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W. M. SWERDLOVE.
CLOTH PILING MACHINE.
APPLICATION FILED FEB. 6, 1909.

Patented Oct. 25, 1910.
7 SHEETS—SHEET 1.

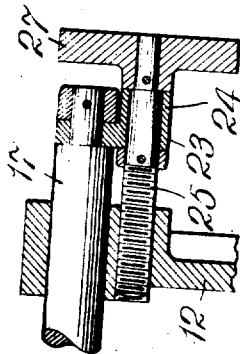


Fig. 2.

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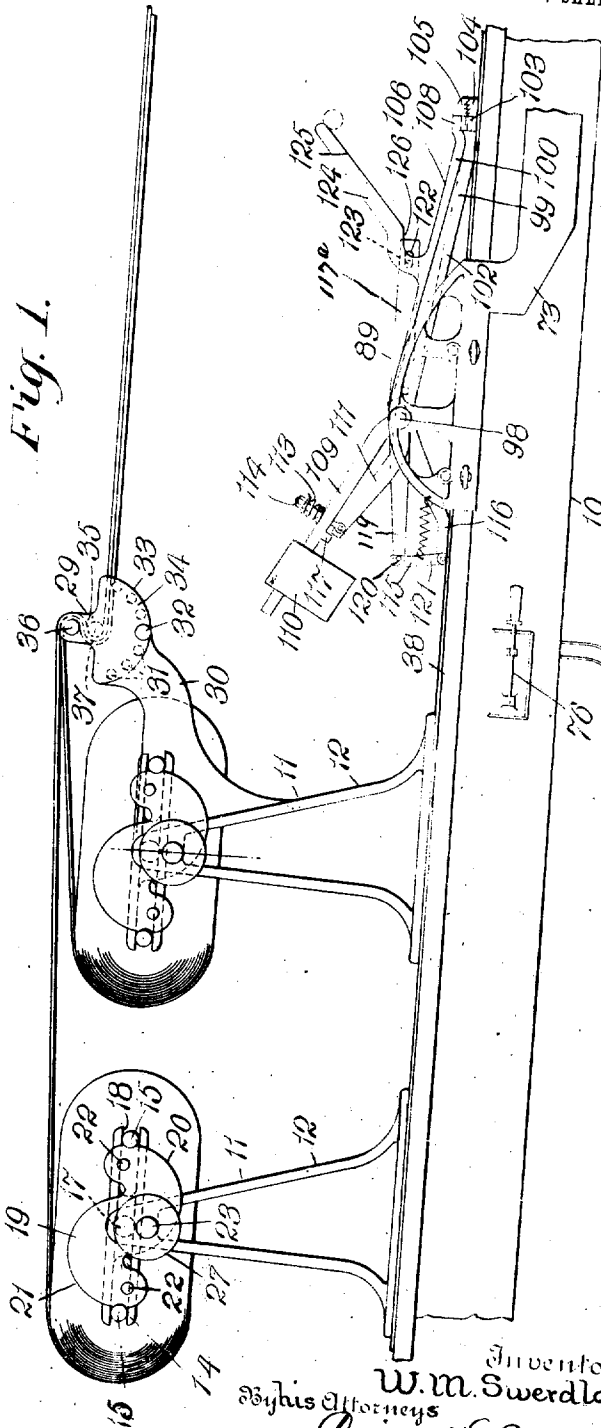


Fig. 1.

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7 SHEETS—SHEET 2.

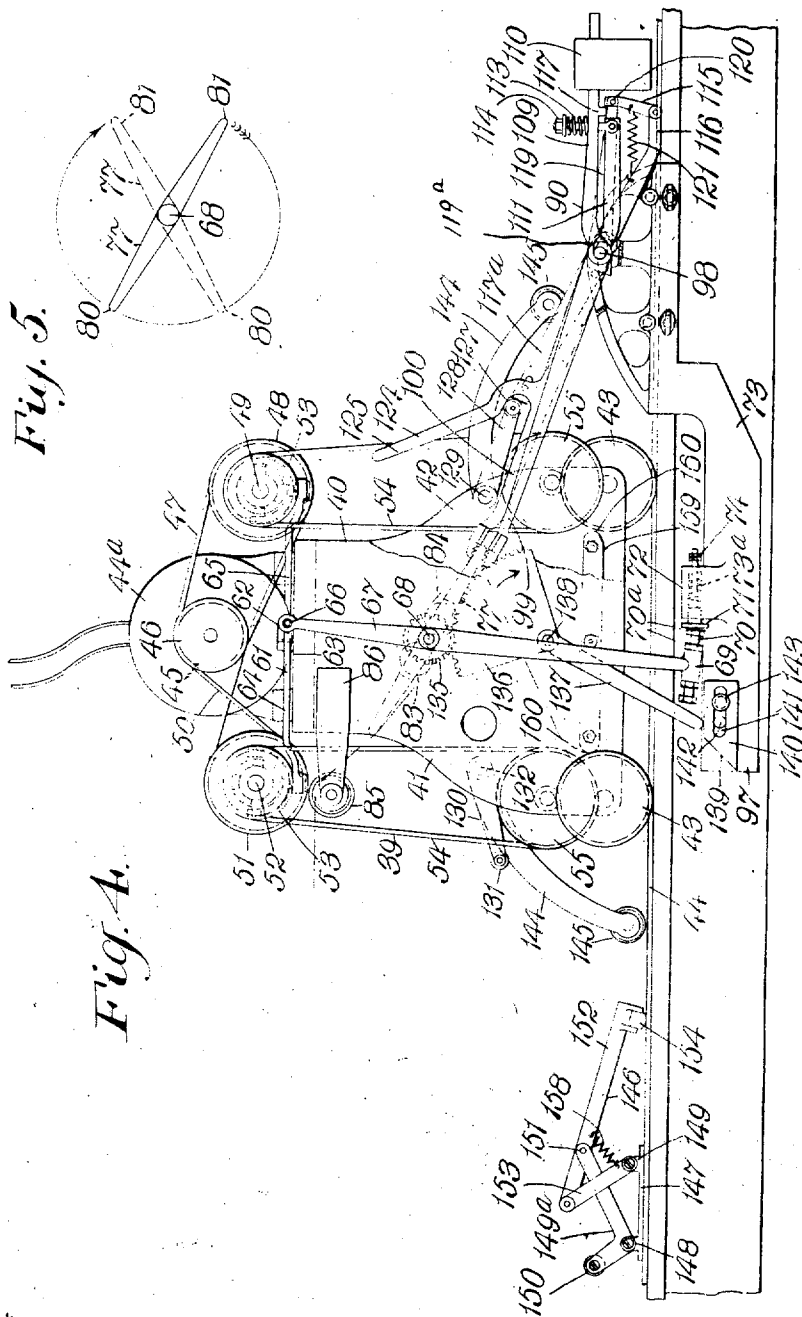


Fig. 5.

Fig. 4.

