

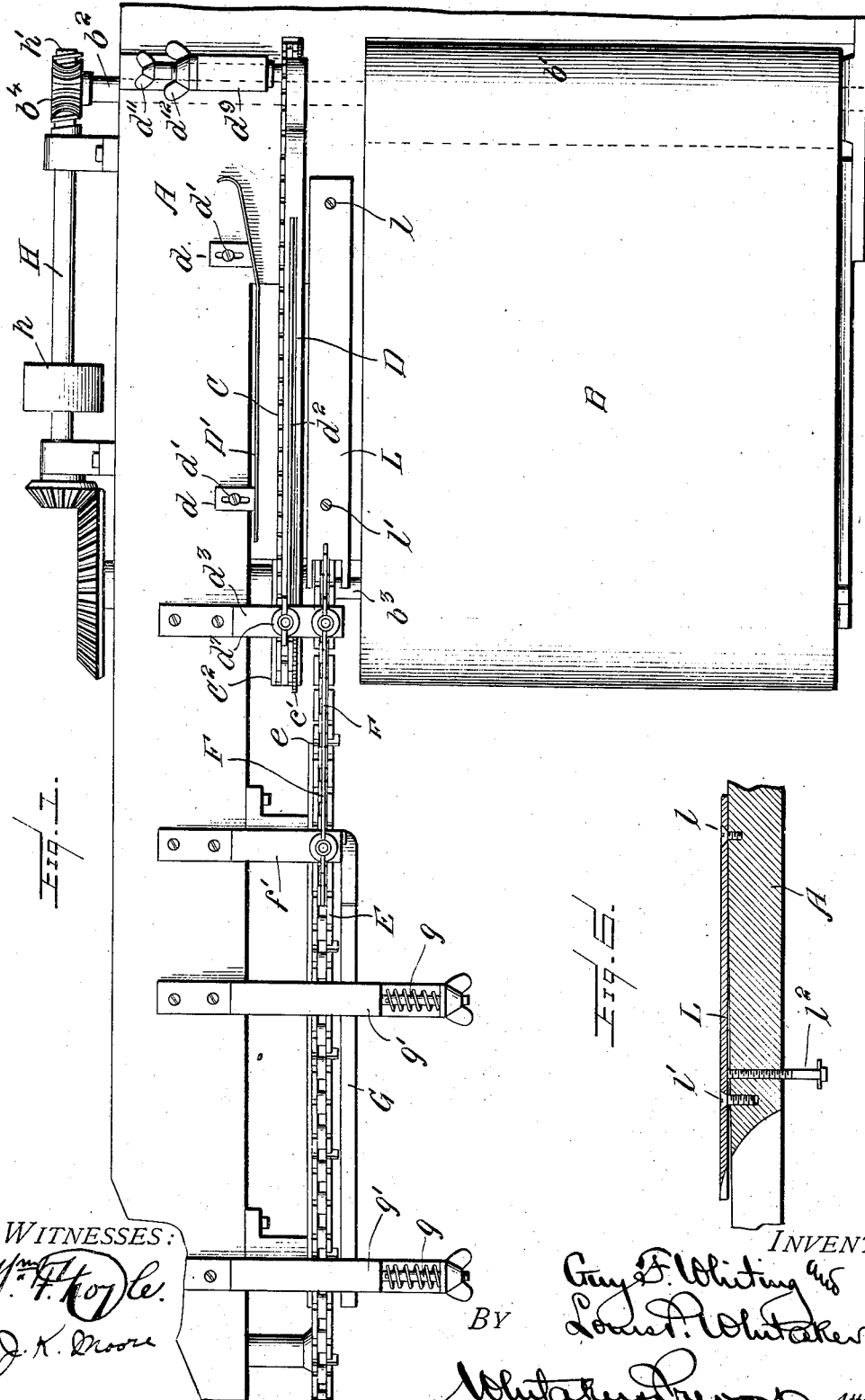
G. F. WHITING & L. P. WHITAKER.  
FEEDING DEVICE FOR TOBACCO LEAVES.

APPLICATION FILED FEB. 20, 1909.

Patented Apr. 15, 1913.

