(No Model.) 3 Sheets—Sheet 1.

C. A. SNYDER.

MACHINE FOR TREATING LEAF TOBACCO.

No. 483,401. Patented Sept. 27, 1892.

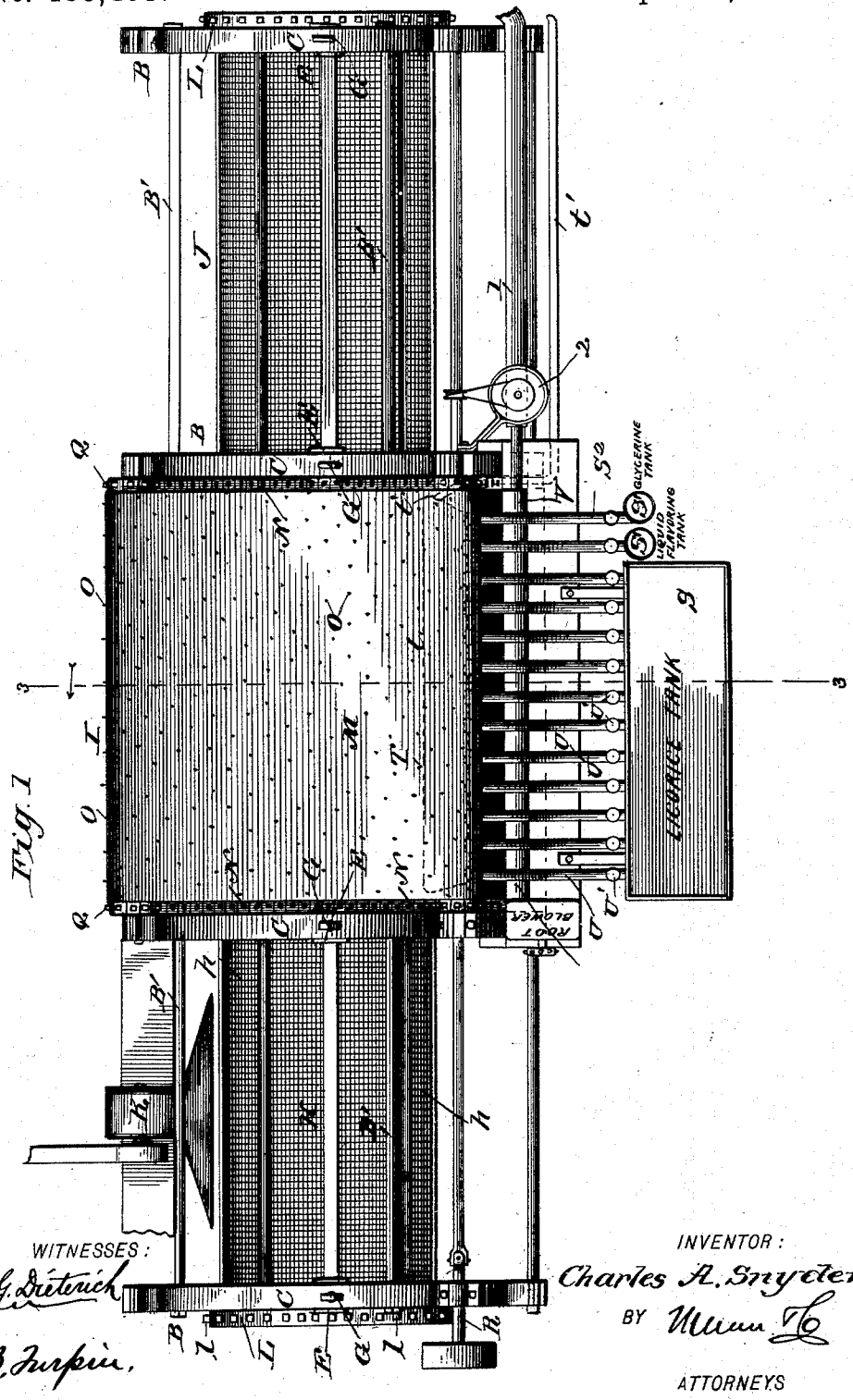

Fig. 1.