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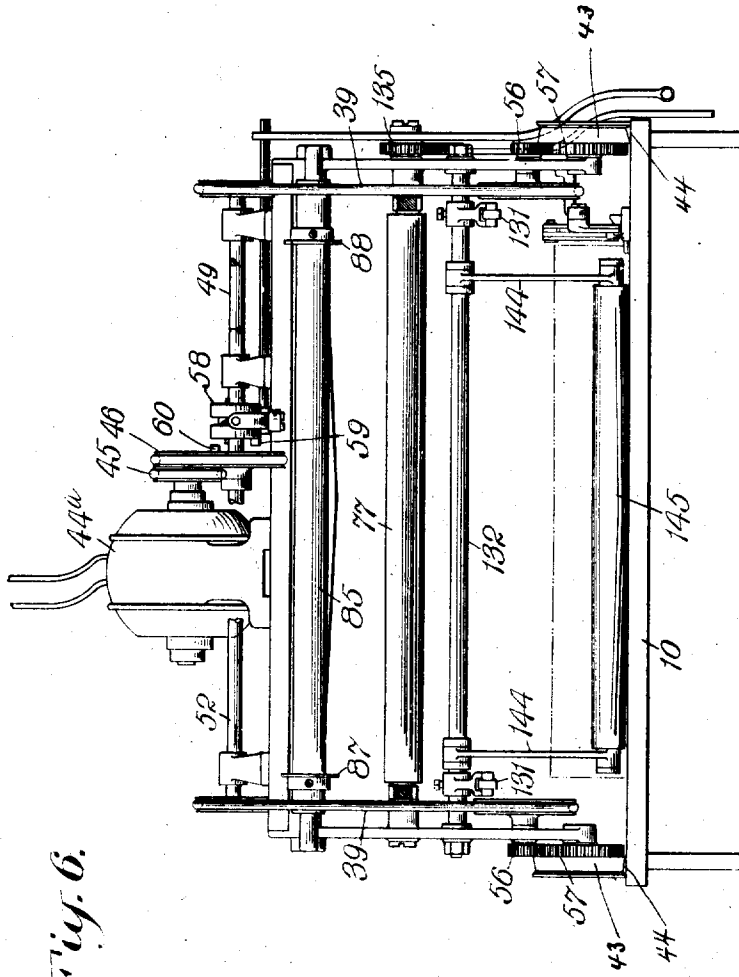


Fig. 6.

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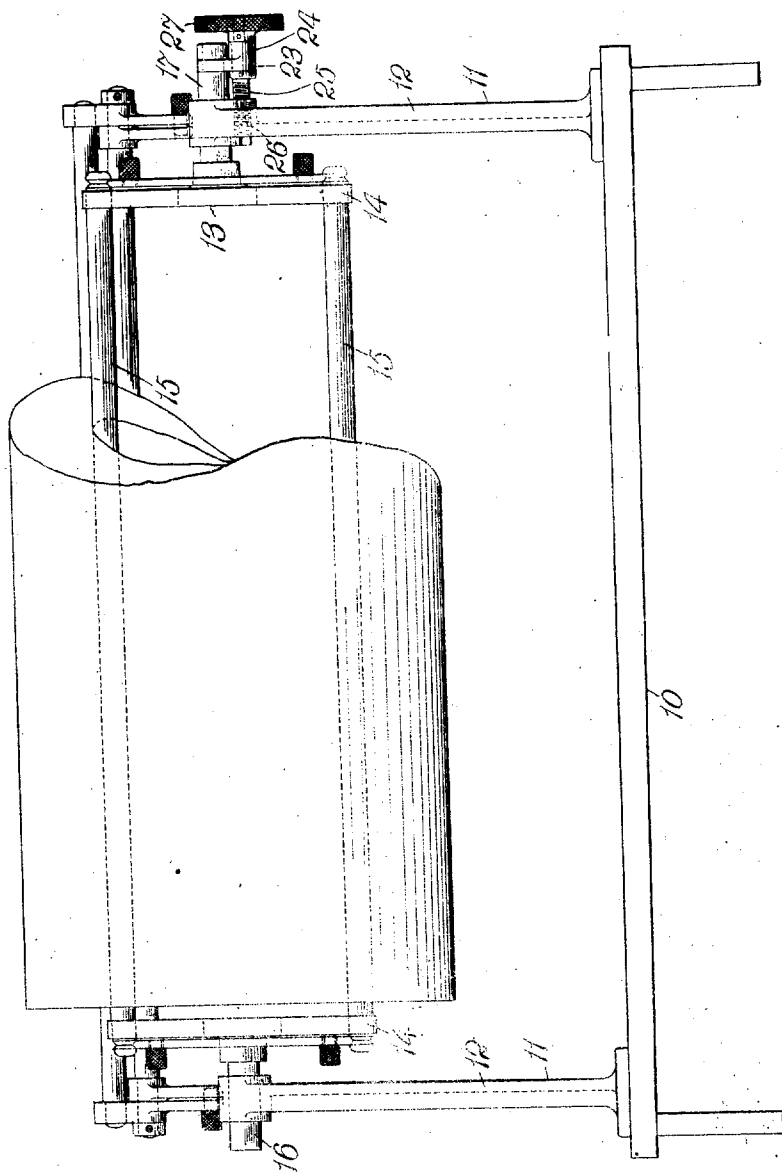
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7 SHEETS—SHEET 4.

Fig. 7.

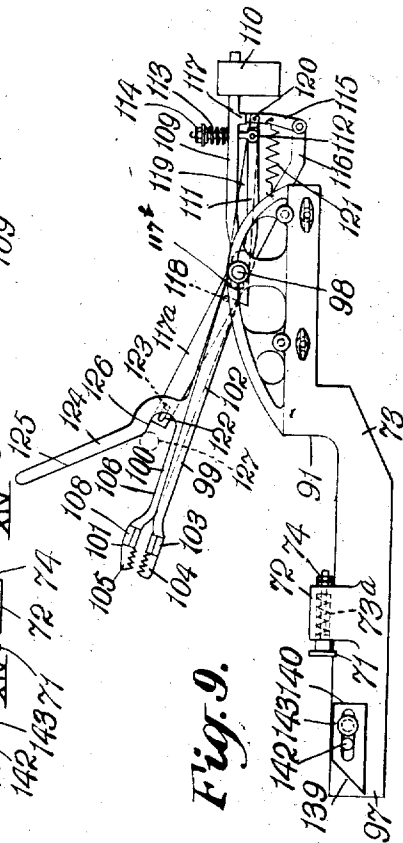
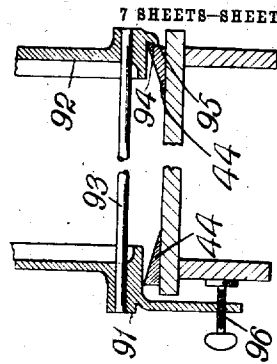


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7 SHEETS—SHEET 5.



