Sept. 30, 1924. 1,510,236

F. MAUSSNER ET AL

FEEDING MECHANISM FOR MATERIAL TREATING MACHINERY

Filed July 13, 1921 4 Sheets-Sheet 1

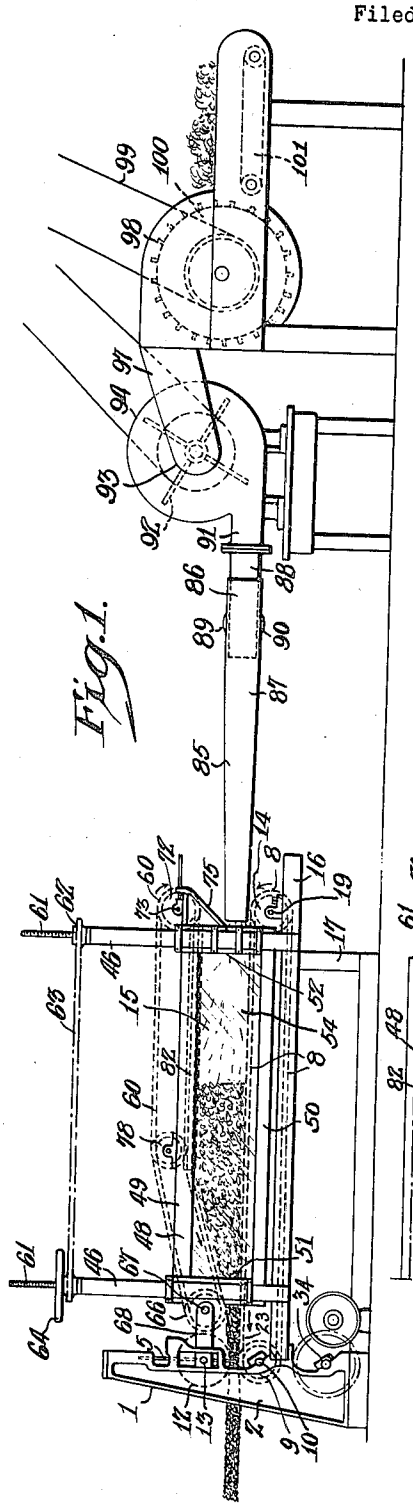


Fig. 1.

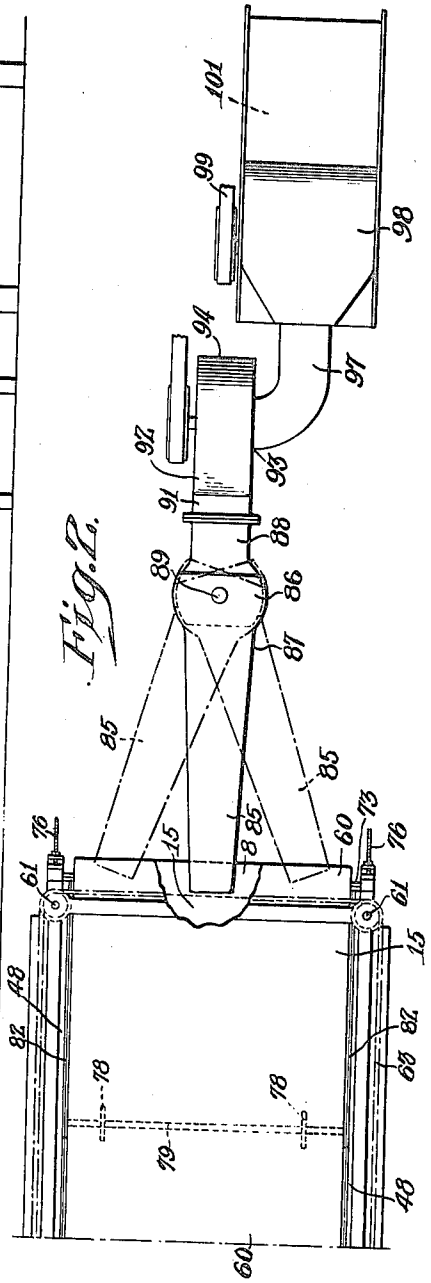


Fig. 2.

