

Sept. 18, 1923.

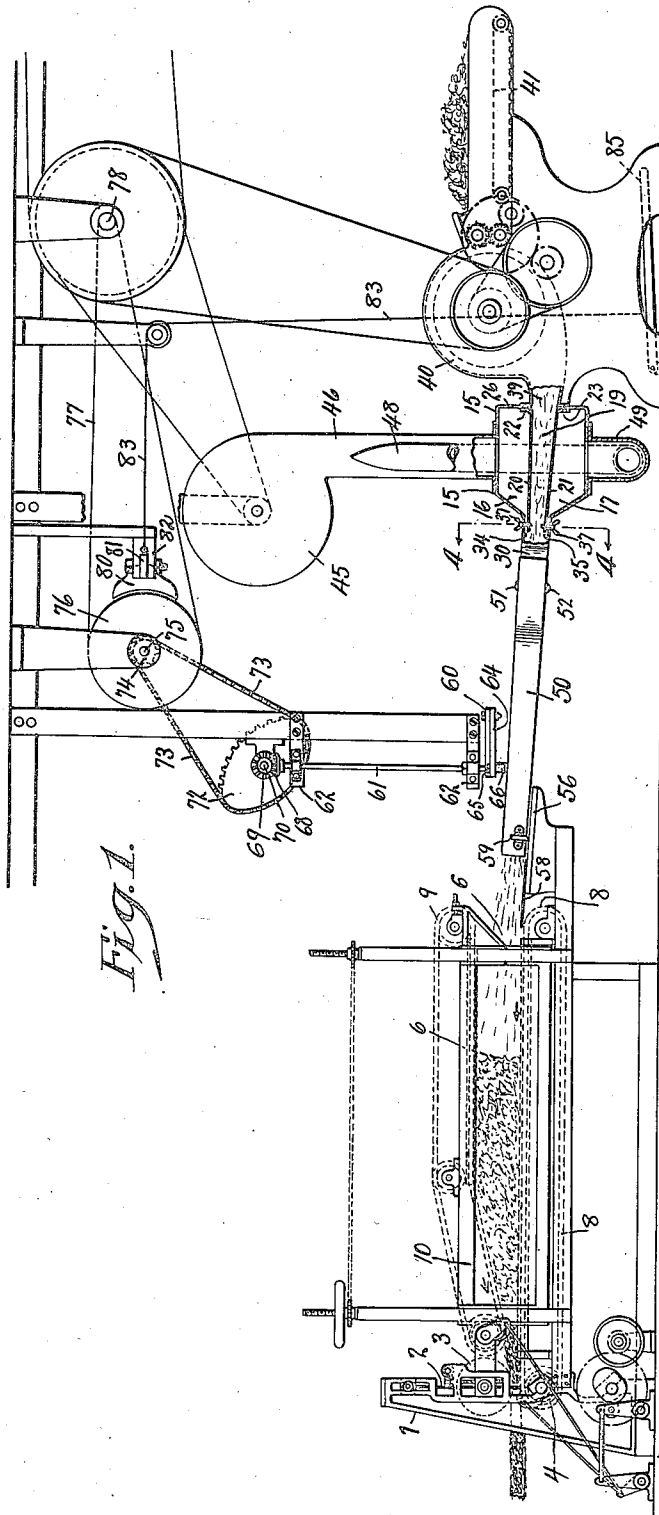
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F. MAUSSNER ET AL

PNEUMATIC FEEDING DEVICE

Filed July 16, 1921

2 Sheets-Sheet 1



INVENTOR.

