951,650.

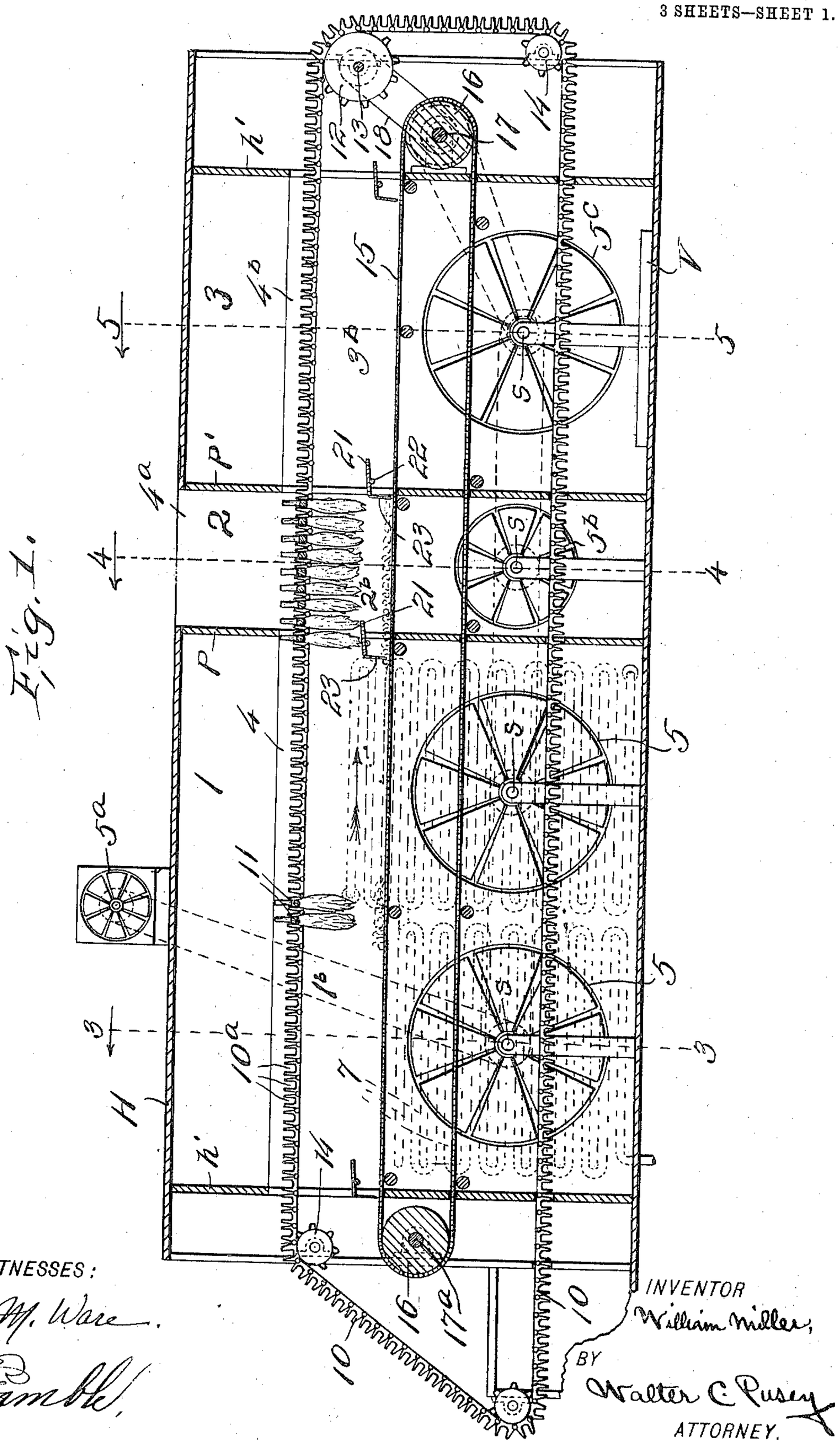
W. MILLER.

MACHINE FOR TREATING TOBACCO, &c.

APPLICATION FILED JAN. 4, 1908.

Patented Mar. 8, 1910.