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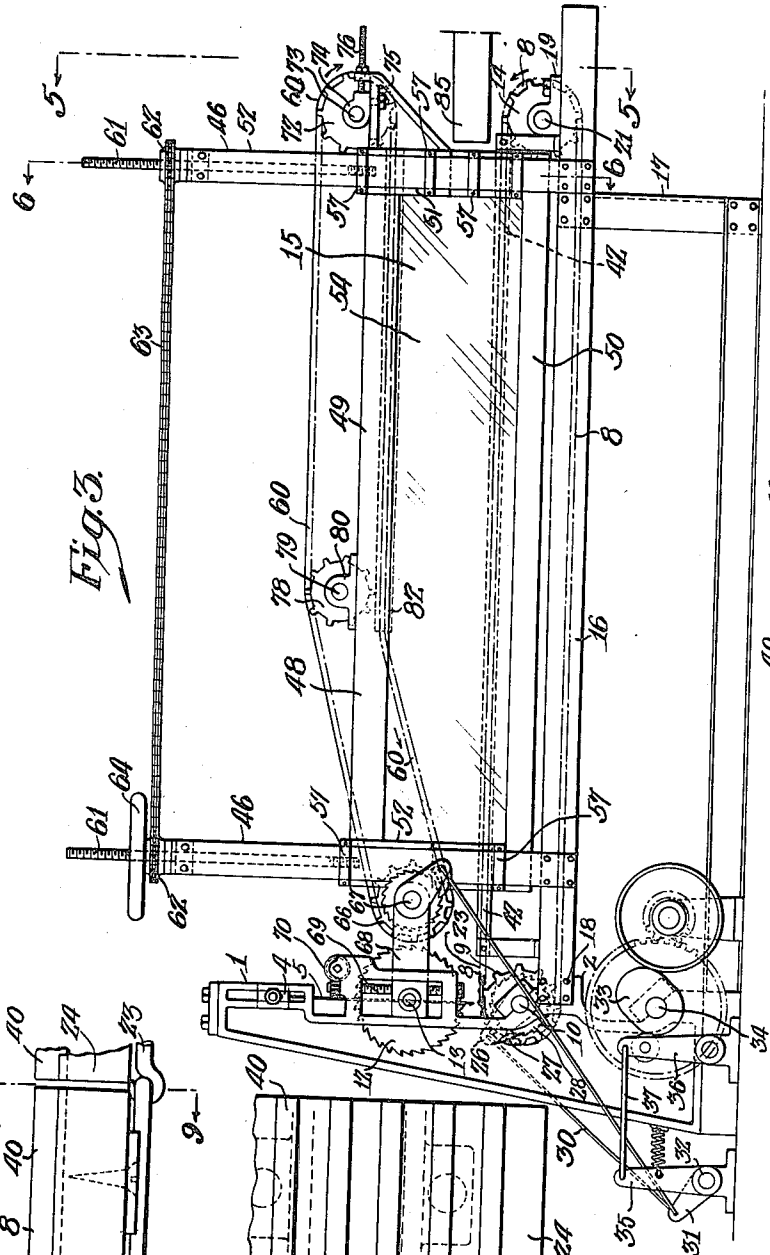


Fig. 3.

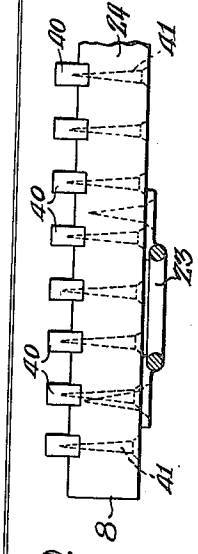


Fig. 9.

