(No Model.) 5 Sheets—Sheet 1.

# C. G. EMERY.

## MACHINE FOR DRESSING FINE CUT TOBACCO.

No. 260,958. Patented July 11, 1882.

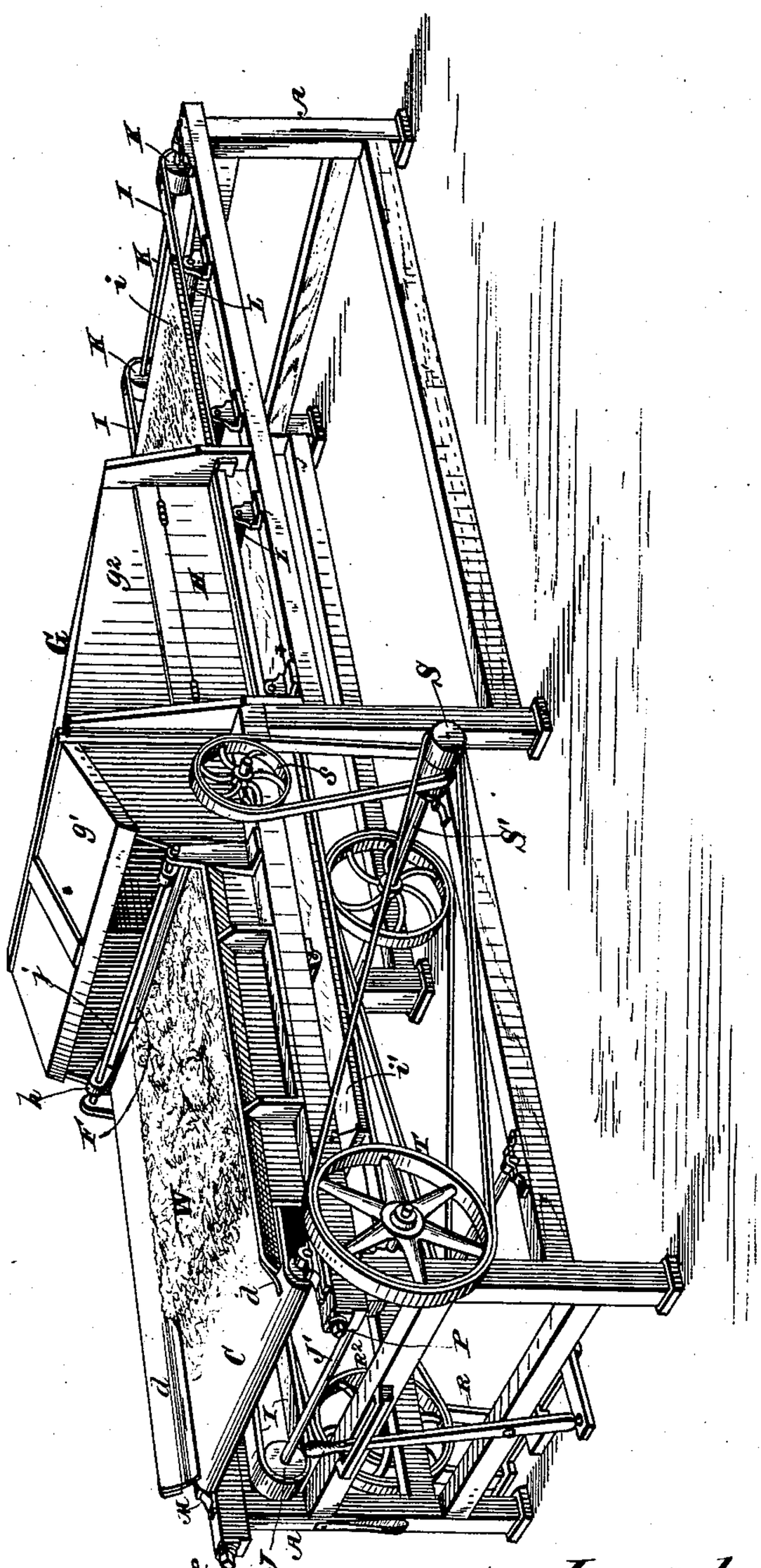

Fig. 1.

Witnesses.
Robert Everett
J. A. Rutherford

Inventor.
Charles G. Emery.
By James L. Norris.
Atty.

(No Model.) 5 Sheets—Sheet 2.

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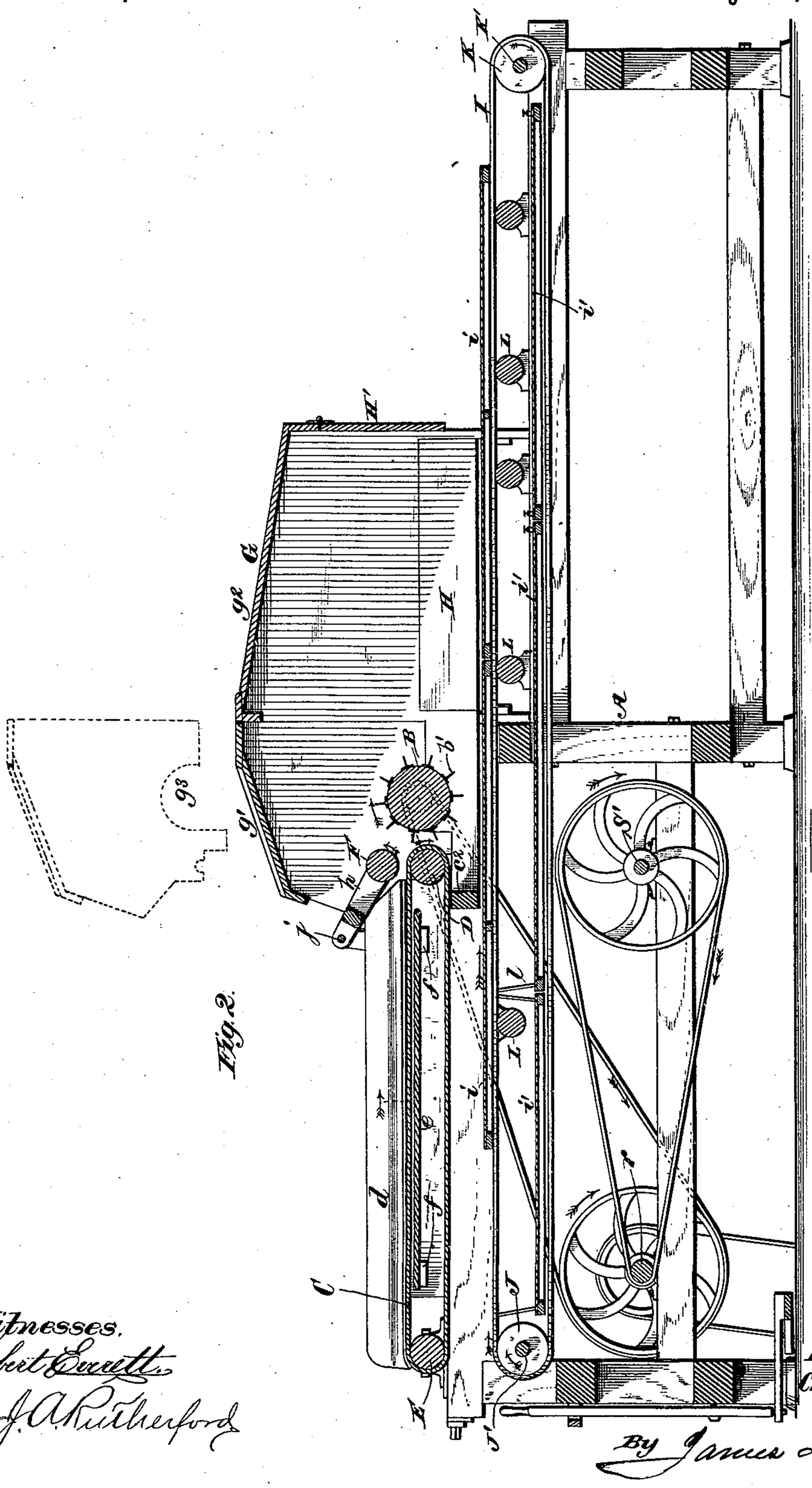

