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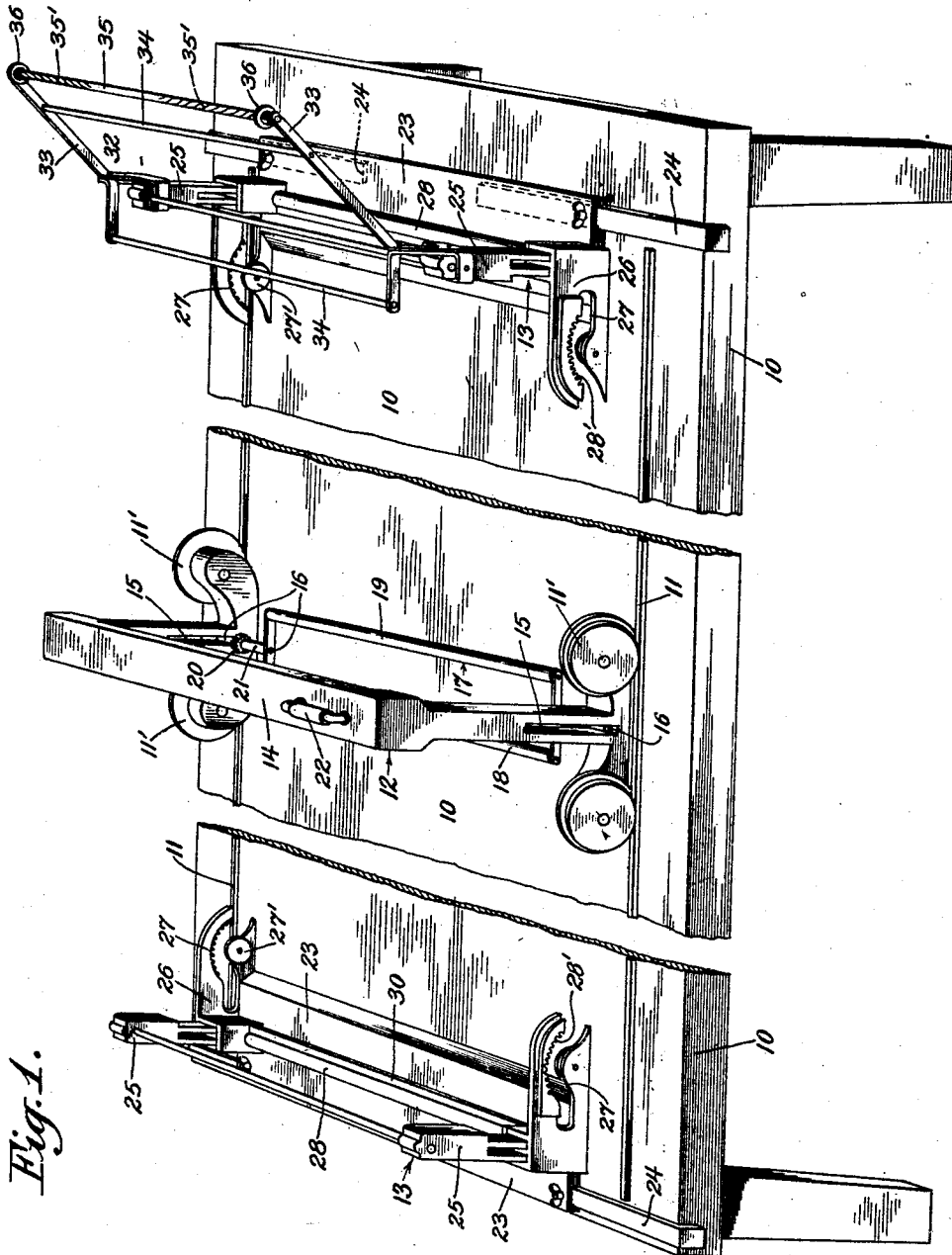
H. SCHWARTZMAN

1,571,808

CLOTH LAYING MACHINE

Filed Feb. 21, 1925

4 Sheets-Sheet 1



Land Proctor
WITNESS:

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ATTORNEY

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Fig. 3.