3 SHEETS—SHEET 1.



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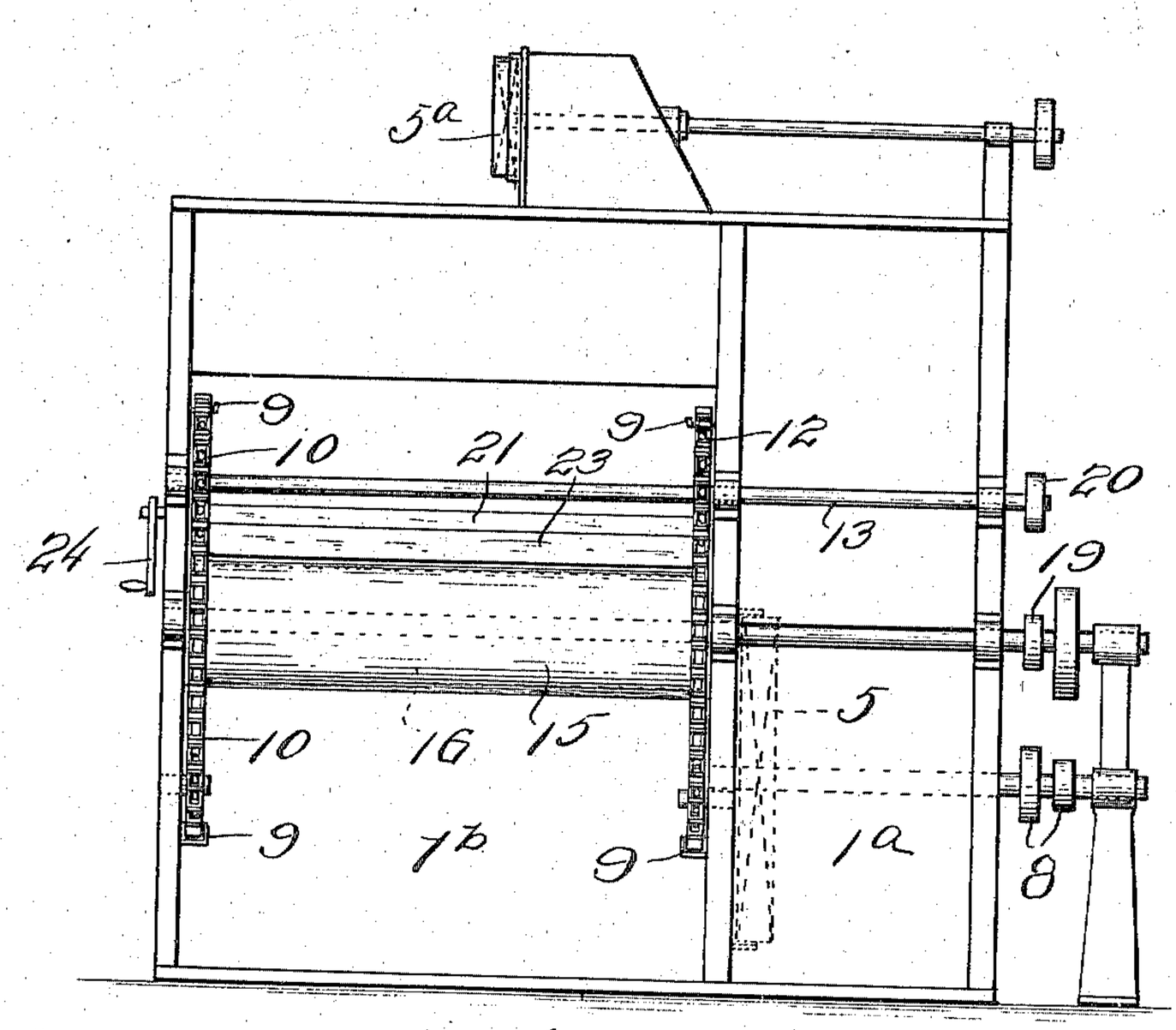

Fig. 2.

