves a gritty deposit, which, unless removed, renders the leaves objectionable and in some instances unfitted for use.

The object of my invention is to provide a stripping or stemming machine adapted to automatically spread or smooth out the leaves before subjecting them to the action of the strippers and to also clean the leaves by removing the gritty particles therefrom. To this end I have devised the improved construction and arrangement of parts hereinafter described, and illustrated in the accompanying drawings, which show the preferred embodiment of my improvements, and in the appended claims I have particularly set forth the generic and specific features of novelty characteristic of the invention.

In the accompanying drawings, which form part of this specification, Figure 1 is a side elevation, partly in section, of a machine embodying my improvements. Fig. 2 is a plan view of the same. Fig. 3 is an elevation of the front end of the machine. Fig. 4 is a rear end elevation. Fig. 5 is a detail view illustrating the means for securing the leaf upon the leaf-carrying belt. Fig. 6 is a detail view of the means for disengaging the stem of the leaf from the carrying-belt after said stem has been stripped from the leaf. Fig. 7 is a

vertical sectional detail view of the feed end of the machine. Fig. 8 is a detail view of a portion of one of the spreading-rollers and its yielding fingers. Fig. 9 is a transverse section of a portion of one of the belt-pulleys, showing the peripheral contour thereof. Fig. 10 is a vertical longitudinal section of one of the spreading-rolls with its oppositely-disposed flexible fingers. Fig. 11 is a top or plan view of the stripping-disks and their operating-gearing; and Fig. 12 is a side view of a part of the machine-frame, illustrating the gearing for driving the spreader and cleaner rolls.

The main frame of the machine comprises standards or uprights 1, secured to a suitable base 2 and connected at their lower ends by parallel horizontal bars 3 and at their upper ends by parallel bars 4. Suitable cross-bars or braces 5 connect the two sides of the frame transversely. I have shown each side of the frame as consisting of two uprights 1, an upper bar 4, and a lower bar 3, all cast in a single piece, but obviously the frame may be of any preferred construction.

At each end of the frame, a short distance above the base thereof, a transverse shaft 6 is arranged in adjustable bearings 7. Each of these bearings consists of a box 8, seated in a vertically-elongated slot 9 in the uprights 1 and having a horizontal lug 10 arranged below and parallel to a bracket 11, projecting from the upright. Adjusting-screws 12 extend through threaded openings in the brackets 11 and lugs 10, and each bearing-box 8 is secured by a bolt 13, extending through the slots 9 of the uprights.

Supported in bearings 14 on the upper horizontal bars 4 are shafts 15 and 16 at the front and rear ends of the frame, respectively, and in parallel relation to the lower shafts 6.

Upon each of the four shafts 6, 6, 15, and 16 is mounted a pulley 17. These pulleys are fixed to their respective shafts by keys 18, Fig. 7, or otherwise, and are all in the same vertical plane to support an endless belt or leaf-carrier 19.

As shown in Figs. 7 and 9, the pulleys or belt-wheels 17 are provided with peripheral edge flanges 20, and their periphery between the flanges 20 is formed with equidistant

sprocket-teeth 21, and said periphery is also provided with an annular groove 22 of rectangular form in cross-section for a purpose hereinafter explained.

5 The endless carrier 19 is provided at one side with a series of perforations 23, adapted to take over the teeth 21 of the several pulleys 17 and at its opposite edge with open-ended notches or slots 24, adapted to receive
10 and hold the leaf-stems, as will be more fully referred to hereinafter.

At the front end of the machine is arranged a feed-table 25, comprising legs 26, formed at their upper ends with bearings 27, parallel
15 rollers 28 and 29, mounted in said bearings, and an endless apron or carrier 30, supported upon said rollers. The endless carrier 30 is located at right angles to the leaf-carrying belt 19, and the travel of the latter is toward
20 the former, as indicated by the arrow in Fig. 1.