Fig. 2.

Witnesses.
Robert Everett.
J. A. Rutherford

Inventor.
Chas G Emery.
By James L. Norris.
Atty.

(No Model.) 5 Sheets—Sheet 3.

# C. G. EMERY.

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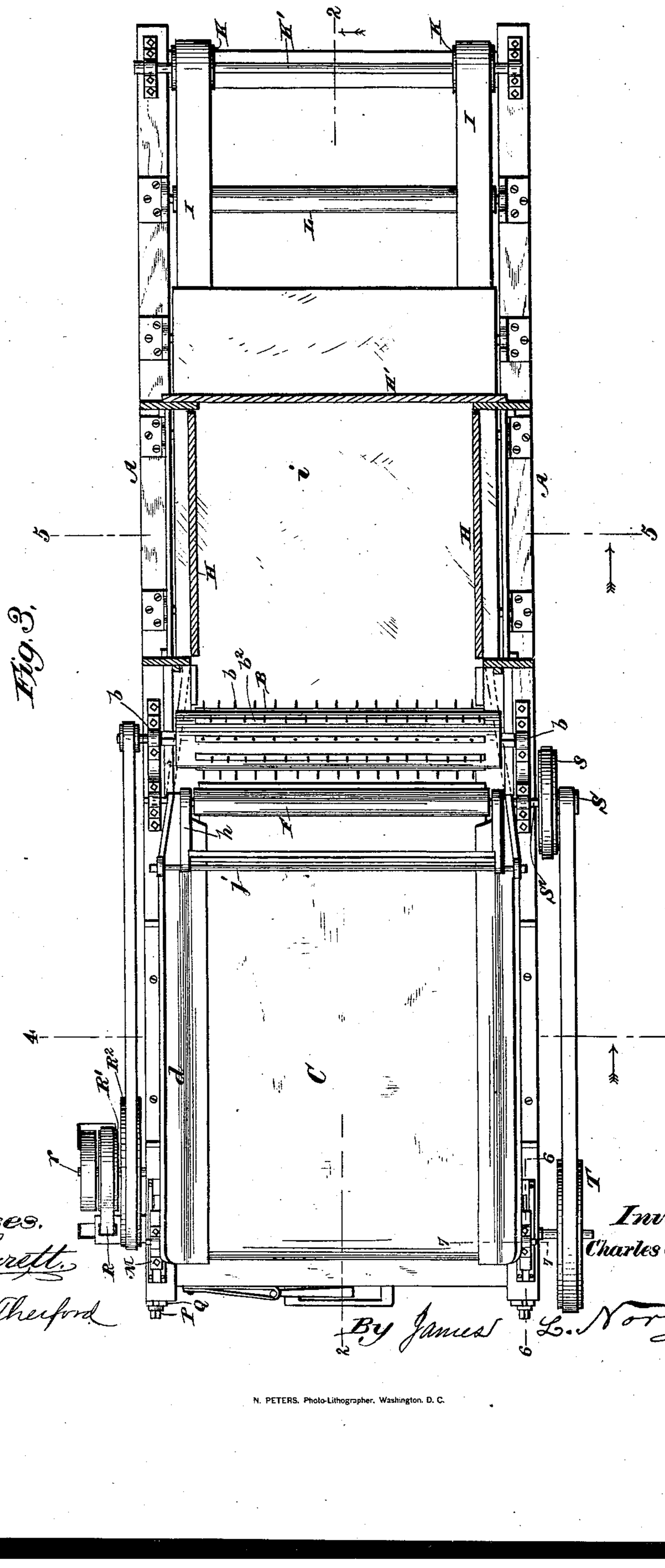

Fig. 3.

Witnesses.
Robert Everett.
J. A. Rutherford

Inventor.
Charles G. Emery.
By James L. Norris.
Atty.

(No Model.) 5 Sheets—Sheet 4.

# C. G. EMERY.

## MACHINE FOR DRESSING FINE CUT TOBACCO.

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Fig. 3.