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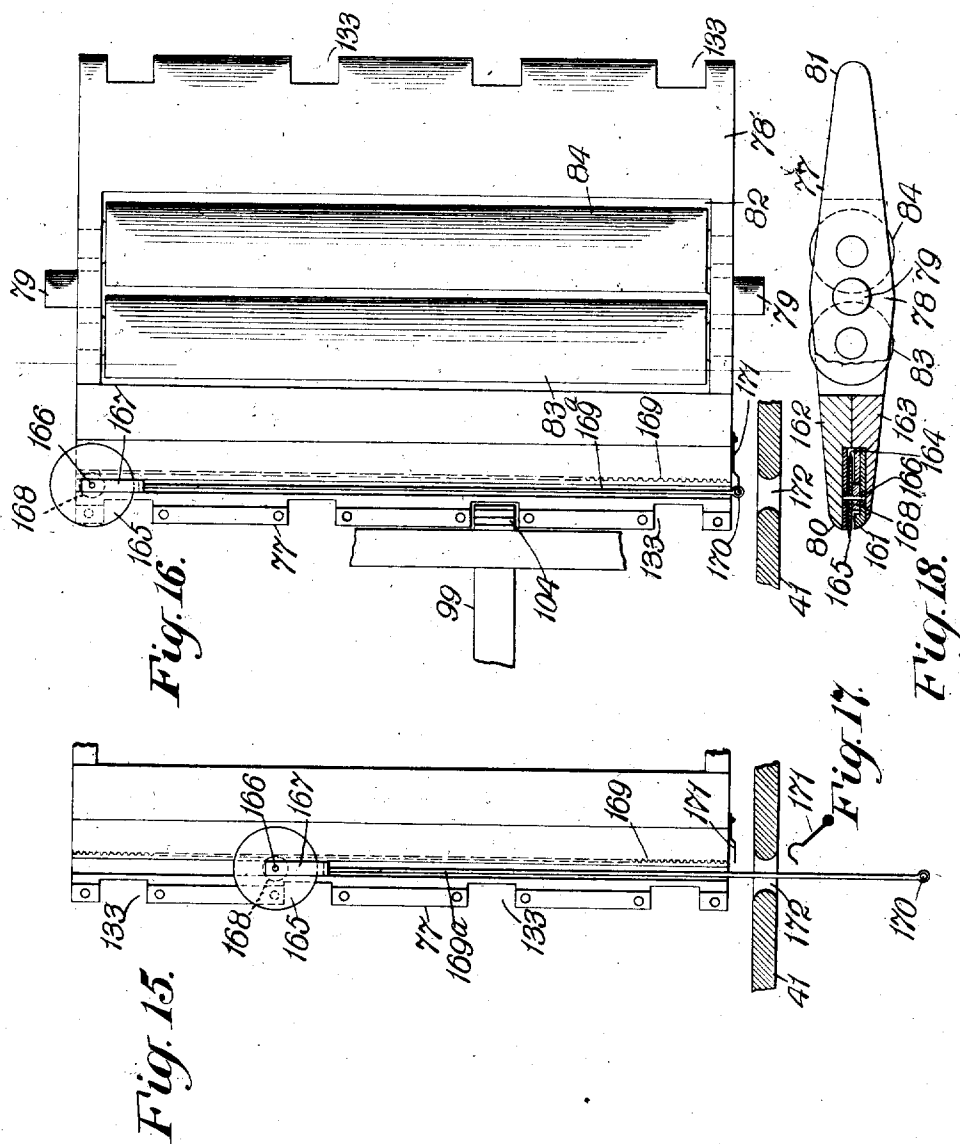
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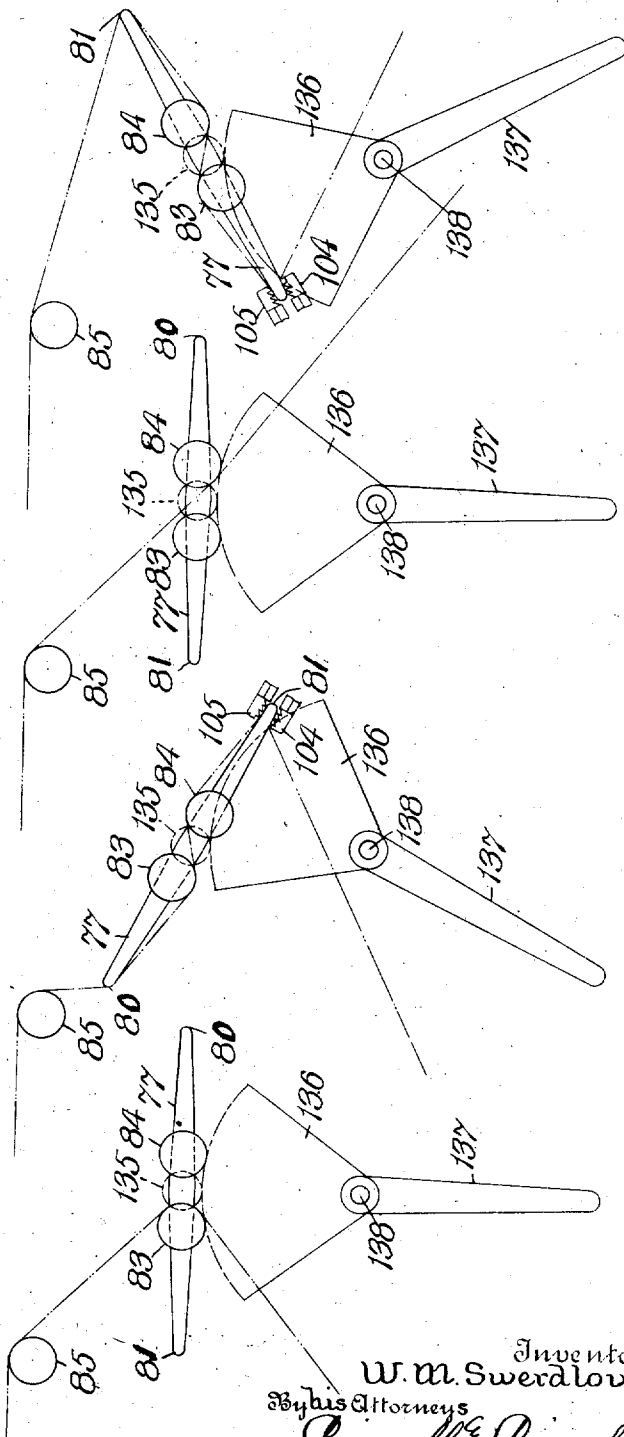
7 SHEETS—SHEET 7.

Fig. 22.

Fig. 21.

Fig. 20.

Fig. 19.



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UNITED STATES PATENT OFFICE.

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CLOTH-PILING MACHINE.

973,891.

Specification of Letters Patent.

Patented Oct. 25, 1910.

Application filed February 6, 1909. Serial No. 476,434.

To all whom it may concern:

Be it known that I, WILLIAM M. SWERDLOVE, a subject of the Czar of Russia, and a resident of New York, borough of Bronx, county and State of New York, have invented certain new and useful Improvements in Cloth-Piling Machines, of which the following is a full, clear, and exact description.

This invention relates more particularly to a machine which will automatically spread or place a plurality of layers of cloth or fabric upon a table or support.

The primary object of the invention is to provide a simple and efficient machine which is adapted to automatically lay or spread a number of layers of cloth one upon another in such a way that the cloth may be taken from a source of supply and deposited upon a table or other support provided therefor, and the said fabric or material suitably held at the ends and in succession to permit the carrying part of the machine to automatically return to its starting point without any assistance on the part of the operator or attendant.

Another object of the invention is to provide a simple and efficient carrier which has self-contained operating mechanism therefor, and which is adapted to move bodily and carry the fabric and deposit the same in its proper position upon a table or other support.