3 SHEETS-SHEET 1.

1,058,823.



WITNESSES:

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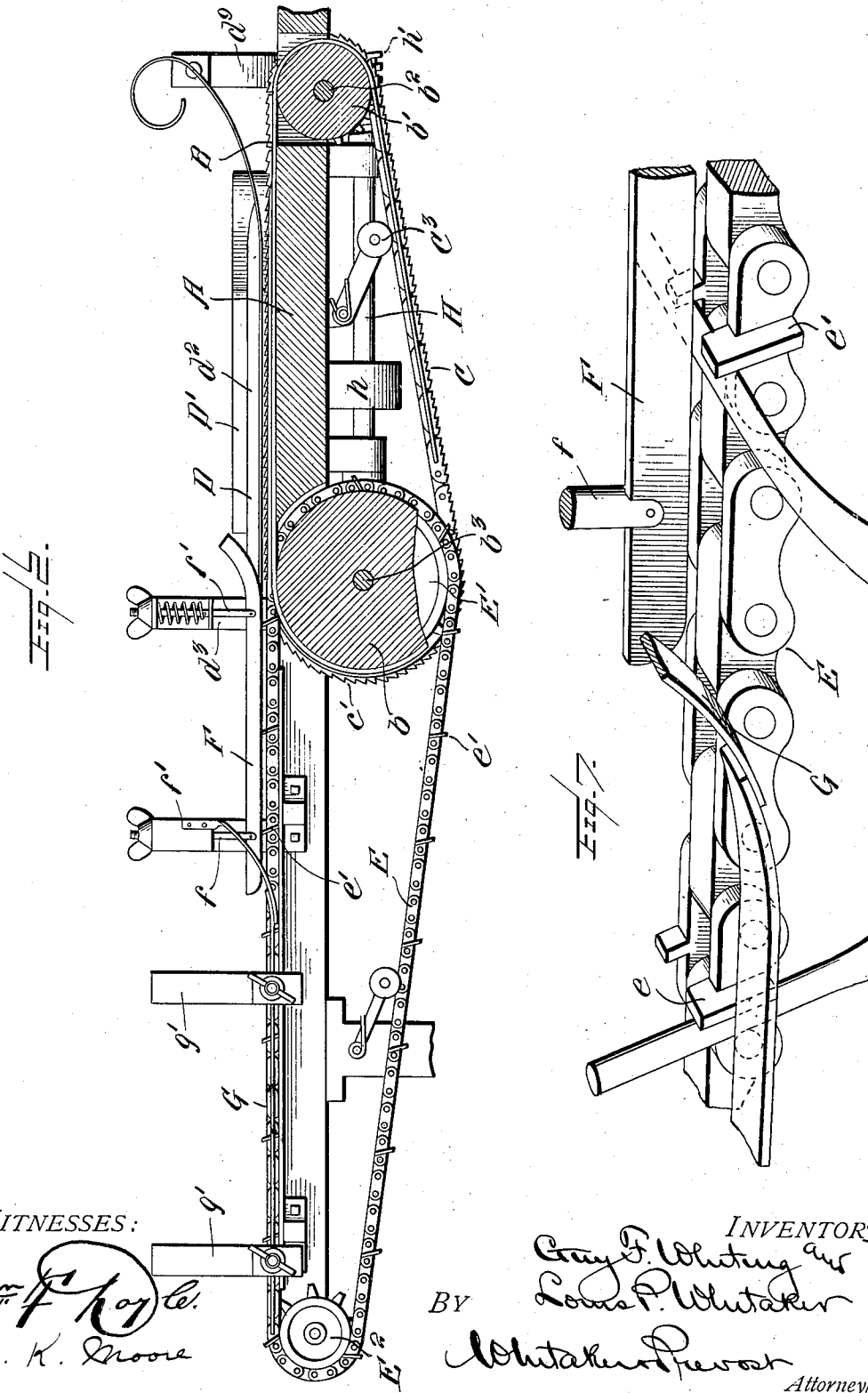