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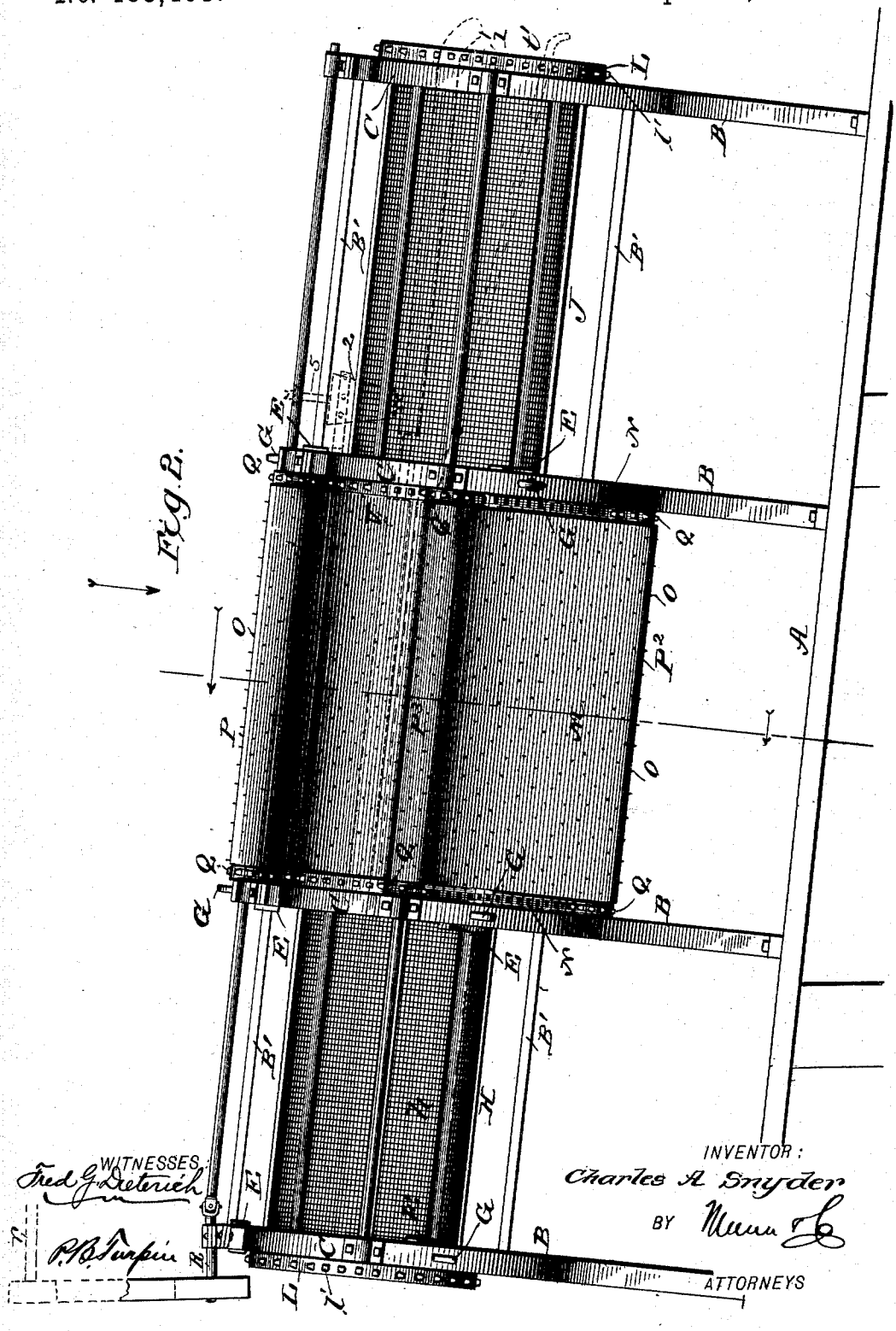

Fig. 2.

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(No Model.) 3 Sheets—Sheet 3.