At the delivery end of the table 25, which is the end nearest the belt 19, a frame-like extension 31 is provided, the ends 32 of the
25 frame being secured to the legs of the table, while the outer side serves as a support for a series of light spring-fingers 33, as shown in Figs. 2 and 5. The free ends of these spring-fingers 33 support the body of the
30 leaves of tobacco as the latter are fed from the table 25 to the belt 19, and thus aid in transferring the leaves from the feed-table to said belt 19 for delivery to the stripper device.

The endless carrier 30 of the feed-table is
35 provided along its edge nearest the belt 19 with equidistant light spring-clips 34, which engage and detachably hold the ends of the leaf-stems, as clearly shown in the drawings.

The shaft of the roller 28 of the feed-table
40 is extended rearwardly, as shown, and provided with a miter gear-wheel 35, meshing with a similar gear-wheel on the upper end of a short vertical shaft 36, held in bearings of a bracket 37, projecting from the frame.

45 The lower end of the shaft 36 is also provided with a bevel gear-wheel 38, meshing with a similar gear-wheel 39, arranged upon the shaft 6 concentric with the pulley 17. The shaft 16 is extended at one end beyond the machine-frame to receive driving-pulleys, and it is supported by a supplemental frame-bar 40, secured at its inner curved end to the main frame and then extending outwardly in parallel relation to said main frame.

55 Upon the outer end of the shaft extension beyond the frame-bar 40 are arranged fast and loose pulleys 41, adapted to receive a belt from any suitable source of power.

Between the frame-bar 40 and the main
60 frame upon the shaft 16 are mounted pulleys 42, 43, and 44, around which are the belts 45 46 and chain 47 for driving, respectively, the spreading-rollers, the leaf-cleaning rollers, and the stripping-disks. The stripping devices are located at the rear end of the machine below the upper rear end pulley 17 and
65 comprise two parallel shafts 48 and 49, mount-

ed in bearings 50 and 51, formed in brackets 52 and 53 of a platform 54, supported from
70 the machine-frame by bracket-arms 55 and 56 or other suitable means. The bearings 51 for the rear ends of the shafts 48 and 49 consist of movable blocks, each provided with a coil-spring 57 and tension-screw 58, whereby
75 the said shafts are afforded a limited laterally-yielding movement. Upon the outer end of each of the shafts 48 and 49 is a beveled disk 59 and a concentric collar 60, the annular spaces 61 between the collars 60 and disks 59 constituting a guide for the leaf-carrying
80 belt 19, as illustrated in Fig. 11.

The shafts 48 and 49 are provided near their forward ends with intermeshing gear-wheels 62, whereby said shafts are revolved in opposite directions. The shaft 49 is also
85 provided with a beveled gear-wheel 63, meshing with a similar gear-wheel 64 on a counter-shaft 65, supported in suitable bearings in the frame. Upon this shaft 65 are also mounted concentric sprocket-wheels 66 and 67. The
90 sprocket-wheel 66 is connected by the sprocket-chain 47 with the sprocket gear-wheel 44 on the shaft 16 and derives motion from said shaft to revolve the shafts 48 and 49 and their stripping-disks through the gearing 62, 63,
95 and 64. The beveled peripheral faces of the disks 59 are fluted or corrugated transversely to provide the required roughened contact-surface for the leaves to be stripped, and said disks, as indicated by the arrows in Fig. 11,
100 travel in opposite directions in the same vertical plane.

At right angles to the disks 59 is arranged a stripping-disk 68, mounted upon the end of
105 a shaft 69, supported in bearings 70, formed in the rear ends of the frame-bars, as shown. This shaft 69 is parallel to the shafts 16 and 65 and carries a sprocket-wheel 71, connected by a sprocket-chain 72 with the wheel 67 upon the shaft 65. Thus the shaft 69 and the
110 stripping-disk 68 are revolved from the main shaft through the shaft 65 and intermediate gearing. The periphery of the disk 68 is oppositely beveled to form a central rib 73, adapted to bear upon the stem of the tobacco-
115 leaf. The beveled sides 74 of the periphery are ribbed or fluted to afford the required bite upon the leaves passing between them and the rollers 59.

