

No. 697,512.

Patented Apr. 15, 1902.

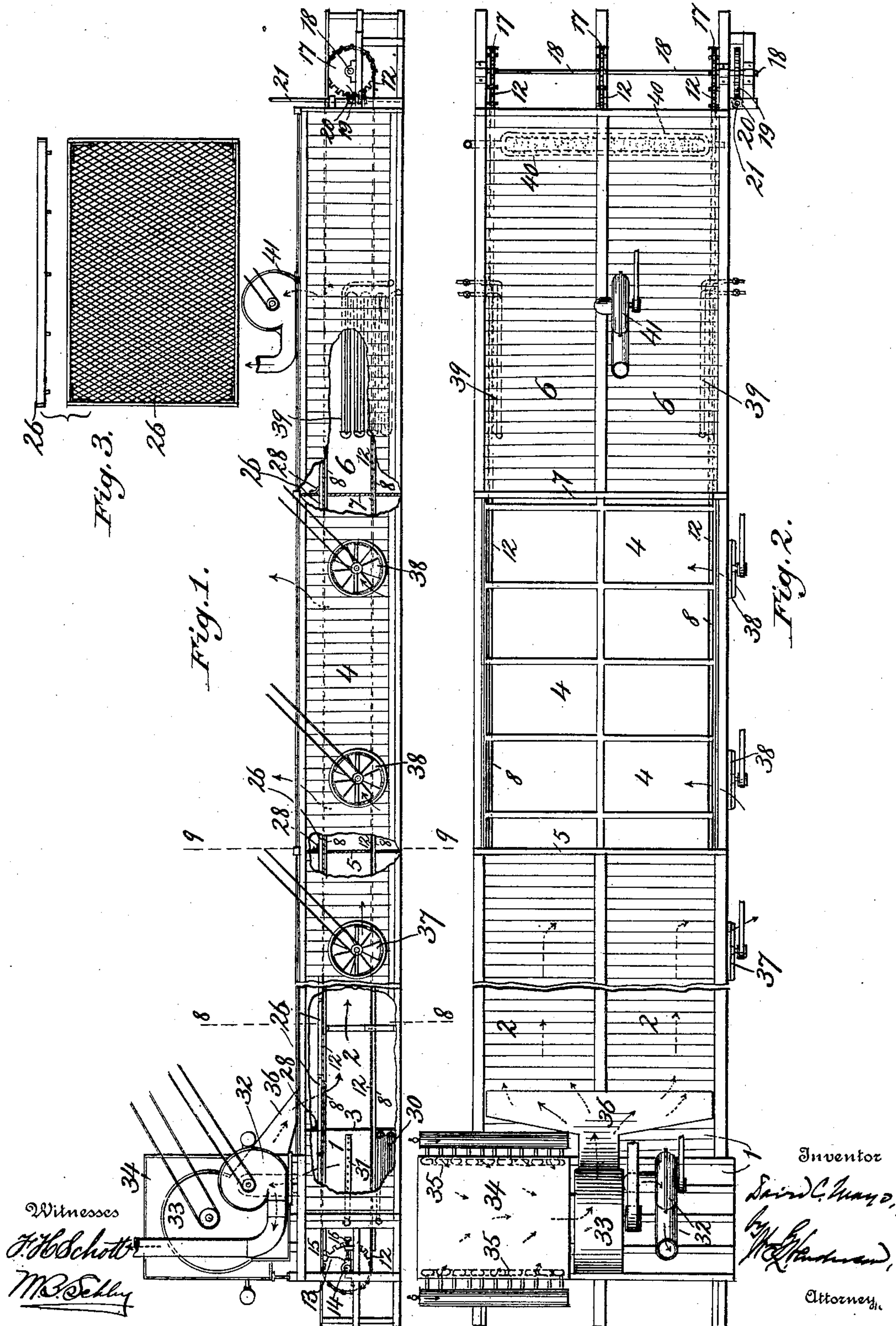
D. C. MAYO.

MACHINE FOR DRYING LEAF TOBACCO.

(Application filed June 19, 1901.)

(No Model.)

3 Sheets—Sheet 1.



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3 Sheets—Sheet 2.

Fig. 4.

