Oct. 5, 1965 W. R. SPIVEY 3,209,629

APPARATUS FOR CUTTING, FEEDING AND STACKING ARTICLES OF CLOTH

Filed March 11, 1963 4 Sheets-Sheet 1

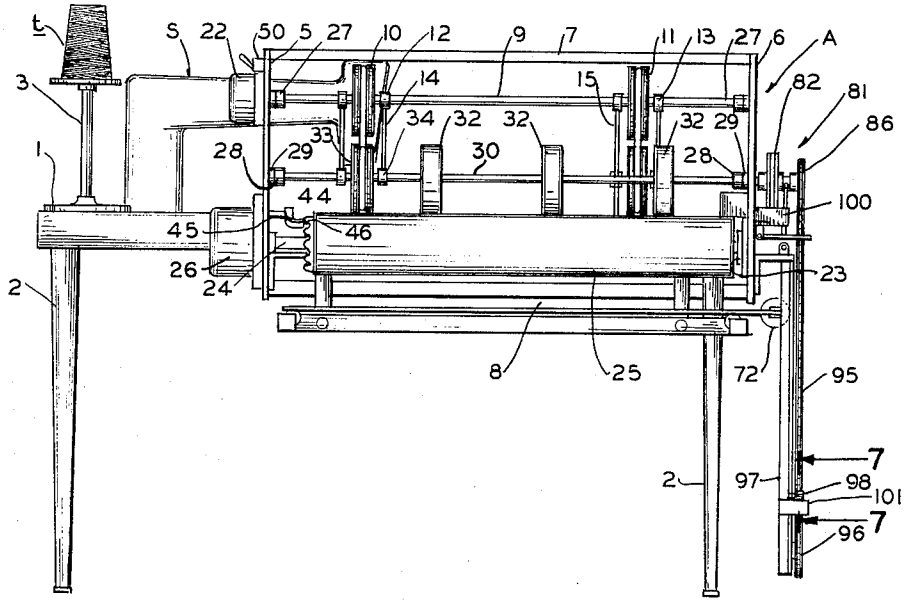


FIG. 1

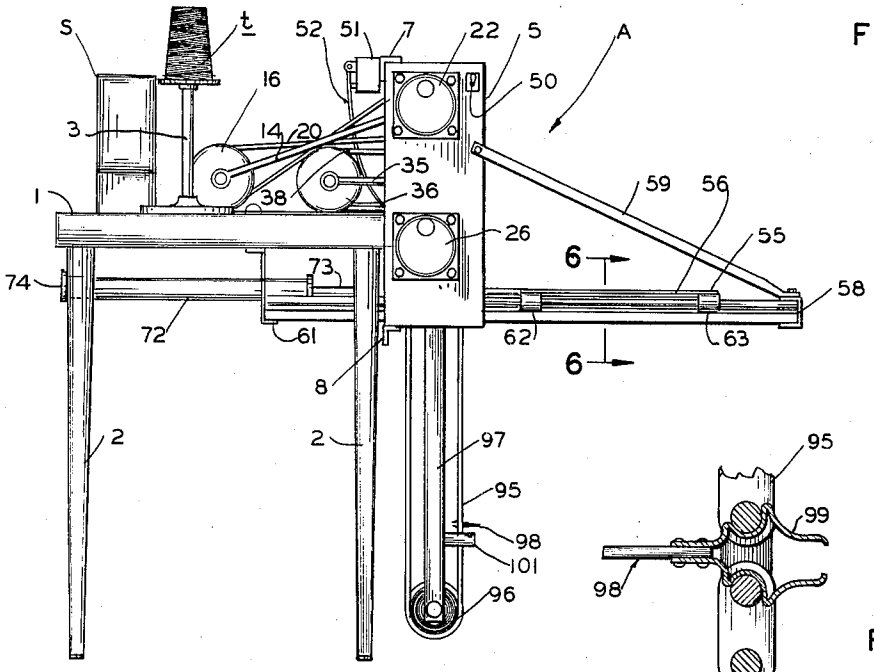


FIG. 2

FIG. 7

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APPARATUS FOR CUTTING, FEEDING AND STACKING ARTICLES OF CLOTH