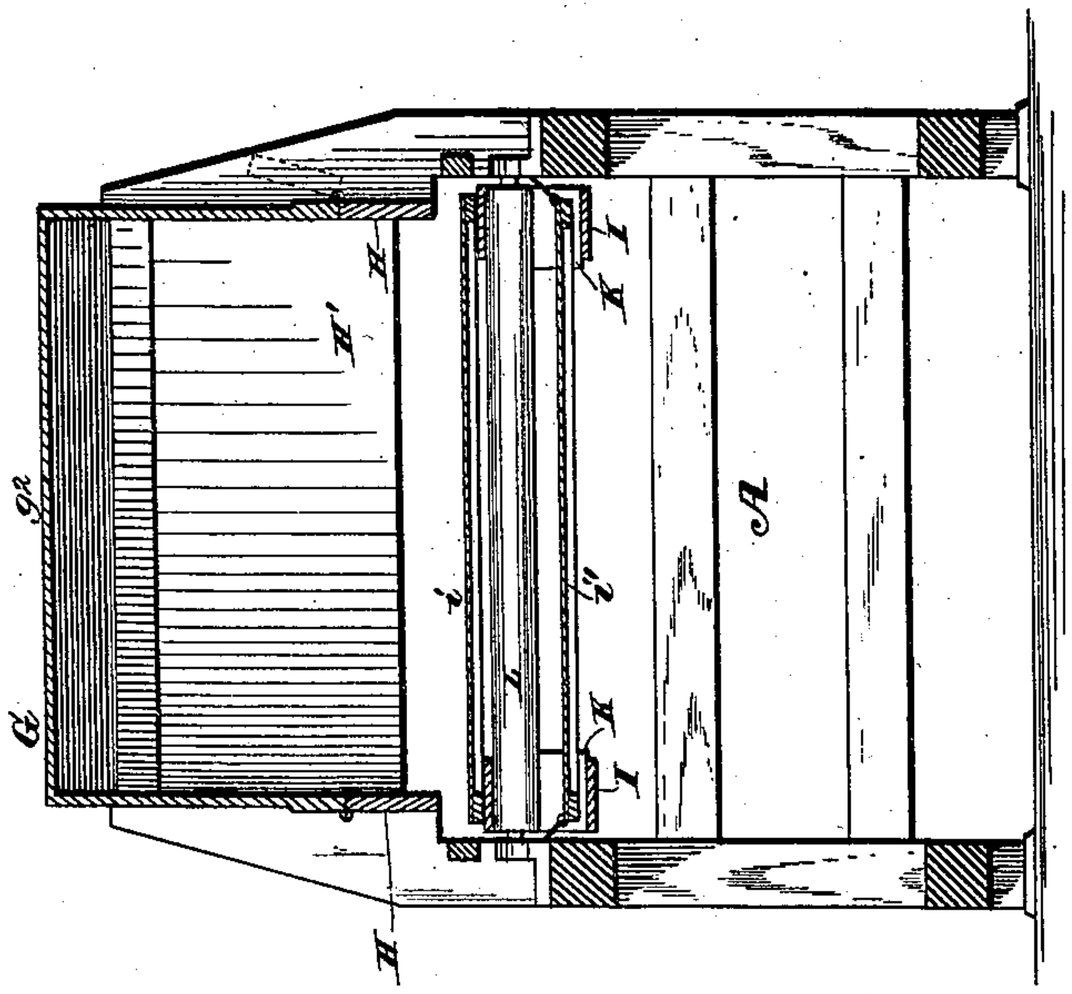
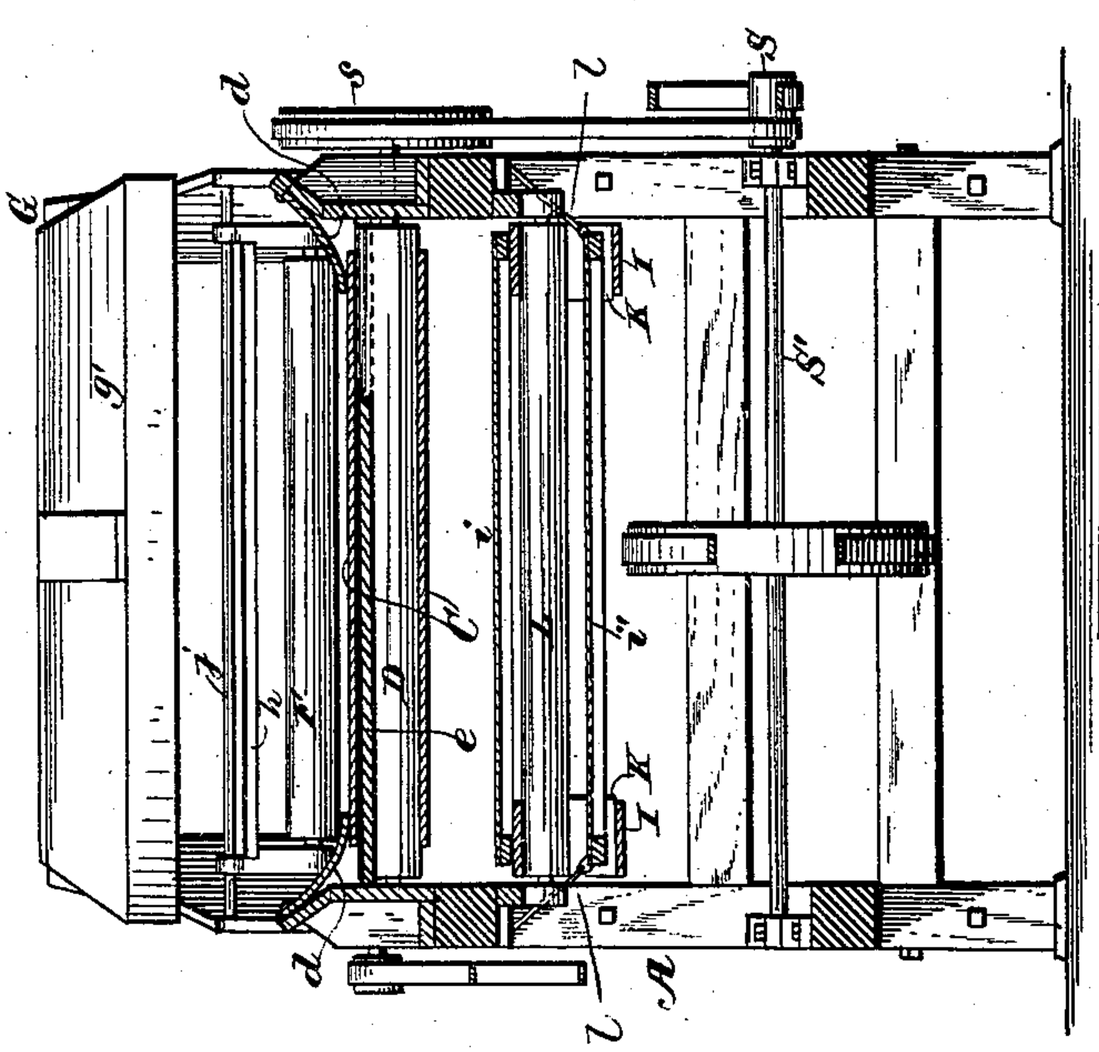



Fig. 4.




Witnesses.
Robt Everett.
J. A. Rutherford

Inventor.
Charles G. Emery.
By James L. Norris.
Atty.