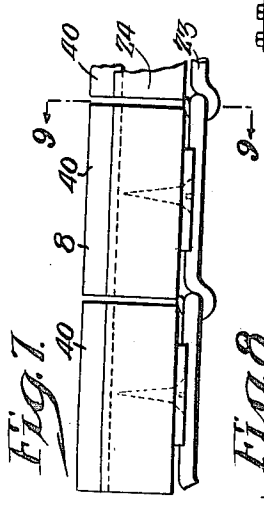


Fig. 7.

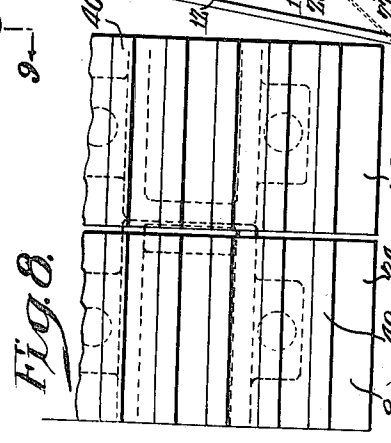


Fig. 8.

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FEEDING MECHANISM FOR MATERIAL TREATING MACHINERY

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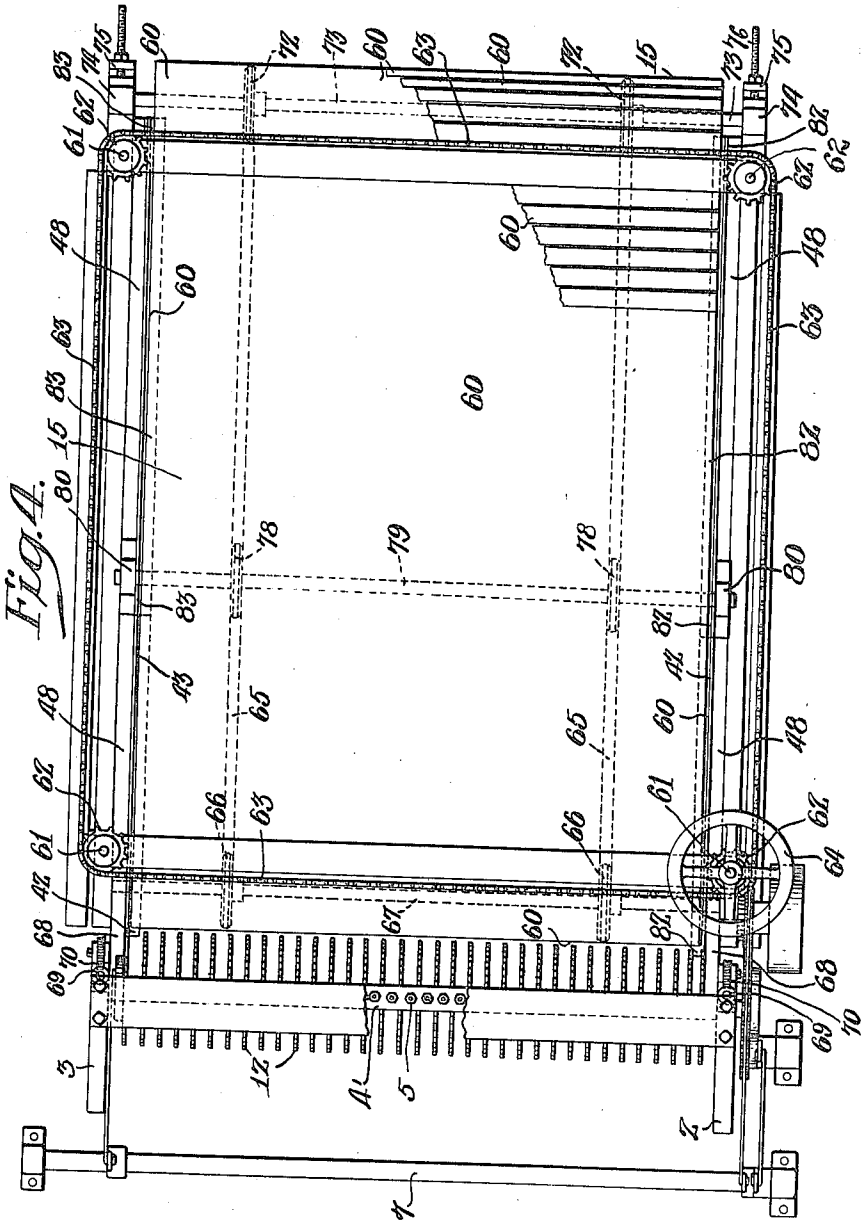