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FIG. 3

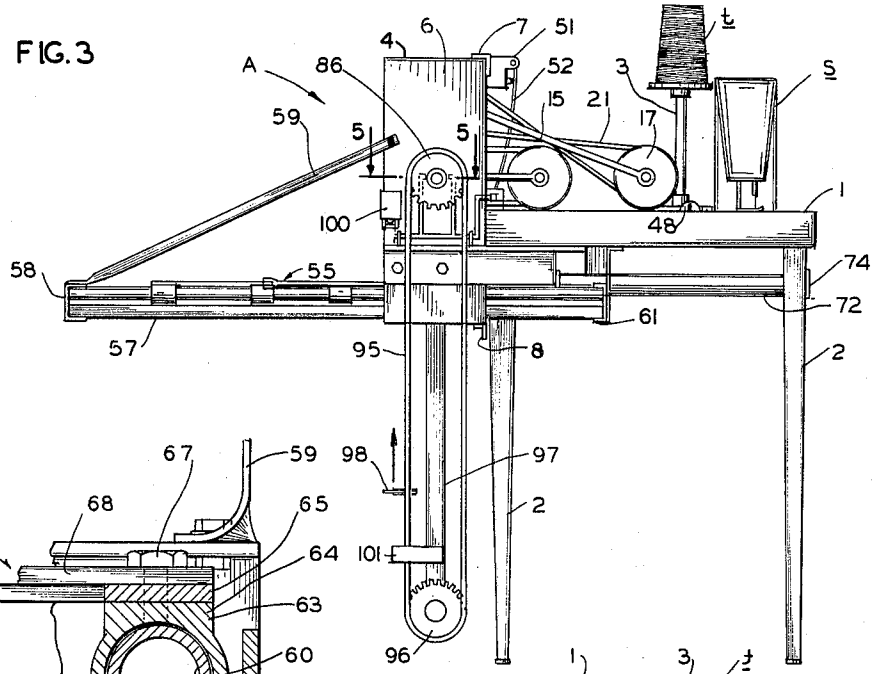
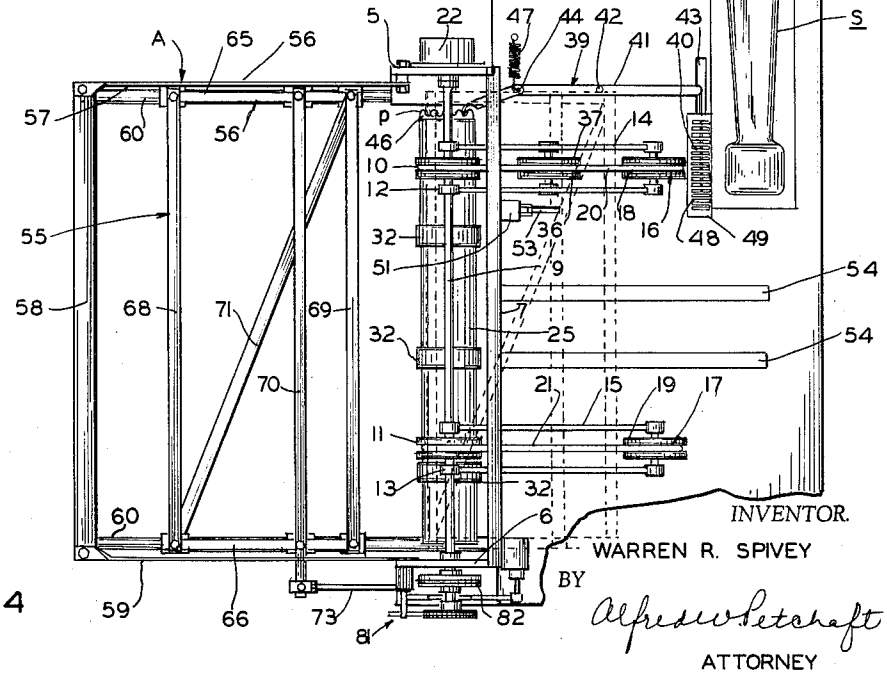


FIG. 6

FIG. 4



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APPARATUS FOR CUTTING, FEEDING AND STACKING ARTICLES OF CLOTH

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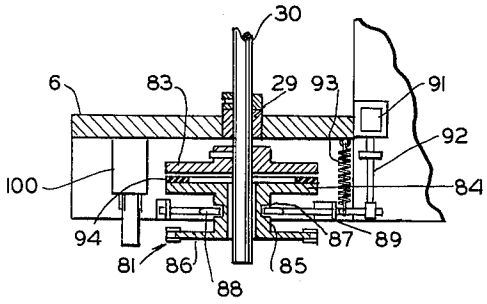