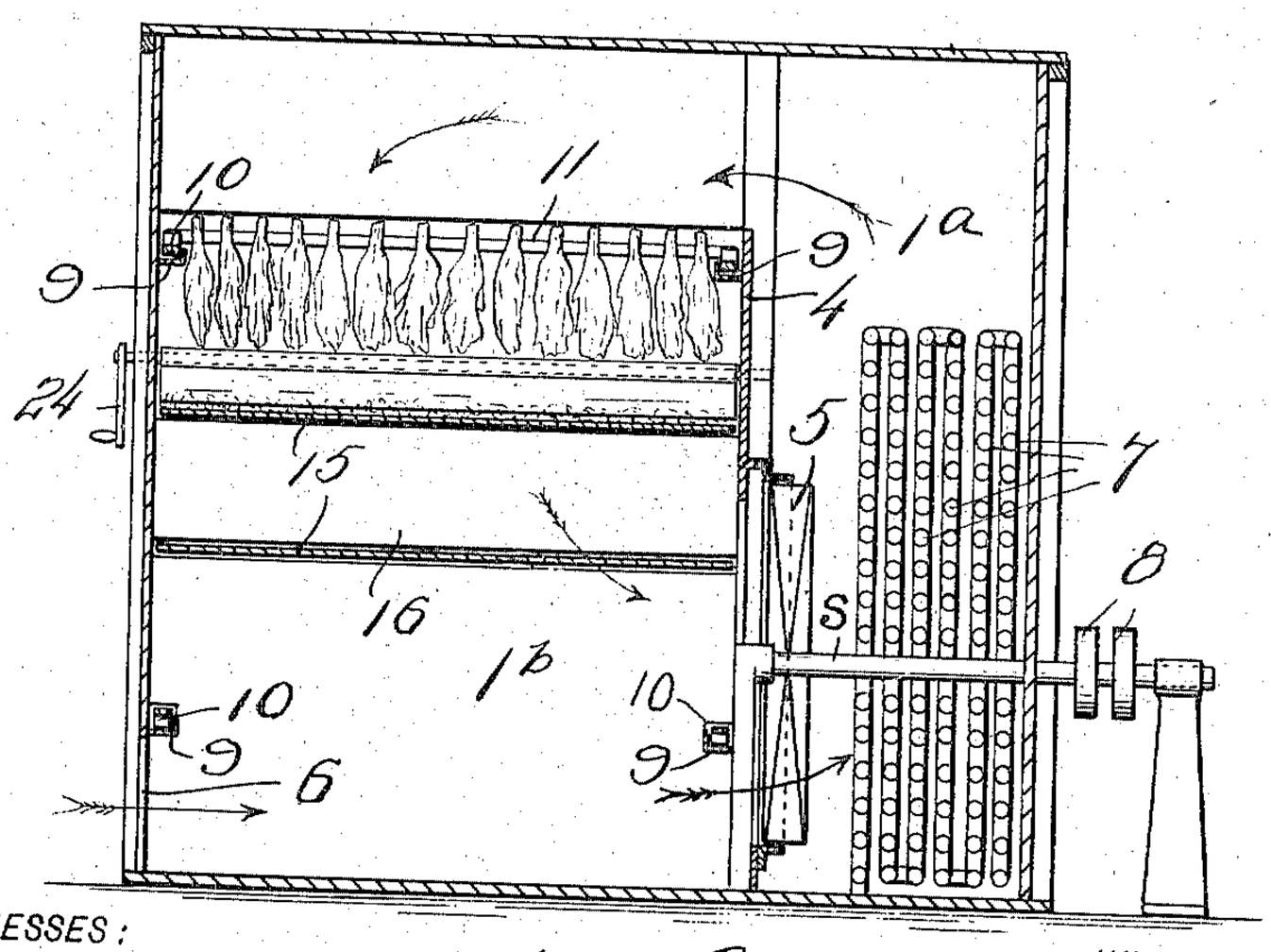

Fig. 3.

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3 SHEETS—SHEET 3.

Fig 4-5.