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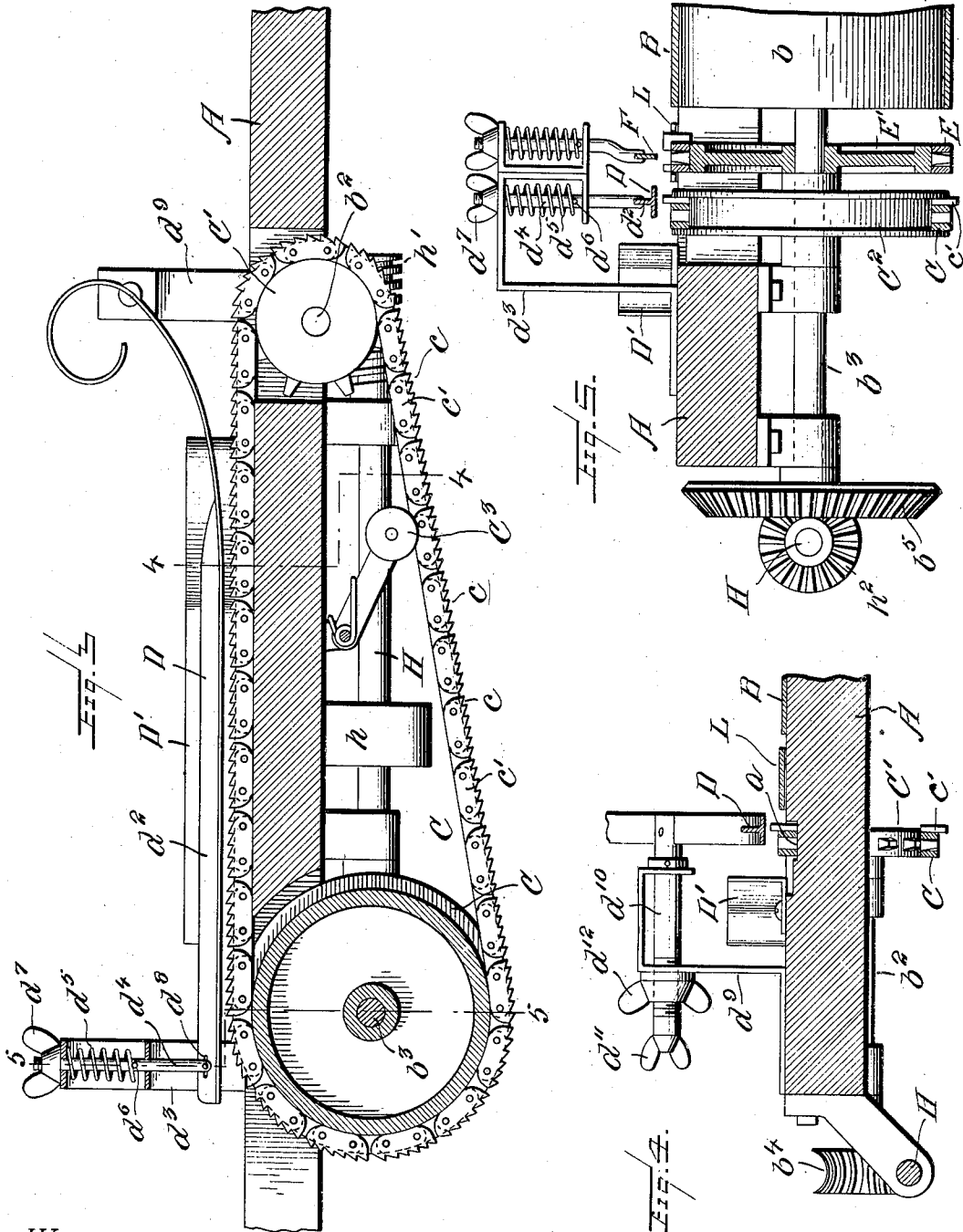
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3 SHEETS—SHEET 3.

