(No Model.) 2 Sheets—Sheet 1.

A. V. HYSORE.

APPARATUS FOR TREATING TOBACCO.

No. 585,759. Patented July 6, 1897.

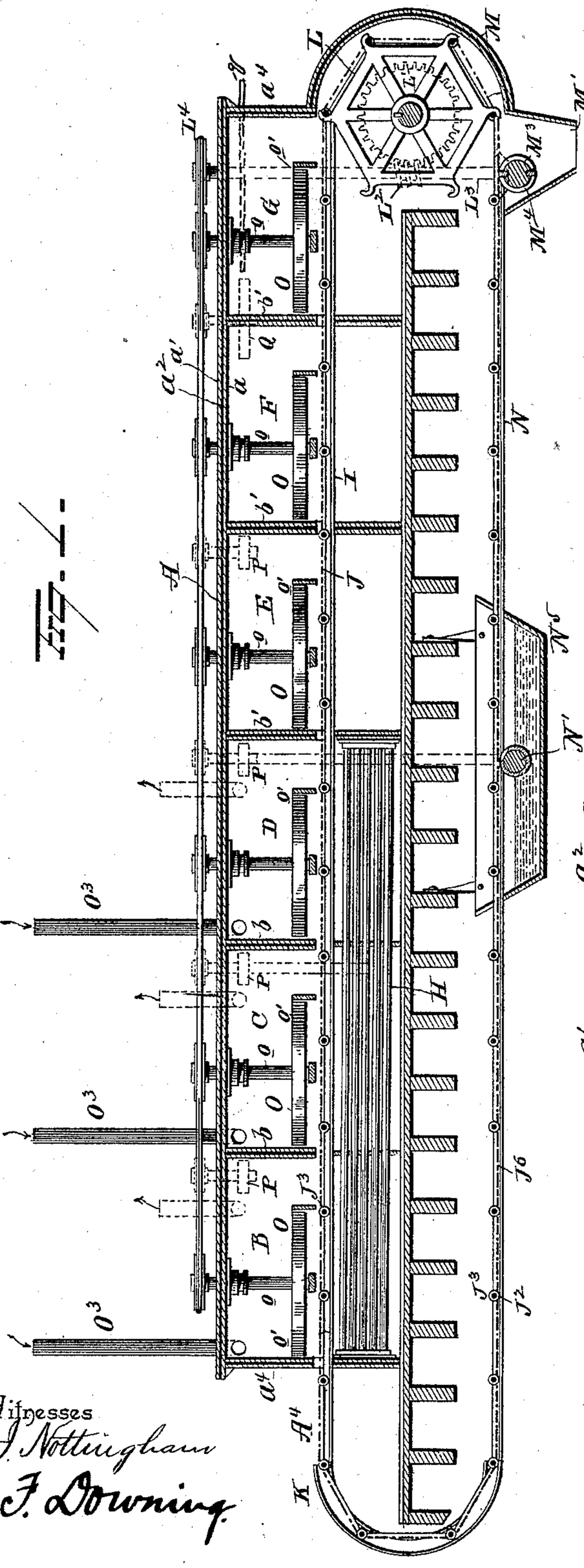

Fig. 1.

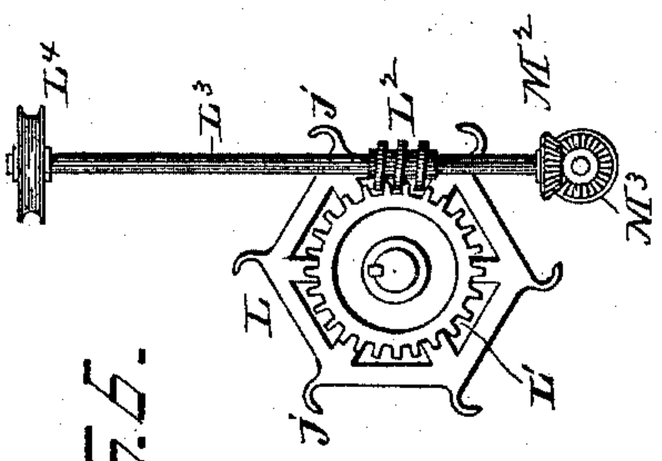

Fig. 2.

