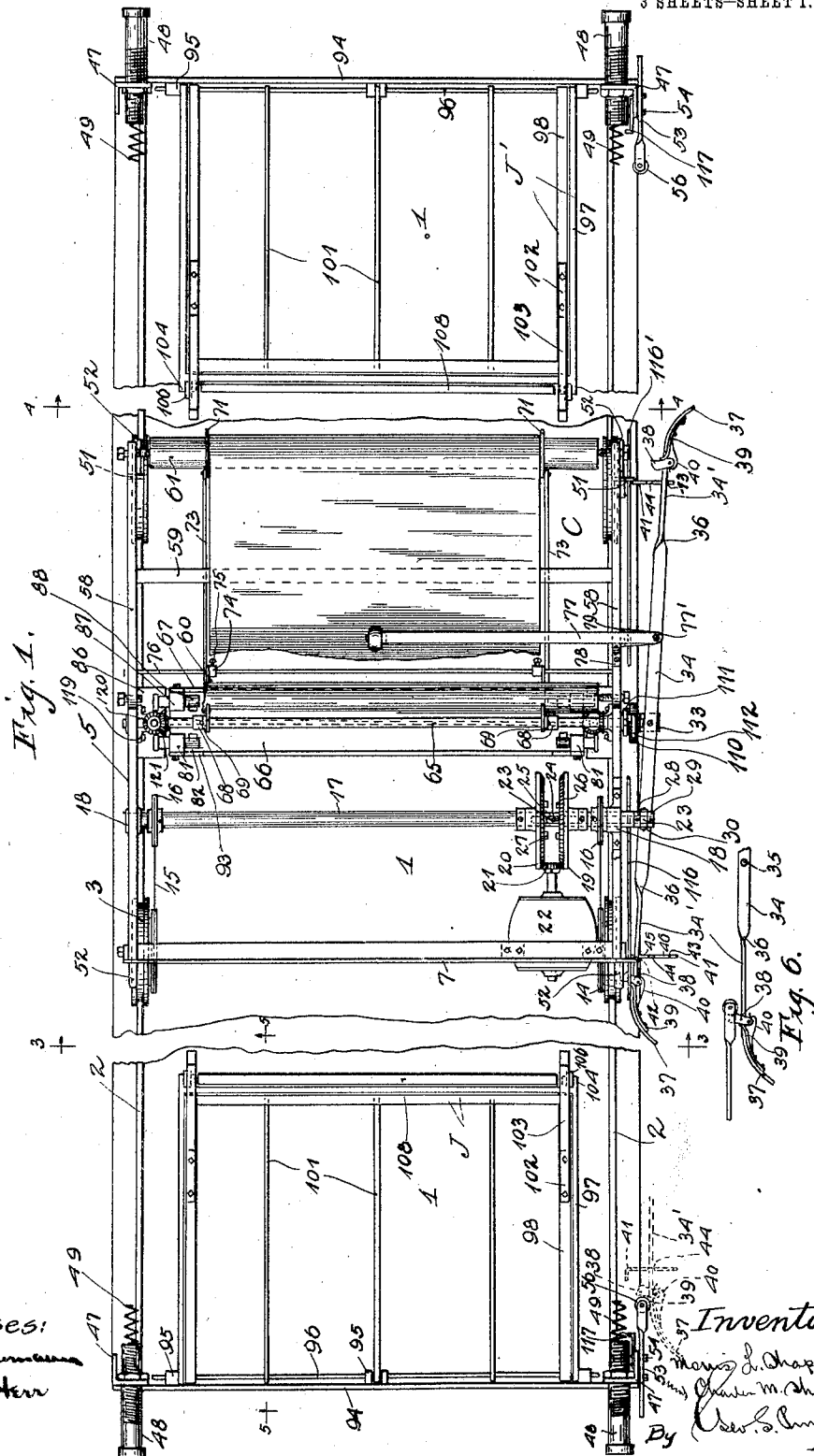


M. L. & C. M. SHAPERA.
CLOTH PILING MACHINE.
APPLICATION FILED JAN. 8, 1910.

1,002,459.

Patented Sept. 5, 1911.

3 SHEETS-SHEET 1.



Witnesses:
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Simon H. H.