FIG. 5

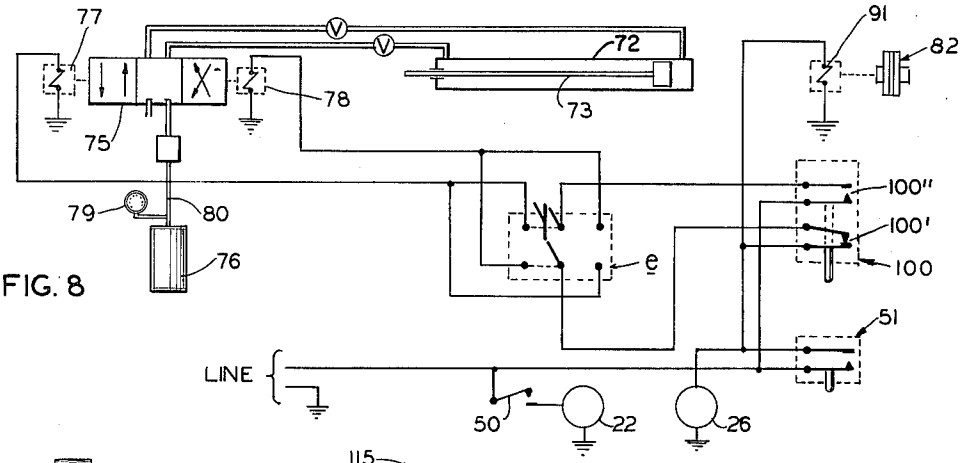


FIG. 8

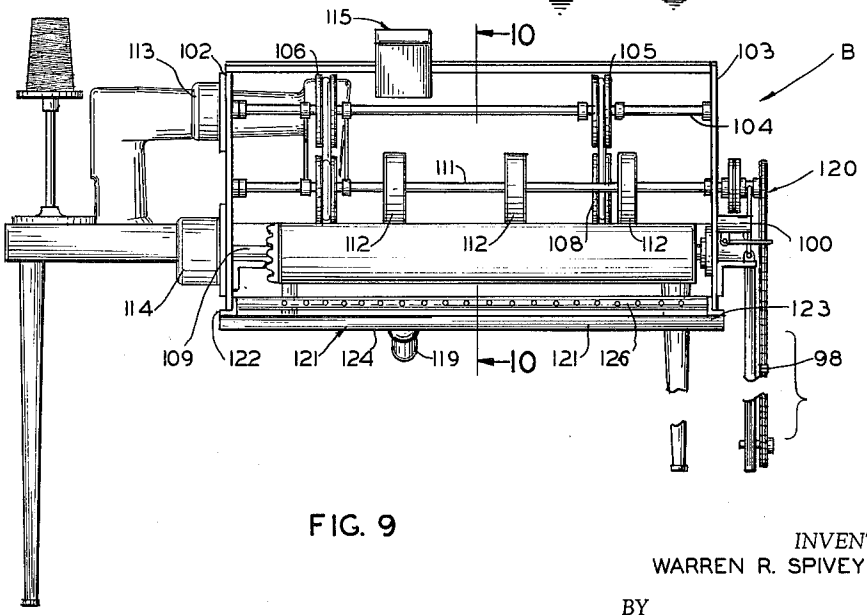


FIG. 9

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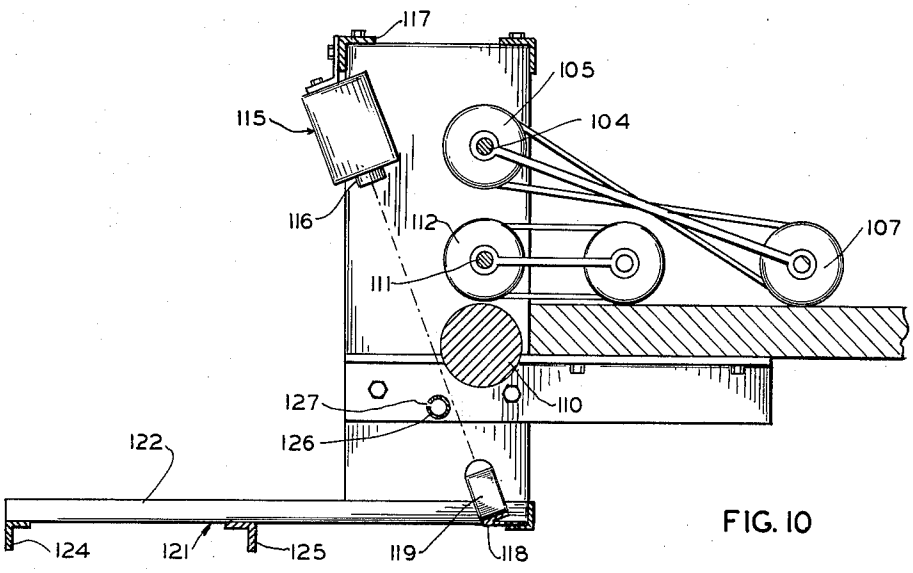


FIG. 10

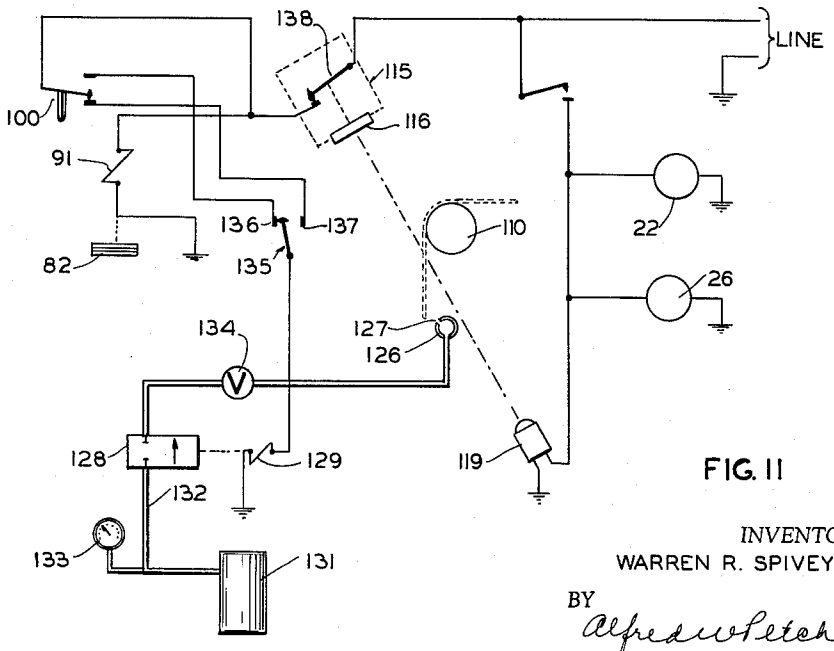


FIG. 11

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United States Patent Office 3,209,629 Patented Oct. 5, 1965

3,209,629

APPARATUS FOR CUTTING, FEEDING AND STACKING ARTICLES OF CLOTH

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Filed Mar. 11, 1963, Ser. No. 264,268
11 Claims. (Cl. 83—79)

This invention relates in general to certain new and useful improvements in fabric handling equipment and, more particularly, to a cloth handling device which is adapted to separate, turn, and stack sections of fabric successively fed through and seamed by a sewing machine.

In garment factories, sections of cloth constituting components or elements of apparel are fed continuously in successive order through a sewing machine, whereby they are stitched, hemmed, seamed or otherwise suitably fabricated. In the interest of speed and efficiency, the operator feeds one piece of cloth right after another with the result that the successive sections are connected by a continuous chain of stitches frequently referred to in the needle trade as "seaming." It is, therefore, necessary that this continuous chain of stitches or so-called "seaming" be severed, and the separate pieces or sections stacked in some suitable manner for convenient transfer to the next operation. It has been a practice heretofore to sever the seaming manually by means of a knife or scissors and stack the pieces by hand. In many of the garment-making operations, the sections of fabric must be turned on a reverse side during the stacking operation. These manual operations of severing the seaming and turning the pieces in the stacking operation are time consuming and, therefore, materially increase the cost of the final product.