Fig. 4.

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Fig. 5.

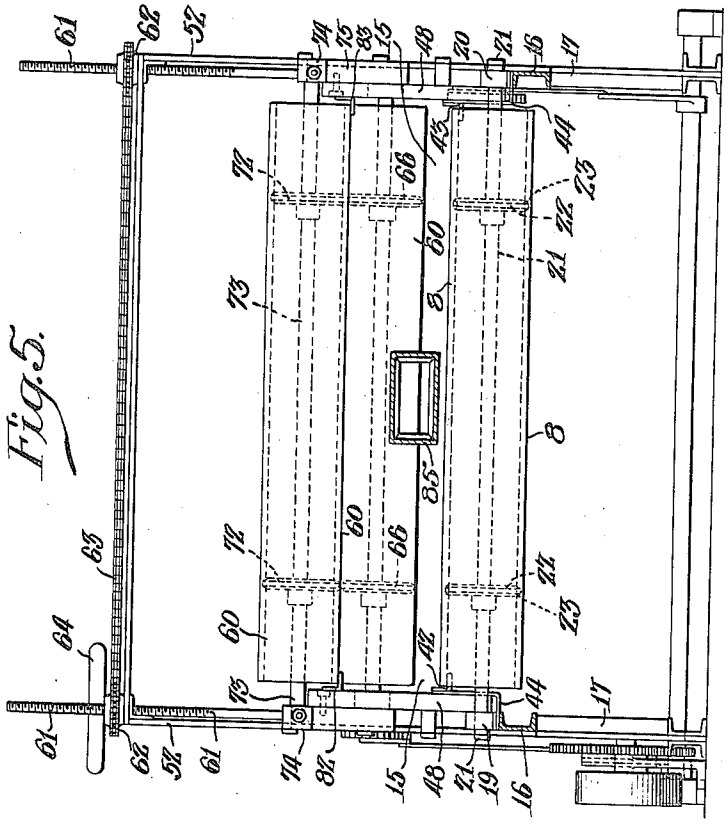
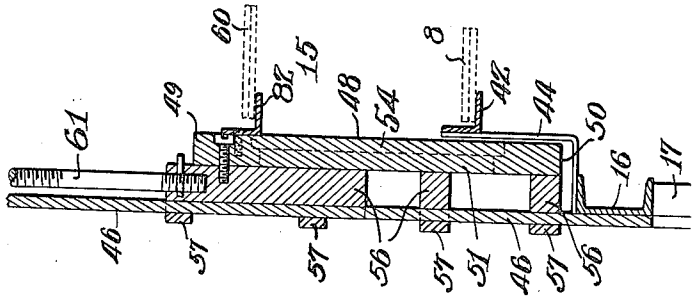


Fig. 6.



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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.

FEEDING MECHANISM FOR MATERIAL-TREATING MACHINERY.

Application filed July 13, 1921. Serial No. 484,528.

To all whom it may concern:

Be it known that we, FREDERICK MAUSSNER, a subject of Germany, residing at Collingswood, county of Camden, State of New Jersey, U. S. A., 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 Feeding Mechanism for Material-Treating Machinery, of which the following is a specification.