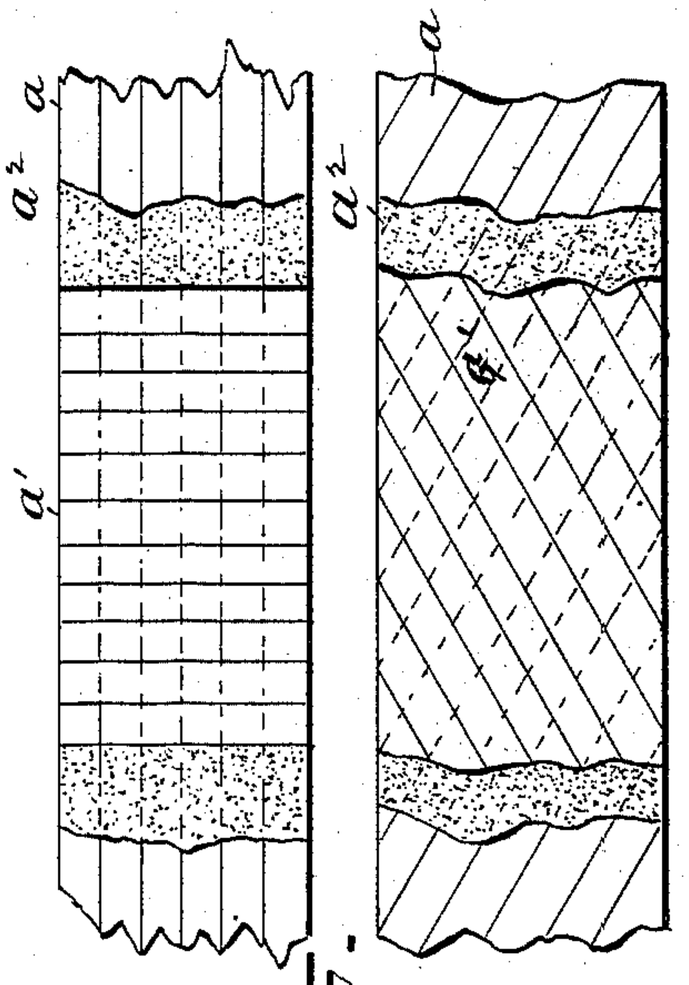

Fig. 5.

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(No Model.) 2 Sheets—Sheet 2.

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Fig. 2.