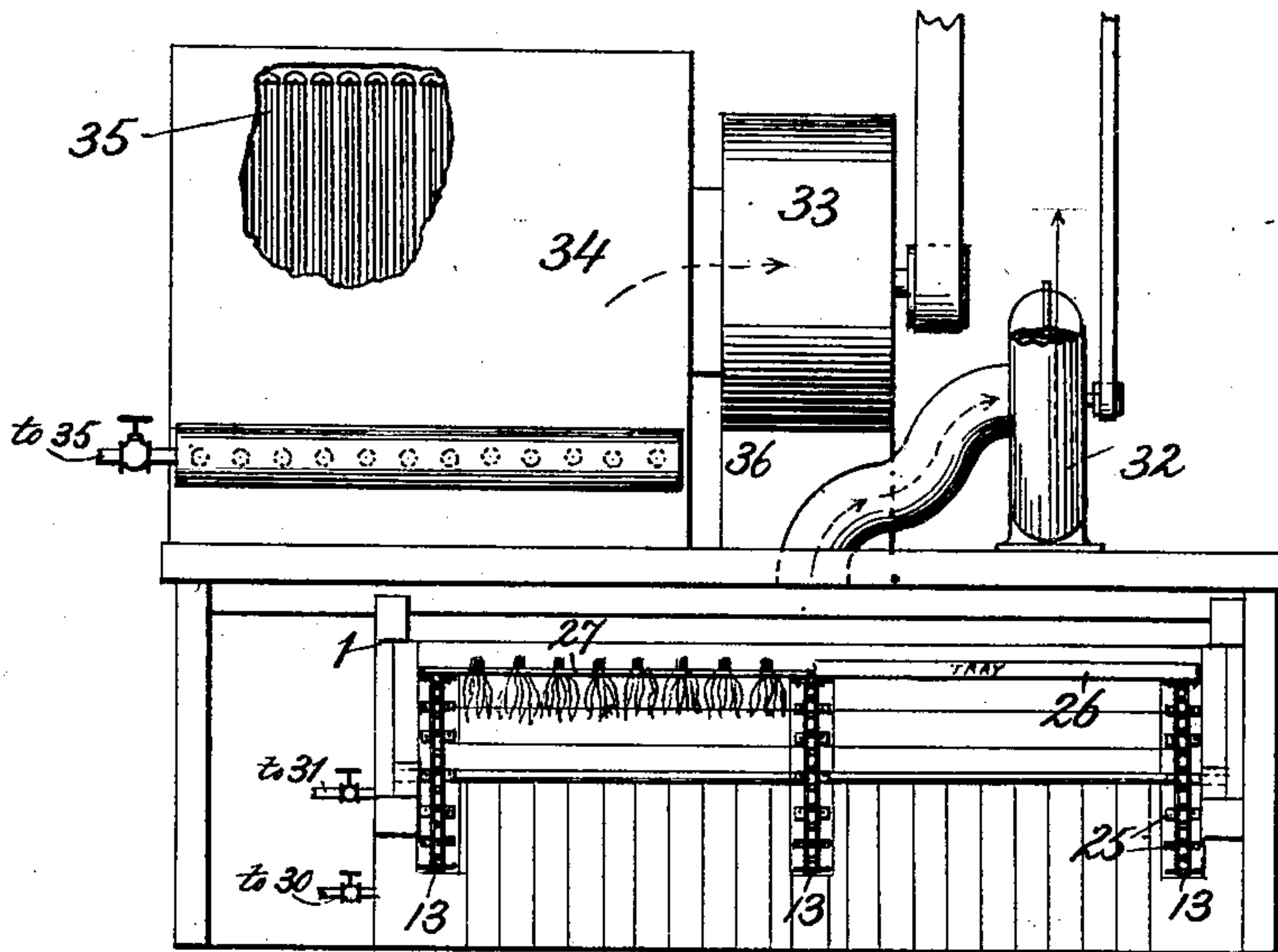


Fig. 5.