Other objects of the invention are to provide a carrier or carriage which may be run by electric power, and which is adapted to move along a track located upon a table; to provide means at or near each end of the machine, or the length of travel of the carriage, which will be automatically actuated so as to receive the successive layers and cause the same to be properly deposited upon the table or support; to provide simple means for automatically reversing the direction of movement of the carrier; to provide simple means whereby the distance of travel of the carrier may be varied according to the material which is being laid or the length of the successive layers, and to provide means for automatically stopping the carriage and feed of the material at any desired point along the table or support or at the starting point only.

A further object of the invention is to provide simple and efficient supporting means for the cloth or fabric at the feeding

end of the machine, and to provide simple and efficient tension means for the fabric.

A still further object of the invention is to provide simple and efficient means whereby the material may be properly guided as it is laid and held to the table or support, and to provide simple means for cutting the material transversely thereof.

With these and other objects in view, the invention will be hereinafter more particularly described with reference to the accompanying drawings, which form a part of this specification, and will then be pointed out in the claims at the end of the description.

In the drawings, Figure 1 is a side elevation of the starting end of the machine showing how the bolts or rolls of fabric may be held at one end of the machine, and also one means for holding the successive layers of cloth held to adapt the machine to work automatically. Fig. 2 shows a different position of the cloth tension device at the supply end of the machine. Fig. 3 is a fragmentary sectional view of adjusting means for the cloth holding device. Fig. 4 is a side elevation, partly broken away, of the carriage for feeding the fabric or material and for depositing the same on a table or support, also the clamping means for holding the edge of the material and for receiving and holding the material at the end of travel of the carriage. Fig. 5 is an end view, partly diagrammatic, of the guide member supported on the carriage. Fig. 6 is an end view of the carriage or cloth carrier. Fig. 7 is an end elevation, partly broken away, showing how the bolts or rolls of cloth are supported and adjusted to cause the material to be properly fed. Fig. 8 is a detail plan view of one of the end gripping and holding devices. Fig. 9 is a detail side elevation of the device shown in Fig. 8. Fig. 10 is a fragmentary detail plan view of one form of device which may be employed to clamp and hold the material at the edges. Fig. 11 is a side elevation of the device shown in Fig. 10. Fig. 12 is a detail perspective view of one of the clamping dogs or members forming a part of the device shown in Figs. 10 and 11. Fig. 13 is a fragmentary transverse section, showing how the gripping and clamping or holding device at the ends of the machine may be adjustably held to a table or support. Fig. 14 is a section taken on the line XIV—XIV of Fig. 8,

showing, in elevation, the stop for the carriage reversing mechanism. Fig. 15 is a fragmentary plan view, partly in section, showing how a transverse cutter or knife member of the carriage. Fig. 16 is a detail plan of the guide member with a part thereof removed to show the cutter in elevation. Fig. 17 shows a detail elevation of the hook for holding the knife or cutter against movement. Fig. 18 is a detail elevation, partly in section, of the guide; and Figs. 19 to 22 are views, partly diagrammatic, showing the different positions of the guide.

While I shall show one means for carrying my invention into effect in which the layers of fabric are deposited upon a table or support in a particular way, it will be understood that the machine may be variously constructed to adapt the same for the purpose intended, and that various changes may be made in the construction and operation of the machine without departing from the character of the invention.

Ordinarily the cloth or fabric is deposited upon a table or support in superposed layers and the layers are piled to a thickness of six or seven inches, more or less, from which the articles to be made from the fabric are cut. The fabric to be laid is moved along the table, and at one end is held so that the carrying means for the fabric may be made to return to the starting point where the fabric is again held. During the movement lengthwise of the table and return the fabric is spread on the table as it moves both ways in the form of layers and not simply one thickness of the fabric, and instead of a single thickness of fabric being fed at one time two or more thicknesses may be fed and laid on the table at the same time.

The support or table 10 may be of any desired length, and at one end thereof may be provided with one or more devices 11 for supporting the bolts or rolls of fabric. As shown there are two supporting devices 11, and these each comprise two uprights or standards 12 in the upper portion of which is held a cloth-supporting element or device 13. Each device 13 comprises two brackets 14 which are connected at their ends by transversely-extending rods 15 in which said rods are slidingly held, and projecting outward from one of the brackets 14 is a shaft or stem 16, while from the other bracket extends a shaft or stem 17 both of which are held to rotate in the uprights 12. The bolts or rolls of material are of different shapes, sometimes round and sometimes folded about a board, and it is desirable to adapt the machine for rotatably holding either kind, or any other kind, to permit the cloth to be unwound therefrom. Each bracket 14 is slotted, as at 18, to permit the rods 15 to be moved toward or from the center, and

movable about the stems 16 and 17 are the cams 19. These cams 19 are each pivotally held to the stems and are substantially S-shaped in form, and have the cam surfaces 20 and 21 which are adapted to engage the ends of the transverse rods 15 so as to force the same outward from the center and to lock said rods in this position to properly sustain the roll or bolts of cloth, each cam being provided with one or more projections 22 for the purpose of providing suitable handles to rotate the cams. By this means various kinds and sizes of bolts, rolls of cloth or fabric may be positively held and rotatably supported so that the material may be readily unwound from the devices 13.

The devices 13 may be adjusted transversely of the machine for the purpose of aligning the cloth to cause the same to be laid properly onto the table 10. Various means may be employed to secure this adjustment. As shown the stem 17 may be provided at one end with an arm 23, and said arm may have a boss 24 which is adapted to fit about a threaded stud 25, and the end 26 of the threaded stud 25 engages a threaded opening in one of the uprights 12 while the other end has a serrated head 27 which when rotated will move the arm 23 toward or from the upright 12, and thereby adjust each of the devices 13 with the cloth supported thereby transversely of the machine.

The cloth or fabric may be removed from a single bolt or roll, or more than one as preferred. As shown the fabric is removed from two bolts or rolls, and these are passed about a tension device 29 which is supported on brackets 30 extending outward from the inner uprights 12. The outer ends of the brackets 30 form a part of the tension device and are each provided with a plurality of openings or apertures 31 which are adapted to be engaged by a pin or device 32 carried by the pivotally held members 33. These members 33 are each provided with a semi-circular portion 34 and upwardly projecting arms 35 between which extends a rod or a roll 36, and beneath the roll 36 is a second roll or rod 37 which serves as a pivot for the members 33. The fabric is passed about the roll or rod 36 and between said roll and the rod 37 so that by shifting the roll 36 relatively to the rod 37, the tension on the cloth or fabric may be varied, it being of course understood that one or more pieces of cloth may be fed at the same time and that the rolls 36 and 37 may either or both of them be stationary or rotatable as desired.