75 indicates a bracket-arm rising from the
120 top of the main frame and provided with a horizontal sleeve 76, within which is supported a short shaft 77, carrying a driving-pinion 78, and a rotary stem-discharger 79. The pinion 78 is connected by a belt 80 with
125 pulley 81 on the main shaft 16. The discharger 79 is preferably made in the form of a wheel comprising a series of parallel rods 82, connected at their respective ends by disks 83, and the function of the wheel is to dis-
130 lodge the stem from the belt after the leaf portion has been stripped therefrom. The direction of revolution of the wheel 79 is the same as that of the belt 19, but the driving-

gearing of the former is so arranged and proportioned with relation to that of the latter that the wheel 79 revolves at a faster speed than the belt, as will be referred to again hereinafter.

I will now describe the mechanism for spreading out or smoothing the leaves after they are taken from the feed-table by the belt 19. Just in rear of the lower forward wheel or pulley 17 and within the framework of the machine I provide a sort of framing consisting of parallel sides 85 and 86, a bottom 87, and end boards 88 and 89. Within bearings formed in the sides 85 and 86 are supported a series of parallel shafts 90, each carrying a spreading-roll 91. The ends of the shafts 90 extend through the side 86 of the framing and are provided with fixed pulleys 92. One of said shafts is also provided with a driving-belt pulley 93 to receive the belt 45 from the main shaft. Each of the spreading-rolls 91 is provided with curved spring-fingers 94, arranged spirally upon the rolls in two opposing series to adapt them to have a sweeping-contact with the leaves from the center or stem thereof outwardly. A series of idle-pulleys 95, mounted upon stud-journals 96, alternate with the pulleys 92 of the shafts 90, and below the end shafts 90 are similar idle-pulleys 97. A belt 98 passes around these several fixed and idle pulleys, as shown in Fig. 12, to cause the shafts 90 to all revolve in the direction indicated by the arrows. The end boards 88 and 89 of the framing are provided with transverse slots 99 and 100, just above the bottom 87, of sufficient width to admit the belt 19 and the leaves carried thereby. A curved guard-plate or guide 101, of light metal, is secured to the front end 88 of the framing and extends under the adjacent pulley 17 and then forwardly below the feed-table 25. In rear of the spreading devices just described I arrange the cleaners or grit-removing rollers. The sides 85 and 86 of the framing are continued rearwardly beyond the rear end board 89 and constitute end supports 102 for the cleaning-rolls 103, the shafts 104 of which are supported in bearings formed in said supports. The rear ends of the supports 102 are connected by a cross-bar 105, to which is secured a guard-plate 106 similar in construction to the plate 101 at the front of the machine and extending rearwardly and upwardly around the adjacent pulley 17 to guide the leaves carried by the belt. The cross-bar 105, like the bars 88 and 89, is transversely slotted to allow the belt 19 to pass through it. The cleaning-rolls 103 are provided with a peripheral surface of card-cloth or equivalent material, and said rolls, as shown, are arranged one above another in pairs, with their several passes in the same horizontal plane as the bottom 87, so that the belt 19 can readily present the leaves to the action of the rolls after leaving the spreader. The shafts of the cleaning-rolls project beyond their support at one side and

are provided with intermeshing teeth 107 to effect a reverse revolution of the rolls of each pair. Each of the shafts 104 is also provided with an end pulley 108. Idle-pulleys 109 are interposed between the pulleys 108, and end pulleys 110 are also provided to receive a belt 111, which passes around the several pulleys and insures the revolution of all of the upper rolls of the several pairs in the same direction, the lower rolls of each pair, as above stated, revolving in an opposite direction. One of the cleaner-shafts is provided with a driving-pulley 112 to receive the driving-belt 46 from the main shaft. The gearing of the cleaner-shafts is arranged, as shown, to revolve said shafts in opposition to the direction of travel of the belt 19 to brush the leaves as they pass.