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# UNITED STATES PATENT OFFICE.

GUY F. WHITING AND LOUIS P. WHITAKER, OF WASHINGTON, DISTRICT OF COLUMBIA,  
ASSIGNORS TO THE PNEUMATIC TOBACCO STEMMER CO., OF WASHINGTON, DIS-  
TRICT OF COLUMBIA, A CORPORATION OF VIRGINIA.

## FEEDING DEVICE FOR TOBACCO-LEAVES.

1,058,823.

Specification of Letters Patent.

Patented Apr. 15, 1913.

Application filed February 20, 1909. Serial No. 479,136.

*To all whom it may concern:*

Be it known that we, GUY F. WHITING and LOUIS P. WHITAKER, citizens of the United States, residing at Washington, in the District of Columbia, have invented certain new and useful Improvements in Feeding Devices for Tobacco-Leaves; and we 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.

Our invention consists in the novel features hereinafter described reference being had to the accompanying drawings which illustrate one form in which we have contemplated embodying our invention, and said invention is fully disclosed in the following description and claims.

Referring to the said drawings, Figure 1 is a top plan view of a feeding apparatus embodying our invention, a portion of the feed table being broken away. Fig. 2 is an enlarged vertical longitudinal sectional view of the same. Fig. 3 is a vertical longitudinal sectional view of a portion of the apparatus, drawn to a still larger scale and showing the auxiliary feeding carrier or chain and adjacent parts. Fig. 4 is a transverse vertical sectional view on line 4—4 of Fig. 3. Fig. 5 is a similar view on line 5—5 Fig. 3. Fig. 6 is a detail of a part of the apparatus. Fig. 7 is a detail perspective view of a part of the apparatus.

The object of our invention is to provide a mechanism for feeding tobacco leaves to a stemming machine, or for other purposes, in which the leaves may be arranged upon a horizontal table from which they are carried, separated or spaced a certain distance apart and turned into a vertical plane and held at a desired angle to a vertical plane extending transversely of their line of travel, or otherwise delivered from the feeding mechanism.

Our present invention is an improvement on the feeding mechanism invented by Louis P. Whitaker and covered by his application for Letters Patent of the United States filed Feb. 6, 1907 and given Serial No. 356,014 and our improvements have in mind facilitating the introduction of the leaves into the feeding mechanism, so as to obtain a very rapid feed of the leaves, and with a mini-

um of labor on the part of the operator or feeder.

In carrying out our invention, we provide a horizontal feed table A supported in any desired manner and provided preferably with a longitudinally extending conveyer B, which may be formed of a single belt or a plurality of belts passing around rollers  $b$ ,  $b'$ , the latter being the driving roller. Adjacent to the inner edge of the conveyer B and parallel thereto we arrange what we term the auxiliary carrier, consisting (as shown in Figs. 1 to 7 inclusive) of a sprocket chain C, or other endless carrying device, provided with a plurality of outwardly or upwardly projecting teeth or projections  $c$ . The teeth  $c$  are preferably inclined forward in the direction toward which they move when the carrier is in operation, or at least have their rearward edges inclined forwardly as shown, so that they resemble saw teeth or ratchet teeth, the object of such formation being to permit the butt portions of the stems of tobacco leaves to be moved over the teeth very readily in the direction of travel of the carrier, but to have the teeth take into the butt portions when they are released by the feeder and carry them forward with the carrier.

The teeth  $c$  are conveniently formed in the edge portions of short plates  $c'$  which are riveted or otherwise secured to the exterior link plates of the chain on one or both sides (the tooth plates  $c'$  being herein shown only on one side of the chain or carrier) but they may be formed in other ways. The chain C is mounted on a rear driving sprocket C' and a forward idle groove pulley C<sup>2</sup>. The sprocket wheel C' is in this instance mounted rigidly on a shaft  $b^2$  which also carries the driving roller  $b'$  for the conveyer B, and the grooved roller C<sup>2</sup> is mounted loosely on a shaft  $b^3$  hereinafter referred to, and upon which the roller  $b$ , of the conveyer B, is also loosely mounted.

The upper lap of the chain C rests preferably in a longitudinal slot or recess  $a$  in the feed table A, so that the teeth  $c$  project a short distance above the top of the table and the lower lap of the chain may be provided with a tightener C<sup>3</sup>, as shown in Fig. 3 if desired. The chain C is driven at substantially the same speed as the conveyer B, and in feeding tobacco leaves the

chain engages the butt portions of the leaf stems a short distance from their ends, the leafy portions or tails lying upon the conveyor B, and in the case of very long leaves extending beyond the same on the side toward the feeder.