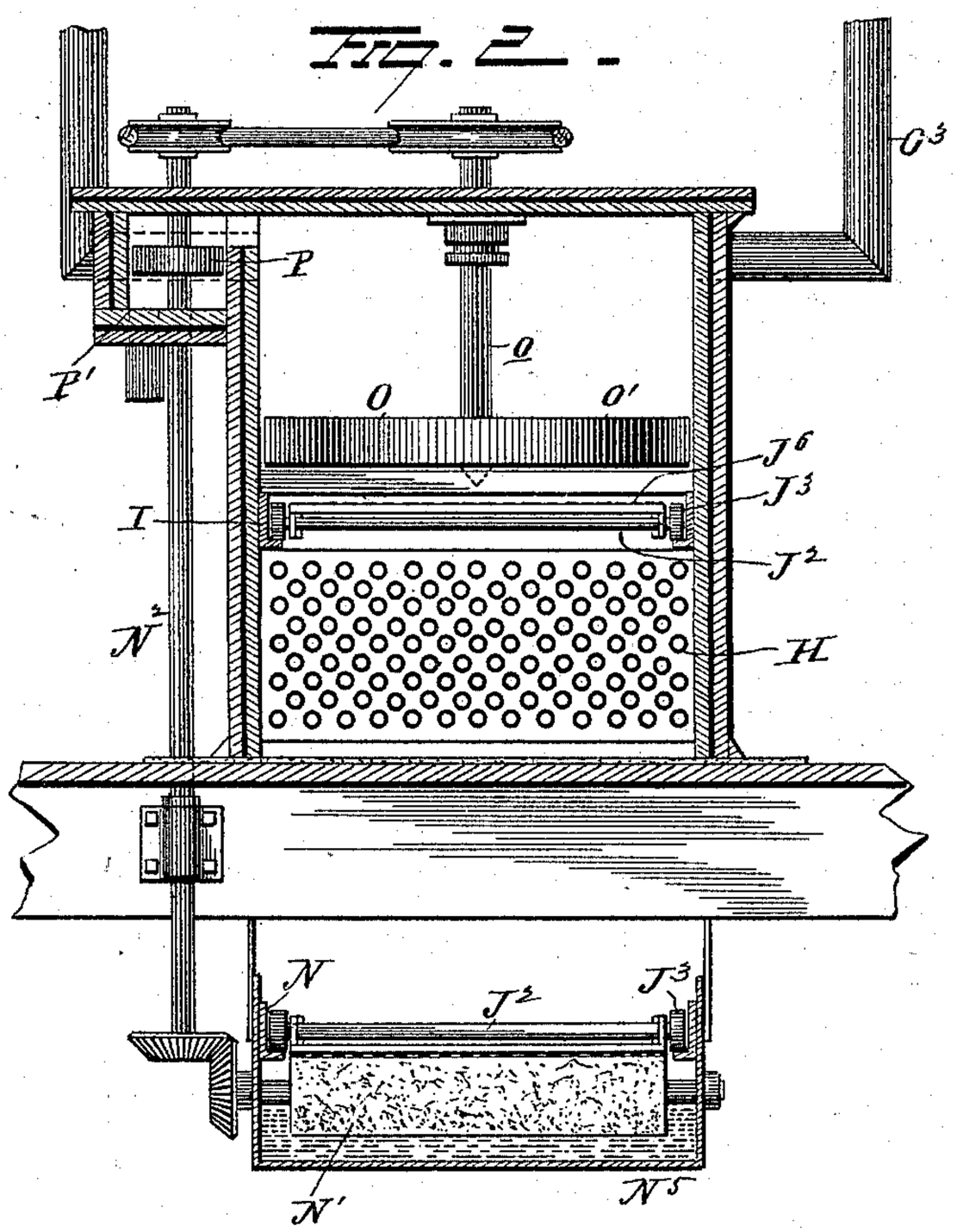


Fig. 4.

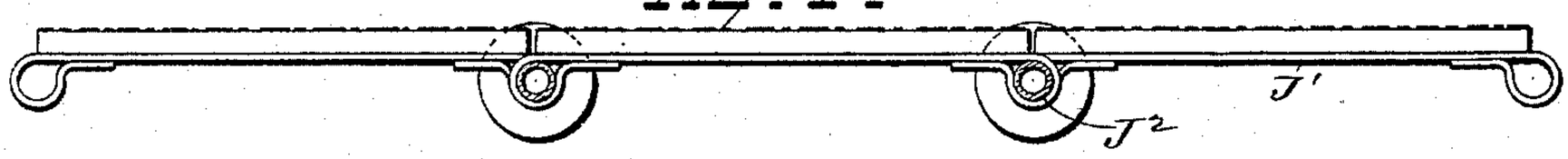
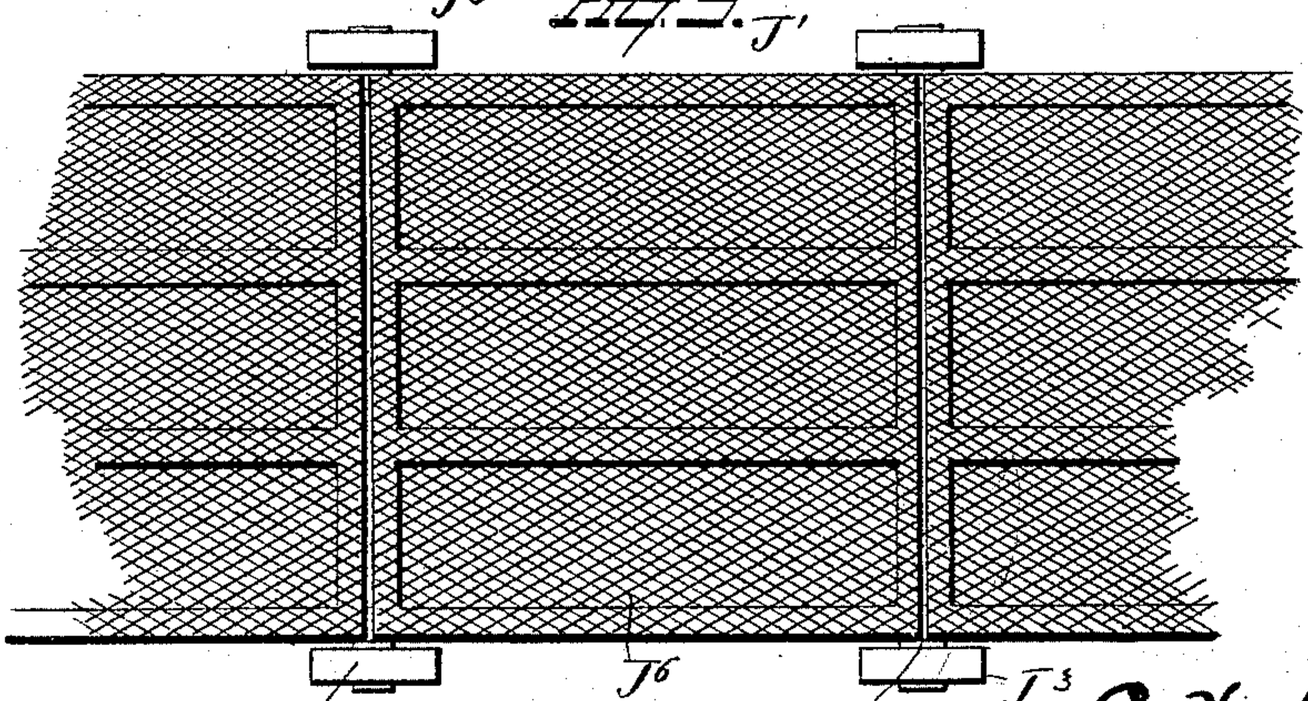