The operation of the machine as thus described is as follows: The leaves 113 are placed upon the carrier 30 of the feed-table one by one by hand, the stem of each leaf being engaged by one of the spring-holders 34. As illustrated in Fig. 2, the leaves when thus placed upon the table 25 are in the more or less crumpled condition in which they are taken from the hogshead in which they are shipped. The carrier 30 of the feed-table travels toward the edge of the leaf-carrying belt 19, and the latter traveling at right angles to the carrier 30 presents its open-ended notches or slots to receive the projecting leaf-stems. The slots 24 in the belt 19 are so spaced apart and the relative movements of the belt 19 and the carrier 30 are such as to make the slots coincide with the clips or holders 34 of the carrier 30, so that when a leaf reaches the end of the feed-table and its body or leaf portion is supported from falling down by the spring-fingers 33 the slot 24 will be opposite the projecting stem 114 of the leaf, and said stem will enter the slot and be engaged thereby, as shown in Fig. 5. The continued movement of the belt 19 then draws the stem out of its holder 34, and the leaf rests upon the belt in the position shown in Fig. 5. The arms 33 not only serve to prevent the body of the leaf from falling off the end of the table, but also support and guide the leaf as it slips from its spring-holder to the carrying-belt 19. As the slots in the belt 19 coincide with the stem-clips 34 it will be apparent that as each slot 24 of the belt passes the end of the feed-table a leaf is transferred to the carrying-belt 19. After passing the fingers 33 the leaf passes under the lower front pulley 17, being guided and supported by the guard 101. The further movement of the belt 19 carries the leaf to the spreader-box, where the spring-fingers 94 of the several rolls 91 successively operate upon it to spread it out smoothly. It will be observed that the spring-fingers revolve in a direction reverse to that of the travel of the belt 19 and are spirally arranged in opposite directions from the center of the rolls to have a sweeping contact with the leaves to spread or unroll them in opposite directions from the

central stem. The first spreading-roll 91 partially spreads or flattens the leaf and each successive roll toward the rear contributes to the smoothing process. The leaf thus spread
 5 or flattened is then passed with the belt 19 between the pairs of cleaning-rolls 103. These rolls revolve in the directions indicated by the arrows in Fig. 1 and thoroughly remove all gritty particles from both sides of the leaf.
 10 After passing through the slotted cross-bar 105 the belt passes under the rear lower pulley 17 to the stripping-disks, the leaves being supported and guided by the guard 106. It will be noted that the ends 114 of the stems
 15 project through the slots of the belt 19, and in passing over or around the several wheels or pulleys 17 said ends 114 extend into and pass through the grooves or channels 22, formed in the periphery of said pulleys. The belt 19
 20 moves upwardly at the rear end of the machine, carrying each leaf successively between the stripping-disks 59 and 68, which revolve in a direction opposite to the direction of travel of the belt between them. The two
 25 disks 59, revolving in opposite directions, operate in conjunction with the beveled disk 68 to strip the leaf sides from the stem, the ribs or teeth of said disks grasping or biting the leaves to tear them from the stem as the
 30 latter is carried upward between the disks. The yielding rear end supports of the shafts 48 and 49, carrying the disks 59, permit said shafts to separate to a limited extent in case a leaf or stem of more than ordinary size or
 35 thickness passes between the disks. To facilitate this yielding movement of the shafts, their inner ends 50^x and bearings 50 are rounded, as shown in Fig. 11. The stripped leaves drop from between the disks 59 to the floor
 40 or into any suitable receptacle provided for the purpose, but the stem is carried upward with the belt 19 over the rear upper pulley 17 to the discharging-wheel 79. As has been stated, this wheel is geared to revolve faster
 45 than the belt 19, but in the same direction, and hence, as illustrated in Fig. 6, the rods 82 of the wheel strike against the projecting end 114 of the stem and force it into the wider part or opening of the slot 24, and thus dis-
 50 lodge it, so that it will drop from the belt into any receptacle provided to receive it. It will be seen that all of the moving parts of the machine are operated from a single source of power and that the three distinct results—
 55 viz., smoothing or spreading out the leaf, removing the grit, and finally stripping or removing the stem from the leaf—are accomplished.