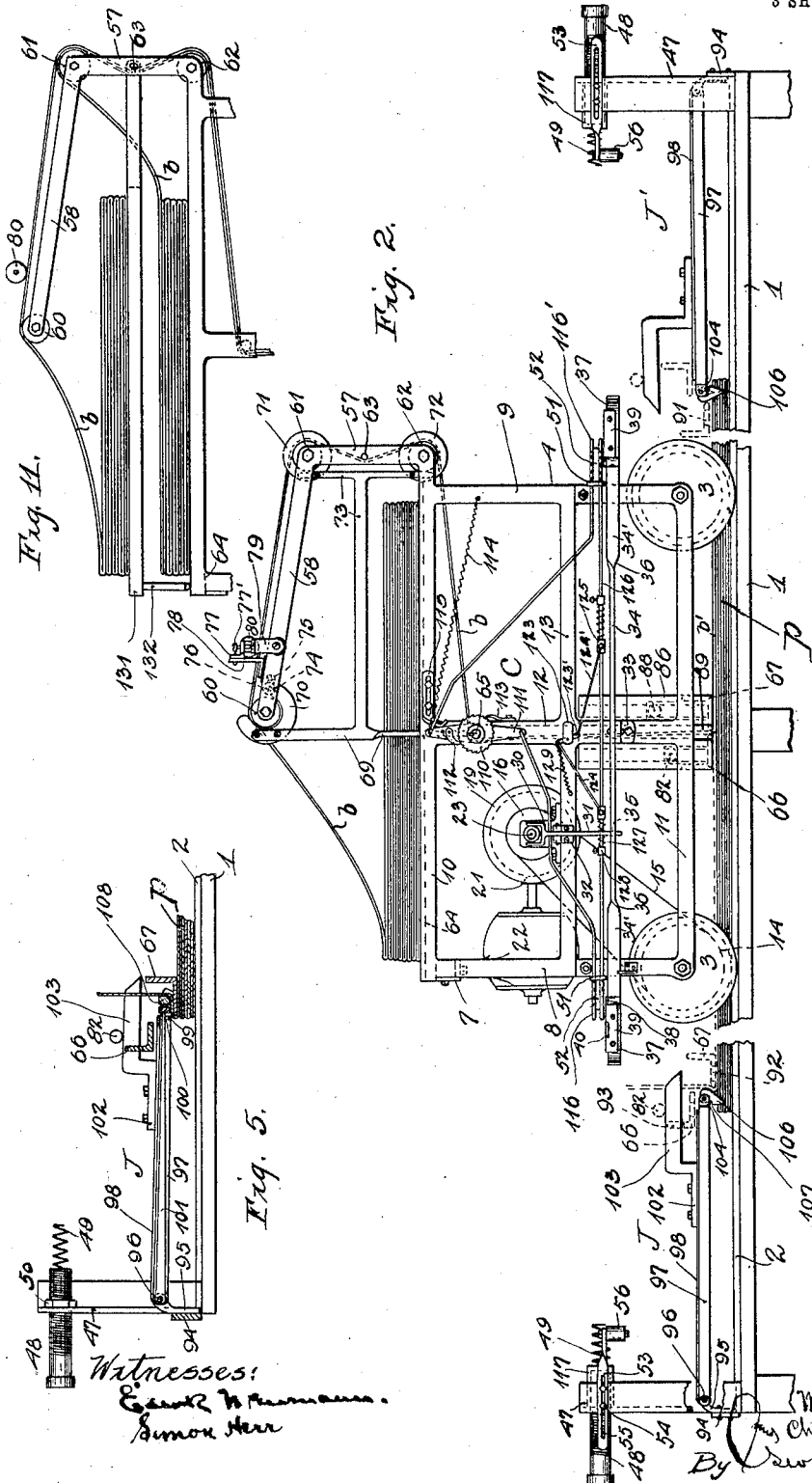
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3 SHEETS-SHEET 2.



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3 SHEETS—SHEET 3.

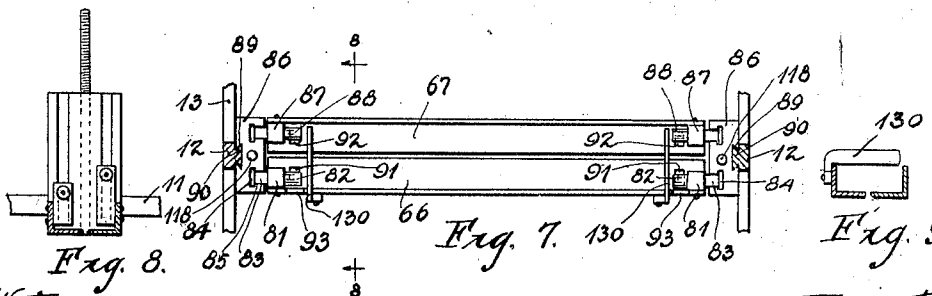
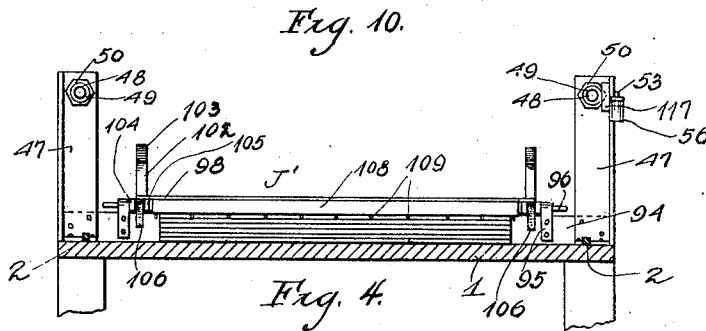
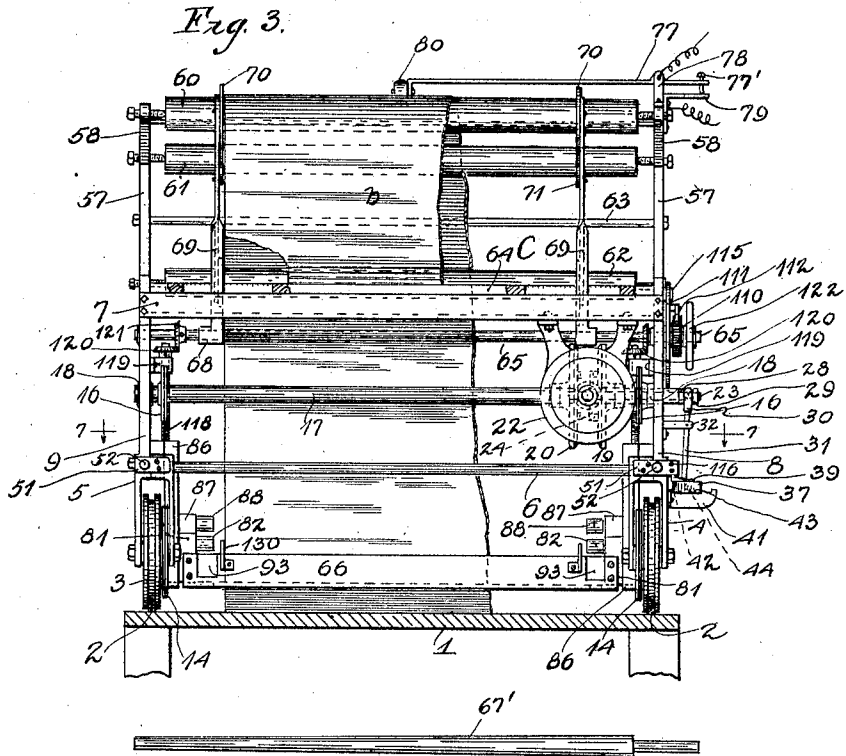