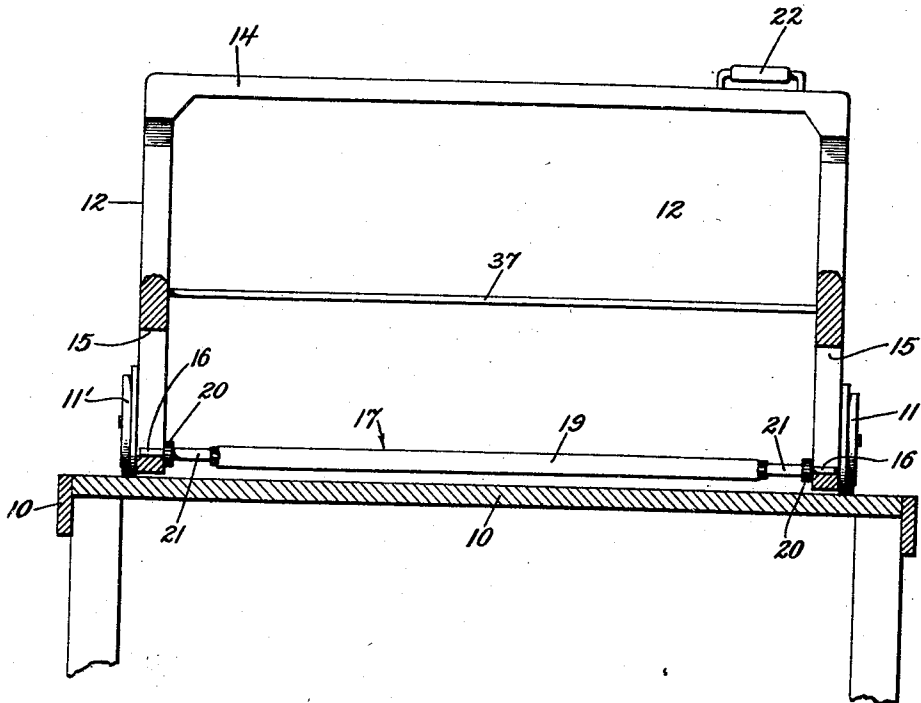
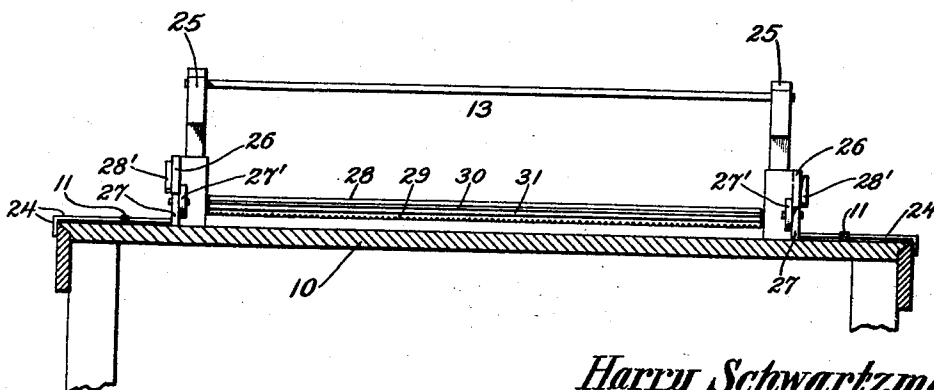


Fig. 4.



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UNITED STATES PATENT OFFICE.

HARRY SCHWARTZMAN, OF NEW YORK, N. Y.

CLOTH-LAYING MACHINE.

Application filed February 21, 1925. Serial No. 10,923.

To all whom it may concern:

Be it known that I, HARRY SCHWARTZMAN, a citizen of the United States of America, residing at New York city, in the county of New York and State of New York, have invented new and useful Improvements in Cloth-Laying Machines, of which the following is a specification.

This invention relates to improvements in cloth laying machines.

The principal object of the invention resides in the provision of a machine for laying out a roll or bolt of cloth in predetermined lengths and in pile formation whereby the cloth is prepared for cutting into separable lengths prior to the cutting out of the garments to be formed therefrom.

Another object is to provide a cloth laying machine which is automatic in its action so as to require the services of a single operator for operation of the same.

A further object of the invention is to embody in a machine of the above mentioned type, a carriage movable back and forth over a table for laying out the cloth from the roll or bolt, and spaced clamping means on the table in the path of movement of said carriage for automatic operation when the carriage has reached the limit of its movements, for gripping the folds of cloth and securely holding the same until it is desired to remove the lengths of cloth from the table.