It is, therefore, the primary object of the present invention to provide a cloth handling device which can be operatively attached to a sewing machine for automatically severing the continuous connection between successive sections of fabric.

It is another object of the present invention to provide a cloth handling device of the type stated which is readily adaptable to most existing types of commercial sewing machines.

It is a further object of the present invention to provide a cloth handling device of the type stated which is capable of separating, turning, and stacking successively stitched sections of fabric.

It is also an object of the present invention to provide a cloth handling device of the type stated which is sturdy in construction, economic to manufacture, and efficient in operation.

With the above and other objects in view, my invention resides in the novel features of form, construction, arrangement, and combination of parts presently described and pointed out in the claims.

In the accompanying drawings (four sheets):

FIG. 1 is a rear elevational view of a sewing machine equipped with the cloth handling device constructed in accordance with and embodying the present invention;

FIG. 2 is a left end elevational view of the sewing machine and cloth handling device attached thereto;

FIG. 3 is a right end elevational view of the sewing machine and cloth handling device attached thereto;

FIG. 4 is a top plan view of the sewing machine and cloth handling device attached thereto;

FIG. 5 is a fragmentary sectional view taken along line 5—5 of FIG. 3;

FIG. 6 is a fragmentary sectional view taken along line 6—6 of FIG. 2;

FIG. 7 is a fragmentary sectional view taken along line 7—7 of FIG. 1;

FIG. 8 is a schematic view of the electrical and pneumatic circuitry forming part of the present invention;

FIG. 9 is a rear elevational view, partly broken away, of a sewing machine equipped with a modified form of cloth handling device constructed in accordance with and embodying the present invention;

FIG. 10 is a vertical sectional view taken along line 10—10 of FIG. 9; and

FIG. 11 is a schematic view of the electrical and peumatic circuitry forming part of the cloth handling machine of FIG. 9.

Generally speaking, the present invention comprised a cloth handling device adapted for operative attachment to a commercial sewing machine including a reciprocating cutting blade for severing the seaming between successive sections of fabric. As the fabric sections are fed from the sewing machine, the seaming is brought into contact with the reciprocating cutting blade through a slotted grid in the table top and then the separated sections of cloth are carried by a pair of feed rollers to a stacking mechanism which includes a movable carriage adapted to receive the fabric sections as they move over the rear margin of the table and stack them in some desired order or position.

Referring now in more detail and by reference characters to the drawings, which illustrate a preferred embodiment of the present invention, S designates a sewing machine mounted upon a table top 1 supported by legs 2 and having a spool of thread *t* which is supported by a spool stand 3. The aforementioned components of the sewing machine S are conventional and, therefore, are neither illustrated nor described in detail herein.

Provided for attachment to the rearward side of the table top 1, as shown in FIGS. 2 and 3, is a cloth handling device A comprising an outer housing 4 preferably formed of aluminum or other light-weight metal and consisting of a pair of transverse end plates 5, 6, which are connected at their upper and lower margins by cross-bars 7, 8, respectively. Journaled in and extending between the end plates 5, 6, is a rotatable shaft 9 which is provided with a pair of drive pulleys 10, 11. Freely disposed upon the shaft 9 on each of the transverse sides of the drive pulleys 10, 11, are two pairs of sleeves 12, 13, each pair supporting a pair of support rods 14, 15. Rotatably mounted on the lower ends of the support rods 14, 15, are hold-down rollers 16, 17, which are supported on the table top 1 by their own weight. The hold-down rollers 16, 17, are provided with peripheral grooves 18, 19, for accommodating drive belts 20, 21, which are also trained about the drive pulleys 10, 11. The rotatable shaft 9 extends through the end plate 5 and is operatively connected to a conventional electric motor 22 which is mounted on the exterior face of the end plate 5 in the manner as shown in FIGS. 1 and 4.

Mounted within each of the end plates 5, 6, are bearings 23 for journaling a rotatable drive shaft 24 and mounted on the shaft 24 is a drum-roller 25 having a smooth highly polished exterior surface. The drum-roller 25 is mounted in such manner that the uppermost margin thereof is tangenial to a horizontal plane which is located slightly below the upper surface of the table top 1. The drive shaft 24 extends through the end plate 5 and is suitably connected to a conventional electric motor 26, the latter being secured to the exterior surface of the end plate 5. The rotatable shafts 9, 30, are respectively provided with pairs of set collars 27, 28, adjacent each of the end plates 5, 6, to prevent axial translation of the shafts.

The end plates 5, 6, are provided with self-aligning bearings 29 for supporting an idler shaft 30 which extends between each of the end plates 5, 6, in upwardly spaced

relation to the rotatable drive shaft 24. Keyed or otherwise secured to the idler shaft 30 are three axially spaced rubber rollers 32 which are of the same diametral size and are spaced upwardly from the drum-roller 25 for a distance equal to the thickness of the cloth. Also mounted upon the idler shaft 30 is a drive pulley 33 and loosely disposed upon the shaft 30 adjacent each of the transverse sides of the pulley 33 are sleeves 34 which are provided with support rods 35. Mounted on the lower end of the support rods 35 is a take-up roller 36 which is provided with a peripheral groove 37 for accommodating a drive belt 38 which is also trained about the drive pulley 33. By reference to FIGS. 2 and 3, it can be seen that the take-up roller 36 is spaced rearwardly with respect to the hold-down rollers 16, 17.