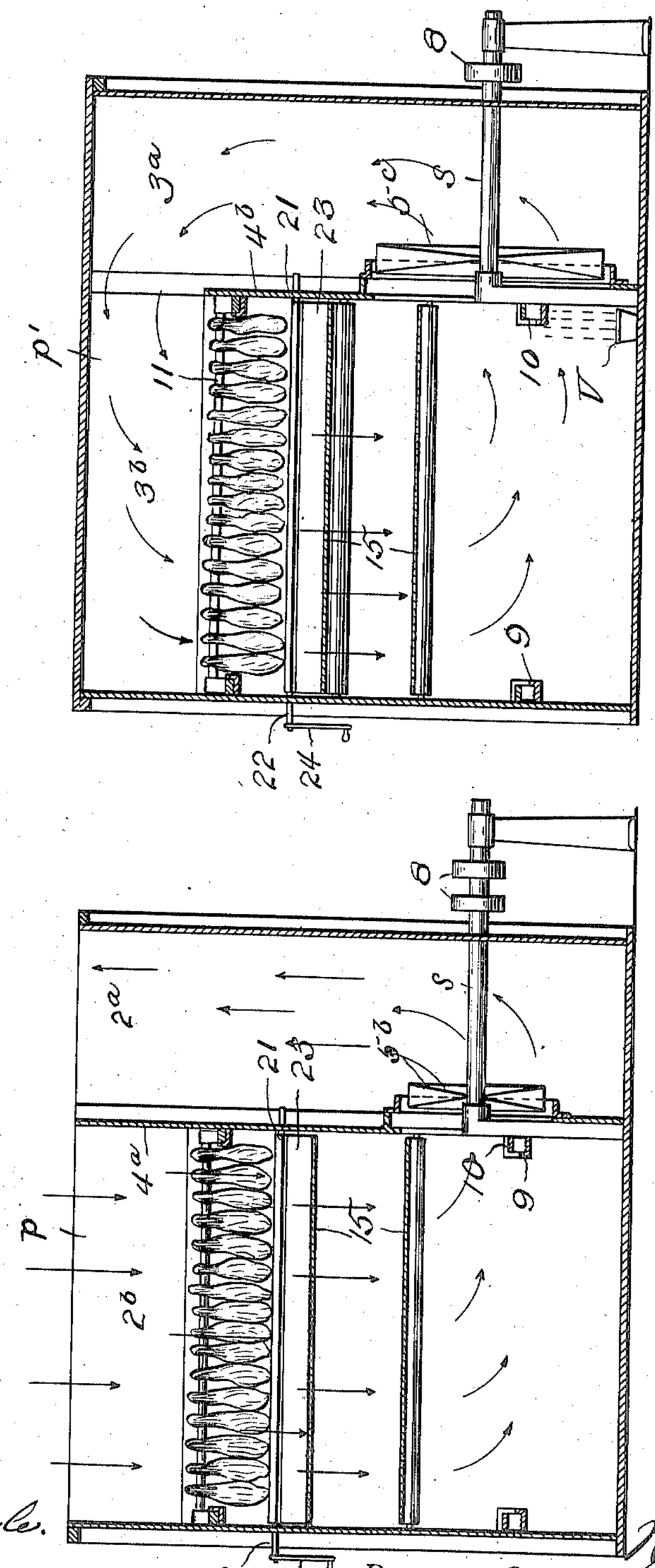

Fig 4-5.

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UNITED STATES PATENT OFFICE.

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MACHINE FOR TREATING TOBACCO, &c.

951,650. Specification of Letters Patent. Patented Mar. 8, 1910.

Application filed January 4, 1908. Serial No. 409,312.

To all whom it may concern:

Be it known that I, WILLIAM MILLER, a citizen of the United States, residing in the city and county of Philadelphia, State of Pennsylvania, have invented certain new and useful Improvements in Machines for Treating Tobacco, &c., of which the following is a full, clear, and exact description, reference being had to the accompanying drawings.

My invention relates to improvements in machines for treating tobacco or other fibrous materials; more particularly to that class of such machines wherein the material is conveyed through a compartment, or series of compartments wherein it is subjected to the treating processes.

The object of my present invention is to provide such a machine in which the tobacco, or the like, is more readily and efficiently handled.