C. A. SNYDER.

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Fig. 3

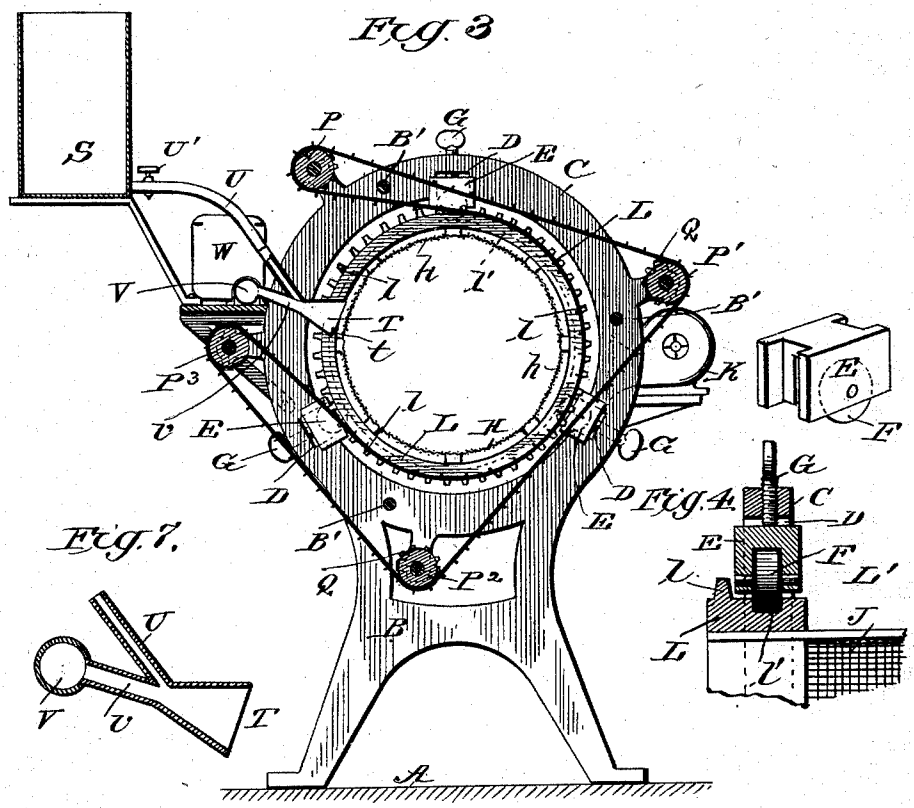


Fig. 7.

Fig. 4.

Fig. 5

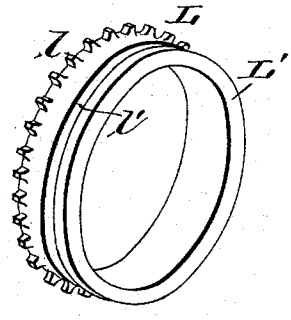


Fig. 6.

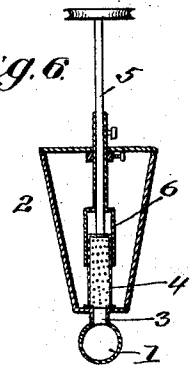
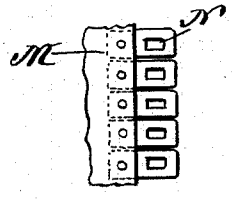


Fig. 8.



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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

CHARLES A. SNYDER, OF DANVILLE, VIRGINIA, ASSIGNOR OF ONE-HUNDRED-AND-SEVEN TWO-HUNDRED-AND-FORTIETHS TO WILLIAM W. BROWN AND ROBERT T. BASS, OF SAME PLACE.

MACHINE FOR TREATING LEAF-TOBACCO.

SPECIFICATION forming part of Letters Patent No. 483,401, dated September 27, 1892.

Application filed December 29, 1891. Serial No. 416,438. (No model.)

To all whom it may concern:

Be it known that I, CHARLES A. SNYDER, residing at Danville, Pittsylvania county, in the State of Virginia, have invented a new and useful Improvement in Machines for Treating Leaf-Tobacco, of which the following is a specification.