Our invention relates to improvements in feeding mechanism for material treating machinery and my invention particularly relates to feeding mechanism for machines for interlacing curled hair, vegetable fiber and the like. Said interlacing machines comprise rolls or aprons between which the loose material is fed, compressed and interlaced by passing needles through the material until the fibers are interlaced sufficiently to form the material into a fabric which will retain its shape, adapting it for use as fillings for mattresses, cushions and many other purposes of a like nature. Heretofore the loose material has been fed into the interlacing machines by hand which made it difficult to produce goods of uniform thickness and weight, and also limiting the production of the machine which, for this reason, could not be operated at a high speed.

The object of the present invention is to provide a method of feeding loose material into a machine for interlacing the same by utilizing a blast of air which is adapted to uniformly handle the material and feed it into the interlacing machine so that the latter will produce goods of uniform weight, thickness and texture; a further object of our invention is to provide feeding mechanism comprising a collecting box, or closed channel, in which the loose material is collected before it enters the interlacing machine and from which box the material is fed continuously into the interlacing machine; a further object of the invention is to provide a collecting box which is adjustable so that the thickness of the bulk of loose material can be regulated as it is collected in the box, thus governing the weight and thickness of the goods produced upon the interlacing machine; a still further object of the invention is to provide a distributing tube, with means for forcing air therethrough for conveying the loose material into the collecting box; a still further object of the invention is to construct the distributing tube so that it may be reciprocated and thus distribute the material uniformly throughout the full width of the collecting box; a still further object of the invention is to provide means for utilizing a blast of air, preferably from a fan, for driving the loose material through the distributing tube and into the collecting box; and a still further object of the invention is to utilize a picker which first receives the material, loosens and separates the clumps of material suitable for interlacing. These together with various other novel features of construction and arrangements of the parts constitute our invention, which will be more fully hereinafter described and claimed.

Referring to the accompanying drawings; Fig. 1, is a side elevation of the feeding mechanism shown in connection with an interlacing machine; Fig. 2, is a partial plan view of Fig. 1; Fig. 3, is a side elevation of the collecting box and the interlacing machine shown in Fig. 1, drawn on a larger scale; Fig. 4, is a plan view of Fig. 3; Fig. 5, is a transverse vertical section on line 5—5 Fig. 3; Fig. 6, is a partial transverse vertical section, on line 6—6 Fig. 3, drawn on a larger scale; Fig. 7, is a side view of a portion of the conveyor belt, or apron, shown in Fig. 3, drawn on a larger scale; Fig. 8, is a plan view of Fig. 7 and Fig. 9, is a transverse section on line 9—9 Fig. 7.

Referring to the drawings in which like reference characters refer to like parts; 1 represents a machine for interlacing curled hair, or like material. The form of interlacing machine illustrated comprises a frame having end bearings 2 and 3, a needle bar 4 carrying a row of barbed needles 5, extending the width of the machine, which latter is preferably made the width of a mattress for a full size bed. The needle bar 4 is adapted to be reciprocated so that the needles will pass through the material upon the apron 8. The apron 8 is mounted at one end upon the roller, or wheel, 9 on

the shaft 10, which is rotated by a pawl and ratchet movement driven by suitable mechanism. Disks 12 are rotatably mounted upon a shaft 13 and are provided for pressing the material upon the apron 8 and for holding the material so that the barbed needles 5 may be withdrawn from the material in the operation of interlacing the same. Any other form of interlacing machine may be used in connection with the feeding mechanism and therefore a detailed description of such machine is not deemed necessary.

The feeding machine comprises a collecting box 15 having its outlet end positioned adjacent to the receiving end of the interlacing machine and its other end open for the reception of loose material which is blown into the collecting box by means hereinafter described.