Fig. 8.

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Fig. 7.

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UNITED STATES PATENT OFFICE.

MORRIS L. SHAPERA AND CHARLES M. SHAPERA, OF CHICAGO, ILLINOIS.

CLOTH-PILING MACHINE.

1,002,459.

Specification of Letters Patent.

Patented Sept. 5, 1911.

Application filed January 6, 1910. Serial No. 536,737.

To all whom it may concern:

Be it known that we, MORRIS L. SHAPERA and CHARLES M. SHAPERA, citizens of the United States, and residing at Chicago, county of Cook, and State of Illinois, have invented new and useful Improvements in Cloth-Piling Machines, of which the following is a specification.

Our invention relates to cloth piling machines and may be considered as an improvement over the machine described in our copending application Serial No. 462,139 filed November 11th, 1908.

One of the important objects of our invention is to simplify the driving control of the carriage. In the copending application referred to, the motor circuit was broken and reversed to change the direction of travel of the carriage, this being very unsatisfactory particularly where an alternating current motor is used. In our present invention the motor runs continuously in one direction and improved clutch mechanism is interposed between the motor and carriage propelling wheels, this clutch mechanism being automatically adjusted upon travel of the carriage to control the reciprocation thereof.

Another object of our invention is to provide circuit controlling mechanism for automatically opening the motor circuit to stop the carriage as soon as the cloth supply on the carrier is exhausted.

Another object of our invention is to simplify and improve the construction of the carriage and to simplify the guiding mechanism for the cloth, and, particularly, to simplify and improve the arrangement and operation of the delivery parts which deliver the cloth to the end jaws or frames of the machines; also, to provide simplified mechanism for automatically controlling the adjustment of the delivery parts with reference to the increasing height of the pile of cloth laid out by the carrier.

Further objects of our invention are to provide for simultaneously laying several layers of cloth from a plurality of bolts carried on the carriage, and to provide for guiding and shifting of the cloth so that it will lay in perfect alinement.

In general, our object is to provide for greater simplicity and efficiency of operation of all the parts separately or together.

Our invention is clearly described in the following specification and illustrated in

the accompanying drawings in which drawings:

Figure 1 is a plan view of the machine, Fig. 2, is a side elevational view, Fig. 3, is a view taken from plane 3—3 Fig. 1; Fig. 4, is a view taken from plane 4—4 Fig. 1; Fig. 5, is a view taken from plane 5—5 Fig. 1; Fig. 6 is a plan view of the clutch controlling lever end and a cam roller cooperating therewith; Fig. 7, is a plan view taken from plane 7—7 Fig. 3, showing the delivery bar arrangement; Fig. 8, is a sectional view taken from plane 8—8 Fig. 7; Fig. 9, is a transverse sectional view of the delivery bars showing the arrangement of the guide plates thereon; Fig. 10, shows a modified form of guide roller; and Fig. 11 is a side elevational view of a plurality of cloth tables.