A still further object is the provision of a cloth laying machine which is portable and adjustable to tables of various lengths and widths, and which may be set-up within a minimum amount of space for the laying of relatively long lengths of cloth, and which is simple in construction and cheap of manufacture.

With these and other objects in view, the invention resides in certain novel construction and combination and arrangement of parts, the essential features of which are hereinafter fully described, are particularly pointed out in the appended claims, and are illustrated in the accompanying drawing, in which:—

Figure 1 is a perspective view of my invention.

Figure 2 is a central longitudinal sectional view therethrough.

Figure 3 is a vertical transverse sectional view on the line 3—3 of Figure 2.

Figure 4 is a similar view on the line 4—4 of Figure 2.

Figure 5 is a detail perspective view of the cloth laying rollers.

Figure 6 is a detail perspective view of one of the clamping bars.

Figures 7, 8, 9, and 10 are diagrammatic views showing the several steps in the operation of the machine.

Like characters of reference refer to like parts throughout the several views of the drawings, in which the reference numeral 10 designates a support in the nature of an elongated table upon which my invention is mounted for operation. My improved cloth laying machine includes a pair of spaced rails 11 secured to the top face of the table and extending approximately the length of the same and which co-act to form a track for supporting and guiding a carriage 12 mounted upon the wheels 11' in its movement thereon. Broadly, the invention includes a carriage 12, cloth clamping means 13 secured at opposite ends of the table in the path of movement of the carriage, and which co-act with the carriage upon the limit of its movement in opposite direction to form a fold in the cloth.

The carriage 12 comprises a frame 14 of relatively U-shape, the legs of which rotatably support the wheels 11' above referred to, and which legs are slotted as at 15 for rotatably and slidably receiving the stub shafts 16, 16, of a cloth laying and folding member 17. The member 17 comprises spaced bars 18 and 19 which are rotatable with respect to the stub shafts to permit the cloth to freely pass thereover during the laying of the cloth as will be presently explained. Gears 20 are keyed to the stub shafts while rotatable sleeves 21 encircle the stub shafts between the gears 20 and the support for the bars 18 and 19. A handle 22 is provided on the top of the frame for the convenience of the operator to permit the carriage to be rolled back and forth across the table for a purpose to be herein-

after explained. The cloth clamping means 13 comprises a base 23 from which extends adjustable jaws 24 for engagement with the longitudinal side edges of the table whereby the same may be securely held thereon and capable of use on tables of various widths and lengths. Spaced posts 25 rise vertically from each base 23 and are disposed in transverse alignment, the posts of each base being also in alignment with the posts on the opposite base. Each post 25 slidably supports for vertical movement an inwardly extending arm 26 which is formed with a cam shaped slot 27, the mouth of which is always disposed in horizontal alignment with the sleeves 21 on the stub shafts 16, and in order to assist the sleeves in their movement through the walls of the cam shaped slots there is provided rollers 27' on the inner faces of the arm. Secured to the outer face of each arm 26 is an arcuate shaped gear rack 28' disposed in longitudinal alignment for co-action with the gears 20 as the sleeves enter the cam slots 27 to rotate the stub shafts to cause the bars 18 and 19 to reverse their horizontal positions and which causes the stub shafts to rotate one-half revolution. The walls of the mouth of the slots 27 serve as a guide for bringing the gears into position for engagement with the racks 28'. A transversely disposed bar 28 is journaled in each transversely disposed pair of arms 26 and is formed with right angularly disposed gripping portions 29 and 30, the edges of which may be serrated, the space between the portions defining a pocket 31 and which bar is given a quarter revolution by the respective cloth laying bars 18 and 19 upon the limit of movement of the carriage in opposite direction.

One set of posts 25 supports a tension and guiding means 32 for the cloth as it passes from the roll or bolt into the machine, and which means includes a frame 33 removably secured to the posts 25 and vertically adjustable thereon. Transverse tension bars 34 are carried by the frame and are disposed at different heights with the higher bar 35 nearer the end of the table. A guide bar 35 is rotatably mounted in the top end of the frame adjacent the higher bar 34 and is formed at opposite sides of its center with right and left spirals 35' to cause the cloth to straighten toward the edges should the same enter the machine in a condition other than a flat condition. Adjustable collars 36 are carried by the bar 35 for guiding the edges of the cloth thereover and which collars are set apart approximately the distance of the width of the cloth to be laid.