To automatically carry the cloth or fabric and to deposit the same properly upon the bed or table top 38, various means may be employed. As shown a carriage or movable element 39 is provided, Figs. 4 and 6, which

is adapted to move back and forth along the bed or table top, and as it moves back and forth to lay and spread the fabric until the desired number of layers have been placed upon the table. The carriage or member 39 comprises a suitable frame 40 formed by two side pieces 41 and 42 which are suitably braced and held apart; and at the lower portion of each frame piece are held the truck wheels 43 which are adapted to travel along the rails 44 forming a track along the table top or bed. The rails 44 forming the track may be of any suitable form, and said rails may be substantially wedge-shaped, and mounted upon the frame may be a suitable motor 44^a. This motor may have the electric current supplied thereto in any desired way to adapt the carriage 39 to move back and forth along the table, and said current of electricity may be either through a trolley located overhead (not shown) which is adapted to engage a wire and moved back and forth with the carriage, or the said carriage or device may have a shoe which is adapted to travel along a rail located adjacent to its path of movement. The motor has its armature shaft provided at one end with pulleys 45 and 46. A belt 47 passes around the pulley 45 and around a pulley 48 loosely arranged on a transversely-extending shaft 49, while a belt 50 passes around the pulley 46 on the motor shaft and also around a pulley 51 normally held to rotate independently of a transversely-extending shaft 52 so that the shaft 52 when rotated by the belt 50, as will be presently described, will move in the direction opposite to that of the shaft 49. That is to say the shaft 49 is intended to move the carriage or device 39 in one direction along its track and the shaft 52 is adapted to move said device or carriage in the opposite direction. The shafts 49 and 52 are provided with pulleys 53 at or near the ends thereof, and around these pulleys 53 pass the belts 54, and said belts also pass around pulleys 55, which are held on the studs or shafts located at the lower portion of the frame pieces 41 and 42. Each pulley 55 has a pinion 56 rotatably held thereto, and this pinion is in mesh with a gear 57, Fig. 6, carried by one of the truck wheels 43, so that each truck wheel is independently mounted on the frame and rotated by the motor 44^a, though it will be seen that instead of the motor other means may be employed for moving the truck, and other connections and as shown may be employed for imparting movement to the carriage.

As the carriage completes its travel according to the length of layers to be made, it is necessary, if the machine is to be entirely automatic, that the direction of movement of the carriage be changed automatically. This may be done in any desired way.

A clutch member 58, Fig. 6, is held to rotate with each of the shafts 49 and 52, and this clutch member may be provided with one or more teeth 59 which are adapted to be moved into engagement with one or more teeth 60 carried by pulleys 48 and 51. A lever 61 is pivotally held at 62 to the top 63 of the machine frame, and one arm, as 64, is adapted to shift the clutch member 58 to cause the teeth thereof to engage the teeth 60 of the pulley 51, while the arm 65 is adapted to engage the clutch member of the shaft 49 and shift the same to cause said shaft to rotate with the pulley 48 or remain stationary according to the direction of movement of said lever. This lever 61 has a rod 66 projecting outwardly therefrom, and this rod is engaged by the upper end of a lever 67, which latter is pivoted at 68 to one side of the carriage frame, and its other end is provided with a boss 69 in which is arranged an adjustable bolt 70. The bolt 70 may be adjustably held to the boss 69 by the nuts 70^a or otherwise, and is adapted to engage a spring-pressed stop 71, Figs. 4, 8, and 14, arranged to move in a projection 72 forming a part of a frame 73 located at opposite ends of the machine table or bed. The stop 71 has its stem passing through an opening in the lug or projection 72, and in said opening is arranged a spring 73^a which is adapted to force the stop 71 in one direction, and on the outer end of the stem of said stop may be arranged lock nuts 74 which may be made to adjust the stop 71. The lever 67 when engaging the stop 71 will be thrown in a direction to move either one of the clutches into engagement with the pulleys to rotate either of the shafts 49 and 52. The stop located at the starting point or the cloth-supply end of the machine will shift the lever so as to cause that shaft to rotate which will move the carriage in one direction, while the stop at the opposite end of the machine or that shown in Fig. 4 will shift the lever 67 in the opposite direction and cause the clutch 58 to rotate the other shaft and thereby move the carriage or device backward or in the opposite direction. The stops 71 may be so adjusted that the lever 67 will be thrown to an intermediate position and thereby disengage both clutches from the shafts 49 and 52 causing the carriage to stop at one end, as it is usually desirable that the carriage stop at the supply end of the machine at each return movement, the operator in this case starting the machine after the carriage has traveled the length of the table and back again by moving the lever 67 by hand, or by controlling the electric source of supply to the motor by means of a switch, as at 76, in Fig. 1.

To carry the fabric with the carriage and to hold the same at each end of the table or at the end of travel of the carriage or device

39. I provide the cloth or fabric so as to be held by a suitable guide, and this guide or device is adapted to direct the fabric into gripping and holding devices located at the supply end of the machine, and at any desired point along the table or support according to the length of the layers. The device or guide 77, Figs. 4 and 5, and Figs. 15 to 18, has a body portion 78 provided with shanks or studs 79 projecting from each end thereof which are adapted to enter openings in the frame side pieces 41 and 42 so as to serve as a pivot for the guide by which the latter may be rocked or oscillated. The body portion of the guide or device 77 may be enlarged centrally thereof, and tapered toward each edge so as to provide rounded edges 80 and 81, and substantially central of the guide or device is a slot or opening 82 in which are rotatably held the rolls 83 and 84. The cloth, either one or more pieces, is passed from the bolts or rolls at the supply end, and over a roll 85 which has its end journaled in brackets 86 projecting outward from the frame, and on said roll, Fig. 6, are guides 87 and 88 either or both of which may be adjustable on the roll, and between which the piece or pieces of cloth are adapted to move so as to be properly positioned and fed properly to the table or bed, and said cloth is passed between the rolls 83 and 84 when the guide is in the normal position or that shown in Figs. 19 and 21. Before starting the machine one end of the piece or pieces of fabric is held at the supply end by means of a gripping and clamping device 89, there being also a similar gripping or clamping and holding device 90 for the fabric at the other end of the table or bed, or at any desired point along the table according to the length of layers to be made. As previously stated, in the cloth-laying trade, a layer does not comprise simply a single piece of the fabric or material, but the layer in this sense is intended to mean the fabric as laid by a complete movement and return of the carriage to its starting point. In other words if a single piece of fabric is to be laid then the layer will comprise the piece of the fabric as laid by the carriage during one movement and the superposed piece laid on top of the same during the return movement of the carriage, and to make the machine automatic it is necessary that the gripping and holding devices 89 and 90 grip and hold the fabric and deposit the same onto the table at each movement of the carriage or conveying device at both ends of the machine.

The gripping and holding devices 89 and 90 may be of any suitable form of construction. As shown each device has its frame 73 comprising two end pieces 91 and 92, and each of which has the projection 72 and spring-pressed stop 71 whereby the direction of movement of the carriage or device 39

may be changed as already explained, and said frame may be adjustably held to the table to adapt the gripping and holding devices to be located at any desired point along the bed or table. The frame pieces 70 may be connected together by one or more rods 93 and one of said pieces, as 92, may have a cut-away or beveled part 94 which is adapted to engage the bevel side 95 of one of the track rails and the other frame piece or member is adapted to rest on the upper edge of the other track rail. The frame piece 91 may be provided with a plurality of clamps 96 which have threaded stems passing through a part of said frame piece and has one end engaging a part of the table or bed so as to positively hold the frame and the mechanism carried thereby in its adjusted position, the extension or part 97 which carries the lug or projection 72 being formed as a part of only one of the frame side pieces, as the piece 91, of each device.