Mounted on the underside of the table top 1 is a cutting device 39 for severing the continuous chain of stitches or seaming between each of the successive sections of fabric. The cutting device 39 includes a blade 40 which is rigidly mounted on an arm 41, the latter being pivotally mounted on the table top 1 by means of a pivot pin 42. The blade 40 is preferably provided with a sharpened and honed edge and extends upwardly through an elongated slot 43 formed in the table top 1. Moreover, by reference to FIG. 4, it can be seen that the blade 40 extends transversely to the direction of movement of the continuous chain connecting the sections of fabric and is in approximate alignment therewith. The arm 41 is actuated by means of a lever 44 which is piovtally mounted on a support 45, the latter being rigidly secured to the table top 1 in the manner as shown in FIG. 3. The other end of the lever 44 is biased against a cam 46 by means of a spring 47 which is secured at one end to the lever 44 and at its other end to the table top 1. The cam 46 is rigidly mounted on the drive shaft 24, and includes eight annularly spaced camming prongs *p*. The electric motor 26 is designed to operate at 70 r.p.m. and, therefore, it can be seen that the blade 40 is reciprocated 560 times per minute through the action of the cam 46. However, it, of course, is obvious that the time actuation of the blade 40 can be varied by replacing the cam 46 with a cam having a different number of camming prongs and by varying the speed of the electric motor 26. In this connection, it should also be understood that a circular cutting device of the type described in copending application Serial No. 177,575, filed March 5, 1962, could be substituted for the cutting device 39.

Mounted within the table top 1 and extending along the elongated slot 43 for its entire length is a series of semicircular convolutions 48 forming part of a spring coil guard 49. By reference to FIG. 4, it can be seen that the hold-down rollers 16, 17, are spaced forwardly of the take-up roller 36 and, moreover, both sets of rollers are spaced forwardly of the elongated slot 43. By means of this construction, the successively emitted sections of fabric are held down on each side of the cutting device 39. Also, the connecting chain extending between each of the sections of fabric is held in a taut position and extends between the convolutions 48 in the guard 49. Therefore, upon actuation of the cutting device 39, the blade 40 will sever the connecting chain. However, it should be noted that the blade 40 will not strike any portion of the fabric sections since they are protected by the guard 49.

The electric motor 22 is originally actuated at the initiation of the cloth handling operation through a toggle switch 50 which is mounted on the end plate 5. The electric motor 26 which operates the drum-roller 25 is only actuated when there is a presence of fabric material on the drum-roller 25 through the action of a microswitch 51 which is operatively mounted on the cross-bar 7. The microswitch 51 is electrically connected to the motor 26 and includes a sensing arm 52 which is movable in a slot 53 formed in the rearward margin of the table top 1, all as can best seen in FIG. 4. The table top 1 is also provided with a plurality of spaced transversely extending teflon strips 54 which provide a relatively friction-free surface for moving the sections of fabric.

After the sections of fabric have passed the drum-roller 25, they are deposited on a movable carriage 55 which is carried by a carriage support frame 56, the latter consisting of a pair of spaced rearwardly extending arms 57 which are bolted or otherwise rigidly secured to the underside of the table top 1 and extend rearwardly beyond the rearward margin of the table top 1. At their outer ends, the rearwardly extending arms 57 are connected by a cross-bar 58 and, moreover, are reinforced by a pair of struts 59 which are secured to the end plates 5, 6. A pair of guide rods 60 are secured to the cross-bar 58 and to a transversely extending support arm 61 which extends between and is secured to the end plates 5, 6.

The movable carriage 55 includes a pair of forward guide sleeves 62 and a pair of rearward guide sleeves 63 which are slidably mounted on the guide rods 60 in the manner as shown in FIG. 4. Integrally formed with each of the guide sleeves 62, 63, are upstanding sockets 64 for accommodating support rods 65, 66, which are, in turn, retentively held within the sockets 64 by means of set screws 67. Extending between each of the support rods 65, 66, are cloth supporting arms 68, 69, and an intermediate arm 70. Welded to the underside of each of the support arms 68, 69, is a diagonally extending bar 71 which prevents buckling or binding of the movable carriage 55 as it shifts back and forth on the carriage support frame 56. The movable carriage 55 is driven through a pneumatic cylinder 72 having a piston rod 73 which is, in turn, secured to one of the forward guide sleeves 62 in the manner as shown in FIG. 3. The pneumatic cylinder 72 is secured to a bracket 74 which is secured, in turn, to the legs 2.

The pneumatic cylinder 72 is of the double acting type and is connected to a two-way three-position valve 75 which is, in turn, connected to a source of high-pressure air 76, as schematically shown in FIG. 8. The valve 75 is operated by a pair of cooperating solenoids 77, 78, all for reasons which will presently more fully appear. A two-pole, two-position switch *e* is electrically connected to the pair of solenoids 77, 78, for reversing the operation of each. A conventional pressure gauge 79 can be preferably interposed in a pneumatic line 80 connecting the high-pressure air source 76 to the valve 75.