A tension bar 37 may also be mounted in the vertical legs of the carriage frame 14 out of the path of rotation of the bars 18 and 19 when they have been raised to the

limit of their vertical movements. The cloth is adapted to pass over and under the tension bars 34 and over the bar 37, and thence between the cloth laying bars 18 and 19.

When preparing the machine for operation, the clamping means 13 are first adjusted to the desired space relation which depends upon the length of the layer of cloth desired. The free end of the roll of cloth is then drawn over the guide bar 35 beneath the upper tension rod 34 and over the lower tension bar 34 and either directly between the cloth laying bars 18 and 19 or over the tension bar 37 and then between the cloth laying bars, depending upon the weight of the cloth to be laid and the amount of tension desired. The operator now moves the carriage toward the right and as the gears 20 move into meshing engagement with the racks, the position of the bars 18 and 19 is reversed thereby causing a loop or fold to be formed in the cloth C as indicated.

As the sleeves on the stub shaft move to the closed end of the cam shaped slots, the foremost of the bars 18 and 19 enters the pocket 31 of the gripping bar 28 and rotates the said bar a quarter revolution as shown in Figure 8 of the drawing. The portion 29 which was formerly in vertical gripping position has moved to a horizontal position while the portion 30 is now serving to hold the cloth clamped against the base 23 and is pressing the cloth at a point between the bars 18 and 19. As the carriage is moved in the opposite direction toward the other end of the table the gears 20 again mesh with the racks which moves the bars 18 and 19 to their former position, but they have in turn left a fold in the cloth and which is now held down by the portion 30 of the gripping bar as shown in Figure 10 of the drawing. It will be noted that the gripping bar has been automatically moved to its former position as the cloth laying bars cannot pass out of the pocket 31 without operating the gripping bar to move the same to its normal position. The operation is repeated as the carriage moves to its limit in opposite directions, and a layer of cloth is spread upon the table upon the limit of movement of the carriage in either direction. By slidably mounting the cloth laying bars 18 and 19 in the carriage frame, and the arms 26 upon the post 25, it will be seen that these parts are permitted automatic vertical movement as the layers of cloth increase in thickness, and that the mouths of the cam shaped slots 27 are always disposed in horizontal alignment with the sleeves on the stub shaft 16 thereby eliminating the adjustment of these parts as each layer is formed.

In Figures 7 to 10 inclusive, I have shown diagrammatic views of several positions of

the cloth laying bars 18 and 19 in their travel over the table. In Figure 7, several layers of cloth have been spread and the carriage is moving in a direction indicated by the arrow. In Figure 8, the carriage has reached the limit of its movement in one direction, at which time the position of the bars 18 and 19 is reversed to form a fold in the cloth and which is shown by the letter F. The newly made fold is being held by the portion 30 of the gripping bar. The carriage is about ready to move in the direction of the arrow. In Figure 9, the carriage is nearing the opposite gripping bar with the bars 18 and 19 back in normal position. In Figure 10 the bars are reversed and the carriage is moved in a direction opposite to that shown in Figure 9. In other words, the carriage is about to spread a new layer of cloth but the cloth laying bars have not as yet been reversed.

From the foregoing description, it will be seen that any number of layers may be spread in stack or pile formation until the arms 26 and stub shafts 16 have reached the top of their respective slots.

I wish it to be understood that if desired, the carriage could be connected with any suitable power which would impart back and forward movement thereto which would render the machine entirely automatic in its operation.

Although I have specifically mentioned that the machine is especially adapted for laying cloth, I do not wish to limit myself thereto, as wallpaper and other thin flexible material could be laid in a similar manner without in any way departing from the spirit of my invention.

While I have described what I deem to be the most desirable embodiment of my invention, it is obvious that many of the details may be varied without in any way departing from the spirit of my invention, and I therefore do not limit myself to the exact details of construction herein set forth nor to anything less than the whole of my invention limited only by the appended claims.

What is claimed as new is:—

1. A machine of the class described including a table, a carriage movable thereover, a cloth laying and folding member supported by said carriage, spaced clamping means, and coacting means operable for rotating said member prior to the limit of movement of said carriage in opposite directions, to form a fold in the cloth for engagement by said clamping means.

2. A machine of the class described including a table, a carriage movable thereover, a cloth laying and folding member supported by said carriage, tension and guiding means for the cloth in its passage from a roll to said laying and folding mem-

ber, spaced clamping means, and co-acting means operable for rotating said member prior to the limit of movement of said carriage in opposite directions, to form a fold in the cloth for engagement by said clamping means.