Fig. 3.



Witnesses
E. V. Nottingham
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UNITED STATES PATENT OFFICE.

ALPHENAS V. HYSORE, OF RICHMOND, VIRGINIA, ASSIGNOR OF TWO-THIRDS TO S. P. MAYO AND W. J. WHITEHURST, OF SAME PLACE.

APPARATUS FOR TREATING TOBACCO.

SPECIFICATION forming part of Letters Patent No. 585,759, dated July 6, 1897.

Application filed January 7, 1897. Serial No. 618,347. (No model.)

To all whom it may concern:

Be it known that I, ALPHENAS V. HYSORE, a resident of Richmond, in the county of Henrico and State of Virginia, have invented certain new and useful Improvements in Apparatus for Treating Tobacco; 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 an improvement in tobacco drying and ordering apparatus, the object of the same being to provide a simple and effective apparatus in which the drying, cooling, and ordering devices are all inclosed within one frame or housing, the several compartments of which are connected by passage-ways for the endless belt, so that the tobacco to be treated is first subjected to a continuous blast of air for expelling the moisture, then carried through a cooling-chamber, where it is cooled, and finally through the ordering-chamber.

A further object is to provide means for supplying the several compartments with fresh air and with means for relieving overpressure within the compartments.

A further object is to so construct all of the compartments and parts therein that practically all the air forced through the tobacco is immediately heated and kept in motion.

A further object is to provide means for supporting the sections of the endless conveyer so that practically no lifting strain or stress is borne by the couplings connecting the sections.

A further object is to provide means for relieving excess of pressure within the several compartments and for keeping the air in motion.

With these ends in view my invention consists in the parts and combinations of parts, as will be more fully described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a view in longitudinal section of an apparatus embodying my invention. Fig. 2 is a view in transverse section of same. Fig. 3 is a view in plan of a portion of the endless conveyer. Fig. 4 is a view in transverse section of same. Fig. 5 is a view of a section of the side and top walls of the housing, and Fig. 6 is a view of the gearing for operating mechanism for stripping the tobacco from the conveyer and for actuating the reel.

A represents a housing rectangular in shape and constructed of an inner and outer sheathing a a' and an intermediate layer of flooring-paper a^2 for the purpose of providing, as far as possible, an air-tight casing which will prevent the admission or escape of air except at such points as are open for the escape and admission of air. This housing A is divided by the partitions b b' into a series of compartments, in the present instance six, which I have lettered B, C, D, E, F, and G, respectively.

The partitions b, which separate the chambers B, C, and D, are composed each of two sections, the upper sections of which are made of two layers of sheathing and an intermediate layer of floor-paper, while the lower sections thereof are made of sheet metal, perforated throughout practically its entire surface, as shown in Fig. 2, for the passage of the pipes H, constituting the steam-radiator. The partitions b' are constructed entirely of the double layers of sheathing and intermediate layer of paper, and all of said partitions, together with the end walls a^4 of the housing, are provided each with an opening extending throughout the width of the internal dimensions of the housing, slightly above the upper row of pipes of the steam-radiator.