The collecting box 15, shown more clearly in Figs. 3 to 6, inclusive, consists of a supporting frame having horizontal side pieces 16 supported at one end by posts 17 and at the other end by bolts 18 which secure them to the end frame members 2 and 3 of the interlacing machine. Bearings 19 and 20 are secured upon the frame members 16 and have rotatably mounted thereon a shaft 21 carrying the opposite end of the apron 8. Upon said shaft 21 and also upon shaft 10 of the interlacing machine are sprocket wheels on which are mounted sprocket chains 23, to which chains are secured the strips 24 which form the flexible apron or belt 8, shown in detail in Figs. 7 to 9. The strips 24 extend the full width of the collecting box 15 and form the flexible belt or apron which is adapted to support the material and carry it into the interlacing machine. The belt or apron 8 is advanced intermittently by an arm 26 loosely mounted upon the shaft 10. Said arm 26 carries a pawl 27 which engages a ratchet wheel 28 secured upon said shaft 10. The arm 26 is reciprocated by the rod 30 extending from an arm 31 on a rock shaft 32 actuated by a cam 33 on the main shaft 34, through arms 35 and 36 and the connecting rod 37.

The strips 24 forming the apron are provided with detachable blocks 40 which are secured upon said strips, by screws 41, so that they will pass between the needles 5 and support the material, so that the needles will pass through the entire thickness of the material to be interlaced.

The belt or apron 8 is supported throughout its length between the sprocket wheels 9 and 14 by angle plates or tracks 42 and 43, secured upon brackets 44 which are in turn secured upon the side members 16 of the frame. The ends of the strips 24, which form the apron 8, are adapted to slide upon said angle plates, 42 and 43 which latter help to support the apron throughout the portion of travel which carries the material through the collecting box 15.

The side members 16 of the frame have upright posts 46 rigidly secured thereto, which form guides for the adjustable sides and top of the collecting box 15. Each of said sides 48 consists of a rectangular frame formed of top and bottom pieces 49 and 50 and secured to end pieces 51 and 52. The frames 48 stand in a vertical position and are slidably mounted upon the posts 46. Within the frame 48 is mounted a panel 54, preferably a glass panel through which the material within the collecting box 15 is visible from either side of the machine. The said frame 48 with the panels 54 form the sides of the collecting box 15.

The side frames 48 are provided with filling pieces 56, as shown in Fig. 6, which are located between the end pieces 51 or 52 and the upright post 46. The posts 46 are embraced by cross pieces or straps 57 which are secured to said filling pieces and permit the frame to slide vertically upon said posts 46. The object of which vertical adjustment is to raise and lower the position of the top belt 60 which is partially carried by the adjustable side frames 48 and forms the top of the receiving box 15.

The side frames 48 are adjustable vertically by means of the four threaded shafts 61 located at the ends of the side frames 48 and adjacent to the four upright posts 46. Said posts 46 form bearings upon which rest the sprocket wheels 62 which are mounted upon the threaded shafts 61 and adapted to be rotated simultaneously by a sprocket chain 63 which extends around the four sprocket wheels 62. A hand wheel 64 is secured to one of the sprocket wheels 62 by which wheel 64 the chain may be operated and thus raise and lower the frames 48 upon opposite sides of the machine simultaneously.

The top of the collecting box is formed by the top belt 60, adapted to be advanced in unison with the lower belt or apron 8. The top belt 60 is adjustable vertically so as to vary the size of the collecting box 15 and thus govern the quantity and thickness of the material to be fed into the interlacing machine.

The belt 60 forming the top of the collecting box is formed with cross strips carried by sprocket chains 65, constructed in a manner similar to the belt 8. Said chains 65 at one end of the belt are supported upon wheels 66 secured upon the shaft 67 rotatably mounted in bearings 68 adjustably mounted upon the interlacing machine 1. Said bearings 68 are adjustable vertically by means of a threaded shaft 69 and suitable mechanism 70 for rotating said shaft 69. The opposite end of the belt 60 is mounted upon wheels 72 carried by a shaft 73 rota-

tably mounted in bearings 74, carried by the side frames 48, which are adjustable vertically. Said bearings 74 are slidably mounted upon the bracket 75 and a threaded shaft 76 is provided for adjusting the bearings to tighten the belt.