My invention is an improved machine for treating tobacco preparatory to its manufacture into plug, fine-cut, smoking-tobacco, wrappers, &c.; and my object is to provide a simple novel construction whereby the tobacco may be first subjected to an air bath, and thereby thoroughly dusted, then be treated with the desired preparations and solutions, and then dried, the tobacco passing by gravity through the machine.

The invention has for further objects other improvements; and it consists in certain novel constructions and combinations of parts, as will be hereinafter described, and pointed out in the claims.

In the drawings, Figure 1 is a plan view of my apparatus. Fig. 2 is a side view, parts being omitted. Fig. 3 is a cross-section on line 3 3 of Fig. 1, and Figs. 4, 5, 6, 7, and 8 are detail views.

In carrying out my invention I provide a suitable framing, which is shown as comprising a base A and upright frames B thereon, all of these frames being constructed alike, so the description of one will answer for all. These frames B are braced by connecting-rods B′, extended between them, and are provided at their upper portions with rings C, which for convenience of reference I shall call the "frame-rings." In their inner faces these rings C are provided with notches D, which receive boxes E, which are movable radially in the notches D, the said boxes being provided at their edges with guides, which hold them to the rings and yet permit their radial movement. At their inner ends the boxes are provided with rollers F, and set-screws G are threaded through the rings C and bear against the outer ends of the boxes E, so such boxes may be set inward as may be desired.

In the construction shown I provide three compartments, which may be termed the "receiving-chamber" H, "agitator" I, and the "discharge-chamber" J, such parts H, I, and J being connected so they will turn together, as more fully described hereinafter. The receiving-chamber H is in the nature of a duster, being covered with wire-gauze *h* or its equivalent—such, for instance, as perforated sheet metal—and during the passage of the tobacco through this chamber H it is subjected to an air bath or blast by means of a suitable blower K′. This blower K′ is shown as located alongside of the rear of the chamber H to force its blast directly against such chamber, so that it will force the dust from the tobacco and drive it out of the chamber; but it is manifest that this blower may be otherwise arranged, if so desired. The subjection of the tobacco to an air bath at this stage of the operation is desirable for several reasons, as it thoroughly dusts the tobacco and also has a tendency to loosen up the leaves and to put them in better condition for the action of the agitator presently described. This chamber H is constructed with end rings L, which are of special construction to enable them to be used on the agitator; but as the special construction is not incidental to their use in connection with the receiving-chamber I shall not fully describe them at this point; but it may be here said that I use this special construction of rings in connection with the outer ends of both the chambers H and J, as they will serve their desired purposes at such ends, and by their use I avoid the necessity of specially constructing guide-rings for use at such points. The agitator I, which is an important feature of my apparatus, will be now described. This agitator comprises an apron M, which is endless and is preferably made of rubber, has at its edges sprocket-chains N, and is provided with pins O, projecting from its outer side, such pins being preferably the extensions of rivet-shanks passed through the rubber apron, as will be readily understood. This apron is passed around guide-rollers P, P′, P^2, and P^3, all of which are preferably provided with sprocket-wheels Q to mesh the chains N, and the upper and lower rollers P P′ are arranged in such relation, as shown, that the apron is made to form almost a complete cylinder.

In order to preserve the hollow of the apron,

I arrange within such hollow the guide-rings L, which have sprocket-teeth *l* to mesh with the chains N. These rings at the opposite ends of the agitator are also the inner end rings of the chambers H and J and are open at the center, as shown. The rings L have tubular flange-like portions L′, which fit in the rings C and are grooved at *l′* to receive the rolls F, by which the rings L are held and may be adjusted. These open rings are of great importance, as they enable the apron to be brought into almost a complete cylindrical form and yet prevent the collapsing of said apron and preserve the hollow thereof in the desired shape. Now it is important that the cylinder should be brought into this nearly-cylindrical form for several reasons. In the first place, the forward projection of the apron above its hollow or receiving portion insures the dropping of the tobacco back into such hollow when it is carried up by the apron and avoids the necessity of providing separate devices for forcing the tobacco down as it is carried up by the apron. Again, this nearly-cylindrical portion of the agitator enables the mouth thereof to be contracted, so that the spray to which the tobacco is subjected while in the agitator may be retained within the agitator and not be dissipated in the air, as might result if the opening for the introduction of such spray were less contracted. The spraying devices, which will be more fully described hereinafter, are greatly preferred; but it will be understood that I do not desire to be limited in the improved features of my agitator to the special construction of such spraying devices, and it will also be understood that it might be practicable in some instances to omit spraying devices and introduce the liquid solutions through the lateral opening by hand.