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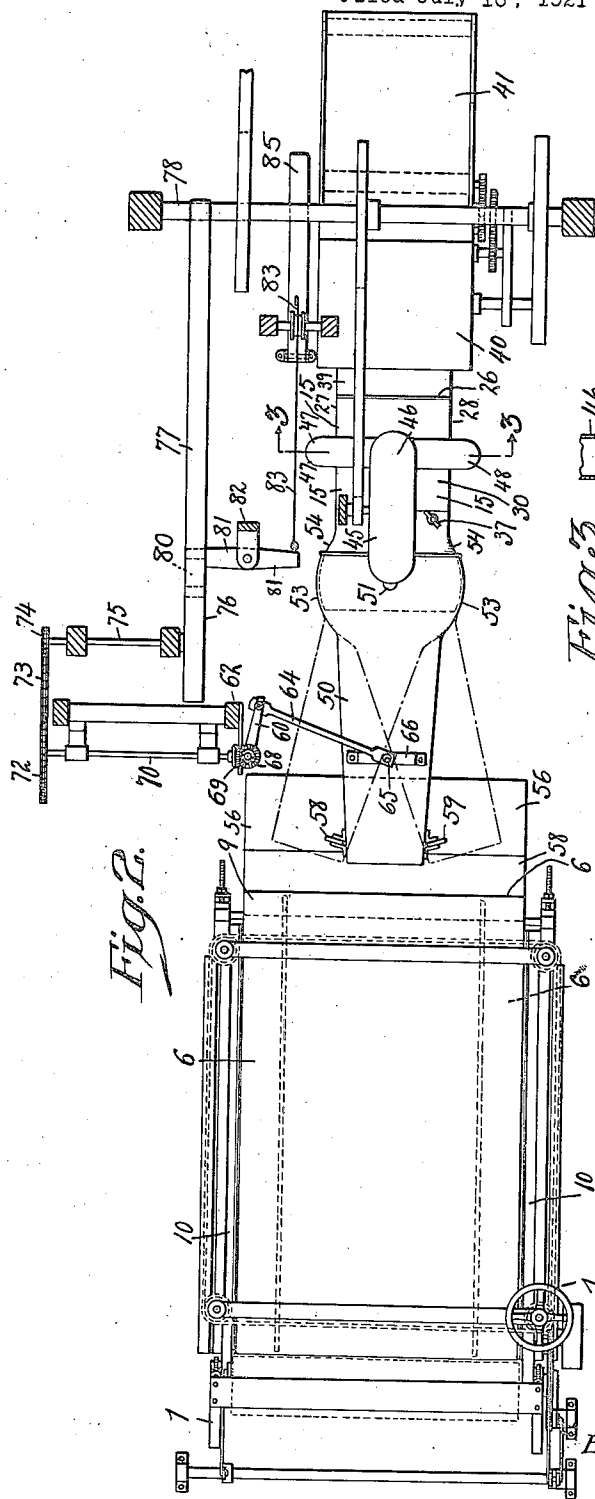


Fig. 2.

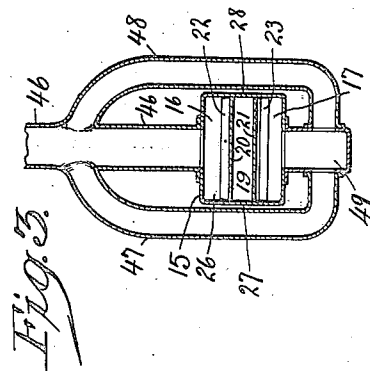


Fig. 3.

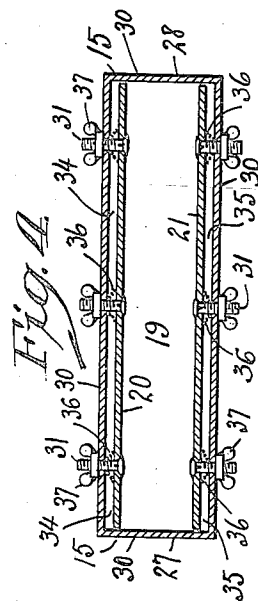


Fig. 4.

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UNITED STATES PATENT OFFICE.

FREDERICK MAUSSNER, OF COLLINGSWOOD, NEW JERSEY, AND ISAAC B. RITTER, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNORS TO HENRY WILHELM COMPANY, OF PITTSBURGH, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

PNEUMATIC FEEDING DEVICE.

Application filed July 16, 1921. Serial No. 495,338.

To all whom it may concern:

Be it known that we, FREDERICK MAUSSNER, a subject of Germany, residing in the United States, at Collingswood, county of Camden, State of New Jersey, and ISAAC B. RITTER, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in a Pneumatic Feeding Device, of which the following is a specification.

This invention relates to improvements in a pneumatic feeding device adapted for feeding loose material into a machine for treating the same, particularly to a machine for interlacing curled hair or vegetable fiber.

The object of the invention is to make novel improvements in the construction of the various parts of a feeding device, whereby the material may be handled more rapidly than heretofore, and whereby the material can be fed into the machine in a uniform body or column; a further object of the invention is to construct an air box or chamber having novel means for regulating the entrance of a blast of air which forces the loose material through a delivery nozzle; a still further object is to provide means for automatically oscillating the nozzle for successively directing the material to all parts throughout the width of the receiving end of the interlacing machine, and also to provide a brake for stopping or retarding the movement of the nozzle at any desired point of its travel, and a still further object is to provide driving gearing for oscillating the nozzle at a greater speed at the ends of its stroke than in the center of the stroke, thus insuring the same amount of material being fed into the collecting box of the machine at the sides as in the center thereof.