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Fig. 8.

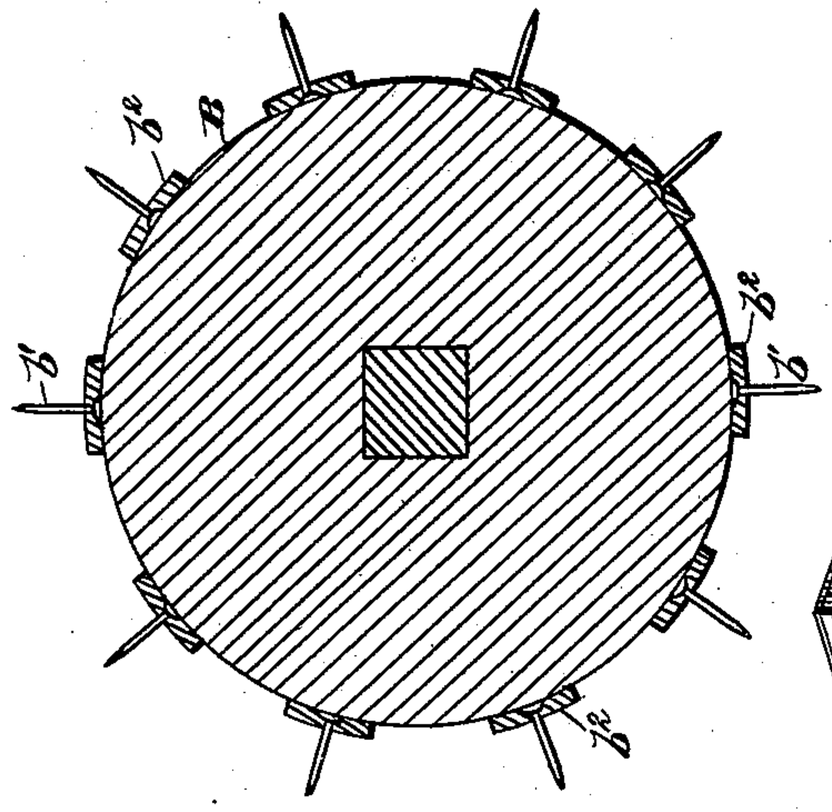



Fig. 9.

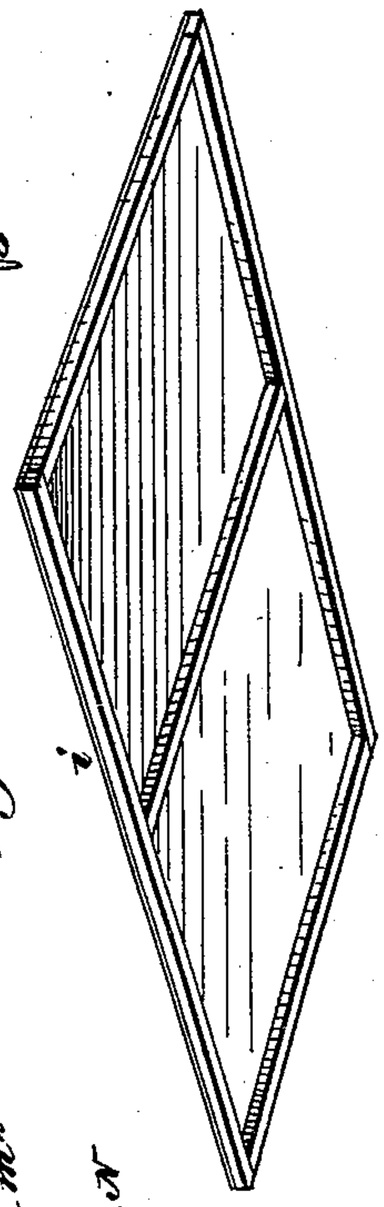



Fig. 6.