The operative parts are mounted on a table 1 and comprise the carriage C, and the end clamping frames or jaws J and J'; tracks 2, 2 being provided on the table for accommodating wheels 3 of the carriage. The carriage comprises front and rear frames 4 and 5 connected together by bars 6 above the wheels and by a bar 7 at the front and top, the side frames each comprising vertical end bars 8 and 9, and top and bottom horizontal bars 10 and 11, also an intermediate vertical bar 12 and a horizontal bar 13. A wheel is pivoted to each lower corner of the carriage, those at the left being each provided with a belt wheel 14, these belt wheels being connected by suitable belts 15 with pulleys 16 on the propelling shaft 17 extending transversely through the carriage and journaled in bearings 18 mounted on the bars 13 between the bars 8 and 12. Pivoted to rotate loosely on shaft 17 are forward and reverse bevel gears 19 and 20 both permanently in mesh with a drive pinion 21 on the shaft of the propelling motor 22. The front end of the propelling shaft is tubular and journals a smaller shaft 23 carrying at its inner end the transverse clutch bar 24 extending outwardly through slot 25 in the shaft 17 between the bevel gears. The inner faces of the gears 19 and 20 have clutch teeth 26 and 27 respectively, the clutch bar, when in its outer position, as shown in Fig. 1, cooperating with teeth 26 to connect the motor in forward driving relation with the shaft 17, and when in its inner position, cooperating with teeth 27 to connect the motor in reverse driving relation with said shaft.

The shaft terminates at its front end in collars 28 and 29 between which engages a fork 30 whose arm 31 is pivoted at an intermediate point on bearing frame 32 secured to bar 13. A bracket 33 on bar 12 between bars 11 and 13, pivots a longitudinal clutch lever 34 at its center to swing in a horizontal plane. The lever between its pivot point and its left end, has an opening 35 through which extends the lower end of the fork arm 31. With this arrangement, clockwise rotation of the clutch lever results in outward movement of the clutch bar 24 to the position shown in Fig. 1, and counterclockwise rotation of the lever results in inward movement of the clutch bar in to the path of teeth 27 of reverse gear 20. When the lever is in intermediate position, the clutch bar will be in a neutral position between the forward and reverse gear teeth, shaft 17 being then disconnected from the motor 22. This motor runs continuously and is preferably suspended from the cross bar 7 adjacent the vertical frame bar 8, as shown.

The clutch lever is formed from a flat bar 34 given half turns 36 near its ends, the central part of the bar, when pivoted to the carriage, being in a horizontal plane and the outer parts, 34', being in vertical planes, the ends 37 curving forwardly (Figs. 1 and 6). At the front of the lever at the base of each curved end is a pawl 38 pivoted to swing in a horizontal plane and extending rearwardly beyond the part 34'. A plate 39 is secured to each curved end and forms an abutment to limit the outward swing of the pawl, a spring 40 engaging the inner side of each pawl and tending to hold it against its abutment in a position substantially at right angles with the part 34'. Under each part 34' a locking plate 41 extends forwardly from the carriage frame, the upper edge of each plate having inner and outer locking notches 42 and 43, respectively, and a central notch 44, friction ridges 45 and 46 interposing between the notches and the entrance edges to the notches being rounded. Referring to Fig. 1, the lower edge of the left part 34' of the clutch lever rests in the inner notch 42 of the left locking plate and the lower edge of the right part 34' rests in the outer notch 43 of the right locking plate, the forward gear 19 being in driving relation with the shaft and the carriage traveling toward the left. In the central, neutral position, the bar is parallel to the carriage and engages in the central locking notches 44, the clutch bar, in this position, being midway between the propelling gears 19 and 20 allowing the gears to rotate idly on the propelling shaft.

At each end of the tracks 2, a post in the form of an angle bar 47, extends upwardly from the table 1. Through the upper end of each post threads a horizontal barrel 48

containing a compression spring 49 which protrudes from its inner end, the barrels being locked in adjusted position by lock nuts 50. At each corner of the carriage frame is secured a plate 51 supporting a stud 52, these studs being in position to enter the springs when the carriage reaches the ends of its travels. The springs cushion the impact of the carriage with the posts and then serve to start the carriage on its reverse travel. Each of the front posts has secured to its front face a horizontal plate 53 adjustable longitudinally by means of screws 54 engaging in slot 55. The inner end of each plate is turned 90° into a horizontal plane and pivots a vertical cam roller 56 interposed in the path of the corresponding pawl 38 on the clutch lever.

From the above description the propulsion control of the carriage is readily understood. The carriage is moving toward the left. When the left curved end 37 of the clutch lever is engaged by the left cam roller, the clutch lever is moved to its neutral position into locking notches 44, the left pawl 38 coming into engagement with the front of the cam roller before the carriage is stopped by the spring bumpers. When the carriage has reached the end of its travel to the left the pawl will have glided past the cam roller to the outer side thereof and will have been replaced against its abutment 39 by its spring 40. As soon, however, as the clutch lever assumed the neutral position the clutch fork was swung to move the clutch bar 24 to neutral position to disconnect the motor, the carriage then completing its travel due to its inertia until stopped by the springs. The recoil of the springs gives the carriage a powerful start in the opposite direction. The clutch lever pawl, upon striking the cam roller, is blocked by its abutment, the result being that the pawl is deflected by the roller to swing the clutch lever in counter-clockwise direction to land its left end in the outer locking notch of the left locking plate 41. The friction ridges 45 and 46 brake the movements of the clutch lever and prevent overthrow thereof. This swing of the lever by its pawl causes movement of the clutch fork to slide the clutch bar into engagement with the teeth of gear 20 whereupon the motor is coupled to the propulsion shaft to complete the propulsion of the carriage to the right. When the right curved end 37 of the clutch lever engages with the right cam roller, the lever is again shifted to neutral position to uncouple the motor and upon recoil of the carriage the pawl engages with the cam roller to swing the clutch lever in clockwise direction back to the position shown in Fig. 1, thus causing the clutch bar to be reshifted into engagement with gear 19 so the motor may complete the propulsion to

the left. Thus the carriage is automatically shuttled back and forth over the table, the cam rollers and clutch lever first cooperating to unclutch the motor, the springs then receiving and recoiling the carriage, and the cam rollers and clutch lever then cooperating to re clutch the motor to the carriage for reverse propulsion, the motor running continuously.