A rod 98 is rotatably held to the members of each of the frames 73 of the gripping and holding devices, and held to rock on said rod are the gripping and holding members 99 and 100 of a gripping device 101. The member 99 is provided with a plurality of arms 102 which are held at one end to the rod 98, and at the other end are connected together by a transverse bar 103, and projecting outward from the transverse bar 103 or from the arms 99 are the gripping jaws 104 which are opposed to the gripping jaws 105 carried by the member 100. This member 100 also comprises a plurality of arms 106 which are connected together by a transverse bar 108, and said arms 106 are held to the rod 98 in such a way that the jaws 105 and 104 may be opened and closed to grip the cloth. The lower member 99 has the outward projecting arm 109 on each side thereof, and each arm 109 is provided with a counterbalancing weight 110, while the upper member 100 is provided with arms 111, the outer ends of which are pivotally held to rods 112 which pass through the arms 109, and on the outer end of said rods are the springs 113 which may be held against the arms 109 by a nut 114 or otherwise so as to normally force the jaws 104 and 105 together to grip the cloth. When the jaws 105 are opened as will be presently described, they may be held in this position by a dog or detent 115 which is pivoted to one end of a stationary bar 116, and said dog is adapted to engage a lug or projection 117 on the arms 109. The bar 116 at each side of the machine is fixed to the rod or shaft 98 and a second bar 117* is provided with a slot 117* at one end to have a certain lengthwise movement on the rod 98, and said bar is provided with a pin 118 which is adapted to engage the outer end of an arm 119. This arm 119 is provided with a slot 119* at

one end to span the rod 98 and to have a limited lengthwise movement thereon, and at its outer end is pivoted, at 120, to the dog or detent 115, the dog being normally forced inward into engaging position by means of a spring 121 which is fastened at one end to the dog 115 and its other end to one of the frame pieces. The outer end of the arm or bar 117^a is slotted, as at 122, and this slot is adapted to be engaged by a pin 123 carried by an outwardly-extending arm or bracket 124 which is connected to the holding member 100. This arm or bracket 124 inclines inwardly toward the carriage so as to provide an inclined edge or surface 125 and a curved surface or recess 126, and said bracket 124 at each side of the machine is adapted to be engaged by a roll 127 carried by an arm 128 which projects outwardly from the stationary roll or shaft 129 at the rear of the carriage. There are arms 130 at the front of the carriage having roll 131 carried by said arms and said arms are held to a rod 132 on the side of the carriage opposite to that of the rod 129. The roll 131 on the arms 130 is for operating the gripping and holding device 89, while the arms 128 and roll 127 are for operating the gripping and holding device 90. As will be seen when the carriage moves forward to carry the fabric therewith as shown in Fig. 4, the roll 127 will engage the brackets 124 and will raise the members 99 and 100 to the position shown in Figs. 4 and 9, and on further movement the jaws 105 will be moved from the jaws 104 by the dog 115 engaging the lugs 117 on the member 99. The roll 127 will pass into the curved part 126 and will engage the end of the arm or lever 117^a so as to move the same along the rod 98, and in doing so will cause the pin 118 to engage the outer end of the arm 119 and this will throw the dog 115 out of engagement with the lug or projection 117 on each side of the device so as to permit the spring 113 to force the jaws 104 toward the jaws 105 to grip the cloth.

The jaws 104 and 105 of the members 99 and 100 are spaced apart, and in alignment with the jaws, the edges of the guide are cut away, as at 133, on each edge thereof to permit the jaws to enter said recesses or cut-away parts to properly grip the material when the latter is fed therein by the movement of the guide and the carriage. At one end of the machine, as for example, that shown in Fig. 4, the guide is positioned to force the cloth between the jaws of the device 90, but on the return movement of the carriage the guide must be moved to a different position or that shown in Fig. 22 to feed the material into the jaws of the device 89, and to secure this the guide shaft or stem is provided with a pinion 135, Figs. 4 and 6, which is adapted to be engaged by the teeth

of a segment 136 which is held to move with an arm 137. This arm 137 is pivoted at 138 to one side of the frame and is of sufficient weight to normally force the guide to the positions shown in Figs. 19 and 21, and said arm has its end adapted to move along the incline or cam edge 139 of a plate 140 which may be adjustably held to the extension 97 of the devices 89 and 90, though a weight or spring may be used to normally hold the arm 137 in the position shown in Figs. 19 and 21. The plate 140 may be slotted, as at 141, and may be guided by a pin 142 and held to the extension 97 of the frame by a nut 143 or otherwise. As the carriage moves adjacent to the gripping device 90, the lever 137 will engage the device 140 and throw the lever to the position to cause the segment to rotate the gear or pinion 135 to throw the guide to the position shown in Fig. 20, and when the carriage is moved in the opposite direction as already described and engages a similar cam device 140 located on the frame of the gripping and holding device 89, the said lever will be moved in the opposite direction so as to force the guide to the position shown in dotted lines in Fig. 22 ready to force the material between the jaws of said device 89. The guide is thus given over a three-quarters turn and this movement first causes the cloth to pass about one edge of the guide and at the next movement of the shuttle about the other end thereof.

The arms 144 are pivotally held to each of the shafts 132 and 129, and on the outer end of said arms are rolls 145 which are tapering from the center thereof, and are adapted to engage the cloth and by the weight thereof to force the same downward properly onto the table bed or support as the carriage moves either backward or forward, and said roll serves to force the air from under the cloth or fabric as the same is fed from the guide during the movement of the carriage.

To hold the cloth at its edges and to be adjustable to the different thickness of cloth according to the number of layers placed on the table, I provide at either or both edges, preferably along both edges, at distances apart a clamping device 146. This clamp or device 146, Figs. 4 and 10 to 12, may comprise a plurality of members which are so held together that as the carriage travels it will automatically lift the engaging part and cause the same to clamp the material or layers of material at the edges thereof. As shown the device comprises a base 147 provided with lugs 148 and 149, and to the lug 148 is pivoted a bell-crank lever 149^a, one arm of which carries a roll 150, and the other arm is pivoted at 151 to an arm 152. A link 153 is pivoted at one end to one end of the arm 152, and its other end to the lug 149, and said arm 152 carries a dog or en-

gaging part 154 at its outer end. This dog 154 is pivoted at 155 to the arm and is provided with a jaw 156 and with an extension 157 which is adapted to be raised and tilted above the layer of cloth as it is deposited, and to assume its proper position when the arm is lowered as shown in Figs. 4, 10 and 11. A spring 158 normally forces the arm 152 downward, and arranged on the carriage at each side thereof is a bar 159 which has its edges 160 curved to form engaging ends, and which are adapted to engage the rolls 150 of the bell-crank levers 149, and force them downward to raise the arms 152 against the tension of the springs 158 to the position shown in dotted lines in Fig. 11.

It is desirable at times to cut the material transversely and particularly at the return movement of the carriage. This may be effected in various ways. As shown in Figs. 15 to 18, the shuttle 77 is provided with a removable member or plate 161 and between this member or plate 161 and the main part of the guide is arranged transversely-extending plates or bars 162 and 163 forming a space 164 between them in which a cutter or knife 165 is adapted to move. This cutter 165 may be circular, and is held to a stud or shaft 166 carried by a guide or knife-bar 167 which is adapted to slide longitudinally of the guide 77, and is held to move in grooves in the bars or plates 162 and 163. A pinion 168 is held to rotate with the cutter, and this pinion is adapted to mesh with the teeth of a rack 169 extending longitudinally of the guide in the groove or space 164. To the bracket or bar 167 is connected a rod 169^a, and this rod may be provided with an eye 170 which is adapted to be engaged by a hook 171 when the cutter is not to be used, but when the hook 171 is released, the rod 169^a may be drawn across the machine and will carry the cutter 165 therewith so as to cut the cloth or fabric, the latter being held about the edge of the guide 77 by reason of the tension of the different devices. The side piece 41 of the carriage frame may be provided with an opening 172 so that the hand may be passed therethrough to disengage the hook 171 to move the cutter across the shuttle, the cutter being normally out of the path of the cloth.