Referring to the accompanying drawings: Fig. 1, is a side elevation of the feeding device shown in connection with an interlacing machine; Fig. 2 is a plan view, partly in section, of Fig. 1; Fig. 3 is a transverse vertical section on line 3—3, Fig. 2, showing the construction of the air box, and Fig. 4 is a transverse vertical section on line 4—4, Fig. 1, drawn on a larger scale.

Referring to the accompanying drawings in which like reference characters refer to like parts, 1 represents a machine for inter-

lacing curled hair, or fiber, having reciprocating needles 2 for interlacing the material as it is passed between the rolls 3 and 4. A collecting box 6 is provided for forming the material into a rectangular column which is carried into the interlacing machine by endless belts 8 and 9 positioned between vertical side walls 10. The endless belts 8 and 9 are advanced towards the interlacing machine 1 so as to carry the column of material between them, and deliver it to said machine to be interlaced in a manner well known by those skilled in the art.

The present invention comprises the casing 15, forming an air box having upper and lower chambers 16 and 17 extending the full width of the casing 15 and which are separated by a central passage-way 19 through the casing, formed by plates 20 and 21, secured by flanges 22 and 23 to the back wall 26 of the casing 15. The plates 20 and 21 extend in nearly a horizontal position throughout the full width of the casing 15 and extend close to the ends 27 and 28 of the casing, but said plates are not attached to said ends 27 and 28, but only to the back wall 26. The outlet end of the casing 15 is provided with a tube 30, into which the free edges of the plates 20 and 21 extend and are adjustably secured to the top and bottom walls of the tube 30 by bolts 31, having their heads secured to the plates 20 or 21 and provided upon the outside of the tube 30 with wing nuts 37 threaded upon the bolts, for drawing the edges of the plates 20 and 21 closer to the top or bottom walls of the tube 30 and thus reducing the size of the air outlets 34 and 35, leading from the air chambers 16 and 17 into the tube 30. Coil springs 36 are mounted upon the bolts 31 for separating the plates 20 or 21 from the walls of the tube 30, by unscrewing the wing nuts 37. The plates 20 and 21 are of thin sheet metal and are sufficiently flexible to permit the edges thereof to be adjusted to vary the size of the outlets 34 and 35, which outlets extend the full width of the casing 15.

The wall 26 of the casing 15 is attached to the discharge pipe 39 of a picker 40, having a feed apron 41 upon which the loose material is first placed in the operation of the device. The picker 40 may be of any stock design adapted for freeing the material of clumps, and delivering it in loose form,

into the said passage-way formed through the casing 15, through which passage-way the material is forced to the interlacing machine by the force of the air as it is discharged through the confined outlets 34 and 35, leading into the tube 30.

Air is forced into the chambers 16 and 17 by a fan 45, which is connected by a pipe 46 leading into the upper chamber 16. Branch pipes 47 and 48 lead from the pipe 46 around either side of the casing 15 and communicate with a pipe 49 leading into the lower chamber 17 of the casing 15.

The tube 30 extending from the outlet side of the casing 15 is pivotally connected with a distributing nozzle 50 by bolts or rivets 51 and 52. The tube 30 and the nozzle 50 are each provided with enlarged ends, having vertical walls 53 and 54, which are concentric with the pivot pins or rivets 51 and 52, and form a joint which is nearly air tight and which permits the nozzle 50 to swing in a horizontal plane upon said pins 51 and 52.

The discharge end of the nozzle 50 rests upon a table 56, supported upon the frame of the collecting box 6 of the interlacing machine 1. The table 56 extends the full width of the receiving, or open end of the collecting box 6 and the nozzle 50 is provided with rollers 58 and 59 which ride over the table 56 as the nozzle 50 is oscillated from one side to the other side of the table 56, as shown in dotted lines Fig. 2. An extension plate 58 is secured upon the table 56, which projects into the end of the collecting box 6 to insure the material entering the box 6 above the feed belt 8.

The nozzle 50 is oscillated so as to discharge the material into the collecting box evenly, through the full width of the latter, by a crank arm 60, secured to a vertical shaft 61 rotatably mounted in bearings 62. The crank arm 60 is connected by a bar 64, with the nozzle 50 by a bolt 65 secured in a bearing plate 66 attached to the nozzle 50.

The shaft 61 is rotated through bevel gear wheels 68 and 69 from a shaft 70. Upon the shaft 70 is secured an elliptical sprocket wheel 72 driven by a sprocket chain 73 from a sprocket wheel 74 on a shaft 75. A wheel 76 is secured to said shaft 75, and is driven by a belt 77 from a shaft 78.