D' represents an adjustable head guide having supporting brackets  $d$  provided with slots to receive securing screws  $d'$  to secure the head guide to the table, and this head guide is arranged at such a distance from the chain C as to insure that the leaves are uniformly engaged by the chain, at the proper point. In feeding the operator is assisted by this guide in getting the leaves in such position that the butt ends will be practically even.

Above the row of teeth  $c$  of the upper lap of the chain C we arrange a yielding guide D, which preferably consists of a flat strip of sheet steel or other resilient metal having a smooth under surface. Where the chain C is provided with tooth plates on both edges, the guide D will be preferably arranged above the longitudinal center of the chain but where tooth plates are provided on one edge only as here shown, the guide D is located centrally above the teeth. We also prefer to stiffen the forward portion of the guide by means of a longitudinal rib  $d^2$  to hold that portion substantially parallel with the chain and the rear edge of the guide is bent upwardly as shown. The guide D is supported at its forward end in such manner that it can yield upwardly and longitudinally, and in this instance we have shown a bracket  $d^3$  secured to the table and carrying a vertically supported and vertically movable rod  $d^4$  therein. A spring  $d^5$  engages an exterior projection, or pin  $d^6$  on the rod to hold it yieldingly in its depressed position and the downward movement of the rod is limited by a wing nut or other adjustable device  $d^7$ , on the rod as shown. The lower end of rod  $d^4$  is split and engages the rib  $d^2$ , to which it is connected by a pin passing through the bifurcated part of the rod, and through a slot  $d^8$  in the rib  $d^2$ , thus providing for the longitudinal movement of the guide.

The opposite end of the spring guide D is supported in such a manner as to enable the guide to be adjusted toward and from the teeth  $c$  of the chain C. In this instance a bracket  $d^9$  is secured to the table and carries a horizontal rod  $d^{10}$  the end of which is bifurcated to embrace the guide D to which it is preferably securely pinned. The rod  $d^{10}$  is provided with means such as a winged head  $d^{11}$  by which it may be turned to cause the spring to bear downward more or less, above the teeth  $c$  and with locking means such as a jam nut  $d^{12}$  to lock it in its adjusted position.

The chain C is driven as hereinafter de-

scribed, and at a comparatively slow rate of speed, so that the operator can take a number of leaves at a time, aline the butts with head guide D', flatten them upon the table and slide them forward over the teeth  $c$  and beneath the guide D' at a much greater rate of speed than the chain C travels. As soon as the operator releases the leaves their stems are gripped by the teeth  $c$  and they are carried along with the chain, the tails being carried by the conveyor B, leaving the operator's hands free to grasp another quantity of leaves and slide them along over the teeth  $c$ , up to the last one of the previous lot, and so on keeping a continuous row of leaves between the teeth  $c$  and the spring guide D, which form a magazine, as it were, and enable the operator by intermittently placing a number of leaves in the feed to effect a practically continuous feed of the leaves therefrom.

The leaves are taken one at a time from the auxiliary carrier C, by a delivery mechanism and separated to a distance of several inches, and separately delivered to a stemming machine. The specific form of delivery mechanism herein shown and described is covered by the application of L. P. Whitaker hereinbefore described, and is not specifically claimed herein.

The delivery chain E is mounted on a driving sprocket E' on the shaft  $b^3$ , and an outer sprocket E<sup>2</sup> of small diameter, mounted on an extension of the table. The chain E is provided at intervals with a tooth  $e$  on its upper face, which forms a continuation of a lateral tooth  $e'$  arranged on the side of the chain, and preferably extends at an angle downwardly, and rearwardly, the angle of tooth  $e'$  corresponding to the angle at which the tobacco leaves are to be delivered, after they are turned from a horizontal into a substantially vertical position.