The construction and operation of the invention will be readily understood from the foregoing description when taken in connection with the accompanying drawings. The cloth or fabric in the form of one or more rolls or bolts is held to the devices 13 so as to rotate in the uprights 12, and the piece of each roll or bolt is caused to pass between the rods or rolls 36 and 37 of the tension device and then around the roll 85 of the carriage or device 39, and from there around the guide 77 so as to pass between the rolls 83 and 84, and the free end of the

superposed piece is passed under the roll 145, and is held between the gripping jaws 104 and 105 of the gripping device 89 located adjacent to the source of supply of the cloth or fabric. The carriage is then caused to travel along the bed or table top 38, and this may be done by operating the switch to supply the current to the motor 44^a of the carriage, the proper clutch having been previously caused to rotate the proper shaft as 49 for example, and through it move the carriage forward along the table by means of the connection with said shaft and motor and the wheels 43 of said device. As the carriage travels along the track the guide 77 will assume the position shown in Fig. 19 and it will remove the cloth from the reel, reels, or devices 13, and as one end thereof is held by the gripping and holding device 89, the superposed pieces of cloth will be deposited and forced upon the table top, and as the carriage or device 39 moves along, the bar 159 on each side of the carriage frame will successively engage the rolls 150 and will raise the dogs 154 carried by the arms 152 of each holding device 146 in advance of the laying of the cloth so as to cause the said dog to engage the upper surface of the cloth and hold the same at intervals and at the edges thereof along the superposed layers. When the carriage or device 39 is about to reach its length of travel, the lever 137 will engage the cam edge 139 of the cam plate 140 and will throw the lever on its pivot so as to oscillate and rock the guide to the position shown in dotted lines in Figs. 4 and 20 at which time the fabric is made to pass about the end 81 of the guide. As the carriage reaches the end of its travel, the arms 128 carrying the roll 127 will ride upon the inclined surface of the bracket 124 of the gripping members 99 and 100 and will raise the same on its pivot or rod 98, and during such movement will open the jaws 104 and 105 to position the same so that as the carriage advances the guide will force the cloth or fabric between said jaws. The carriage will move slightly farther and in doing so the rolls 127 carried thereby will engage the bars 117^a and will force the same outwardly so as to cause the pins 118 to engage the bars or arms 119 and through them throw the dogs 115 out of engagement with the teeth or projections 117 of the member 109 so that the springs 113 will cause the two sets of jaws to be brought together to hold and grip the cloth. As this movement is effected, the bolt 70 at one end of the lever 67 will engage the stop 71, and this will shift the lever on its pivot 68 and by means of the rod 66 will shift the clutch lever 61 on its pivot so that the clutch carried by the shaft 52 will be made to engage the teeth of a pulley or drum 51 and thereby rotate the shaft 52 and cause the carriage

or device to move back to the starting point. During the backward or return movement of the carriage or device 39, the cloth or fabric will be held by the clamping jaws 5 of the device 90, and as the carriage moves along the support the clamping and gripping device 90 will lower so as to deposit the cloth on the table bed, and as said carriage continues to move the guide will assume the position shown in Fig. 21 and will successively raise the dogs 154 of the holding devices 146 to permit the latter to hold the upper member of each layer, the said dogs being normally forced to their holding position by means of the springs 158. The rolls 15 145 carried by the forward end of the carriage will now engage the cloth and serve to force the same on the table during the return movement of said carriage, and when the carriage reaches the starting point, the guide will be moved to the position shown in Fig. 22, and the jaws of the device 39 will be elevated to receive the cloth or fabric from the guide at the supply end in substantially the same manner as described in connection with the gripping device 90. The carriage at this time may be stopped by means of the switch 76 or it may be automatically stopped by adjusting the stop 30 or device 71 so that it will move the lever 67 to throw the clutches on the shafts 49 and 52 to an intermediate position thereby disengaging both clutches from the pulleys, while the motor may continue to rotate. At this point or at any other desired point the fabric or pieces of fabric may be cut transversely by means of the cutter 165 which may be forced transversely of the machine by the rod 169 as already described. 40 While the carriage or device forming the piling means for the fabric is shown as being driven by an electric motor mounted thereon, it will be understood that the carriage or device 39 may be operated in any other desired way.

From the foregoing it will be seen that one or more pieces of cloth may be automatically deposited upon a table or support; that simple means are provided whereby the cloth or fabric may be held on each end; 50 that a simple carrying and piling device is provided for the cloth, which device is so operated that it will automatically position the cloth to be held at each end of the travel of said device; that simple means are provided for cutting the cloth transversely; that simple and efficient means are provided for automatically actuating the carriage; that simple means are provided for holding 60 the cloth at the edges and for causing the cloth to be deposited properly upon the table or support, and that simple means are provided for adjusting the cloth or fabric transversely in order that it may be fed properly in the carriage and to the table. 65

Having thus described my invention, I claim as new and desire to secure by Letters Patent:—

1. The combination with a supporting table, of a plurality of devices having means 70 for holding a quantity of fabric from which the latter may be unwound, a carriage adapted to move along the supporting table, means arranged as a part of the carriage for moving the same along the table in either 75 direction, reversing mechanism, means for automatically operating the reversing mechanism to change the direction of movement of the carriage, an oscillating guide arranged to oscillate on the carriage around which the 80 fabric is adapted to pass, gripping and clamping devices located on opposite sides of the carriage in the path of movement thereof, means whereby the cloth may be automatically directed by the guide into 85 the gripping and clamping devices during the movement of the carriage, and means for holding the edges of the cloth as it is deposited upon the table.

2. The combination with a support, of a 90 source of supply for the fabric located at one end of said support, means whereby a plurality of pieces of cloth may be superposed, a carriage movable along the support and having a device thereon around which 95 the cloth or fabric is caused to pass, gripping and clamping devices located on opposite sides of the carriage in the path of movement thereof, means for automatically actuating said devices, together with means for 100 holding the edges of the cloth as it is deposited upon the support to be automatically actuated by the carriage as it moves back and forth on said support.

3. The combination with a table having a 105 track thereon, of a carriage adapted to travel along said track and having a guide thereon around which the fabric is adapted to pass, fabric engaging devices held to the carriage on opposite sides thereof, means mounted on 110 the carriage for moving the same in either direction along the track, holding devices adapted to clamp the edges of the cloth and automatically actuated during the movement of the carriage, mechanism for reversing 115 the direction of movement of the carriage, means for oscillating the guide, and gripping and clamping devices adjustably held to the table on opposite sides of the carriage and having means adapted to be automati- 120 cally actuated so as to receive the fabric and hold the same during the movement of said carriage.