The elliptical sprocket wheel 72 is provided for operating the shaft 61 and the crank arm 60 at various speeds through each revolution, and said wheel 72 is positioned upon the shaft 70 so that the crank arm 60 will move the nozzle 50 slowly throughout the central part of its movement across the table 56, and rapidly at the ends of the stroke, thus providing a rapid movement of the nozzle at the end of each stroke. This variation in the speed of travel of the nozzle prevents too much material being blown into

the collecting box 6 at the sides thereof, and automatically regulates the feeding of material into the collecting box throughout the full width of the same.

Further control of the feeding of the material is obtained by means of the wheel 76, secured to shaft 74, through which the nozzle 50 is oscillated. Said wheel 76 is adapted to be engaged by a brake shoe 80, to retard the speed of the wheel 76 by causing the belt 77 to slip on the drive shaft 78, and thus retard the movement of the oscillating nozzle 50, so that the feeding of the material may be controlled, should one portion of the collecting box 6 fill up faster than another portion. By applying the brake 80 to the wheel 76, the delivery end of the nozzle 50 may be stopped or caused to run slowly at any desired portion of its travel across the receiving end of the collecting box 6.

The brake 80 is secured to a lever 81 pivoted in a fixed bearing 82. A cable 83 is attached to the free end of the lever 81, and also attached to a foot lever 85, located near the picker 40, so that the operator may direct the feeding of the material from the nozzle 50 into any portion of the collecting box 6, as may be required. By this arrangement the entire operation of the feeding device is under the control of one operator.

Having thus described our invention, we claim and desire to secure by Letters Patent:

1. A feeding device for a material treating machine, comprising a nozzle, a tube to which the nozzle is pivotally connected, means for supplying a blast of air through the tube for carrying loose material through the nozzle and into the said machine, and means for oscillating the free end of the nozzle to distribute the material throughout the width of the receiving end of the machine.

2. A feeding device for a material treating machine, comprising a nozzle, a tube to which the nozzle is pivotally connected, means for supplying a blast of air through the tube for carrying loose material through the nozzle and into the said machine, a power driven shaft, a crank arm secured upon said shaft, a connecting rod pivotally connected with the crank arm, and a pivot member upon the nozzle by which the said connecting rod is attached to the nozzle for oscillating the discharge end of the nozzle across the receiving end of said machine.

3. A feeding device for a material treating machine, comprising a nozzle, a tube to which the nozzle is pivotally connected, means for supplying a blast of air through the tube for carrying loose material through the nozzle and into the said machine, mechanism operatively connected with the nozzle for oscillating the discharge end thereof in relation to the receiving end of said machine, and means for increasing the relative speed

of travel of the nozzle as it reaches the ends of its stroke.

4. A feeding device for a material treating machine, comprising a nozzle, a tube to which the nozzle is pivotally connected, means for supplying a blast of air through the tube for carrying loose material through the nozzle and into the said machine, mechanism operatively connected with the nozzle for oscillating the discharge end thereof in relation to the receiving end of the said machine and an elliptical wheel for communicating power to the said operating mechanism for increasing the relative speed of travel of the nozzle at the ends of its stroke.

5. A feeding device for a material treating machine, comprising a nozzle, a tube to which the nozzle is pivotally connected, means for supplying a blast of air through the tube for carrying loose material through the nozzle and into the said machine, a shaft, mechanism operated by the shaft for imparting an oscillating movement to the discharge end of the nozzle, an elliptical wheel secured upon said shaft, and a member for rotating the said elliptical wheel whereby the elliptical wheel will increase the rate of travel of the nozzle at the ends of its stroke.

6. A feeding device for a material treating machine, comprising a nozzle, a tube to which the nozzle is pivotally connected, means for supplying a blast of air through the tube for carrying loose material through the nozzle into the said machine, mechanism

operatively connected with the nozzle for oscillating the discharge end thereof in relation to the receiving end of the said machine, a power driven shaft for operating said mechanism, a brake interposed between said shaft and said mechanism for retarding the movement of the nozzle at any portion of the stroke of the nozzle, and means for operating the brake.

7. A feeding device for a machine for interlacing curled hair or fiber, comprising a picker, a casing connected with the outlet end of the picker, plates within the casing forming a passage-way for material from the picker, said casing having air chambers therein with air outlets leading into the said passage-way, means for adjusting the plates to regulate the size of the air outlets from said chambers, air supply pipes connected with said casing communicating with the said air chambers, an outlet tube connected with the casing, a nozzle pivotally connected with said outlet tube, a table positioned adjacent to the receiving end of the interlacing machine, rollers upon the nozzle adapted to ride upon the table, means for oscillating the tube, and a collecting box connected with the interlacing machine into which the nozzle distributes the material.

In testimony whereof we affix our signatures.

FREDERICK MAUSSNER.
ISAAC B. RITTER.