The speed of the sprocket chains C and E is timed so that the sprocket chain C moves substantially the distance between two adjacent stems or leaves while the chain E moves the much greater distance, between two teeth  $e$ ,  $e$ , so that each of the leaves carried by chain C is delivered to a tooth  $e$  of chain E at the instant that the leaf escapes the lower end of guide D, and the tooth  $e$  at once carries the leaf toward the delivery end of chain E and beneath a guide F arranged edgewise above the chain E and supported similarly to the forward end of guide D by means of spring pressed rods  $f$ ,  $f$  and brackets  $f'$   $f'$ , but the guide F is arranged to press firmly upon the stem or butt portion of the leaf as it is carried along by the tooth  $e$ .

At a certain point above chain E the guide F is stopped, and at substantially the same point a lateral guide G is arranged adjacent to the lateral teeth  $e'$ , and supported yield-

ingly, as by spring pressed rods  $g$   $g$  and brackets  $g'$   $g'$ . The end of guide  $G$  adjacent to guide  $F$  is bent upwardly so as to engage the leaves on the upper side and at one side of the chain  $E$  thus bending them down at the point of contact and throwing them quickly into a substantially vertical position, in front of the lateral teeth  $e'$ . The forward movement of the chain and the friction of the lateral guide  $G$  causes each leaf to align itself with the forward inclined face of the tooth  $e'$  with which it is in contact, thus presenting each leaf to the stemming machine at the desired angle, determined by the angle of the tooth  $e'$ . The leaves will also extend above the chain  $E$  a uniform distance determined by the adjustment of the head guide  $D'$ , as will be clearly understood, so that the butt ends of the leaves may be properly gripped by the feeding mechanism of the tobacco stemming machine.

It will be understood that at the time the leaves are transferred from the receiving carrier  $C$  to the delivery carrier  $E$  they will fall off of the conveyer  $B$ , and hang downward thereby facilitating the turning of the leaves into vertical position when they engage the upturned end of the guide  $G$ .

The various parts of the apparatus may be driven in any desired way. In the present drawings we have shown a driving shaft  $H$  which may be driven from the stemming machine or independently and at different speeds as required, a suitable change speed gearing of any well known or preferred type being employed if desired. The shaft  $H$  is here shown as having a pulley  $h$  for receiving a driving belt, but it may receive power in any desired way. The shaft  $h$  is provided at its rear end with a worm  $h'$  engaging a worm wheel  $b^4$  on the shaft  $b^2$  for imparting motion to the auxiliary carrier  $C$  and the conveyer  $B$ . At its forward end the shaft  $H$  is shown as provided with a bevel gear  $h^2$  engaging a larger bevel wheel  $b^5$  on shaft  $b^3$ , for driving the delivery chain  $E$ . Variations may obviously be made in the driving mechanism without departing from the invention.

Between the conveyer  $B$ , and the auxiliary chain  $C$ , we employ a vertically adjustable plate  $L$  (see Fig. 6) the forward end of which is notched or cut away to permit the teeth  $e$  of chain  $E$  to pass therethrough as they rise through the table around the sprocket wheel  $E'$ . We may employ a spring plate for this purpose and secure it rigidly to the table at the end farthest from the sprocket wheel, as by screw  $l$ , in such manner that the other end tends to spring upward, and provide an adjusting screw  $l'$  by means of which the vertical adjustment of the forward end of the plate may be accomplished, as shown best in Fig. 6. In

some cases we may provide a bottom screw  $l^2$  engaging the lower face of the plate  $L$  to raise it, as also shown in Fig. 6, if found necessary or desirable. The effect of raising and lowering this plate is to vary the length of the effective portions of the teeth  $e$ ,  $e$  of the auxiliary chain  $C$ , as it will vary the amount which said teeth project above the plate.

What we claim and desire to secure by Letters Patent is:

1. A feeding device for leaves, comprising among its members a feed table to support the leaves, a carrying device provided with serrated portions for engaging the leaves near their butt ends arranged longitudinally of and adjacent to one edge of said table, said serrated portions of the carrier being constructed to permit the leaves to be moved freely over the same in one direction only, and means for moving said carrying device in said direction, whereby said carrier engages the leaf stems near one end and carries them in a direction transversely of their length.