The movable carriage 55 is moved to its extended position, that is the position as shown in the dotted lines of FIG. 4, and to its retracted position, that is the position as shown in the solid lines of FIG. 4, in timed relation to the feeding of the articles of cloth through a timing device 81 which is mounted on the exterior surface of the end plate 6. The timing device 81 includes a clutch 82 having a pair of clutch plates 83, 84, the clutch plate 83 being rigidly mounted on the idler shaft 30. The clutch plate 84 is integral with a sleeve 85 which is, in turn, rotatably mounted on, and axially shiftable with respect to, the shaft 30. The sleeve 85 is provided with a sprocket 86 and a peripheral groove 87, the latter being operatively engaged in a yoke 88 which is rockably pivoted on the underside of the table 1 by means of a bracket 89. The clutch plates 83, 84, are biased into and out of engagement by the action of a solenoid 91 which is mounted on the end plate 6 and is secured to the yoke 88 through a connecting rod 92. The clutch plates 83, 84, are normally biased out of engagement through the action of a spring 93 which is interposed between the bracket 89 and the end plate 6. Moreover, when biased into engagement, the clutch plate 84 is provided on its interior face with an annular rubber contact strip 94 for preventing slippage between the two clutch plates 83, 84.

Trained around the sprocket 86 is a sprocket chain 95 which is trained at its lower end around a sprocket 96 which is, in turn, rotatably mounted on a depending arm 97, the latter being secured to the transverse margin of the table top 1. The sprocket wheel 96 is spring-

biased to turn in a counter-clockwise direction, reference being made to FIG. 3.

Provided for insertion into any of the apertures of the sprocket chain 95 is a removable actuating pin 98 which is retained by means of a spring clip 99. By reference to FIG. 7, it can be seen that the spring clip 99 can be squeezed so that it can be inserted between any of the rollers forming part of the spring chain 95. When the clutch plates 83, 84, are in the engaged position, the sprocket 86 will rotate with the idler shaft 30. Rotation of the sprocket 86 will rotate the sprocket chain 95 in a clockwise direction, reference being made to FIG. 3, and thereby move the actuating pin 98 upwardly in the direction of the arrow in FIG. 3. As the pin 98 reaches it uppermost position, it will actuate a double-pole single-throw microswitch 100 which is mounted on the exterior surface of the end plate 6. The microswitch 100 includes a set of normally closed contacts 100' and a set of normally open contacts 100''. By reference to FIG. 8, it can be seen that the microswitch 100 is electrically connected to the solenoid 91 and, when actuated, will actuate the solenoid 91, permitting the spring 93 to cause disengagement between the clutch plates 83, 84. As this occurs, the sprocket 96 which is spring-biased in a counterclockwise direction will rotate the sprocket chain 95 in a counterclockwise direction and move the actuating pin 98 downwardly. Downward movement of the actuating pin 98 will continue until it strikes a striker plate 101 which is removably mounted on the depending support bar 97. By reference to FIG. 3, it can be seen that the sprocket plate 101 can be moved and retained on the support bar 97 in any of a plurality of selected positions. Any conventional fastening means, such as a removable bolt, may be used in order to secure the striker plate 101 to the support bar 97.

In use, the cloth handling device A is attached to any convenient table top which is provided with a sewing machine S. The electric motor 22 is connected to any suitable source of alternating current, not shown, for actuation. This will, in turn, cause rotation of the rotatable shaft 9 and thereby rotate each of the drive pulleys 10, 11. The hold-down rollers 16, 17, are then driven through belts 20, 21, which are trained about the drive pulleys 10, 11.

As each section of cloth is fed from the sewing machine S, it is passed across the cutting device 39 and are protected from contact with the rapidly reciprocating blade 40 by the slotted grid of guard 49. However, the connecting chain between each of the successively emitted sections of cloth will pass through one of the convolutions 48 forming part of the guard 49. The rapid reciprocation of the blade 40 in contact with the connecting chain will sever this connecting chain. Moreover, it can be noted that the take-up roller 36 and the hold-down rollers 16, 17, will maintain the connecting chain between each of the successive sections of cloth in a taut position.

The sections of fabric will continue to be driven along the table top 1 by the hold-down rollers 16, 17. As soon as the rearwardly presented or so-called leading edge of each fabric section comes into contact with the sensing arm 52, it will swing the sensing arm 52 outwardly or rearwardly in the slot 53, thereby closing the microswitch 51. At this instant, the electric motor 26 will be actuated, thereby setting in rotation the drive shaft 24, and the drum-roller 25. As the sections of fabric pass across the drum-roller 25, the upper surfaces will engage the rollers 32 and thereby set into rotation the idler shaft 30. Rotation of the idler shaft 30 will thereupon actuate the timing device 81 in the manner to be hereinafter described.

Closing of the microswitch 51 will also complete a circuit to the solenoid 91, thereby shifting the clutch plate 84 into engagement with the clutch plate 83.

As the drive shaft 24 is rotated, the cam 46 mounted thereon will also be set into rotation. As the lever 44 is biased into the camming prongs 48 by means of the spring 47, it will rock and thereby actuate the arm 41. The rocking action of the arm 41 will cause rapid reciprocation of the blade 40 in a direction which is transverse to the movement of the sections of fabric.

It can be seen by reference to FIG. 8, that the closing of the microswitch 51 will also complete a circuit to the solenoid 91 which will cause engagement between the clutch plates 83, 84. As soon as the clutch 82 is in the engaged position, it will rotate the sprocket 86 and, hence, the sprocket chain 95. Moreover, the sections of fabric will continue to pass over the drum-roller 25 and dangle downwardly beyond the rearward margin thereof. It can be seen that the rotation of the drum-roller 25 causes rotation of the idler shaft 30.