Intermediate wheels 78 are provided for supporting the upper return portion of the belt 60. The wheels 78 are mounted upon a shaft 79 supported by bearings 80 secured upon the side frames 48 and are movable vertically with said frames. The lower or advancing portion of said belt 60 is supported by angle plates 82 and 83, secured to the inner surfaces of the side frames 48, as shown in Figs. 5 and 6. The angle plates 82 and 83 extend lengthwise of the machine throughout a portion of the length of the collecting box 15 and thus hold a portion of the belt 60 in a horizontal plane. The forward end of the collecting box is gradually made smaller due to a portion of the belt 60 being positioned at an angle in relation to the lower belt or apron 8. This is accomplished by the shaft 67, carrying the forward end of the upper belt 60, being adjusted to a position closer to the lower belt 8 than the position at which the side frame members 48, carrying the horizontal portion of the belt 60 are adjusted in relation to the lower apron. By arranging the belt 60 so as to reduce the height of the outlet end of the collecting box 15, the material, as it is blown into the collecting box, will pile up against the inclined portion of the belt 60 and the material will collect in the collecting box until the space between the parallel portion of the upper belt 60 and lower belt 8 is partially filled with material. The quantity or thickness of material contained in the collecting box may be regulated by adjusting the side frame members 48 carrying the belt 60, closer to or further from the lower belt 8 and the said belts moving in the direction of the arrows Figs. 1 and 3, will feed the material into the interlacing machine in a uniform column.

The pneumatic feeding mechanism shown in Figs. 1 and 2, comprises a tube or nozzle 85 through which the loose material is blown into the open end of the collecting box 15 by means of a blast of air which carries the material through the said distributing tube or nozzle 85. The said tube is provided with a hinged joint 86 which permits the free end to be moved from one side to the other of the open end of the collecting box 15 so that the latter may be filled evenly throughout the width of the collecting box. The hinged joint 86 connects the swinging section 87 with the fixed section 88 which form the distributing tube or nozzle 85. Said sections 87 and 88 are provided with enlarged heads having concentric walls adapting the two sections to fit tightly together. Rivets 89 and 90, pivotally connect the sections together with a free passageway formed through the delivery tube and permitting the section 87 to swing in a horizontal plane.

The section 88 of the delivery tube is connected with the outlet pipe 91 of a fan 92 and the opening 93 of the fan casing 94 is connected by a pipe 97 with a picker 98 driven by a belt 99. The picker may be of any stock construction having pins projecting from a revolving drum 100 and provided with a feed apron 101 for carrying the material into the drum.

The material such as curled hair or fibre is placed upon the apron of the picker 98 from which it is forced through the pipe 97 by the action of the picker drum and by the suction created by the fan.

The fan creates a blast of air which drives the material through the delivery tube and into the collecting box 15. The pivoted nozzle 85 may be moved across the open end of the collecting box, as indicated by the dotted positions, shown in Fig. 2, so that the material may be distributed evenly throughout the full width of the collecting box, forming a column of material of uniform cross section, within the collecting box which is fed into the interlacing machine. The size of the collecting box may be readily adjusted to form a column of material of any thickness or weight desired.

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

1. A feeding device for a material treating machine comprising an endless belt adapted to feed material towards said machine, top and side walls positioned adjacent to said belt to form a channel for receiving loose material, means for varying the size of the channel in cross-section, and means for filling the channel with loose material throughout a portion of its length to form a column of material adapted to be carried by said endless belt into the said machine.

2. A feeding device for a material treating machine comprising two endless belts extending in parallel relation to each other throughout a portion of their length and adapted to form a channel between them, side walls positioned in relation to said belts to complete said channel, means for partially filling the channel with loose material to form a column and means for operating the belts for carrying the column of material into the said machine.