2. A feeding device for leaves, comprising among its members, a feed table, a carrying device arranged longitudinally of and adjacent to one edge of the table and moving toward the delivery end of the device, said carrying device being provided with leaf engaging teeth, said teeth having their rear faces inclined toward the delivery end of the device to permit the leaves to be freely moved transversely of their length over the same in said direction.

3. A feeding device for leaves comprising among its members a feed table, a carrying device arranged longitudinally of and adjacent to one edge of the table and moving toward the delivery end of the device, said carrying device having projections for positively engaging and feeding the leaves therewith, said projections being constructed to permit the leaves to be moved freely thereover transversely of their length, in a direction toward the delivery end of the device and means for positively holding the leaves in engagement with said projections.

4. A feeding device for leaves comprising among its members a feed table, a carrying device arranged longitudinally of and adjacent to one edge of the table and movable toward the delivery end of said feeding device, and provided with leaf engaging and feeding projections inclined toward the said delivery end of the device, and a stationary leaf engaging guide for holding the leaves in engagement with said projections and capable of yielding away from said carrying device.

5. A feeding device for leaves comprising among its members a feeding table, an endless carrier arranged longitudinally of and adjacent to one edge of the table and pro-

vided with projections inclined toward the direction in which the carrier is moved, and a stationary guide having portions substantially parallel to portions of said carrier, for holding the leaves in engagement with the said projections.

6. A feeding device for leaves comprising among its members a feed table, an endless carrier arranged longitudinally of and adjacent to one edge of the table, provided with a longitudinally disposed row of teeth, said teeth having their rear faces inclined toward the direction in which the carrier is moved, to permit the leaves to be moved freely transversely of their length over said teeth in said direction, means for operating said carrier and a stationary spring guide located above said carrier, and having a smooth friction face, for engaging the leaves and pressing them into contact with said teeth.

7. A feeding device for leaves comprising among its members, a feed table, an endless carrier provided with a longitudinally disposed row of teeth, said teeth having their rear faces inclined toward the direction in which the carrier is moved, to permit the leaves to be moved transversely of their length freely over said teeth in said direction, means for operating said carrier and a stationary spring guide located above said carrier, and having a smooth friction face, for engaging the leaves and pressing them into contact with said teeth and independent adjusting devices engaging said guide at different points in its length.

8. A feeding device for leaves comprising among its members, an endless carrier provided with a longitudinally disposed row of teeth, said teeth having their rear faces inclined toward the direction in which the carrier is moved, to permit the leaves to be moved freely over said teeth in said direction, means for operating said carrier and a spring guide located above said carrier, and having a smooth friction face, for engaging the leaves and pressing them into contact with said teeth, said guide having the end farthest from the delivery end of the feed, extending upward, a rotatable support engaging the upturned portion of the guide, and means for adjusting said rotary part about its axis of rotation.

9. A feeding device for leaves comprising among its members, an endless carrier provided with a longitudinally disposed row of teeth, said teeth having their rear faces inclined toward the direction in which the carrier is moved, to permit the leaves to be moved freely over said teeth in said direction, means for operating said carrier and a spring guide located above said carrier, and having a smooth friction face, for engaging the leaves and pressing them into contact with said teeth, a support engaging the end of said guide nearest the delivery end of the

feed, said guide having a longitudinal movement with respect to said support, the other end of said guide being turned upward away from said carrier, a rotatable support engaging the upturned portion of said guide and means for adjusting said rotatable support about its axis of rotation.

10. A feeding device for leaves comprising among its members, an endless carrier provided with a longitudinally disposed row of teeth, said teeth having their rear faces inclined toward the direction in which the carrier is moved, to permit the leaves to be moved freely over said teeth in said direction, means for operating said carrier and a spring guide located above said carrier, and having a smooth friction face, for engaging the leaves and pressing them into contact with said teeth, a vertically movable spring pressed rod connected to the end of said guide nearest the delivery end of the feed, a horizontally disposed rotatable support engaging the guide near its opposite end, and means for adjusting said rotatable guide to vary the tension of the guide upon the leaves.