10 A top frame over the right half of the machine comprises vertical end members 57 extending from the right ends of the carriage frame bars 10, side members 58 extending toward the left from the upper
15 ends of the rear members, and one or more cross bars 59 extending between these side members. Pivoted between the left ends of the side members is a guide roller 60, and pivoted between the upper and lower ends
20 of the rear members are guide rollers 61 and 62 respectively, while between these last mentioned rollers, extends a tension rod 63. Supported on the cross bar 7 and between the frame bars 10 of the carriage is
25 the board 64 for supporting a bolt of cloth 6 to be piled. The cloth passes first over roller 60, then over roller 61, then about the tension rod 63, then about the lower roller 62, then over a central shaft 65 journaled in bars 12 of the carriage frame, and
30 then downwardly between and about feed or delivery members 66 and 67, which will be described later. Free to be adjusted along shaft 65 are blocks 68 each supporting an
35 upright bar 69 terminating at its upper end in a guide plate 70 partly encircling the roller 60. On rollers 61 and 62 are adjustable guide plates 71 and 72 respectively. A T shaped extension 73 from which bar 69
40 secures to guide plates 71 and 72 so that we have front and rear vertical guide planes each including a guide plate 70, a guide plate 71 and a guide plate 72, the guide planes being adjustable for any width of
45 cloth by movement of their supporting blocks 68 along shaft 65. The guide planes are locked in adjusted position by lugs 74 on plates 70 adapted to be secured by set
50 screws 75 to a rod 76 extending between the side members 58 of the top frame.

In order to automatically stop the carriage when the supply of cloth is exhausted, we provide circuit controlling mechanism for the motor which automatically opens the
55 motor supply circuit when the cloth has all been laid. This circuit controlling mechanism includes a lever 77 pivoted on bracket 78 supported on one of the side members 58, and a contact bracket 79 secured to said side member below the outer end of the lever
60 which carries an adjustable contact screw 77', for cooperating with the contact bracket. The lever 77 extends over the top frame and at its inner end pivots a roller 80. When
65 cloth is passing over the top frame the roller

is engaged thereby and the lever is supported to hold its contact screw against the contact bracket thereby keeping the motor supply circuit closed. When the cloth supply is exhausted, the roller is unsupported and
70 the lever drops to disengage the contact screw from the bracket thereby causing the motor circuit to be opened and the carriage stopped. Thus when a supply of cloth has been laid, the carriage is automatically
75 stopped and the attendant notified.

The feed or delivery mechanism to which reference has been made above, is best shown in Figs. 3, 7 and 8. The delivery
80 members 66 and 67 are in the form of angle bars and are arranged side by side at the bottom of the carriage below the shaft 65, their vertical flanges being at the outside and their horizontal flanges lying normally
85 in a common plane and separated by a narrow gap of just sufficient width to allow the cloth to pass between. The bar 66 is secured at its ends to blocks 81 each of which pivots from its inner face a cam roller 82.
90 An extension 83 from the outer face of each block terminates in a head 84, the extension and head being vertically slidable in a T slot 85 of a guide block 86. The bar 67 is
95 secured at its ends to blocks 87 each of which pivots a cam roller 88 on its inner face. Blocks 87 are longer than blocks 81 so that the cam rollers 88 are higher than cam rollers 82. The blocks 87 also have T
100 extensions engaging in T slots of the guide blocks 86. The outer faces of the guide blocks have vertical channels 89 for receiving vertical dove tail extensions 90 extending inwardly from the carriage frame bars
105 12. The delivery bars 66 and 67 can therefore move relatively vertically or can be moved simultaneously with the guide blocks. Below each cam roller, 82, the horizontal flange or bar 66, has an opening 91, and below each roller 88, the horizontal flange of
110 bar 67 has an opening 92. Just in front of each roller 82, the vertical flange of bar 66 has a slot 93 extending downwardly from its upper edge.