3. A feeding device for a material treating machine comprising two endless belts extending in parallel relation to each other throughout a portion of their length and adapted to form a channel between them, said belts being inclined towards each other throughout a portion of the length of the channel adjacent to the outlet end of the lat-

ter, side members for closing the sides of the channel, means for partially filling the channel with loose material, and means for operating the belts for compressing the material and for carrying it into the said machine.

4. A feeding device for a material treating machine, comprising a frame, an endless belt mounted upon said frame, an endless belt mounted above the first mentioned belt, means upon said frame for positioning the upper belt in parallel relation with the lower belt throughout a portion of the length of said belts, side members positioned in relation to the said belts to form a channel, means for delivering loose material into the said channel and means for operating the belts to carry the material into said machine.

5. A feeding device for a material treating machine, comprising a frame, an endless belt mounted upon said frame, an endless belt mounted above the first mentioned belt, means upon said frame for positioning the upper belt in parallel relation with the lower belt throughout a portion of the length of said belts, side members positioned in relation to the said belts to form a channel, means for delivering loose material into the said channel, adjusting means for varying the distance between said belts, and means for operating the belts to carry the material into said machine.

6. A feeding device for a material treating machine, comprising a frame, an endless belt mounted upon said frame, side members adjustably mounted upon said frame, an endless belt positioned above the first mentioned belt, means upon the side members for guiding the upper one of said belts in parallel relation to the lower belt throughout a portion of their lengths to form a channel having parallel walls, means for delivering loose material into said channel and means for operating the belts to carry the material into the said machine.

7. A feeding device for a material treating machine, comprising a frame, an endless belt mounted upon said frame, side members slidably mounted upon said frame, threaded shafts carrying the side members, sprocket wheels mounted upon the said frame and adapted to engage the threaded shafts, a sprocket chain engaging the sprocket wheels, means for operating the sprocket chain for simultaneously raising and lowering the side members, an endless belt mounted upon the side members, tracks upon the side members for supporting the last mentioned belt in parallel relation with the first mentioned belt to form a channel having parallel walls, means for delivering loose material into said channel and means for operating the belts to carry the material into the said machine.

8. A machine for interlacing curled hair or fiber having in combination an endless feed belt, a frame upon which the one portion of said belt is mounted, an upper endless belt, a bearing upon said machine upon which one portion of the upper belt is mounted, said bearing being adjustable vertically to vary the distance between the upper and lower belts, a bearing upon said frame in which the outer portion of the upper belt is mounted, said last mentioned bearing being adjustable vertically upon said frame to vary the distance between the said outer portion of the upper belt and the said lower belt, means for holding the upper and lower belts in parallel relation throughout a portion of their lengths, means for filling the channel formed between said belts with material and means for advancing the said belts for carrying the material into the said machine.

9. A machine for interlacing curled hair or fiber having in combination, a row of reciprocating needles, an endless feed belt for carrying material below said needles, said belt formed of transverse slats extending parallel with the said row of needles, blocks secured upon said strips adapted to pass longitudinally through the spaces formed between the needles and support the material above the surface of the said strips to insure the needles passing through the material without entering the said strips, and endless members for flexibly securing the said strips together to form the belt.

10. A machine for interlacing curled hair or fiber having in combination, a row of reciprocating needles, an endless feed belt for carrying material below said needles, said belt formed of transverse slats extending parallel with the said row of needles, blocks secured upon said strips adapted to elevate the material above the strips and allow the needles to enter the spaces formed between said blocks, vertical side members positioned adjacent to the sides of said belt, an upper belt forming a collecting channel, a tube having one end thereof positioned adjacent to the open end of the collecting channel for directing loose material into the collecting channel, a picker connected with said tube and a fan for creating a blast of air for forcing the material through said tube into the said collecting channel.

In testimony whereof we affix our signatures.

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