By reference to FIG. 8, it can be seen that the closing of the microswitch 51 also actuates the solenoid 78 when the switch *e* is moved to the position shown in the dotted lines of FIG. 8. Actuation of the solenoid 78 moves the valve 75 to a position where it will admit air to the pneumatic cylinder 72, causing the piston rod 73 to extend. Extending of the piston rod 73 will shift the movable carriage 55 rearwardly within the carriage support frame 56. As this occurs, the first half of the section of fabric which is being passed off the drum-roller 25 will drape downwardly between the drum-roller 25 and the cloth supporting arm 69.

The plate 101 is secured to the arm and the actuating pin 98 is retained in the sprocket chain 95 in a position where it will move upwardly during the time that one half of each fabric section passes over the drum-roller 25. When approximately one-half of the fabric section has passed beyond the drum-roller 25 the actuating pin 98 will contact the microswitch 100, opening the normally closed contacts 100' and close the normally open contacts 100''. By following the circuity of FIG. 8, it can be seen that the break of the contacts 100' will break the circuit to solenoid 78. Moreover, closing of the contact 100'' will complete a circuit to the solenoid 77. Actuation of the solenoid 77 will shift the valve 75 to a position where it will admit air to the pneumatic cylinder 72, causing the piston rod 73 to retract. This, of course, will shift the movable carriage back to its initial position, as can be seen in the dotted lines of FIG. 4. It can be noted that the cloth which has been passed over the drum-roller 25 dangles downwardly in a freely depending position between the support bar 69 and the drum-roller 25. As the carriage 55 shifts rearwardly, the section of fabric will drape across the intermediate arm 70 and the cloth supporting arm 68 thereby turning the section of fabric upside-down.

It is to be noted that the microswitch 51 still remains in the closed position during the passing of the second half of each fabric section. Therefore, the solenoid 91 remains in the actuated state. However, the clutch 82 will slip on the idler shaft 30 during the passing of the second half of each fabric section. However, as the trailing margin of each fabric section passes beyond the rearward margin of the table top 1, the sensing arm 52 will fall rearwardly within the slot 53 opening the microswitch 51. This will break the circuit to the solenoid thereby shutting off the air to the cylinder 75, and stopping the movement of the carriage 55. The spring-biased sprocket 96 will thereupon rotate the chain 95 in a counterclockwise direction, reference being made to FIG. 3, until the actuating pin 98 contacts the striker plate 101.

It can be seen that the various lengths of cloth can be handled with the device A merely by adjusting the position of the striker plate 101 on the support bar 97. Thus, if the longer section of fabric is to be used, the striker plate 101 is lowered on the support bar 97. Similarly, for shorter sections of fabric, the striker plate 101 will be raised from the position as shown in FIG. 5. As the carriage 55 has been shifted to its initial position,

the cloth handling device A is in a position where a new cycle can be initiated.

If, for some reason, it is desired to maintain the section of fabric on the same face, when striking, the switch *e* is moved to its opposite position. This will, in effect, reverse the cycle of the movable carriage **55** and will reverse the action of the solenoids **77**, **78**. In this case, at the initiation of the operation, the carriage **55** will be held in a stationary position, that is the position as shown in the dotted lines of FIG. 4. As the section of cloth passes through the sensing arm **52**, it will actuate the microswitch **51**, causing the drum-roller **25** to rotate in the manner as previously described. As the section of fabric passes beyond the drum-roller **25**, it will dangle downwardly beyond the rearward margin of the cloth supporting arm **68**. As soon as half of this section passes over the drum-roller **25**, the pin **98** which has been moving upwardly in the manner as previously described will close the contacts **100''** of the microswitch **100**. This will cause the solenoid **77** to move the valve **75** to a position where the piston rod **73** will be extended. This will, in turn, shift the movable carriage **55** to its outermost position. As the carriage **35** moves outwardly, the remaining half of the section of fabric will pass over the drum-roller **25** and across the cloth supporting arm **68**. Therefore, the last half of the fabric section will drop on the rear side of the arm **69** until it passes completely beyond the drum-roller **25**. The sections of fabric will then be draped over the arms **68**, **69**, in a U-shaped manner and in a right-side-up position.

It is possible to provide a modified form of cloth handling device B, substantially as shown in FIGS. 9–11, and which is substantially similar to the previously described cloth handling device A, and comprises a pair of end plates **102**, **103**, having a rotatable shaft **104** with drive pulleys **105**, **106**. The drive pulleys **105**, **106**, similarly rotate hold-down rollers **107**, **108**. Also mounted within the end plates **102**, **103**, is a rotatable drive shaft **109** having the drum-roller **110**. Similarly mounted above the drum-roller **110** is an idler shaft **111** which is provided with rubber rollers **112**. The rotatable shafts **104**, **109**, are also powered by means of electric motors **113**, **114**, respectively.

Forming a part of the cloth handling device B is a photoelectric sensing mechanism **115** including a photoelectric cell **116** which is mounted on a cross-bar **117** extending between and rigidly secured between the end plates **102**, **103**. A bracket **118** is secured to, and projects outwardly from, the interior face of the end plate **102** and at its outer end supports a light **119**, completing a photoelectric circuit to the photoelectric cell **116**. By reference to FIG. 10, it can be seen that the beam of light passes between the rearward margin of the table top **1** and the drum-roller **110**. Thus, as sections of fabric pass across the drum-roller **110**, they will break the photoelectric beam between the photoelectric cell **116** and the light **119**.