The delivery bars 66 and 67 cooperate with the clamp or jaw frames J and J' to
115 deliver the cloth thereto. Referring to Figs. 1, 2, 4 and 5, the posts 47 at each end of the table are connected near their bases by a bar 94 which supports a plurality of lugs 95 supporting a pivot rod 96. The ends of an
120 outer U frame 97 and the ends of an inner U frame 98 pivoted to this rod, the inner frame being formed of angle iron the vertical front wall 99 of which has vertically elongated slots 100 receiving the intermediate rods 101 extending from the pivot
125 rod to the front wall of the outer U frame (Fig. 5), this arrangement allowing slight relative rotation between the U frames. Secured on each side member of the left inner
130

U frame is a Z bracket 102 the upper substantially horizontal parts 103 of said brackets being in the vertical planes of the corresponding lower cam rollers 82 on the carriage. The parts 103 form cam rails for the rollers 82 and their outer ends bevel downwardly to points as shown. The height of the rails is such that as the carriage travels to the left, the cam rollers 82 are raised to the tops of the rails and the delivery bar carried by said rollers is raised above the level of the U frames, the rails passing through the slots 93 of the delivery bars (Figs. 2 and 5). From each inner corner of the outer U frame extends two lugs 104 and 105 between which is pivoted a substantially heartshaped cam dog 106 having a stop shoulder 107 on its left edge. These shoulders prevent swing of the dogs to the left the dogs, however, being free to swing toward the right. Between these dogs, and secured to the body of the outer U frame, is the tooth bar 108 having teeth or points 109 extending downwardly (Fig. 4). The right jaw frame J' is of exactly similar construction as the left frame J except that the cam rails 103 are higher to receive the higher cam rollers 88 on the carriage, the delivery bar 67 passing between the rail and inner U frame upon passage of the cam roller over the rail.

The delivery operation will now be plain. Referring to Fig. 2, the carriage is traveling toward the left, a pile *p* having been laid thereon and held in place by the tooth bars engaging over the ends thereof. The right end of the cloth layer *b'* is held under the right tooth bar, the left end of the layer passing about the edge of the delivery bar 67. Near the left end of the carriage travel, the edge of the bar encounters the left cam dogs 106 and as these dogs cannot rotate toward the left, the U frames together with the delivery bar 66 now supported thereon, will be raised to allow the horizontal flange of bar 67 to carry the left end of layer *b'* under the teeth of the tooth bar. When the carriage reaches the left end of its travel, the openings 92 in bar 67 will register with the cam dogs which pass therethrough to allow the U frames to drop to carry the tooth bar against the left end of layer *b'* (Fig. 5). When the carriage now starts to travel toward the right, delivery bar 67 is withdrawn from under the tooth bar, this occurring without raising of the U frames as the cam dogs are free to rotate to the right and out of the openings 91. The cloth will now be carried toward the right by the delivery bar 66 to form the next layer. When the bar 66 was lifted on to the cam rails, the weight thereof was added to that of the U frames to press the tooth bar against the pile end to prevent displacement thereof during delivery thereto of the left end of

layer *b'*. When the carriage reaches the right end of its travel, it cooperates with jaw frame J' exactly as it did with jaw frame J, the carriage shuttling back and forth to pile the cloth on the table. The level of the delivery bars must be raised in accordance with the increasing height of the pile. This we accomplish automatically by improved and simplified mechanism. The shaft 65 carries at its front end a ratchet wheel 110 between which and the carriage frame a rock lever 111 is pivoted centrally on the shaft and carries a ratchet pawl 112 engaging the ratchet wheel, the arrangement being such that counterclockwise rotation of the lever will cause the pawl to rotate the ratchet wheel and shaft, a detent spring 113 then holding the ratchet wheel. A spring 114 extending to the right between the upper end of the lever and the carriage frame serves to rotate the lever back to normal after each active rotation thereof, an adjustable stop 115, secured to the carriage frame determining the number of ratchet teeth to be advanced during each active rotation of the lever. An actuating rod 116 pivots to the lower end of the rock lever and extends toward the left through a guide opening in the left plate 51 already referred to, the rod extending a distance beyond the plate in the plane of an abutment plate 117 secured to the front left post 47. When the carriage reaches the left end of its travel, the end of the rod encounters the abutment plate and is pushed to the right to rotate the rock lever in counter clockwise direction, which results in a rotational advance of the ratchet wheel and shaft 65. A similar rod 116' extends from the upper end of the rock lever through and beyond the right plate 51 to be engaged by the right abutment plate 117, such engagement likewise resulting in rotation of the shaft 65. Each of the guide blocks 86 already referred to, has threaded therethrough, a screw shaft 118 journaled at its upper end in a bearing bracket 119 (Fig. 3) and carrying at its upper end a bevel gear 120. These gears mesh with companion bevel gears 121 on the ratchet wheel shaft 65, so that rotation of said shaft will result in rotation of the screw shafts to raise the guide blocks. The stop 115 for the rock lever 111 is adjusted in accordance with the thickness of the layers of the pile *p* so that each rotational advance of the ratchet wheel will result in raising of the guide blocks a distance equal to the thickness of one layer. Raising of the guide blocks takes place when the carriage reaches the ends of its travels, at which time one of the delivery bars is under the tooth bar of the corresponding jaw frame. The delivery bars are therefore raised slightly above the pile so as not to disturb the just laid top layer thereof upon withdrawal of the delivery bars from under