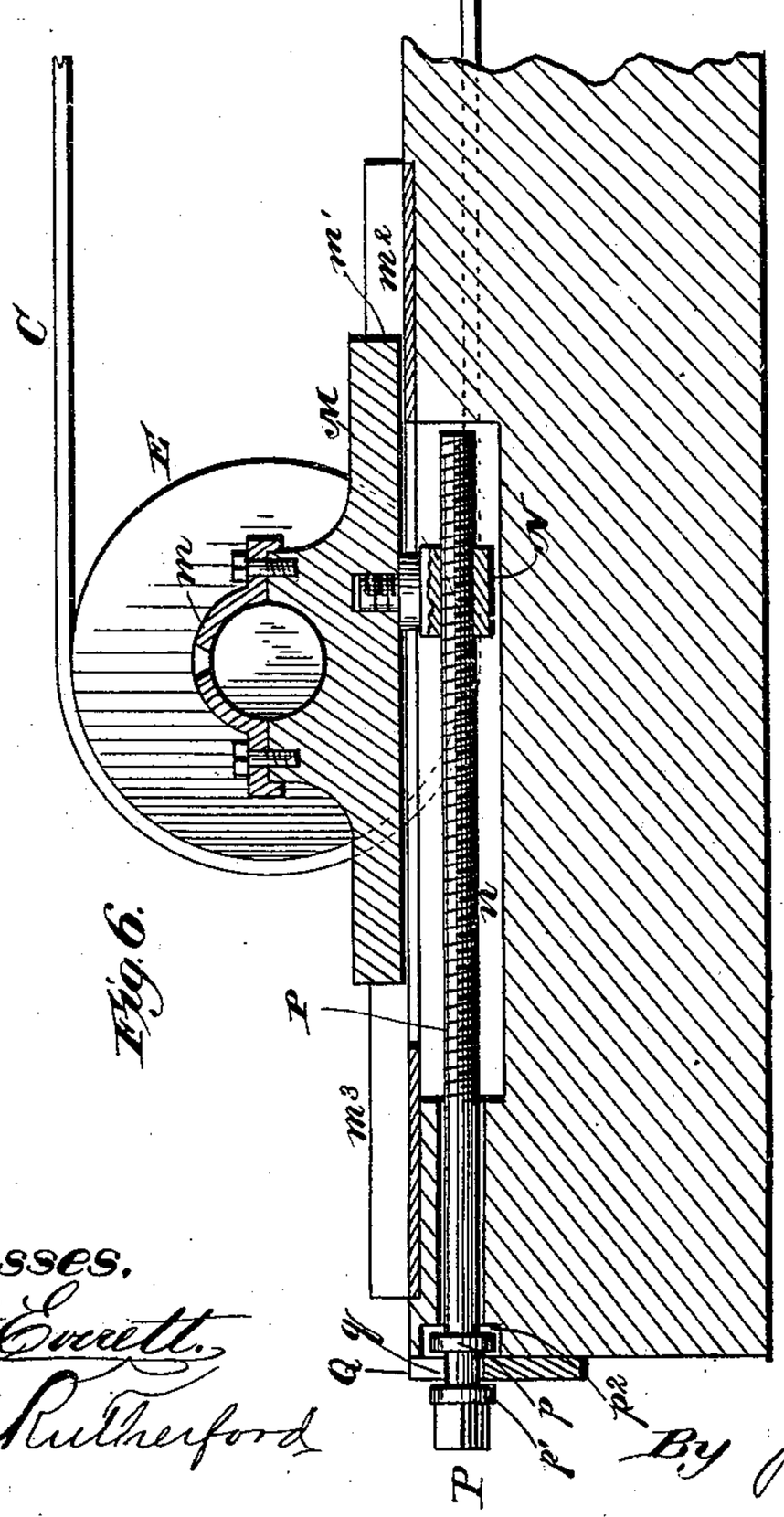
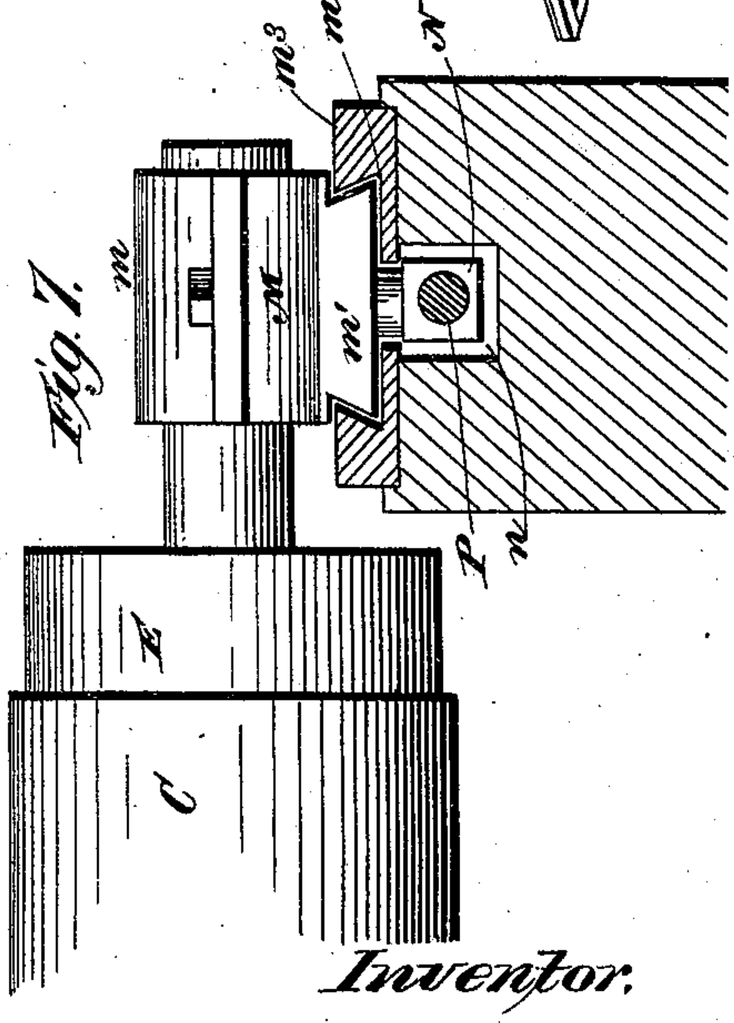



Fig. 7.




Witnesses.
Robert Everett.
J. A. Rutherford

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Atty.

# UNITED STATES PATENT OFFICE.

CHARLES G. EMERY, OF BROOKLYN, NEW YORK.

## MACHINE FOR DRESSING FINE-CUT TOBACCO.

SPECIFICATION forming part of Letters Patent No. 260,958, dated July 11, 1882.

Application filed March 27, 1882. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES G. EMERY, a citizen of the United States, residing at Brooklyn, in the county of Kings and State of New York, have invented new and useful Improvements in Machines for Dressing Fine-Cut Tobacco, of which the following is a specification.

I will here premise that all long-cut (sometimes termed "fine-cut") tobacco intended for either smoking or chewing purposes is dried or cured after leaving the cutting-machine before it is packed into packages of any kind or description, or used in the manufacture of cigarettes or cigars.

In order to make the leaf-tobacco cut evenly and without breakage it is moistened or wet, in which moist condition it emerges from the machine so tangled and lumped as to render it impossible to cure it in such state. Usually it is dressed by hand and spread on trays or screens to dry and cure before being manufactured into cigarettes or put in packages for smoking or chewing. It is found impossible to thoroughly untangle and straighten out the threads and prevent the making of "shorts," or short threads or shreds, and to remove the lumps by hand-dressing from the cut, so as to effectually expose the tobacco to the air and prevent loss in shorts.

This invention, which is designed to obviate said defects, relates to a machine that I have devised for dressing cut tobacco in such manner that the mass of tobacco brought from the cutting-machine in a more or less tangled and lumpy condition shall be separated, disentangled, and deposited without shorts, with its threads or shreds substantially straight, which latter state is one of the prerequisites preparatory to the manufacture of cigarettes.

Among the prominent features of this machine the following may be briefly mentioned, to wit: a rotary picker adapted to act upon the mass of tangled tobacco and disentangle it, project it forward, and deposit it in a substantially straight condition; an endless apron for feeding the cut tobacco to the said rotary picker; a device for compacting the tobacco as it is delivered from the feed-apron to the rotary picker; inclined flexible strips located along the edges of the feed-apron for the purpose of preventing the cut tobacco from dropping off the apron at its sides as the tobacco is being carried forward to the picker; a peculiarly-constructed hood covering the rotary picker and providing a chamber in which the tobacco thrown from the rotary picker descends to certain trays upon which the tobacco is deposited substantially straight; means for carrying a series of trays under the picker and the hood, so that the empty trays started at one end of the machine will pass to the other end of the same, where they can be removed with the tobacco which they have collected during their passage under the picker and hood; an arrangement of receptacles for collecting any loose tobacco which may drop from the trays or other operative parts of the machine outside of the hood; devices for supporting the belts upon which the trays that receive the tobacco from the picker are carried; a device for removing any tobacco which may be carried round upon the under side of the endless feed-apron; certain devices for conveniently taking up such slack as may occur in the endless feed-apron; and a device for supporting the upper leaf of the feed-apron in case it sags. These features, together with certain other details of construction, are illustrated in the annexed drawings, in which—