Secured to the inner walls of the housing and extending throughout the length of same are the L-shaped beams I. These beams pass through the openings in the several partitions, and thus form a straight track on which the endless conveyer J travels. This conveyer is composed of a series of rectangular or square frames J′, the meeting ends of the adjacent frames being connected to a shaft J^2, carrying rollers J^3. These rollers are designed to run and move on the L-shaped beams I, and hence that portion of the endless conveyer within the housing is held solidly in a horizontal plane. At the front or feeding end of the apparatus the angle-irons K, U-shaped in cross-section, extend from a point below the floor up to and connect with the L-shaped irons I, so as to direct the roll-

ers up to the plane they occupy while passing through the apparatus. These irons K are formed in the arc of a circle, and hence offer but little resistance to the travel of the conveyer.

Located at the discharge end of the apparatus is the reel or spider L, the surfaces of which correspond in size with the size of the frames J′ of the conveyer J. This reel is provided at the angles with the hook-shaped fingers *j*, which latter are adapted to grasp the shafts J^2, and thus move the conveyer toward the discharge end of the apparatus. This reel L is provided with the toothed wheel L′, which latter is driven by the worm L^2 on the shaft L^3. This shaft, which is the driving-shaft of the conveyer, is driven by a belt or other suitable gearing engaging or meshing with the pulley or wheel L^4 on the upper end of the shaft. The reel projects beyond the discharge end of the housing, its projecting portion being covered by the curved shield M, which terminates at its lower end in a discharge-hopper M′.

Located within the hopper M′ and in a position to engage the surface of the conveyer is the scraper, comprising a shaft M^3 and the spirally-arranged ribs M^4, the latter being preferably of rubber. By making the ribs of rubber they can engage the conveyer with considerable pressure, if necessary, and thus effectually remove or strip all the tobacco therefrom without injuring the latter. This scraper is actuated by the bevel-pinion M^2 on the driving-shaft L^3.

The conveyer is supported below the housing by the L-shaped angle-irons N, which latter extend from the hopper M′ to the irons K, and thus operate to support the section of the conveyer below the apparatus horizontally and prevent the weight thereof from falling on the joints connecting the sections thereof.

N^5 is a water-trough located below the floor of the apparatus, and within the trough is the roller or cylinder N′, covered with felt, which latter being partly submerged is always saturated and operates by its contact with the wire-gauze coverings J^6 of the frames J′ to cleanse the same and loosen up and remove any particles of leaf adhering thereto. The cylinder N′ is revolved in a direction opposite the direction of movement of the conveyer by the shaft N^2, which latter is driven by a bolt or suitable gearing.

From the foregoing it will be seen that the sectional conveyer is supported throughout its entire length. Hence there is never any undue stress or strain on the parts connecting the sections constituting the conveyer.

Located within the compartments B C D and filling the greater part of the space below the conveyer are the steam-pipes H. These pipes are separated sufficiently to permit of the free passage of air between them and extend from one side of the housing to the other, so that all of the air forced downwardly by the fans is brought into direct contact with the pipes or the hightly-heated air surrounding the pipes and is relieved of its moisture. By filling practically the entire space below the conveyer with steam-pipes the air as it is forced through the tobacco is immediately brought into contact with the hot pipes, and besides being relieved of its moisture is heated and immediately begins to ascend.

Located within the several compartments are the fans O. These fans nearly equal in diameter the width of the compartments and are secured on shafts *o*, which pass up and through the top of the housing, each shaft being provided at its upper end with a pulley or gear-wheel by which motion is transmitted to the fan. The fan-blades constituting a fan are surrounded by a peripheral band *o*′, which operates to cause practically all the air to be driven downwardly instead of laterally, thus concentrating practically the entire blast onto the tobacco on the endless conveyer immediately under the fan.

The fans rest well down over the conveyer in close proximity thereto and operate to force the air through the tobacco and through the wire-gauze screens J^6, secured to the conveyer-frames J′. The air thus forced through the tobacco takes up the moisture therefrom, and the moistened air coming in contact with the hot pipes H is immediately robbed of its moisture and heated and immediately begins to ascend. The downwardly-moving current created by the fan prevents the air from rising under the fan. Hence it seeks an egress from the hot compartment at a point as far removed from the fan as possible, or at the end of the compartment farthest removed from the fan. This ascent of the air is assisted by the small fans P, located in the fan-chambers P′ at the side of the several heating-compartments, each fan-chamber being provided with an air-inlet leading from the heating-compartment and an outlet leading to the outer air. By this arrangement overpressure within the compartment is prevented and a complete circulation of air maintained. Fresh air is supplied to fans O by the air-pipes O^3.