the tooth bars when the carriage recedes. This upward movement of the bars also has a tendency to bring the ends of the next layer into more intimate engagement with the teeth of the tooth bars. When a pile is removed from the table, the guide blocks can be quickly dropped to bring the delivery bars to their initial position by withdrawing the pawl and the detent spring from the ratchet wheel and rotating shaft 65 by a hand wheel 122 at the outer end of the shaft (Fig. 3). To automatically count the layers of a pile, a cyclometer 123 is attached to the carriage frame whose left and right actuating rods 124, 124' each extend from one end of rock lever 123' and pivot to a block 125 slidable on rod 126 slidable through guide openings in the left and right plates 51 to cooperate with the abutment plates 117 on the front posts 47. Each block abuts against a compression spring 127 encircling the rod, and bearing against a block 128 adjustably secured to the rod. When the carriage reaches the ends of its travels, the rod 126 is pushed inwardly to advance the cyclometer one point, a spring 129 restoring the rod to normal position. Thus at each end of travel of the carriage the clutch mechanism is automatically set for opposite propulsion, the formed layer is clamped, the ratchet mechanism is actuated to raise the delivery bars, and a layer is counted on the cyclometer, none of the operations requiring any attendance. When all the cloth is piled, the carriage stops automatically by virtue of the motor circuit controlling mechanism. The motor runs continuously from the time the carriage is initially started until its circuit is opened by the automatic circuit controlling mechanism. This is particularly advantageous where the motor is of the alternating current type. The arrangement also eliminates the danger due to sparking where the motor circuit is repeatedly opened as for example in the arrangement in our copending application referred to.

In order to more perfectly aline the layers of a pile, the shaft 65, over which the cloth travels before it passes between the delivery bars, could be conical, as shown in Fig. 10, the conical surface 67' tending to crowd the cloth against the front guide plate 130 carried by one of the delivery bars (Figs. 3, 7 and 9), thus causing the front edges of the pile layers to exactly register.

As shown in Fig. 11, one or more bolts of cloth could be supplied on the carrier to be simultaneously fed to a common pile on the table. For this purpose additional bolt supporting boards 131 are provided. As shown, one additional board is provided whose right end is supported on tension rod 63 and whose left end has legs 132 resting on the main board 64, the cloth from the main board passing directly over roller 61 while

the cloth from the additional board passes first over roller 60 and supports the roller 80 controlling the motor circuit contact mechanism. For an arrangement like this, the ratchet mechanism must, of course, be adjusted to raise the guide blocks and deliver bars a distance equal to two thicknesses of cloth at each end of the carriage travel.

We do not desire to be limited to the exact constructions and arrangements shown as changes could readily be made which would still fall within the scope of our invention, but

We desire to secure the following claims by Letters Patent.

1. In combination, a carriage, a track over which the carriage is adapted to reciprocate, a motor on the carriage, forward and reverse clutch mechanism for determining the direction of propulsion of the carriage by the motor, a clutch lever pivoted at a central point to said carriage and connected with the clutch mechanism, one position of the clutch lever causing the forward clutch mechanism to be active, another position of the lever causing the reverse clutch mechanism to be active and a neutral position of the lever causing entire disconnection of the clutch mechanism, a post adjacent each end of the track, and a cam roller on each post, a pawl on each end of the lever free to swing only in one direction, each cam roller cooperating with the corresponding lever end and pawl to shift the lever to neutral position when the carriage travels in one direction whereby propulsion is stopped and means for starting the carriage on its return movement, said cam rollers cooperating with the lever end and pawl during such return movement to shift the lever to position to cause propulsion of the carriage in the direction in which it has been started.

2. In a cloth piling machine, the combination of a cloth carriage, an electric motor for propelling said carriage back and forth over a fixed path, clamping frames at each end of said path for receiving and retaining the cloth piled by said carriage, and means controlled by the passage of cloth from said carriage for automatically adjusting the motor circuit to stop the motor when the supply of cloth on said carrier is exhausted.

3. In a cloth piling machine, the combination of a track, a carriage having wheels engaging said track, propulsion mechanism on said carriage having connection with said wheels, bumper springs at each end of the track for stopping the carriage and causing recoil thereof in the opposite direction, and controlling mechanism for said propulsion mechanism actuated upon recoil of the carriage to change the propulsion thereof to be in the direction of recoil.

4. In a cloth piling machine, the combination of a track, a carriage mounted on

said track, a motor on said carriage, clutch mechanism for connecting said motor with the carriage for forward or reverse propulsion of the carriage over the track, a clutch lever controlling said clutch mechanism, bumper posts at each end of the track, bumper springs supported on said posts for receiving and recoiling the carriage, a cam arm at each end of the track in the path of the clutch lever, engagement of said clutch lever with a cam arm when the carriage approaches the corresponding bumper springs causing the lever to be shifted to a neutral position to cause the clutch mechanism to disconnect the motor from propelling connection with the carriage, and a pawl at each end of the lever for engaging the cam arm upon recoil of the carriage to shift the clutch lever to adjust the clutch mechanism for propulsion of the carriage by the motor in the recoil direction.