While the construction above described and
 60 illustrated in the drawings is a desirable and practical one, it is obvious that many modifications of the details of form and arrangement of the parts might be resorted to without departing from the spirit and scope of my
 65 invention. I therefore desire it to be understood that I do not limit myself to the construction shown, but reserve the right to make

all such alterations, variations, or modifications in the mechanical details of my machine, as may fall within the purview of the following claims. 70

Having thus described my invention, what I claim is—

1. In a machine for stemming tobacco, the combination of means for positively engaging 75 and holding the leaf, and a rotary spreader for spreading or combing the leaf outwardly toward the edges, said spreader consisting of a roller armed with resilient teeth or fingers running in reversed spirals around the same 80 from the center toward the ends.

2. In a machine for stemming tobacco, the combination of a conveyer constructed to positively engage the leaf, a surface over which the leaf is carried by the conveyer, and an 85 overlying, positively-driven, rotary spreader for spreading or combing the leaf outward toward the edges, said spreader consisting of a roller traveling in the reverse direction to the movement of the conveyer and provided 90 with curved resilient teeth or fingers arranged in reversed spirals running around the roller from the center toward the ends.

3. In a machine for stemming tobacco, the combination of a conveyer constructed to positively engage the leaf and carry it along, and 95 a rotary spreader for spreading or combing the leaf outwardly toward the edges, said spreader consisting of a roller armed with resilient teeth or fingers running in reversed 100 spirals around the same from the center toward the ends.

4. In a machine for stemming tobacco, the combination of a feed-table provided with a moving belt upon which the leaves rest and 105 are carried, an endless belt constructed and adapted to engage the leaves by their stems and carry them inward, said belt traveling in proximity to said table so that it may take the leaves therefrom, and a stripper located 110 in relation to the endless belt so that, as the leaves are carried along by the belt butt-end foremost, the stripper will act to strip them from the stems.

5. In a machine for stemming tobacco, the 115 combination of a stripper, an endless carrier provided with stem clips or holders, and an endless conveyer-belt provided with a series of catches adapted to engage the projecting stems of the tobacco-leaves to remove them 120 from the carrier and deliver them to the stripper.

6. In a machine for stemming tobacco, the combination of a stripper, an endless carrier provided with clips or holders to detachably 125 secure the leaf-stems, and an endless conveyer-belt provided with a series of slots or notches adapted to receive the stems of the leaves and automatically detach the latter from the endless carrier and deliver them to 130 the stripper.

7. In a machine for stemming tobacco, the combination of a leaf-carrying belt slotted to receive the leaf-stems, and pulleys around

which the belt passes, said pulleys having annular peripheral grooves into which the projecting ends of the stems of the leaves project as the belt passes over the pulleys.

5 8. In a machine for stemming tobacco, the combination of an endless leaf-carrying belt provided along one of its edges with a series of perforations, and along its opposite edge with a series of slots or notches, and driving
10 and guide pulleys for the belt, each of said pulleys being provided on one side of its periphery with sprocket-teeth, and on the opposite side of its periphery with an annular groove.

15 9. In a machine for stemming tobacco, the combination of a feed-table having an endless carrier provided along one of its edges with clips or catches, an endless leaf-carrying belt provided with slots or notches coinciding with the clips or catches of the feed-table carrier, said carrier and leaf-carrying belt being arranged to pass each other in their travel, so that the stems of the leaves projecting from the feed-table carrier will be
20 engaged by the leaf-carrying belt, and a stripper to which the carrying-belt conducts the leaves taken from the feed-table carrier.

10. In a tobacco-stemming machine, the combination of a feed-table, an endless leaf-carrying belt, and yielding fingers or guards to hold the leaf while it is being taken from the feed-table by the belt.

11. In a tobacco-stemming machine, the combination of an endless belt adapted to
35 hold and carry the leaves by their stem ends, a stripper, pulleys for said belt, and one or more guides arranged adjacent to the pulleys to hold the leaves in proper relation to the belt.

40 12. In a tobacco-stemming machine, the combination of a leaf-carrying belt, and a stripper comprising a pair of revolving fluted disks, between which the belt delivers the leaves and which act to strip the leaf portion
45 from the stem while the latter is held in the grasp of the carrying-belt.