3. A machine of the class described including a table, a carriage movable across said table for laying a length of cloth thereon, means for forming a fold in the cloth prior to the limit of movement of the carriage in opposite directions, and means for gripping the folded cloth adjacent the folds therein.

4. A machine of the class described including a table, a carriage movable across said table for laying a length of cloth thereon, automatic means for forming a fold in the cloth prior to the limit of movement of the carriage in opposite directions, and automatic means for gripping the folded cloth adjacent the folds therein as the folds are formed.

5. A machine of the class described including a table, spaced clamping means thereon, a carriage movable over said table between said clamping means, a rotatable member mounted in said carriage and through which the cloth is adapted to pass, and means for rotating said member to form a fold in the cloth near the limit of movement of said carriage in opposite directions, said member operating said clamping means to cause the same to automatically engage the folded ends of the cloth upon the limits of movement of the carriage.

6. A machine of the class described comprising a table, spaced gripping bars mounted upon the same for vertical sliding movement, a carriage movable over said table between said gripping bars and adapted to engage the same, a member journaled in said carriage for vertical sliding movement with respect thereto and adapted to spread a length of cloth on said table upon movement of the carriage thereover, coacting means for reversing the position of said member near the limit of movement of said carriage in either direction to form a fold in the cloth and for moving said member to normal position after the fold has been formed and engaged by said gripping bars, and the carriage is moving in an opposite direction to spread a new length of cloth.

7. A machine of the class described comprising a table, spaced gripping bars mounted upon the same, each bar having a pair of right angularly disposed gripping portions, a carriage, a rotatable member supported by said carriage including a pair of spaced bars, gear racks extending inwardly of said gripping bars, gears carried by said rotatable member for meshing engagement with said gear racks as the carriage nears the limit of its movement in

- opposite directions to reverse the horizontal position of said spaced bars to form a fold in a length of cloth adapted to pass there-between, said rotatable member co-acting with the respective gripping bars upon the extreme limit of movements of the carriage to cause the same to change the relative position of said gripping portions to receive the newly formed fold of cloth.
8. A machine of the class described comprising a table, spaced gripping bars mounted upon the same, each bar having a pair of right angularly disposed gripping portions, a carriage, a rotatable member supported by said carriage including a pair of spaced bars, gear racks extending inwardly of said gripping bars, gears carried by said rotatable member for meshing engagement with said gear racks as the carriage nears the limit of its movement in opposite directions to reverse the horizontal position of said spaced bars to form a fold in a length of cloth adapted to pass there-between, said rotatable member co-acting with the respective gripping bars upon the extreme limit of movements of the carriage to cause the same to change the relative position of said gripping portions to receive the newly formed fold of cloth, and automatic means for constantly maintaining said gripping bars, rotatable member and gear racks in proper horizontal alignment as the thickness of the folded cloth increases upon said table.
9. A machine of the class described comprising a table, a pair of base plates arranged in spaced relation upon said table, adjustable means for clamping said plates upon said tables, a pair of posts rising from each base plate, a member slidable vertically upon each post, a rotatable gripping bar journaled in each transversely aligned pair of members, a gear rack formed in each member and extending inwardly of said gripping bars, a carriage movable over said table between said gripping bars, a cloth laying and fold forming member vertically movable with respect to said carriage, and gears on said last mentioned member for engagement by said gear racks to rotate the same one-half revolution to form a fold in a length of cloth to be engaged by said gripping bars.
10. A machine of the class described comprising a table, a pair of base plates arranged in spaced relation upon said table, adjustable means for clamping said plates upon said table, a pair of posts rising from each base plate, a member slidable vertically upon each post, a rotatable gripping bar journaled in each transversely aligned pair of members, a gear rack formed in each member and extending inwardly of said gripping bars, a carriage movable over said table between said gripping bars, a cloth laying and fold forming member vertically movable with respect to said carriage, and gears on said last mentioned member for engagement by said gear racks to rotate the same one-half revolution to form a fold in a length of cloth to be engaged by said gripping bars, said gears and gear racks being out of horizontal alignment, and co-acting means for moving said cloth laying and gripping member to cause said gears to move to a position for engagement by said gear rack.
- In testimony whereof I have affixed my signature.

HARRY SCHWARTZMAN.