Figure 1 represents a perspective view of my improved machine. Fig. 2 is a vertical longitudinal section thereof on the line 2 2 of Fig. 3. Fig. 3 is a plan view thereof with the hood removed. Fig. 4 represents a vertical section on the line 4 4 of Fig. 3. Fig. 5 represents a vertical section on the line 5 5 of Fig. 3. Fig. 6 is a longitudinal section, on an enlarged scale, of a portion of the apparatus, taken on the line 6 6 of Fig. 3, and showing an arrangement for tightening the endless apron employed for feeding the tobacco to the picker. Fig. 7 is an elevation and part section of the same, taken on the line 7 7, Fig. 3. Fig. 8 shows, on an enlarged scale, a section taken transversely through the picker-cylinder. Fig. 9 represents a perspective view of one of the trays in an inverted position.

Referring by letter to the drawings, in the several figures of which like letters indicate like parts, A indicates the main frame, which will be constructed so as to support the sev-

eral operative parts of the machine in their proper relative positions, the component parts of said frame being of such material or materials as will be deemed best suited for the purpose.

The means employed for acting upon the mass of tobacco as it comes prepared from a cutting-machine, so as to separate the tangled tobacco, disentangle it, project it forward, and deposit it substantially straight, consists of a rotary picker, B, which is composed of a drum or cylinder that is journaled in bearings *b* upon the main frame and provided upon its perimeter with a suitable number of picker-teeth, which, during the rotation of the cylinder, act upon the tobacco to produce the above-mentioned results. The picker-teeth can be arranged upon the picker-cylinder in a variety of ways—as, for example, they can be arranged in longitudinal parallel rows, as illustrated; or they can be arranged in transverse or diagonal or zigzag rows around the cylinder, or be arranged without regard to rows. In fact, they may be arranged in any desirable manner, the arrangement of the teeth conveniently upon the cylinder being somewhat dependent upon the way in which they are connected with the same, although, as will be seen, any of the modes employed for fastening on the teeth might be used for arranging them as just described.

As shown in the drawings, the picker-teeth *b'* are in the nature of tacks or small pointed nails, which are inserted in strips $b^2$ of some flexible material—such, for example, as india-rubber, leather, canvas, or other suitable yielding material—and these strips are secured to the perimeter of the cylinder with the heads of the teeth against its face, so that the teeth are in rows parallel with the axis of the picker-cylinder; but these strips can be wound spirally around the cylinder; or short strips with such teeth can be secured transversely thereon or otherwise diversified. Again, one or more sheets of flexible material can be provided with picker-teeth, and the said sheets attached so as to partially or entirely cover the face of the cylinder, the teeth in such instance being arranged either in rows, as shown, or in any of the other ways hereinbefore mentioned. The yielding base thus afforded for the picker-teeth will allow them to yield sufficiently in case of their encountering any lump or other obstruction in the mass of tobacco that is being picked, disentangled, and separated to prevent breakage of the teeth, and also to act generally upon the tobacco in a more efficient manner; but as a matter of course the picker-teeth could be made rigid with the cylinder, which could be effected by driving them into the cylinder when the latter is made of wood; or, in case a hollow metal cylinder is provided, the same can be formed with perforations, in which the teeth may be secured.

As a means for feeding the tobacco forward to the rotary picker, I provide an endless horizontal belt or apron, C, formed of rubber, canvas, or leather, or other flexible material suitable for traveling around rollers and carrying the tobacco forward to the picker.

The rollers D and E, upon which the endless apron is supported and by which it is impelled, are journaled in suitable bearings upon the main frame A, the rear roller, D, being located directly in front of the rotary picker, so as to bring the endless apron in close proximity to the picker-teeth, and thereby allow it to deliver the tobacco to the picker. The front roller, E, is located at the front or feed end of the machine, thereby permitting the tobacco as it is brought from the cutting-machine to be conveniently fed onto the apron and spread or leveled thereon by an attendant.

To prevent the tobacco as it is being conveyed by the endless apron to the picker from falling off the apron at its edges and dropping down upon the operative parts of the machine, so as to impair their efficiency by gumming or clogging the same, I provide two flexible strips, *d d*, one of which is arranged along each edge of the upper leaf of the endless apron, these strips being secured along their upper edges to portions of the sides of the main frame, which, at this part of the machine, is elevated above the apron. These strips *d* are of such width that when their free lower edges are dropped down upon the upper leaf of the endless apron the strips will assume the inclined and slightly-concaved position shown best in Fig. 4. This arrangement in effect constitutes a feed-trough having stationary converging sides and a movable bottom, which, during the operation of the machine, has a continuous travel toward the rotary picker. These guard-strips, while resting upon the endless apron with sufficient pressure to prevent the escape of tobacco at the edges of the apron, will nevertheless not bear thereon sufficiently to retard or interfere with the free movement of the apron or to effect any appreciable wear of the same.

Below the upper leaf of the endless apron is located a support, *e*, consisting of a sheet or plate of wood, metal, or other appropriate material supported directly by the sides of the main frame A, or by means of cleats *f* or other devices capable of supporting and maintaining said plate or sheet in close proximity to the under side of the aforesaid upper leaf of the endless apron. This plate or support *e* does not necessarily touch the apron when the latter is drawn taut upon its rolls; but, in case of any looseness of the apron and its tendency to sag by reason of the weight of the tobacco, the support *e* will uphold and prevent the apron from sagging, which, if permitted, would interfere with the level condition of the tobacco that is being carried forward to the picker.

As the tobacco is carried upon the endless apron to the picker in a loose condition, it becomes desirable to prevent the free delivery of the tobacco and to present it to the picker-teeth in a more compact state, so as to increase the efficiency of the picking and separating action. To such end a presser-roll, F, is located

over the rear roll, D, of the apron, and journaled in swinging bearings *h*, that are hung upon a rod, *j*, extending transversely across the machine from side to side, the said rod being supported at its ends in suitable standards, which can be considered as a part of the main frame. This presser-roll, being located in front of the picker and over the delivery end of the endless apron, bears upon the tobacco with a yielding pressure, so as to press and hold the same sufficiently to compact it, and thus insure its presentation to the picker-teeth in a compact mass.