The open end guide-rings L for the agitator permit the introduction of the tobacco directly in one end of the agitator and its discharge from the opposite end thereof. This insures the passage of every portion of the tobacco throughout the full width of the apron and enables the use of a narrower apron than would be practicable were the tobacco introduced in some other manner. Another and an important result accomplished by this mode of introducing and discharging the tobacco is that thereby the entire lateral opening is left unobstructed, so that it may be utilized for the introduction of the solutions, flavoring-extracts, &c., as may be desired. Thus I secure by the described construction a convenient arrangement by which the tobacco is introduced directly in one end and discharged directly from the other end of the apron. Such apron may be arranged in almost a complete cylindrical form to better agitate the tobacco, to insure its return by gravity when carried up, and to retain the spray, and at the same time the full length and width of the lateral opening is left unobstructed for the introduction of the spraying devices. The upper guide-roller P is driven by connecting its shaft with a shaft R, which shaft R is suitably belted with a line or drive shaft *r*. This roller P gives motion to the apron, the apron gives motion to its end guide-rings L, and such guide-rings serve to turn the chambers H and J in the same direction as that portion of the agitator-apron engaging with its guide-rings L. This forms a convenient construction for driving the parts H, I, and J of the machine, and by giving motion to the end guide-rings of the agitator, as described, the said rings by their motion will operate to facilitate the entrance of the tobacco into and its discharge from the agitator, and so aid in preventing the clogging of such part.

The screens may be secured to the guide-rings L in any suitable manner. This may be preferably accomplished by securing strips of wood or iron to the guide-rings and fastening the screens thereto, as will be understood from Fig. 3.

In practice it is preferred to incline the parts H, I, and J downward on a gradual incline from the receiving end of the chamber H to the discharge end of the chamber J, and this is preferably accomplished by supporting the base A at the desired angle, which may be conveniently accomplished by mounting such base at one end on a block or foundation higher than that which supports its opposite end. This is preferable, because it enables the upright frames B to be all constructed alike and also permits of the arrangement of the said parts H I J at any angle the owner of the machine may prefer, as the character of the tobacco or the speed at which the machine is run may render it desirable to incline the parts H, I, and J in some instances more than in others. It will be understood that by similarly constructing as many as possible of the parts of the machine I am able to greatly reduce the initial cost thereof.

The discharge-chamber J is preferably constructed, like the chamber H, of wire-gauze, and where desired a hot blast may be used in such chamber to facilitate the drying of the tobacco; but ordinarily this will not be found necessary, and in many instances the discharge-chamber may be omitted and the tobacco discharged directly from the lower end of the agitator into a suitable receptacle. At the discharge end of the machine a suitable conveyer may be arranged to conduct the tobacco to any desired part of the house.

In front of the agitator I arrange the spraying devices, which include a reservoir S, a distributer T, arranged below the reservoir and extended into the lateral opening of the agitator, a number of pipes U, extended from the reservoir to the distributer, an intermediate pipe V, connected by a number of pipes *v* with the distributer T, and a blower W, which may preferably be an ordinary Root blower and which is arranged to discharge its blast into the intermediate pipe V, such blast being arranged to pass from the pipe V