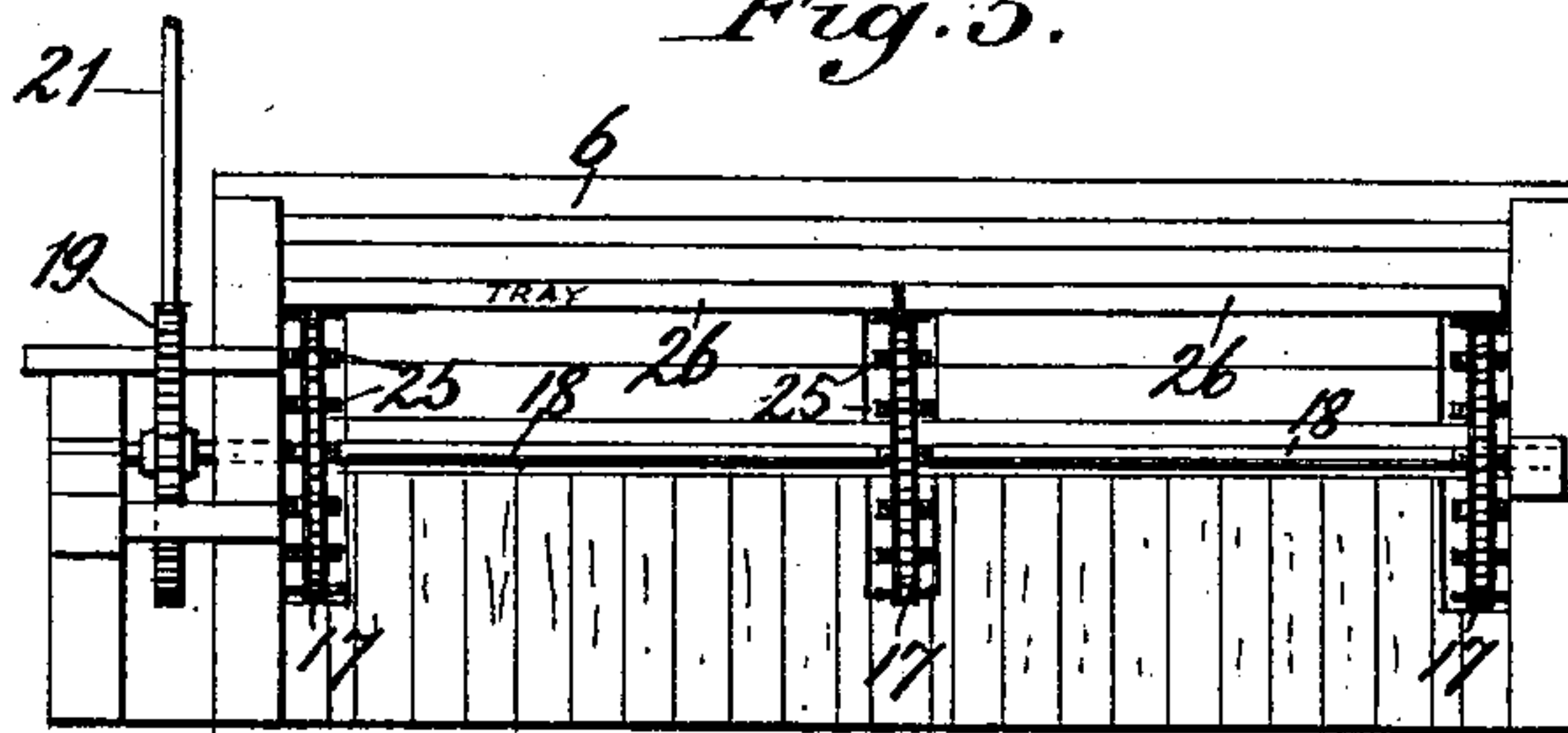


Fig. 6.