The invention consists primarily in providing suitably driven endless chains or carriers traversing the compartment or compartments of a closed housing, said chains being connected by transverse rods or poles from which bunches of the tobacco are suspended; together with an endless, perforated, belt subjacent to said carrier and also caused to suitably traverse said compartment or compartments.

The invention also consists in combination with said treating compartment, or compartments, endless chains, and subjacent belt, of means for regulating the degree of opening in the end walls and partitions of the housing between the forwardly moving portion of the said carriers and the corresponding portion of said belt.

The invention consists further in certain improvements and details of construction hereinafter pointed out.

Referring to the annexed drawings:—Figure 1, Sheet 1, is a vertical medial section through a tobacco treating machine in which my invention is embodied. Fig. 2, Sheet 2, is a front (or delivery end) elevation. Fig. 3 is a vertical section as on line 3—3, Fig. 1, through the drying compartment. Fig. 4 is a vertical transverse sectional view on the line 4—4, Fig. 1, through the cooling compartment. Fig. 5 is a similar view on the line 5—5, Fig. 1, through the ordering compartment.

In the said drawings I have shown my invention as applied to a machine comprising a housing divided into three compartments 1, 2 and 3, respectively, by partitions p, p'; 1 being a drying compartment; 2 a cooling compartment; and 3 an ordering compartment; but I do not wish to be understood as confining myself to such particular arrangement, as the number and character of the compartments is immaterial, and may be varied. In the machine shown in the drawings, the housing H is closed at each end by end walls h'. The drying compartment 1 is divided into two chambers, 1^a and 1^b, respectively, by a longitudinal partition 4; in openings in which partition are exhaust fans 5. These fans draw air from the exterior of the housing through an opening 6 in the side wall thereof near the forward end, and force the same up through chamber 1^a, through coils, of heating pipes 7, over the top of partition 4, which extends but a portion of the way up from the bottom of the housing, leaving a passage-way communicating between the two chambers 1^a and 1^b. Thence the air is forced downwardly through the chamber 1^b, and so through the tobacco therein, as hereinafter described, and the air being constantly drawn toward the rear of the machine, where it is ejected through a suitable opening by a positively driven fan 5^a. The next compartment 2, the cooling compartment, is separated from compartment 1 by a lateral partition p, and is also divided into two chambers 2^a and 2^b, which are separated from each other by a partition 4^a, similar to partition 4, but in this compartment said partition extends entirely from top to bottom. The top of the housing is entirely removed from this compartment. In the partition 4^a is an exhaust fan 5^b, which tends to draw a current of air down through chamber 2^b, and force the same up through chamber 2^a, and so cool the tobacco which is conveyed through said chamber 2^b. The next compartment 3 is the ordering compartment. This compartment, like compartment 1, is closed, and separated from compartment 2 by a lateral partition p^1, and is divided by a partition 4^b, into two chambers 3^a and 3^b; said partition 4^b, like partition 4, extending only a portion of the way up from the bottom of the compartment, af-

fords a passage-way between the two chambers. In chamber 3^b is a suitable vaporizer V and in an opening in the partition 4^b is an exhaust fan 5^c, which draws the vapor in chamber 3^b into chamber 3^a; thence said vapor is forced upwardly over the top of said partition and down through chamber 3^b, and thence through the tobacco passing through said chamber, and again into the suction side of the fan.

The various fans, hereinbefore referred to, are carried by rotatable shafts *s* suitably journaled in bearings of the frame of the machine, and driven from a source of power by belts running over pulleys 8 on said shafts, all as indicated by dotted lines in Fig. 1.