5. In a cloth piling machine, the combination of a track, a carriage mounted on said track to travel back and forth thereon, bumper mechanism at each end of the track for receiving and recoiling the carriage, propulsion mechanism on the carriage, clutch mechanism for the propulsion mechanism for determining the direction of travel of the carriage, a clutch lever for said clutch mechanism, a pawl at each end of said clutch lever, a cam arm at each end of the track, adjacent the corresponding bumper mechanism to shift the lever to entirely unclutch the propulsion mechanism, and said arm engaging the pawl of the lever upon recoil of the carriage to further shift the lever and to cause actuation of the clutch mechanism to adjust the propulsion mechanism for driving the carriage in the recoil direction.

6. In a cloth piling machine, the combination of a track, a carriage mounted on said track, a pair of vertically movable cloth delivery bars at the bottom of said carriage adjacent the track, a clamping frame pivoted to each end of the track and extending inwardly toward the carriage, cam dogs at the end of each frame, means on each frame for raising the foremost delivery bar when the carriage approaches said frame, the other bar engaging the cam dogs on said frame to raise said frame, said other bar having openings into which the cam dogs drop to allow said frame to fall after raising thereof, and means for reversing the direction of travel of the carriage after said frame falls, said cam dogs revolving to allow withdrawal of said other bar without raising of said frame.

7. In a cloth piling machine, the combination of a track, a cloth carriage on said track, an electric motor for propelling said carriage, guiding mechanism for guiding

cloth from said carriage to said track, a circuit for said motor, switch mechanism for said circuit, lever mechanism connected with said switch mechanism and held by said cloth to close said circuit, and means whereby said lever mechanism is actuated to open the switch mechanism and said motor circuit when all the cloth has been fed from said carriage.

8. In a cloth piling machine, the combination of a track, a carriage on said track, means for propelling said carriage back and forth on said track, clamping frames at the ends of said track, delivery bars on said carriage, guide rollers for guiding cloth from said carriage to said delivery bars, guide plates on said rollers, and a conical roller engaging the cloth to crowd the cloth against said guide plates.

9. In a cloth piling machine, the combination of a track, a carriage on said track, clamping frames on the ends of said track, delivery bars on said carriage for feeding cloth to said clamping frames, guide rollers on said carriage for guiding cloth from the top of the carriage to said bars, two sets of guide plates encircling said rollers and longitudinally slidable thereon, a common supporting frame for each set of guide plates, and a shaft on which said frames are adjustable to adjust the distance between said sets of guide plates in accordance with the width of the cloth.

10. In a cloth piling machine, the combination of a track, a carriage on said track, clamping frames on the ends of said track, delivery bars on said carriage for feeding cloth to said clamping frames, guide rollers on said carriage for guiding cloth from the top of the carriage to said bars, two sets of guide plates encircling said rollers and longitudinally slidable thereon, a common supporting frame for each set of guide plates, and a conical roller engaging the cloth to crowd said cloth against one set of said guide plates.

11. In a cloth piling machine, the combination of a track, a carriage mounted on said track, a pair of vertically movable cloth delivery bars at the bottom of said carriage, adjacent the track, a clamping frame pivoted at each end of the track and extending inwardly toward the carriage, cam dogs at the end of each frame, cam rollers on each delivery bar, cam rails on each frame for engaging under the cam rollers of the foremost bar when the carriage approaches said frame whereby said bar is raised, the other bar engaging the cam dogs on said frame to raise said frame, said other bar having openings into which the cam dogs drop to allow said frame to fall after raising thereof, and means for reversing the direction of travel of the car-

riage after said frame falls, said cam dogs revolving to allow withdrawal of said other bar without raising of said frame.

12. In a cloth piling machine, the combination of a track, a carriage having wheels engaging said track, a motor on said carriage, a shaft on the carriage having driving connection with said wheels, forward and reverse gears loose on said shaft and permanently connected with said motor, clutch mechanism for connecting either gear with said shaft, a clutch lever for said clutch mechanism pivoted on said carriage to swing on a horizontal plane, a cam post at each end of said track for engaging the approaching end of the clutch lever to shift said lever to neutral position, means independent of said clutch mechanism for stopping the carriage after such shifting of the lever and for starting the carriage in the opposite direction, and means in said lever for cooperating with said cam post when the carriage starts in the opposite direction for further shifting the lever to thereby adjust the clutch mechanism for reverse propulsion of the carriage by the motor.

13. In combination, a carriage, abutment members between which said carriage reciprocates, resilient means associated with

said abutment members for starting said carriage in the reverse direction, a clutch having three positions, one a neutral position, a reversing lever associated with said clutch, and means for throwing said lever into neutral position before the end of a stroke in one direction and for throwing said lever into the reverse position after the beginning of the return stroke.

14. In combination, a carriage, abutment members between which said carriage reciprocates, resilient means associated with said abutment members for starting the carriage in the reverse direction, means actuated by contact with said abutment members for automatically disconnecting the propelling means of said carriage, and means for automatically connecting the propelling means of said carriage after the carriage has been started in the reverse direction by the action of said resilient means associated with said abutment members.

In witness whereof, we have signed our names to this specification in the presence of two subscribing witnesses.

MORRIS L. SHAPER.
CHAS. M. SHAPER.

Witnesses:

GEO. S. PINES,
EDW. R. NEUMANN.