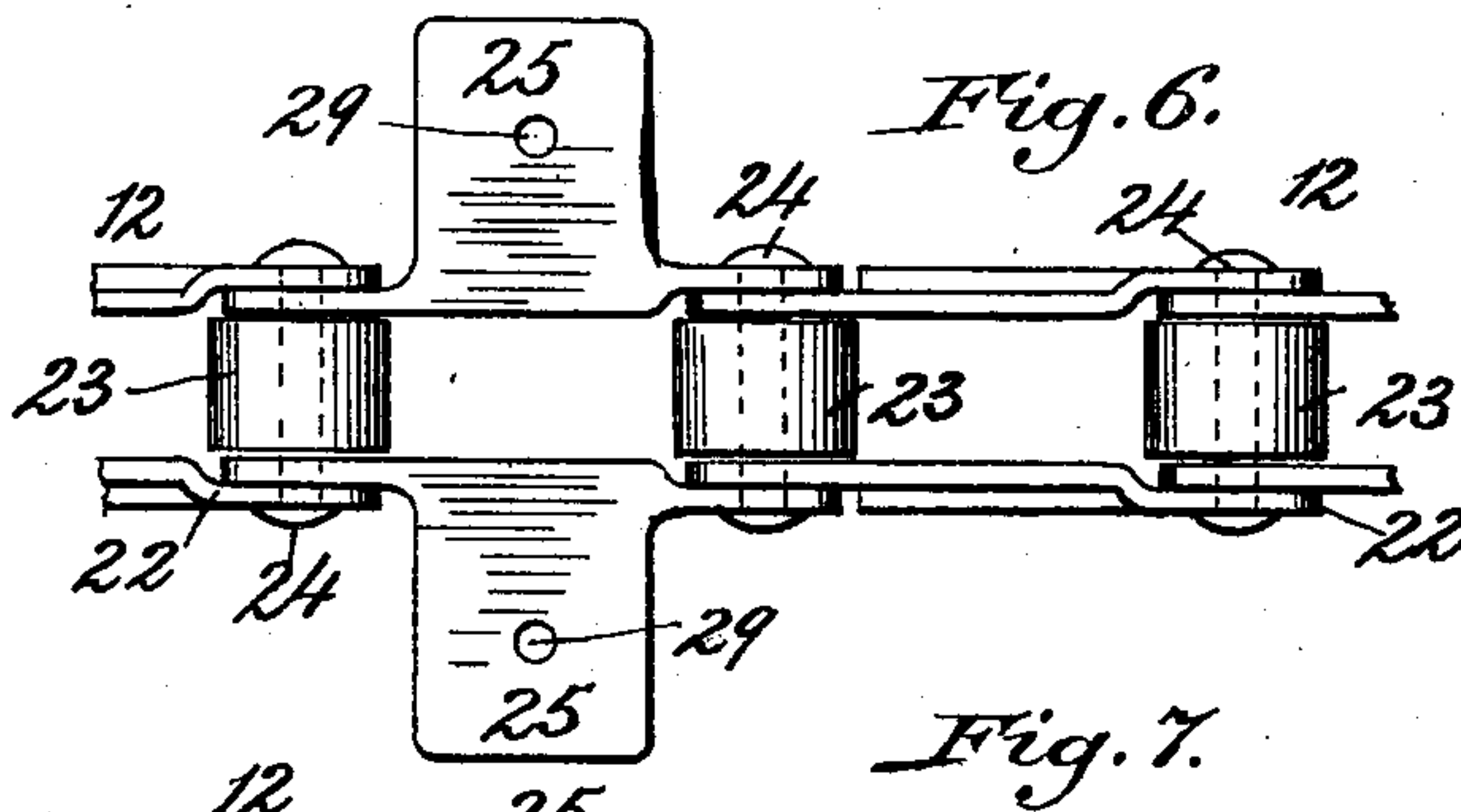
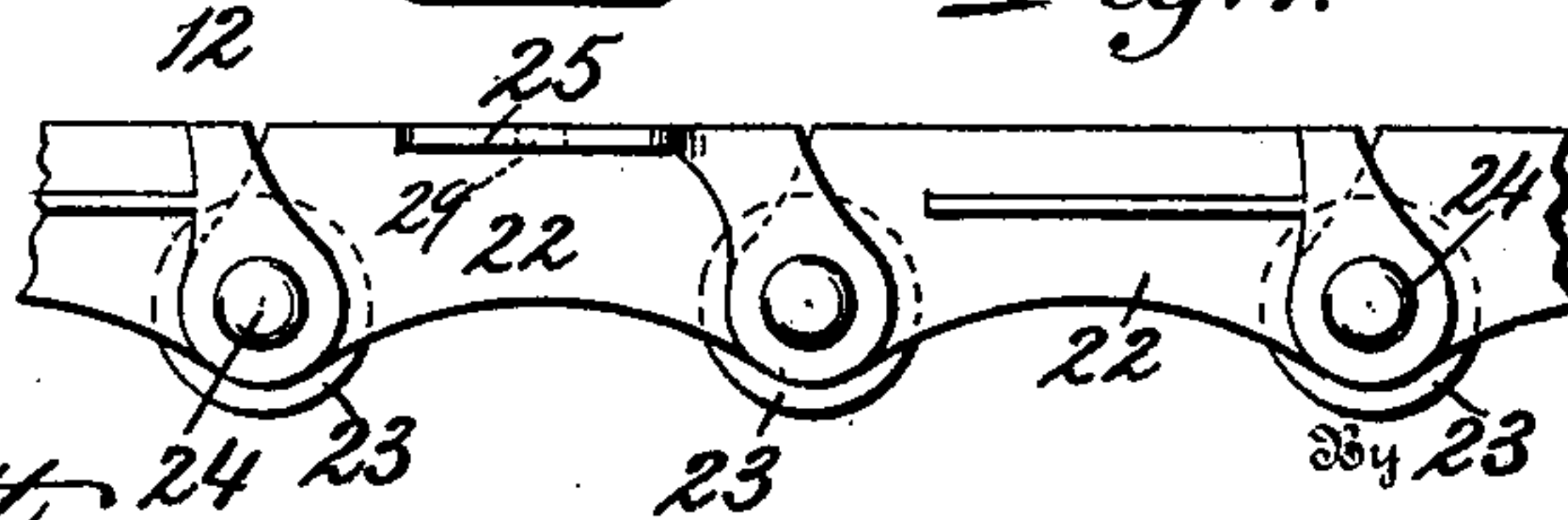


Fig. 7.