Running in trackways 9, adjacent to each side of the chambers 1^b, 2^b and 3^b of the compartments 1, 2 and 3, and a short distance below the top thereof, are endless chains or carriers 10, whose links are provided on their upper sides with sockets 10^a to receive the ends of poles or rods 11, which span the distance between said chains. These chains run at the same speed and in the same horizontal plane, being carried over sprockets 12 on a driving shaft 13 driven from a source of power, and supported and guided by idler sprocket wheels 14 at either end of the machine. The upper portion of said chains moves forward through the drying, cooling and ordering compartments in the order named, as indicated by the arrow, Fig. 1, and the idle lower portion of said chains returns therethrough in the reverse order. Bunches of tobacco, or the like, are suspended from the rods or poles 11, which are in this instance, removable from the sockets 10^a; and they, the rods loaded with the tobacco bunches, are placed successively upon said chains, their opposite ends resting in opposite sockets in said chains. The chains then move forward through the opening in the end wall *h'*. into the drying compartment of the machine, where the hot air is circulated through the tobacco in well known manner, by the fans 5. This circulation of the hot air through the tobacco, tends to make some of the leaves or pieces of leaves to become detached from their respective bunches, and fall to the bottom of the compartment, and as many different grades or kinds of tobacco may be passing through the machine at one time, the fallen pieces would be indiscriminately mixed in the bottom of the machine and would have to be afterward removed and assorted if, indeed, their value were not entirely destroyed by the uneven treatment such fallen leaves would receive. Thus, if leaves remain too long in the drying compartment they would become scorched and of no value; or, should they remain too long in the ordering compartment, and thus be subjected to too long treatment by the vapor circulated therein, their commercial value would be much impaired; for example, if bright tobacco be allowed to remain too long in the ordering compartment, it will become reddened in color, which renders it of little, if any, commercial value. In order to obviate these difficulties, which is the chief object of my invention, I provide, running in a lower plane than the upper, the tobacco carrying portion, of the chains 10 an endless perforated belt 15, which belt traverses the machine from end to end in the same direction as the chains 10, running over drums 16, mounted on shafts 17, 17^a, the one of said shafts 17, near the delivery or forward end of the machine, being driven from the driving shaft 13, by a belt 18, running over pulleys 19 and 20, on said drum carrying shaft and on the driving shaft, respectively. The said belt 15 is driven at the surface as and in unison with the chains or carriers 10, and the belt is perforated in order to permit free circulation of air therethrough. It will thus be seen that if any tobacco leaves become detached from the bunches suspended from the rods 11, said leaves will fall immediately beneath upon the belt 15, and be delivered from the forward end of the machine in such relative position, and having passed through the various compartments of the machine, if it have more than one, in unison with the superjacent bunches of tobacco, the said bunches and their fallen leaves will each receive the same treatment; whereas, if the belt were not used, and the detached leaves were allowed to fall to the bottom of the compartments, as hereinbefore indicated, the said leaves and bunches would be quite differently treated.

As sometimes the length of the bunches hanging from the rods 11 may vary, and as it is desirable that the relative positions of the belt 15 and chains 10 remain the same, it is desirable that the degree of opening through the partitions *p* and *p'*, and the end walls *h'* between said chains and belt may be varied, yet allowing the free passage of the chains bearing the bunches of tobacco and also the subjacent belt carrying the detached leaves. To this end, I provide suitable doors 21 extending laterally across the interior of the machine in the openings in said partitions and end walls, respectively, which doors are, in this instance, carried upon rotatable shafts 22, journaled in the side walls of the housing as seen in Figs. 1 and 3. It will be observed that said doors are respectively secured to their shafts so that the portion above the shaft shall be wider than that below, and to the lower edge is secured a piece of canvas 23, or like flexible, yet air tight material, whose lower end rests upon the top of the belt 15. Thus when the shafts 22 are rotated a certain distance, by turning

cranks 24 on the ends thereof, respectively, the degree of opening between the belt and chains may be lessened or increased to any required extent, and no matter to what extent the upper portion of said doors be elevated the flexible strip 23, or piece of canvas, hereinbefore referred to, will always come into contact with the belt 15, preventing the escape of air from one compartment to another, or to the exterior of the machine, while in contact with said belt, but said strip 23 will easily be lifted by any detached tobacco leaves that may pass beneath it on said belt 15. It will therefore be seen that the flexible strips 23 serve to always close the spaces between the lower edges of the doors 22 and the belt 15, but readily yield to permit passage of any detached tobacco leaves that may fall upon said belt, and during such passage of the detached tobacco leaves under the strips 23, there is no appreciable escape of air from the compartments, inasmuch as the leaves and strips combined serve to close the spaces between the lower edges of the doors 22 and the belt 15, the strips 23 dropping back upon the belt 15 immediately after the leaves of tobacco have passed said strips. One of these doors is provided for each partition and one for each end wall of the housing.