13. In a tobacco-stemming machine, the combination of a leaf-carrying belt, a stripper comprising a pair of oppositely-revolving
50 fluted or ribbed disks between which the belt carries the leaves, and an auxiliary disk having its periphery extending between the fluted disks.

14. In a tobacco-stemming machine, the combination of a leaf-carrying belt, a stripper comprising a pair of fluted or ribbed disks mounted upon yielding supports, concentric collars adjacent to said disks, the belt traveling between said collars and disks, and
60 an auxiliary disk mounted to revolve at right angles to said pair of disks.

15. In a tobacco-stemming machine, the combination of a leaf-carrying belt, a stripper comprising a pair of beveled and fluted
65 disks between which the belt carries the leaves, and an oppositely-beveled auxiliary disk revolving at right angles to said pair of

disks and having its periphery extending between the disks, said disks revolving in a direction reverse to the travel of the belt. 70

16. In a tobacco-stemming machine, the combination of a leaf engaging and carrying endless belt, a stripper located in relation to said belt so that, as the leaves are carried along thereby, it may strip them from the
75 stems, and means for discharging the stems, said means being in such proximity to the traveling belt that the stems may be engaged thereby and disengaged from the belt after stripping. 80

17. In a tobacco-stemming machine, the combination of a feed-table, an endless leaf-carrying belt constructed and adapted to engage the leaves by their stems and carry them inward, said belt traveling in proximity to
85 said table so that it may take the leaves therefrom, a stripper located in relation to said belt so that, as the leaves are carried along thereby, it may strip them from the stems, and means for engaging and discharging the
90 stripped stems, said means being located in such relation to the traveling belt beyond the stripper that the stems may be discharged from said belt.

18. In a tobacco-stemming machine, the combination of a leaf-carrying belt, a stripper, and a rotary stem-discharging device arranged in proximity to said belt. 95

19. In a tobacco-stemming machine, the combination of a leaf-carrying belt, a stripper, and a rotary stem-discharging device arranged in proximity to said belt, and revolving in the same direction therewith but at a higher speed. 100

20. In a tobacco-stemming machine, the combination of a leaf-carrying belt provided with open-ended slots or notches, a stripper and a rotary stem-discharging device arranged in proximity to said belt, and revolving in the same direction therewith but at a
105 higher speed, the open end of the notches being arranged forward of their closed ends with relation to the travel of the belt. 110

21. In a tobacco-stemming machine, the combination of a feed-table having an endless carrier provided with leaf-holders, a leaf-carrying belt provided with slots arranged to coincide with said leaf-holders, spring-fingers to support the leaves, a stripper, and a stem-discharger. 115

22. In a tobacco-stemming machine, the combination of a traveling feed-table, a leaf-carrying belt adapted to take the leaves by their stems from the table, a stripping mechanism to and through which the belt carries
125 the leaves butt-end foremost, a rotary spreader for combing or spreading the leaves outward toward both edges after leaving the feed-table, and a series of grit-cleaning rolls to the action of which the leaves are sub-
130 jected after leaving the spreader and before reaching the stripping mechanism.

23. In a tobacco-stemming machine, the combination of a feed-table, a leaf-carrying

belt adapted to take the leaves from the table
by the stems, a stripping mechanism to and
through which the belt carries the leaves
butt-end foremost, a surface over which the
5 belt carries the leaves on their way to the
stripping mechanism, and a revolving spread-
ing-roll for combing or spreading the crum-
pled leaves outwardly from the center toward
the edges.
10 24. In a tobacco-stemming machine, the
combination of a feed-table, a leaf-carrying
belt adapted to take the leaves from the table
by their stems ends, a stripper to and through
15 which the belt carries the leaves butt-end
foremost, and a series of grit-cleaning rollers

arranged above and below the belt, so that
the leaves after leaving the spreader pass be-
tween the grit-cleaning rolls on their way to
the stripper.

25. In a tobacco-stemming machine, a leaf- 20
carrying belt provided with open-ended
notches in its edge, said notches being adapt-
ed to engage and hold the leaf-stems.

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

JAMES D. GOODWIN.

Witnesses:

GEO. W. HUNTER,
G. J. FINDLEY.