4. The combination with a table having a 125 track thereon, of a carriage adapted to travel along said track and having a guide thereon around which the fabric is adapted to pass, means for moving the same in either direction along the track, mechanism for reversing the direction of movement of the car- 130

riage, means for oscillating the guide, gripping and clamping devices adjustably held to the table on opposite sides of the carriage and having means adapted to be automatically actuated so as to receive the fabric and hold the same during the movement of said carriage, and means for holding the edges of the cloth as it is deposited upon the table.

5. The combination with a table having a track thereon, of a carriage adapted to travel along said track and having a guide thereon around which the fabric is adapted to pass, vertically movable rolls held to the carriage on opposite sides thereof, means mounted on the carriage for moving the same in either direction along the track, mechanism for reversing the direction of movement of the carriage, means for oscillating the guide, and gripping and clamping devices held to the table on opposite sides of the carriage and having means adapted to be automatically actuated so as to receive the fabric and hold the same during the movement of said carriage.

6. The combination with a table having a track thereon, of a carriage adapted to travel along said track and having means around which the cloth is adapted to pass, means for moving the same in either direction along the track; mechanism for reversing the direction of movement of the carriage, movable rolls tapering from the center and located on opposite sides of the carriage adapted to force the air from under the fabric, and gripping and clamping devices held to the table on opposite sides of the carriage and having means adapted to be automatically actuated so as to receive the fabric and hold the same during the movement of said carriage.

7. The combination with a table having a track, of a carriage adapted to travel along said track and comprising a frame, fabric supporting means independent of the carriage from which the fabric is conveyed to said carriage, wheels for supporting the frame, a motor mounted on the frame, connections between the motor and the wheels for driving the carriage in either direction, clutch mechanism, means for operating the clutch mechanism to cause the carriage to move in either direction, together with means cooperating with the carriage to cause the cloth to be deposited along the table in superposed layers.

8. The combination with a table having a track, of a carriage adapted to travel along said track, a gripping and holding device comprising two pivotally held members each provided with gripping jaws spaced apart, brackets projecting outward from one of the members, means carried by the carriage adapted to travel along said brackets and to raise the members of the gripping and holding device, weights normally forcing the

members in one direction, a spring normally forcing the members in a direction to cause the jaws to move toward each other, a pivotally held dog, a spring normally forcing the dog in one direction to engage a part of one of the members to cause the jaws to be placed in an open position, a bar connected to the dog, an arm operated by the carriage to cause the bar to disengage the dog from the member to permit the spring to force the jaws together.

9. The combination with a table, of a carriage adapted to travel along said table, a gripping and holding device comprising two pivotally held members each provided with gripping jaws, means carried by the device adapted to be engaged by the carriage to raise the members of said device, means normally forcing the members in one direction, a spring normally forcing the members in the direction to cause the clamping jaws to move toward each other, a pivotally held dog, adapted to engage a part of one of the members to hold the jaws in an open position, means operated by the carriage to release the dog, and means for forcing the jaws together when the dog is released.

10. The combination with a support, of a carriage adapted to travel along said support, an oscillatory guide comprising a body having a substantially plate-like body provided with rounded edges, and provided with a slot centrally thereof, rolls journaled in said slot around which the cloth is adapted to pass and be drawn, means for oscillating said guide, together with means cooperating with the guide on the carriage to cause the cloth to be deposited in layers on the table.

11. The combination with a support, of a carriage adapted to travel along said support, means for holding the cloth at its ends, a guide comprising a body having a substantially plate-like body and provided with a slot centrally thereof, rolls journaled in said slot around which the cloth is adapted to pass and be drawn, means for moving said guide, together with means cooperating with the guide on the carriage to cause the cloth to be deposited in layers on the table.

12. In a cloth-piling machine, the combination with a table, of a carriage adapted to travel along said table, a guide mounted upon said carriage, a cutter slidingly held in one end of said guide, a rod connected to the cutter, means whereby the cutter may be rotated as the same is forced transversely of the guide to cut the cloth, and means cooperating with the shuttle and the carriage to cause the cloth to be deposited along the table.

13. In a cloth-piling machine, the combination with a table, of a carriage adapted to travel along said table, a guide mounted upon said carriage, a cutter slidingly held

in one end of said guide, means for moving the cutter longitudinally of the guide to cut the cloth, and means cooperating with the guide and the carriage to cause the cloth to be deposited along the table.

14. In a cloth-piling machine, the combination with a table, of a carriage adapted to travel along said table, a guide mounted upon said carriage, a cutter slidably held in one end of said guide, a rod connected to the cutter, a pinion and a rack whereby the cutter may be rotated as the same is forced longitudinally of the guide to cut the cloth, and means cooperating with the guide and the carriage to cause the cloth to be deposited along the table.

15. The combination with a table, of a carriage adapted to travel along said table, means cooperating with the carriage for guiding the cloth and depositing the same upon the table, means for positively driving the carriage in either direction including reversing mechanism, said mechanism having a lever as a part thereof, a stop, means for adjusting the stop whereby the lever may be operated and the direction of movement of the carriage changed, and means for holding the edges of the cloth as it is deposited upon the table.

16. The combination with a table, of a carriage movable along said table, means cooperating with the carriage to cause the cloth to be deposited in layers upon the table, together with a holding device having a pivotally held dog, an arm to which the dog is held, a link, a spring for forcing the arm and dog downward, a bell-crank lever connected to the arm and means carried by the carriage for operating the bell-crank lever and for elevating the dog to cause the same to clamp each layer of material as it is deposited upon the table.

17. The combination with a table, of a carriage movable along said table, means cooperating with the carriage to cause the cloth to be deposited in layers upon the table, together with a holding device having a pivotally held dog, an arm to which the dog is held, a spring for forcing the dog downward, a lever connected to the arm, and means carried by the carriage for operating

the lever and for elevating the dog to cause the same to clamp each piece or layer of material as it is deposited upon the table.

18. The combination with a table, of a carriage adapted to travel along said table, a device for holding the cloth comprising two rods, means for supporting the rods at their ends, a cam device for forcing the rods apart, means for adjusting the rods transversely, together with means for depositing the cloth in layers upon the table.

19. The combination with a table, of a carriage adapted to travel along said table, a cloth holding device comprising movable parallel rods, brackets supporting the ends of said rods, S-shaped cams pivotally mounted between the ends of said rods and adapted to force them apart, and means for depositing the cloth in layers upon the table.

20. The combination with a table, of a carriage adapted to travel along said table, a device for rotatably holding the cloth, a support for said device, together with a tension device carried by said support, and comprising brackets provided with a plurality of openings, transversely-extending rods, one of which is movable relatively to the other and around which the fabric from the said device is adapted to pass, plates carrying one of the rods, and a pin carried by each of the plates adapted to engage the openings in the supporting brackets to adjust the tension device.

21. The combination with a table, of a carriage adapted to travel along said table, a device for rotatably holding the cloth, a support for said device, together with a tension device carried by said support, and comprising brackets, transversely-extending rods, one of which is movable relatively to the other and around which the fabric from the said cloth holding device is adapted to pass, plates carrying one of the rods, and means for locking the movable rods in different positions.

This specification signed and witnessed this 3rd day of February A. D. 1909.

WILLIAM M. SWERDLOVE.

Witnesses:

W. A. TOWNER, JR.
L. MAYER.