Witnesses

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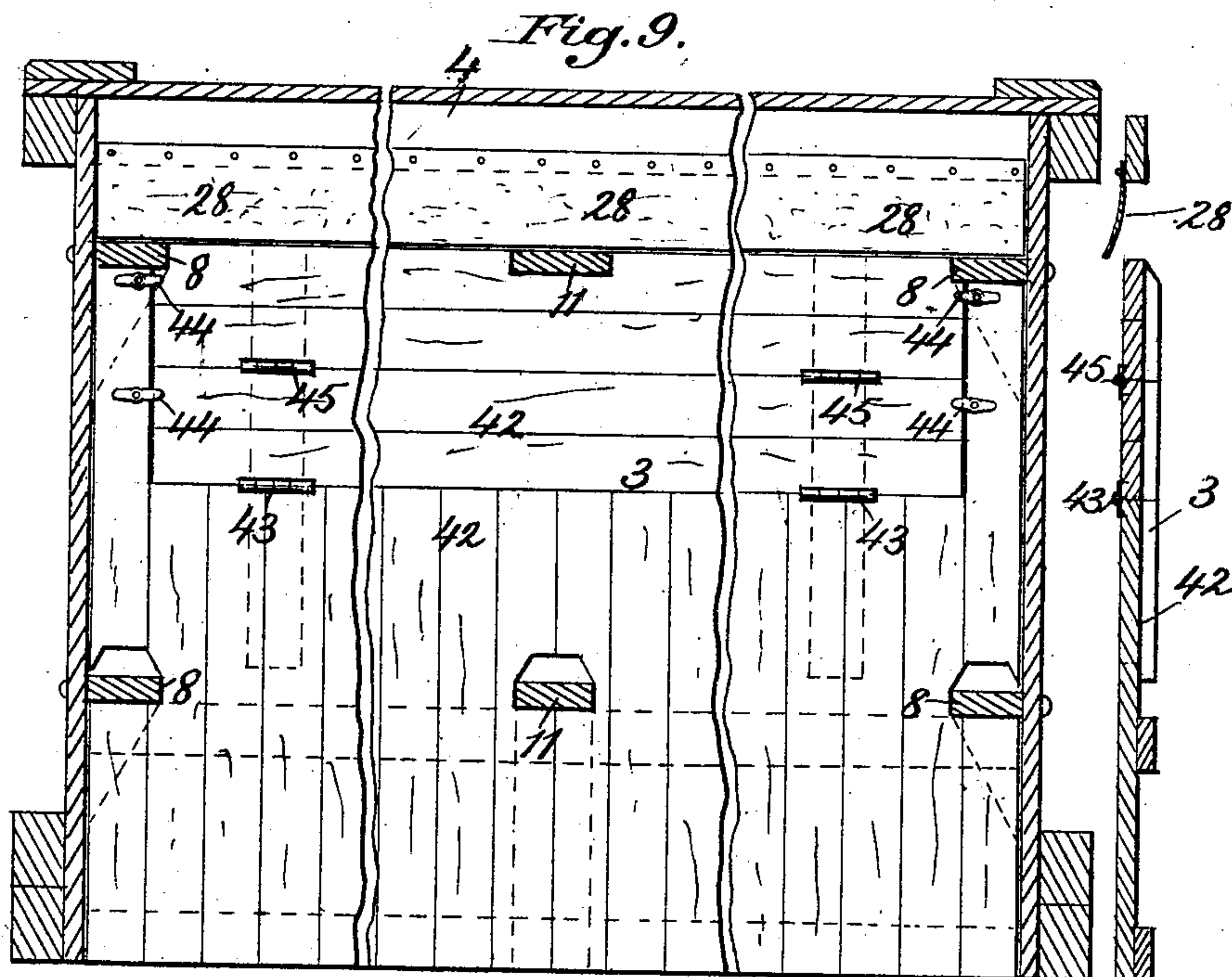
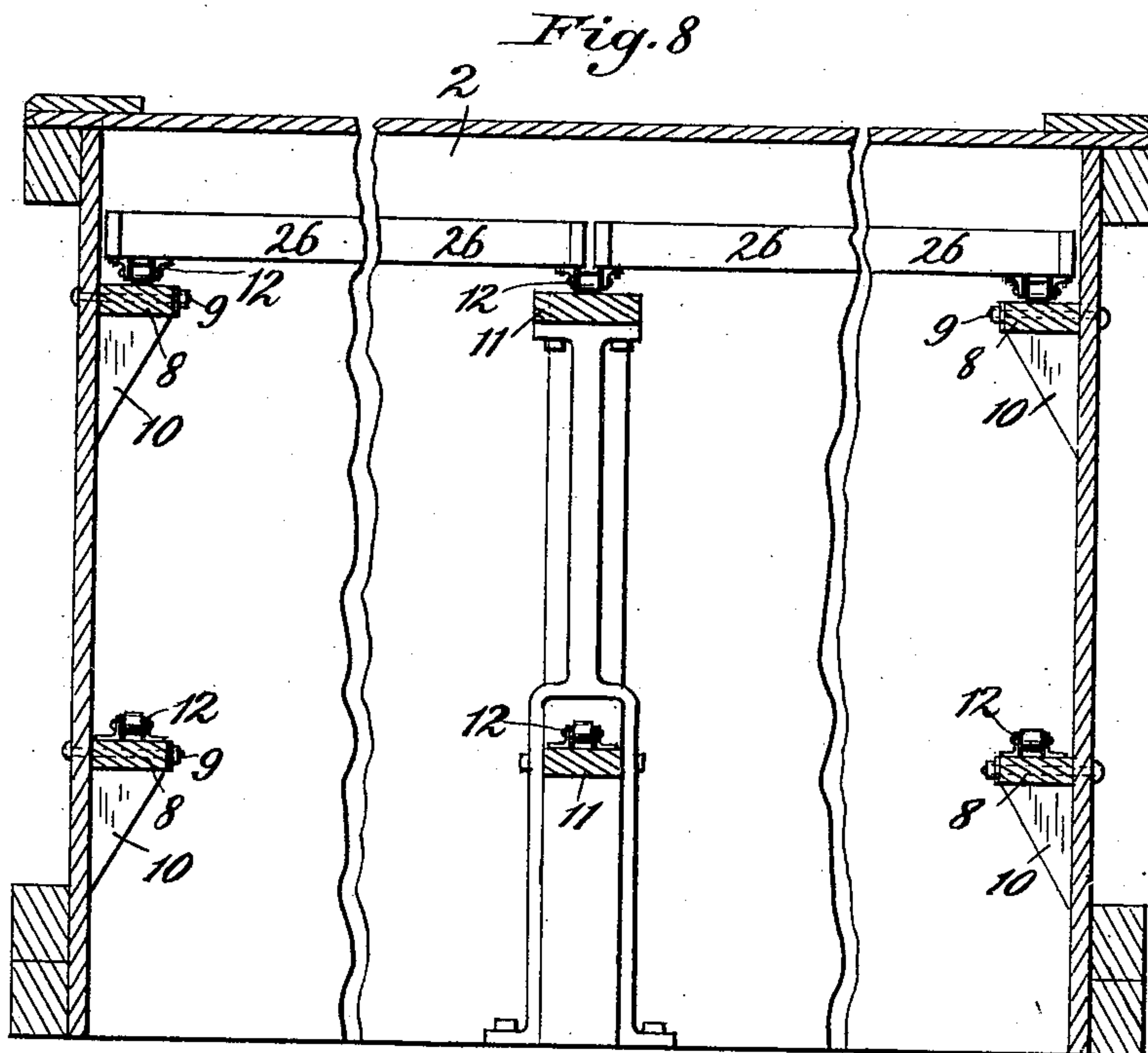
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3 Sheets—Sheet 3.