11. A feeding device for leaves comprising among its members a feed table, an endless chain arranged longitudinally of and adjacent to one edge of the table and having its links provided with vertically and longitudinally disposed plates provided at their upper edges with teeth inclined in the direction toward which the chain is moved, means for driving said chain, and a stationary guide located above said chain and having portions substantially parallel thereto, to hold the leaves in engagement with said teeth.

12. A feeding device for leaves comprising among its members, a carrier provided with leaf engaging projections inclined toward the direction in which the carrier is moved, driving mechanism for said carrier, means for holding the leaves in engagement with said projections and a delivery carrier operated at greater speed than the first mentioned carrier, provided with means for receiving the leaves therefrom singly, and separating them.

13. In a feeding device for tobacco stemming machines, the combination with a delivering carrier provided with teeth at intervals for conveying single leaves and presenting them to the stemming machine, and means for turning the leaves from a horizontal to a vertical position while in engagement with said carrier, of an auxiliary carrier operated at slower speed than and delivering leaves to said delivering carrier, said auxiliary carrier being provided with a plurality of closely related projections inclined in a direction toward the delivery carrier to permit the leaves to be moved freely thereover in said direction, and means for holding the leaves in engagement with said auxiliary carrier.

14. In a feeding device for tobacco stemming machines, the combination with a horizontal feeding table, of a delivering carrier provided at intervals with teeth on a horizontal and vertical face for conveying single leaves and presenting them to the stemming machine, means for turning the leaves from a horizontal to a vertical position while in engagement with said carrier, of an auxiliary carrier provided with closely related teeth, inclined toward the delivering carrier, to permit the leaves to be moved by hand freely over said teeth toward the delivery carrier, a guide for holding the leaves in engagement with said auxiliary carrier, and means for driving said auxiliary carrier at a lower rate of speed than the delivering carrier.

15. In a feeding device for tobacco stemming machines, the combination with a horizontal feed table, of a horizontally disposed conveyer, for receiving and carrying the main portions of the leaves, an endless carrier, parallel to said conveyer, for engaging the leaves near their butt ends, said carrier being provided with teeth having their rear edges inclined in the direction of travel of the carrier, and a yielding guide located above the carrier, for holding the leaves in engagement therewith.

16. In a feeding device for tobacco stemming machines, the combination with an endless carrier, provided with closely related teeth inclined in the direction of travel of said carrier, a horizontal plate located adjacent and substantially parallel to a portion of said carrier, means for adjusting said plate vertically with respect to said carrier to vary the depth of engagement of said teeth with the tobacco leaves, and a guide above said carrier for holding the leaves in engagement with said carrier.

17. In a feeding device for tobacco stemming machines, the combination with a horizontal feed table, of a horizontally dis-

posed conveyer, for receiving the main portions of the leaves, a horizontally disposed carrier, arranged parallel to said conveyer and provided with closely related projections inclined toward the direction of travel of said carrier, for engaging the portions of the leaves adjacent to their butt ends, means for moving said conveyer and carrier at substantially the same rate of speed, means for engaging the butt portions of the leaves above said carrier and holding them in engagement therewith, and delivering mechanism for receiving the leaves singly from said carrier and conveyer, and delivering them in a vertical position to the stemming machine.

18. In a feeding device for tobacco stemming machines, the combination with a horizontal feed table, of a horizontally disposed conveyer, for receiving the main portions of the leaves, a horizontally disposed carrier arranged parallel to said conveyer and provided with closely related projections inclined toward the direction of travel of said carrier, for engaging the portions of the leaves adjacent to their butt ends, means for moving said conveyer and carrier at substantially the same rate of speed, means for engaging the butt portions of the leaves above said carrier and holding them in engagement therewith, delivering mechanism for receiving the leaves singly from said carrier, and delivering them to the stemming machine, means for driving said delivery mechanism at greater speed than the said carrier, and conveyer, and means for turning said leaves into a vertical position while in engagement with said delivering mechanism.

In testimony whereof we affix our signatures, in the presence of two witnesses.

GUY F. WHITING.

LOUIS P. WHITAKER.

Witnesses:

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WM. F. DOYLE.