The compartments B, C, and D are each constructed as described, and each is provided with the heating-coils and blast and exhaust fans, and as the tobacco passes successively through them it will be seen that it is gradually relieved of its moisture and when it reaches the compartment E it is in a dry and hot condition.

The compartment E, which is for cooling the tobacco, is provided with the two fans O and P, identical in construction and operation with the fans in the heating-chambers, and as compartment E is not heated it will be seen that the tobacco as it passes through it is cooled and got into condition for ordering.

The two compartments F and G are like compartments E, except that the fans P of the other compartments are dispensed with, a

single fan Q being located in the partition between the two compartments. While this fan Q is intended to assist in the circulation of the air within the compartments, it is also designed to spray water and steam by centrifugal action onto the tobacco on the conveyer, and thus get the tobacco in condition for working. This fan Q necessarily revolves rapidly, and water forced thereagainst by a steam or other injector *q* is thrown off in the form of spray onto the tobacco as the latter is carried slowly along on the continuously-moving endless carrier.

The tobacco, after it has been dipped into the licorice or other preparation employed for flavoring, is deposited on the endless conveyer at the feeding end A^4 of the apparatus and is gradually conveyed first through the heating-compartments, where the excess of liquid is evaporated and the tobacco gradually dried. It then passes into the cooling-compartment, where it is cooled, and from thence into the ordering-compartments, where it is ordered or got into condition where it can be worked. After leaving the ordering-chamber it passes over the reel and is removed from the conveyer by the scraper M^3, after which the surface of the conveyer is cleaned and polished by the saturated-felt cylinder N'.

All the movable parts are geared to move in unison and at proper relative speeds by suitable belting or gears.

It is evident that numerous slight changes might be made in the general form and arrangement of the several parts herein shown and described without departing from the spirit and scope of my invention, and hence I would have it understood that I do not wish to limit myself to the precise details of construction herein shown and described; but,

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

1. An apparatus for drying tobacco, comprising a housing, a series of compartments separated by partitions, an endless conveyer passing lengthwise through the several compartments, a series of heating-pipes located immediately below the conveyer a fan located above the conveyer, and adapted to force air downward through the tobacco to the heating-pipes below, and outlet for the escape of the air substantially as set forth.

2. An apparatus for treating tobacco comprising a housing, a series of compartments separated by partitions, an endless conveyer passing lengthwise through the several compartments, a series of heating-pipes located immediately below the conveyer, a large fan for creating a downward blast of air located above the conveyer nearer one end of each compartment and a smaller exhaust-fan located near the other end.

3. An apparatus for treating tobacco comprising a series of heating-compartments, a cooling-compartment and an ordering-compartment and an endless conveyer passing lengthwise through the several compartments, the heating-compartments having a radiator or heating-pipes located in and practically filling the compartments below the conveyer, tracks extending throughout the several compartments for supporting the conveyer, a blast-fan in each compartment located above the conveyer and adapted to force air downward through the tobacco to the heating-pipes below, and a means of escape for the air.

4. The combination with a drying-compartment and an endless elevator passing through same, of heating-pipes located below and practically filling the space below the conveyer, air-inlet pipe above the conveyer, a fan for forcing the air down through the conveyer and a small exhaust-fan located in a plane above the first-mentioned fan, substantially as set forth.

5. In an apparatus for treating tobacco, the combination with a housing, and a track extending throughout the length of same, of an endless conveyer comprising frames covered with wire-gauze, shafts mounted on rollers, each shaft connecting two adjacent frames, tracks located below the housing for supporting the returning portion of the conveyer, curved irons connecting the tracks at one end and a reel over which the conveyer passes at the other end.

6. In an apparatus for treating tobacco, the combination with a housing, and an endless conveyer passing through and supported within the same, of a scraper comprising a cylinder having yielding spiral ribs the latter adapted to move in contact with the conveyer and remove the tobacco therefrom.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

ALPHENAS V. HYSORE.

Witnesses:
M. A. WOODELL,
A. D. CRUTCHFIELD.