As the general construction of the housing and detailed arrangement of the compartments may be considerably varied and are all well known to those skilled in the art, I have not deemed it necessary to herein particularly show and describe the same.

I remark that the construction of my invention may be considerably varied without departing from the essential principles thereof.

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

1. In a machine of the class recited, the combination of the closed housing, having one or more compartments, means for circulating air therein, endless chains or carriers, passing through openings in the end walls of said compartment or compartments and traversing the same longitudinally in the same plane, the tobacco carrying rods connecting said chains and extending laterally across said compartment or compartments, the endless perforated belt subjacent to said chains and also passing through said openings in the end walls of said compartment or compartments, means for driving said chains and belt; together with means for regulating the degree of said openings in the end walls, between said belt and chains, substantially as set forth.

2. In a machine of the class recited, the combination of a housing having one or more compartments, means for circulating air therein, endless chains or carriers passing through openings in the end walls of said compartments and traversing the same longitudinally in the same plane, the rods connecting said chains and extending laterally across said compartments, the endless perforated belt subjacent to said chains and also passing through said openings in the end walls, means for driving said chains and belt; together with the adjustable doors pivotally mounted in the openings between said chains and belt in the end walls of said compartment or compartments, whereby the degree of said openings may be regulated substantially as set forth.

3. In a machine of the class recited, the combination of a housing having one or more compartments, means for circulating air therein, endless chains or carriers passing through openings in the end walls of said compartment or compartments and traversing the same longitudinally in the same plane, the rods connecting said chains, the endless perforated belt subjacent to said chains and also passing through said openings in the end walls, means for driving said chains and belt; together with the pivotally mounted, adjustable doors mounted in the openings between said chains and belt in the end walls of said compartment or compartments, and having depending from one edge thereof the pieces of flexible material, substantially as set forth.

4. In a machine of the class recited, the combination with a housing having one or more compartments, of means for circulating air therein, endless chains or carriers passing through openings in the end walls of said compartment or compartments and traversing the same longitudinally in the same plane, rods detachably connected to said chains for suspending tobacco leaves therefrom, an endless perforated belt arranged within the housing and subjacent to said chains and also passing through said openings in the end walls, said belts serving to collect and carry the tobacco leaves that become detached from said rods, whereby said detached leaves are simultaneously carried through the housing and subjected to treatment with the suspended leaves, means for driving said chains or carriers, connections between said endless belt and said driving means, whereby the latter constitute a common driving mechanism for the chains and belt and actuate the chains and belt at the same speed, adjustable doors pivotally mounted in the openings between said chains and belt in the end walls of said compartment or compartments, and depending flexible strips carried at the lower edges of said doors and coöperating with the belt to close the spaces between the latter and the lower edges of said doors.

5. In a machine of the class recited, the combination with a housing having one or

more compartments, of means for circulating air therein, endless chains or carriers passing through openings in the end walls of said compartment or compartments and traversing the same longitudinally in the same plane, rods detachably connected to said chain for suspending tobacco leaves therefrom, an endless perforated belt arranged within the housing and subjacent to said chains, and also passing through said openings in the end walls, said belts serving to collect and carry the tobacco leaves that become detached from said rods, whereby said detached leaves are simultaneously carried through the housing and subjected to treatment with the suspended leaves, means for driving said chains or carriers, connections between said endless belt and said driving means, whereby the latter constitute a common driving mechanism for the chains and belt and actuate the chains and belt at the same speed, rotatable shafts journaled in the sides of the housing and extending across the openings in the end walls of said compartment or compartments, doors carried by said shafts and adjustable by the latter in said openings for regulating the size of the openings, and depending flexible strips carried at the lower edges of said doors and coöperating with the belt to close the spaces between the latter and the lower edges of said doors.

In testimony whereof, I have hereunto affixed my signature this 6th day of December, A. D. 1902.

WILLIAM MILLER.

Witnesses:
WAYNE P. RAMBO,
HOWARD MORSHEAD.