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UNITED STATES PATENT OFFICE.

DAVID CRAWLEY MAYO, OF RICHMOND, VIRGINIA, ASSIGNOR TO W. GRAY MOSELEY, OF RICHMOND, VIRGINIA.

MACHINE FOR DRYING LEAF-TOBACCO.

SPECIFICATION forming part of Letters Patent No. 697,512, dated April 15, 1902.

Application filed June 19, 1901. Serial No. 65,173. (No model.)

To all whom it may concern:

Be it known that I, DAVID CRAWLEY MAYO, 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 Machines for Drying Leaf-Tobacco; and I do 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, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

My invention relates to an apparatus for treating leaf-tobacco, more especially to that class of machines in which the tobacco is aired or dried, then cooled, and afterward "ordered."

The object of my invention is to provide such a machine in which the tobacco-leaf is first subjected to a spray of live steam for the purpose of opening up the leaf and putting it in better condition to be dried, the leaf-tobacco being then carried from this preliminary steaming or opening-up chamber into a drying-chamber, where it is subjected to a current of hot air introduced at one end of the chamber and withdrawn from the other end, so that a constant movement of hot air is maintained through the drying-room and carried out of the same without recirculation in the room, thereby carrying off all unpleasant odors and leaving the leaf untainted and possessing only the natural tobacco odor, the tobacco-leaf then being carried into a cooling-chamber, through which is maintained a continuous movement of cool air, the leaf then being carried into the "ordering-room," where it is subjected to the action of heat and where there is drawn through the tobacco-leaf a spray of water or steam introduced into the room, so as to create a moist mist or fog through which the tobacco-leaf is carried, after which the tobacco-leaf is carried out of the machine thoroughly dried and ordered and in the best condition possible for the uses to be made of it.

To the accomplishment of the foregoing and such other objects as may hereinafter appear the invention consists in the construc-

tion and in the combination of parts herein-after particularly described, and then sought to be clearly defined by the claims, reference being had to the accompanying drawings, forming a part hereof, and in which—

Figure 1 is a side elevation of the machine broken away; Fig. 2, a plan view; Fig. 3, a detail of the tray; Fig. 4, an end elevation; Fig. 5, an opposite end elevation; Fig. 6, a plan of chain; Fig. 7, a side view of chain; Fig. 8, a vertical section on 8 8 of Fig. 1, and Fig. 9 a vertical section on 9 9 of Fig. 1.

In the drawings the numeral 1 designates the preliminary spraying room or chamber, separated from the drying-room 2 by a partition 3, the drying-room at the other end being separated from the cooling-room 4 by partition 5, constructed as hereinafter described, and the cooling-room 4 separated from the ordering-room 6 by a partition 7, these several rooms or compartments being closed at top and bottom and on opposite sides with the exception of the cooling-room, which is left with an open top, the several rooms being end to end in the order named.