through the pipes *v* into the distributer T, the pipes *v* and U being arranged to open into such distributer at the same point, so that the blast through pipes *v* will rapidly convert the solution discharged from pipes U into spray. This spray will be distributed by the part T to the tobacco in the agitator, such distributing part being arranged to flare out toward the agitator, so that it will spread the spray and distribute it upon the entire quantity of tobacco in the agitator. It will be noticed that the distributer is elongated in the direction and extends almost the full length of the lateral opening into the agitator. Each of the pipes U has an independent valve U′, so that one or more of such pipes U may be wholly or partially shut off in order to regulate the supply of the licorice or other solution supplied to the tobacco. By making these valves independent a greater or less quantity of the solution may be supplied to the tobacco at its entrance or near the middle or near the end of the agitator, so that if for any reason it is desired to supply but a small portion of the solution to the tobacco near the front end of the agitator and a greater quantity near the rear or discharge end thereof, or vice versa, this may be conveniently accomplished by properly manipulating the valves U′. This location of the reservoir is considerably above the distributer, so that the solution will pass from such reservoir to the distributer by gravity, and this gravity will be aided by the suction produced by the blast of air forced through the pipes *v* into the distributer, as before described. The end of the distributer next to the discharge end of the agitator is extended beyond the reservoir S, and I provide at such point one or more sub-reservoirs S′ for flavoring-extracts and the like, such sub-reservoirs having pipes S^2 opening into the distributer T, the said pipes S^2 being provided with valves similar to the valves U′. Pipes *v* lead from the intermediate pipe V and open into the distributer T, adjacent to the pipes S^2, and operate in connection with such pipes S^2 in similar manner to their operation in connection with the pipes U, before described. At the rear end of the pipe V, I connect a pipe 1, which leads to the discharge end of the machine and is adapted to conduct a dry or powdered flavoring and to discharge the same onto the tobacco as it leaves the machine. At its lower edge the distributer is provided with a drip-trough *t*, from which a pipe *t′* leads to conduct any liquid portions out and prevent their discharge into the agitator. As shown, this pipe 1 discharges at the rear end of the chamber J; but when such chamber J is omitted it should lead to the rear end of the agitator, as will be readily understood. The powder-holder includes a vessel 2, having a discharge-opening 3 in its bottom, such opening being arranged in connection with the pipe 1, as shown. The vessel 2 preferably tapers toward its lower end, and within it I arrange a cylindrical sieve 4, open at its bottom and fitted at such bottom over the opening 3. This sieve 4 has a shaft 5 suitably geared with the machine, so that the sieve when turned will sift the powder placed in the vessel 2 into the pipe 1, whence it will be discharged by the blast. To regulate the supply of powder fed to the tobacco, I provide a cylindrical shut-off 6, fitted over the sieve 4 and adapted to be adjusted to wholly or partially cover such sieve, in order to stop off or regulate the quantity of powder fed from the vessel. The shaft of this sieve and the Root or other blower may be geared with and driven by the shaft of the guide-roller P, or they may be driven in any other suitable manner.

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

1. An apparatus, substantially as described, comprising an agitator consisting of an endless apron and supports therefor and having its inlet end open and unobstructed, whereby the tobacco may be introduced directly in said end in a longitudinal direction, and having an outlet at its opposite end and a lateral opening for the insertion of the treating solutions, &c., substantially as set forth.

2. A machine, substantially as described, comprising an agitator-apron having a lateral opening and open at one end for the introduction of the material and a receiving-chamber connected with the inlet end of the agitator and arranged to introduce the material longitudinally into the end of said agitator, substantially as set forth.

3. In an apparatus, substantially as described, an agitator comprising open end rings having sprocket-teeth, the framing having bearings for the said rings, the apron having at its edges sprocket-chains engaging the teeth of the rings, and the guide and drive rollers for said apron, substantially as set forth.

4. In an apparatus, substantially as described, an agitator consisting of an endless apron provided on its outer side with projecting teeth and arranged with a space between its ends for the insertion of the treating solutions, &c., and end supports for said apron, consisting of open rings, substantially as and for the purposes set forth.

5. An apparatus, substantially as described, consisting of an apron, means for supporting the apron, and open end rings in the hollow of said apron at its inlet and discharge ends, all substantially as described, whereby there is provided a lateral opening for the insertion of the treating solutions or materials, substantially as set forth.