Below the endless feed-apron and near the rotary picker is located a scraper, $c^2$, employed for the purpose of removing from the apron such threads of tobacco as may happen to be carried round by the apron, the tobacco thus removed falling down into certain trays, which will be hereinafter described. The picker rotates in the same direction as the travel of the endless apron, as indicated by the arrow, so that its teeth will catch in the mass of tobacco from the under side of the latter, and as it picks, straightens, and otherwise acts upon the same it will throw the disentangled tobacco rearwardly into a hood, G, which will prevent the tobacco from flying out into the room or onto other portions of the machine than those destined for its reception. This hood is supported upon the main frame so as to cover the rotary picker, and it is made in two sections, $g'$ and $g^2$. The front section, $g'$, of this hood is detachably connected with the main frame, so that it can be removed in order to admit of access to the rotary picker in the event of any injury to or clogging up its teeth, or when it becomes necessary to reach it for cleaning or for removal or inspection. The construction of the sides of this front section of the hood is indicated by the view in dotted lines, Fig. 2, just above the full-line representation of the same. These sides are adapted to fit over the ends of the picker-cylinder, and for such purpose are formed each with a recess (indicated at $g^3$) which will receive the picker-cylinder, the lower edge of each side of this hood-section being otherwise adapted to conform to that part of the machine to which the said front section of the hood is fitted. While this part of the hood fits closely over the picker-cylinder, it does not bear upon the same so as to check its operation, the propinquity of said parts being, however, sufficient to prevent escape of tobacco. The rear section, $g^2$, of the hood, which is supported upon the main frame by means of suitable legs, is provided with side doors, H, and with a rear door, H′, so that by opening these doors ready access can be had to the rear interior portion of the hood and inspection made of such parts of the machine as are covered by the said hood-section.

In order that the tobacco which is thrown from the rotating picker shall be collected and removed as rapidly as it falls to the lower open portion of the hood, provision is made for passing below the said hood a series of screens or trays in immediate succession of each other, so that no appreciable intervening space shall necessarily occur between any two adjacent trays or screens in the line of trays or screens which are passing under the hood, receiving the falling tobacco and conveying the same to the rear or delivery end of the machine. For this purpose a pair of endless belts, I, are mounted upon and driven by two pairs of pulleys or rollers, J K, respectively mounted upon shafts J′ K′, one of which is located at the feed and the other at the delivery end of the machine, and a number of shallow trays, *i*, are provided, which can be placed upon the said belts and carried by them under the hood, so as to receive the tobacco as it falls. These two shafts, carrying the belt-rollers, are located so that the belts will be below the endless feed apron already described, and also so that there will be sufficient space between the belts and the lower edge of the hood for the passage of the trays or screens as they are being carried upon said belts from the feed to the rear of the machine. The upper leaf of each one of these belts passes over a series of rollers, L, or analogous supporting devices, so that the belts bearing the trays will be steadied in their travel and prevented from sagging. The trays or screens, which are adapted to be placed upon the belts so as to form a line or continuous series, consist each of a light rectangular frame, braced in any suitable manner and covered with canvas or some other light material suited for the purpose. As the loose tobacco is thrown from the picker and falls onto the trays, some portion of it might escape between the trays and the lower edge of the hood. To prevent waste in case such should happen, and also to intercept such tobacco, so that it shall not reach any of the lower operative parts of the machine, I suspend in a plane between the upper and lower leaves of the belts a series of trays, *i*′, which will collect any loose tobacco that may fly out from the hood or drop over the sides of the trays as they pass below and emerge from under the hood. This series of trays is continued from one roller to the other, so that any loose tobacco that might fall from any other source whatever in the machine will also be collected. These lower trays can be suspended from the main frame A in any suitable way—as, for example, by means of links *l*, so as to be capable of removal for the purpose of emptying them of the tobacco whenever a sufficient quantity has been collected; or they may be otherwise supported in or about the position indicated. The construction of the trays or screens of this lower set can be similar to that of the trays designed to be placed upon the belts; or they can be otherwise constructed in order to subserve their respective purpose.

The feed-apron C, by which the tobacco is carried to the rotary picker, will in the course of time stretch and become loose upon its roll-

ers, both by reason of the continuous weight of the tobacco and also by constant usage, which inevitably tends to loosen an endless apron which is mounted upon and impelled by rollers.

To take up such slack in the apron as may occur from time to time, I provide slidable bearings for the journals of the front roller and means for adjusting said slidable bearings, whereby the same can be moved along sufficiently to take up the slack. This portion of the machine will be understood by referring to Figs. 6 and 7 of the drawings, in which one of the journals of said roller and the slidable bearing therefor are illustrated. In said figures M indicates the slidable bearing, being provided with a cap, *m*, to hold the journal down, and being further provided with a dovetailed lower part, *m'*, which rests within and is adapted to travel along a correspondingly-dovetailed way, $m^2$, that is formed in a metal plate, $m^3$, secured to an upper horizontal bar or timber of the main frame. A nut, N, is provided with a screw-threaded shank that is screwed into the slidable bearing, and a recess, *n*, is formed in the said base or timber of the main frame, for the reception of the nut, which will move in said recess conjointly with the movement of the bearing to which the nut is attached. A horizontal screw-rod, P, engages in this screw-nut and extends beyond the end of the main frame, so that it can be gripped by a wrench or other instrument for the purpose of giving it an axial rotation in order to cause the movement of the bearing M. The screw-rod is formed with an unthreaded portion, which has its bearing in the main frame, and to prevent any longitudinal movement on the part of said rod it is provided at its ends with a pair of annular shoulders or collars, *p* *p'*, the former being located within a recess, $p^2$, in the main frame, while the remaining collar, *p'*, is outside of a plate, Q, that is secured to the main frame and formed with a slot or recess, *q*, through which the rod passes. It will thus be seen that the collars *p* *p'* upon the screw-rod are respectively located at opposite sides of said fixed plate, and hence that any endwise movement of the rod will be prevented, and that when the screw-rod is turned in the proper direction the slidable bearing will be moved toward the front end of the machine, and the slack of the endless feed-apron thus be taken up.

It is of course understood that the two slidable bearings M are constructed alike and operated in the same way, in order to preserve the parallelism between the front and rear rollers in adjusting the former for the purpose of tightening up the apron.