From one end of the machine to the other on the inside walls of the different rooms or compartments are secured rails or tracks 8, which may be formed of suitable strips or timbers secured by bolts 9 to the side walls and braced at intervals by the angle-pieces 10, and midway of the compartments or rooms, extending from one end to the other of the machine, will be tracks 11, suitably supported, so that the midway track and the side tracks will serve as supports for endless chains 12, running through the machine from one end to the other and passing around sprocket-wheels 13, supported by shafts 14, journaled in movable boxes 15, adjustable by screws 16 at one end of the machine and at the other end passing around sprocket-wheels 17, connected to a shaft 18, journaled in suitable boxes, said shaft also carrying a worm-wheel 19, with which engages a worm 20 on a shaft 21, to which power will be transmitted from any suitable source for the purpose of moving the endless chains. These chains are each formed of links 22, having rollers 23, where the links are hinged together by pin-tles 24, so that these rollers will rest upon

and travel over the rails 8 and 11, which support the chains, the chains having some of their links at intervals apart formed with side flanges 25, which will serve as supports for trays 26, having screen bottoms for sustaining the leaf-tobacco or for sustaining sticks 27 if the leaf-tobacco is to be carried through the machine on sticks instead of in trays. It will be understood that the vertical partitions which separate one compartment or room from another will be formed with openings through which the chains will pass and that at the top of the partitions the openings will be of such dimensions that the trays containing the leaf-tobacco or the bunches suspended from the sticks will pass through the same, and where these openings are formed in the upper part of the partitions they will be provided with flexible covers 28, formed of canvas or other suitable material, so that they will yield as the trays or sticks, with suspended bunches of tobacco, come in contact with the same, said flexible covers assuming their normal position after the trays have passed. The side flanges 25, which project from certain links of the chains, will be formed each with a perforation 29, which will receive a pin projecting from the bottom of the tray or from the bottom of the stick, so that the tray or the stick will be prevented from sliding from off the flange-supports, said pintles permitting the trays or sticks to be readily lifted and removed from the chains at the discharge end of the ordering-room.

The preliminary spray room or compartment 1 is provided with a steam-coil 30 at one or both sides, so as to heat such compartment, and it is also provided with a steam-spray pipe 31, receiving live steam from a suitable source and injecting it in a fine spray into the room, so that said spray will rise and pass through the leaf-tobacco, being carried through the top of the chamber, so that the tobacco-leaf will be moistened and opened up, thereby better preparing it to receive the full influence of the hot air as it passes through the drying-chamber after leaving this preliminary steaming-room. For the purpose of removing any unpleasant or green odor from the tobacco subjected to this preliminary steaming process I provide an exhaust-fan 32, which communicates with the top of the preliminary steam-room, so as to create an upward and outward circulation of air through and from this steaming-room, thereby carrying off all unpleasant odors and preventing the leaf-tobacco from becoming tainted or impregnated with such odors, and thus preserving the pure and natural flavor of the tobacco.

When the tobacco enters the drying-room 2, it is there subjected to currents of hot air impelled into and through the room and over the leaf-tobacco by means of a force-fan 33, which draws hot air from a chamber 34, heated by a steam-coil 35, and forces said air into and over the tobacco in the drying-chamber through a spout 36, entering the top of

the drying-chamber. The air thus impelled into the drying-chamber has its circulation through the chamber accelerated by means of an exhaust-fan 37, communicating with said chamber near its end next to the cooling room or chamber. This exhaust-fan creates a strong circulation of hot air through the drying-chamber and prevents any recirculation of the air therein, so that the tobacco-leaf which has been opened up by the steaming process is subjected to a forced current of hot air passing through the drying-chamber, thereby quickly and effectively drying the leaf, the moisture and such impurities as may be thrown off from the tobacco-leaf being carried out through the exhaust-fan 37.

The leaf-tobacco passes from the hot drying-chamber into the cooling-chamber 4, where it is subjected to currents of cool air created by means of the fans 38, which may be either exhaust or force fans, and for the purpose of further facilitating the cooling of the tobacco-leaf in this chamber the top of the chamber is left open, as illustrated, so that the leaf will be quickly cooled by the enforced currents of air created by the fans, after which the leaf-tobacco is carried into the ordering-room 6. In this ordering-room the tobacco-leaf is subjected to the influence of heat thrown off from steam heating-coils 39, located one on each side of the room and which will raise the temperature to 120° centigrade, or thereabout, and in the same room the leaf is subjected to a dense mist or fog created by injecting steam into the chamber through perforated pipes 40, which will be located near the bottom of the room and so arranged that the sprays injected from the pipes will impinge one against the other, thereby creating a fine and forcible mist or fog in the room, through which mist the leaf-tobacco is moved. The air is continuously moved from this room by means of an exhaust-fan 41, so that a continuous and forcible circulation or movement of the air from within to outside of the room is maintained without any recirculation in the room, thereby carrying off any impurities or disagreeable odors that may be thrown off from the leaf and in that way free the leaf from those odors and unpleasant flavor that might otherwise be retained or imparted to it, and thus delivering the leaf from the machine thoroughly prepared and in the best condition for the market.