6. In an apparatus, substantially as described, an agitator comprising an endless apron and end supports therefor, consisting of open rings through which the tobacco may be supplied to and discharged from the apron, substantially as set forth.

7. The improved agitator, substantially as described, consisting of the apron having sprocket-chains at its edges, the end guide-rings therefor having on their outer sides sprocket-teeth to mesh the chains of the apron and open at the center for the introduction and discharge of the tobacco, and the drive-roller having sprocket-gears meshing the chains of the apron, whereby the roller drives the apron and the apron drives its guide-rings, all substantially as and for the purposes set forth.

8. An apparatus, substantially as described, comprising a frame having bearing-rings provided with bearings for the drive and guide rollers, the drive and guide rollers, the endless apron passed around said rollers, and the end guide-rings open centrally for the inlet and discharge of the tobacco and journaled in the frame-rings, all substantially as and for the purposes set forth.

9. In an apparatus, substantially as described, an agitator comprising an endless apron, guides within said apron, and circular end guides fitted in the hollow of said apron, whereby the apron may be formed into almost a complete cylinder, the circular end guides preserving the hollow of the apron in proper shape, all substantially as and for the purposes set forth.

10. An apparatus, substantially as described, comprising the framing, the endless apron, the end guide-rings fitted within the hollow of and arranged to be turned by the said apron, means for driving the apron, and the receiving-chamber united at one end to one of the end guide-rings, whereby the said chamber will be turned by the power applied to the apron, all substantially as and for the purposes set forth.

11. A machine for treating tobacco, substantially as described, comprising an agitator formed of an endless apron, means for supporting the apron, and circular end guides fitted in the hollow of said apron, whereby there is provided a contracted lateral opening for the introduction of solutions, &c., and a sprayer, substantially as set forth.

12. An apparatus, substantially as described, comprising the frame-rings provided in their inner faces with notches or openings, the boxes fitted movably in said notches or openings and provided with rollers, the screws for adjusting said boxes, the guide-rings having portions fitting in the frame-rings and grooved to receive the said screw-adjusted rollers, the endless apron carried by the guide-rings, and the rollers fitted within said apron, all substantially as set forth.

13. An apparatus, substantially as described, comprising the frame-rings having outwardly-projected brackets having bearings, the drive and guide rolls journaled in such bearings, the apron passed around said rollers, and the end guide-rings fitted in the hollow of said apron and journaled within the frame-rings, substantially as set forth.

14. In an apparatus, substantially as described, a powder or dry-flavoring distributer comprising a vessel having a discharge-opening in its bottom, a cylindrical sieve in said vessel and open at its bottom and arranged with said open bottom over the opening in the bottom of the vessel, said sieve being provided with a shaft and adapted to be revolved, and a cylindrical shut-off arranged and adapted to be adjusted over said sieve to wholly or partially shut off the same, substantially as set forth.

15. An apparatus, substantially as described, comprising the liquid reservoir and distributer and the connection-pipes, the intermediate pipe, the blower arranged to discharge its blast into said intermediate pipe, the powder or dry-flavoring distributer having a vessel or reservoir, and a conducting-pipe arranged to receive the powder therefrom, said conducting-pipe being connected with the intermediate pipe of the sprayer, whereby it will also receive the blast from the blower, substantially as set forth.

16. An improved apparatus, substantially as described, consisting of the framing having frame-rings, the receiving-chamber having end rings fitted in the framing, and a covering of wire-gauze or its equivalent, the agitator consisting of the end guide-rings open for the admission and discharge of the tobacco, the sprayer having an elongated flaring distributer, a reservoir connected with said distributer and a blower, and the flavoring-reservoir having its discharge-pipe arranged to open into the said distributer, substantially as set forth.

17. An apparatus, substantially as described, comprising the agitator, the spraying device, the powder-distributer, the blower, and connections whereby parts of the blast of the blower are directed to the sprayer and to the powder-distributer, substantially as set forth.

18. An apparatus for treating tobacco, consisting of an agitator, a sprayer, a powder-distributer, a blower, and valve devices whereby the spray or the powder may be shut off at will, substantially as set forth.

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Witnesses:
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