The rotary picker, the rollers for the endless feed-apron that carries the tobacco to said rotary picker, and the shafts of the rollers for the endless belts upon which the trays are placed for the purpose of carrying off the tobacco which has been acted upon by the picker can all be driven by means of gearing or other suitable mechanism so timed that the picker-cylinder shall revolve at a higher rate of speed than the travel of the endless feed-apron and the endless belts carrying the trays. The endless feed-apron may be caused to travel a little faster than the belts carrying the trays or screens; but in all cases it is essential that the picker-cylinder shall revolve with greater rapidity than the said apron and the belts, so that all of the tobacco fed forward by the feed-apron will be thoroughly and effectively subjected to the action of the picker-teeth, and also so that the tobacco is thrown from the picker in condition to fall with the fibers or threads substantially straight upon the trays or screens, and the same will not move so rapidly as to disarrange the tobacco received upon them and cause it to be thrown into irregular masses.

As herein shown, the above-described operative parts of the machine are impelled by belt-power.

As illustrated, R indicates the power-belt applied to a belt-pulley, R', fixed upon the main rotary driving-shaft *r*.

Motion is transmitted to the picker-cylinder from a large belt-pulley, $R^2$, upon the main driving-shaft *r* by an endless belt, this belt-pulley being of such size as will insure the rotary picker being driven at a high rate of speed. The rear driving-roller of the endless feed-apron is driven at a slower speed by belt-power transmitted from a small pulley, S, upon a shaft, S', to a belt-pulley, *s*, upon one of the journals of said roller. The shaft S', upon which this small pulley S is fixed, is in turn driven by belt-power from the main driving-shaft *r*, the former being provided with a large belt-pulley for the belting employed.

It will also be seen that the shaft of the pair of belt-pulleys located at the feed end of the machine, and employed for driving the belts that carry the trays, is provided with a belt-pulley, T, and driven by belt-power from the pulley S upon the shaft S'.

It will be understood that any suitable belt-shifter will be employed for shifting the power-belt from a fixed to a loose pulley upon the main driving-shaft.

Having thus described the construction of the several parts of the machine and their individual functions, I will now describe the general operation.

The rotary picker, the endless feed-apron, and the belts for carrying the trays being set in motion, the picker-cylinder will revolve rapidly and at a rate of speed greater than that of the feed-apron or the endless belts for carrying the trays or screens. The cut tobacco will be brought directly from the cutting-machine and fed onto the feed-apron at the front or feed end of the machine, the attendant spreading the tobacco out upon the apron in as level a condition as possible. The tobacco (indicated in Fig. 1 by the letter W) is carried

forward by the feed-apron to the revolving picker, the presser-roller F serving to compact the tobacco just before it is presented to the picker-teeth. The latter now seize and separate the tangled tobacco, disentangle it, carry it over in contradistinction to carrying the tobacco under its axis, and project it into the air within the hood, where it falls and is deposited upon the trays in a substantially straight condition. The trays, moving toward the rear end of the machine, pass successively from under the hood, and, arriving upon the exposed portions of their supporting-belts at said rear end of the machine are lifted from the belts by an attendant, thereby avoiding any disturbance of the tobacco in conveying it from the machine. A continuous line of trays is maintained upon the belts by an attendant or attendants, who will place empty trays or screens upon said belts at the feed end of the machine as rapidly as the trays carrying tobacco are removed from the belts, so that by this constant supply of fresh trays no interval will occur between the trays that are passing under the picker and the hood. The remaining portions of the machine perform their respective functions during the above operation in the manner hereinbefore fully described.

What I claim is—

1. The combination, in a machine for dressing tobacco, of an endless feed-apron with a rotary picker adapted to act upon and disentangle the tobacco delivered from the feed-apron, and project it rearwardly, with an endless belt or apron traveling beneath the feed-apron and the picker for receiving and carrying rearwardly the disentangled tobacco delivered by the picker, substantially as described.

2. The combination, in a machine for dressing tobacco, of an endless feed-apron with a rotary picker adapted to disentangle the tobacco delivered from the feed-apron and project it rearwardly, an endless carrier belt or apron extending the length or nearly the length of the machine, located under both the feed-apron and the rotary picker, substantially as described.

3. The combination, in a machine for dressing tobacco, of an endless feed-apron and a yielding pressure-roller located near the delivery end of said apron, a rotary picker for disentangling and projecting rearwardly the tobacco delivered from the feed-apron, and an endless belt or apron for receiving and carrying forward to the delivery end of the machine the dressed tobacco, whether deposited directly thereon or in trays carried by the belt or apron, said belt or apron traveling below both the feed-apron and the rotary picker, and extending substantially the entire length of the machine.

4. The combination, in a machine for dressing tobacco, of an apron for feeding forward the tobacco, a pressure-roller for compressing the tobacco near the delivery end of the feed-apron, a picker for acting on the tobacco as it issues from between the pressure-roller and feed-apron, an endless carrying belt or apron located beneath the feed-apron and the picker, said belt or apron extending throughout the length of the machine, or nearly so, for carrying forward to the delivery end of the machine trays or screens introduced at the front of the machine beneath the feed-apron, substantially as described.

5. In a machine for dressing tobacco, the inclined flexible strips located at the edges of an endless feed-apron and having their lower free edges resting upon the said feed-apron, whereby the tobacco is prevented from falling over the edges of the same, substantially as described.

6. The combination, in a machine for dressing tobacco, of the rotary picker which carries the tobacco over and projects it to the rear in a disentangled condition, with the hood covering the said picker, and providing at the rear thereof a chamber into which the tobacco is projected, substantially as described.

7. The combination, in a machine for dressing tobacco, of the rotary picker adapted to disentangle the tobacco and project it rearwardly with a hood providing a chamber into which the tobacco is projected from the rotary picker, and the endless belt or apron passing under said hood and picker and extending out to the rear of the hood, whereby the tobacco descending in the hood will fall upon trays or screens placed upon the belts and the latter be carried under and out from the hood to the delivery end of the machine, substantially as described.

8. The combination, in a machine for dressing tobacco, of an endless feed-apron with the rotary picker adapted to take the tobacco at the delivery end of the feed-apron and carry it over to the rear and project it tangentially into the air in a disentangled condition, a hood providing a chamber in which the tobacco is projected from the rotary picker, and an endless belt or apron traveling under the picker and the hood, substantially as described.

9. In a machine for dressing tobacco, a series of trays or screens suspended in a horizontal plane below the devices for feeding, picking, and carrying off the tobacco, whereby waste tobacco will be collected, substantially as described.

10. The combination, in a machine for dressing tobacco, of the rotary picker adapted to disentangle and project the tobacco rearwardly, with a hood covering said rotary picker and composed of two sections, the front section being detachable from the machine and the rear section being provided with doors, substantially as described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

CHARLES G. EMERY.

Witnesses:

JOHN D. LITTLE,

CHARLES H. PIERCE.