The partitions 5 between the drying-room and cooling-room, as well as the other partitions separating the several rooms and also the outer end partitions to the preliminary spraying-room and the ordering-room, have the upper part of the partition from about the plane of the upper tracks downward for about the distance of fourteen inches made in the form of a door 42, hinged at its lower part, as at 43, to the lower part of the partition, so that when the leaf-tobacco is carried through

on the sticks instead of in trays a space will be thus afforded for the passage of the depending bunches of tobacco-leaf, and when the tobacco-leaf is carried through on sticks instead of in trays the flexible covers 28 will be made longer than when the tobacco is carried in trays, so that said flexible covers may cover the space formed by dropping the hinged doors 42, said doors 42 when raised being held in place by turn-buttons 44. If desired, the doors 42 may be made in two parts horizontally, the upper part being hinged to the lower part by hinges 45, so that when necessary or desirable only the upper part of the door may be dropped, a detail of a partition formed as described being illustrated in Fig. 9 of the drawings.

The approximate dimensions of the machine will be about nine feet one inch in width and with a depth of four feet, the distance between the ceiling and the upper tracks being about eight inches, the distance between the upper and the lower track being about twenty-four inches, and the distance between the lower track and the bottom of the machine being about sixteen inches. The width of the door to each partition will be about four feet one inch and the height of the door about fourteen inches. The length of the preliminary spraying-room will be about four feet, the length of the drying-room about forty-six feet, the length of the cooling-room about fourteen feet, and the length of the ordering-room about sixteen feet, while the length of the framework at each end of the machine for supporting the sprocket-wheels and accessories will be about four feet each. The dimension of each tray will be about four feet six inches in length by three feet in width, and the middle tracks or rails will be so located or spaced from the side tracks or rails as to enable two trays to pass through the machine placed end to end across the machine, the trays being placed so that longest dimensions will extend transversely of the machine as they pass through the several rooms. The foregoing dimensions are the approximate dimensions; but they may be varied without departing from the essential features of the invention, and it is also to be understood that changes can be made in the details of the various parts and essential features of my invention still be retained.

Water may be injected into the spray-pipes 40 along with steam, so as to create greater moisture.

Having described my invention and set forth its merits, what I claim is—

1. A machine for drying leaf-tobacco comprising a preliminary steam-spraying room for spraying and opening up the tobacco-leaf, a drying-room in communication with the spraying-room, a cooling-room in communication with the drying-room, an "ordering-room" at the end of the cooling-room, means for carrying leaf-tobacco through the several

rooms, a steam-spraying device in the preliminary spraying-room, means for exhausting the moisture-charged air from the spraying-room and discharging it outside of said room without a recirculation of it in the room, means for impelling into the drying-room hot air derived from a source outside of the drying-room, means for exhausting the air from the drying-room at the portion thereof toward the cooling-room, means for impelling cool air through the cooling-room, means for heating the "ordering-room" and creating a vapor mist therein, and means for exhausting air from the "ordering-room," substantially as described.

2. In a machine for drying leaf-tobacco, the combination with a drying-room, of a preliminary spray-room provided with means for creating a steam spray therein for loosening and opening up the tobacco-leaves, means for exhausting the moisture-charged air from the spray-room and discharging it outside of said room without a recirculation of it in the room and means for conveying the leaf-tobacco from said spray-room into the drying-room, substantially as described.

3. In a machine for drying leaf-tobacco, a drying-room, a chamber located outside of the drying-room and provided with means for heating air therein, an air-impelling device communicating with said heating-chamber and delivering hot air into the drying-room, means for exhausting air from the drying-room at a point toward the discharge end of the drying-room and discharging it from said room without permitting a recirculation through the room whereby an inflowing current of fresh hot air is impelled over the material in the room and the tainted air is carried off without again coming in contact with the material, and means for carrying through said room the material to be dried, substantially as described.

4. In a machine for drying leaf-tobacco, the combination with a cooling-room, of an "ordering-room," means for creating an enforced vapor mist in the "ordering-room," means for exhausting air from said room, without permitting a recirculation through said room, and means for carrying tobacco-leaf from the cooling-room into and through the "ordering-room," substantially as described.

5. In a machine for drying leaf-tobacco, having a tobacco-leaf carrier, an "ordering-room" provided with spray-pipes located in the room beneath the leaf-carrier to create beneath the carrier a vapor mist, and means for drawing the mist up through the tobacco-leaf and carrying it out of the room without its recirculation through the tobacco-leaf, substantially as described.

6. In a machine for drying leaf-tobacco, the combination of a series of rooms separated by partitions, a tobacco-leaf carrier passing through the rooms, a door to each partition, beneath the upper part of the leaf-carrier,

and a flexible apron above the partition and the upper part of the leaf-carrier, substantially as described.

7. In a machine for drying leaf-tobacco, the
5 combination of a series of rooms in communication one with the other, an endless-chain carrier traveling through the rooms, said carrier consisting of two end chains and a central chain, the central chain having flanges
10 extending at intervals from its opposite sides and the end chains each having flanges pro-

jecting from their sides toward the central chain, to receive and support leaf-tobacco, supporting means between the central chain and the two end chains, substantially as described. 15

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

DAVID CRAWLEY MAYO.

Witnesses:

VENABLE JOHNSON,
B. PEYTON, Jr.