The cloth handling device B includes a timing mechanism **120** which is substantially identical to the previously described timing mechanism **81** and includes all of the components thereof. Thus, when sections of fabric are passed across the drum-roller **110**, the rubber rollers **112** will be set into rotation, causing the idler shaft **111** to rotate. This will, in turn, actuate the timing mechanism **120** in the manner as previously described. During the course of rotation of the idler shaft **111**, the actuating pin **98** will raise to close the microswitch **100**.

The cloth handling device B is provided with a stationary cloth supporting mechanism **121**, rather than a movable carriage **55**, as employed in the cloth handling device A. The cloth supporting mechanism **121** includes a pair of rearwardly extending arms **122**, **123**, which are welded or otherwise rigidly secured to the interior faces of the end plates **102**, **103**, respectively, and rigidly secured to the outer ends of the arms **122**, **123**, is a cross-bar **124**. Extending between and welded to each of the arms **122**, **123**, is a stacking bar **125** which is located at the immediate rear of the drum-roller **110**. Thus, as the sections of cloth passed across the drum-roller **110**, the free end will dangle down between the drum-roller **110** and the stacking bar **125**.

Mounted on the underside of the table top **1** adjacent the rearward margin thereof is a tubular air cylinder **126** which is provided with a plurality of horizontally aligned rearwardly facing apertures **127** which provide a means for blowing jets of air at the sections of cloth as they drape downwardly between the drum-roller **110** and the stacking bar **125**. The air cylinder **126** is connected to an on-off valve **128** which is operable by a solenoid **129**. The valve **128** is connected to a source of high pressure air **131**, as schematically shown in FIG. 11, by an air line **132**. Interposed in the air line **132** is an air pressure gauge **133** and interposed in a line connecting the valve **128** and cylinder **126** is a pressure regulating valve **134**. Thus, through this construction, it is possible to regulate the air blast from the discharge apertures **127** for sections of cloth having various weights. A single pole throw switch **135** having contacts **136**, **137**, is electrically interposed between the microswitch **100** and the solenoid **129**, for reversing the operation thereof in the same manner as the switch *e* reversed the operation of the solenoids **77**, **78**. The photoelectric cell **116** includes a microswitch **138** which is normally held in the open position when a light circuit is completed.

The cloth handling device B is operated in a similar manner to the cloth handling device A. When sections of cloth are passed under the hold-down rollers **107**, **108**, they will be driven to the drum-roller **110**. As they pass over the drum-roller **110**, they will break the circuit between the photoelectric cell **116** and the light **119**, thereby completing a circuit to the microswitch **100**, and energizing the solenoid **91**, causing engagement of the clutch plates **83**, **84**. The passing of the sections of cloth will also set the rubber rollers **112** into rotation causing the rotation of the idler shaft **111**.

Rotation of the idler shaft **111** will operate the timing mechanism **120**, causing the actuating pin **98** to move upwardly to a position where it will strike the microswitch **100**, all in the manner as previously described in connection with the cloth handling device A. As the section of cloth passes across the drum-roller **110**, it will then move downwardly between the drum-roller **110** and the stacking bar **125**. During this time, the actuating pin **98** will be moving upwardly through the rotation of the sprocket chain **95**. As approximately one-half of the section of fabric has passed across the drum-roller **110**, the actuating pin **98** will actuate the microswitch **100**, completing a circuit to the contact **136** of the microswitch **135**. This will, in turn, complete a circuit to the solenoid **129**, causing the valve **128** to admit air to the cylinder **126**.

As this occurs, the air under pressure in the cylinder **126** will be forced outwardly through the discharge apertures **127** and will blow the remaining half of cloth across the other side of the stacking bar **125**. In effect, the sections of cloth will be stacked across the stacking bar **125** in a U-shaped manner. It should, of course, be noted that in this operation, the fabric section is turned upside down as it is stacked on the stacking bar **125**. When the cloth has passed completely across the drum-roller **110**, the light circuit between the photoelectric cell **116** and the light **119** will be completed and thereby break the circuit to the solenoid **129**, moving the valve **128** to its closed position preventing further deliverance of air to the cylinder **126**.

It is, of course, possible to stack each of the sections of fabric on the stacking bar **125** so that they are right side up. To accomplish this, the switch **135** is moved to its opposite position, so that the blade of the switch is in contact with the contact **137**, thereby reversing the

action of the solenoid 129. As the sections of fabric are then passed across the drum-roller 110, a circuit will be completed to the solenoid 129, causing the valve 128 to move to a position where it will supply air to the air cylinder 126. As the leading edge of the cloth is passed across the drum-roller 110, it will be blown beyond the stacking bar 125 where it will dangle downwardly on the rearward margin thereof. At approximately one-half of the section of fabric has passed across the drum-roller 110, the pin 98 will open the normally closed contacts of the microswitch 110, thereby breaking a circuit to the solenoid 129 and cutting off the air pressure to the cylinder 126. This will permit the remaining portion of the section of fabric to dangle downwardly in a free-depending position between the drum-roller 110 and the stacking bar 125 so that each of the successive sections of cloth are draped in a so-called right-side-up position.

It should be understood that changes and modifications in the form, construction, arrangement, and combination of the several parts of the cloth handling devices may be made and substituted for those herein shown and described without departing from the nature and principle of my invention.

Having thus described my invention, what I claim and desire to secure by Letters Patent is:

1. A cloth handling device for use with sewing machines and the like which is mounted on a support means, said cloth handling device comprising mechanical feeding means adapted to move successive sections of cloth after they have been stitched by a sewing machine so that a portion of each of the sections of cloth is adapted to hang downwardly over the edge of the support means in a freely depending position, cloth supporting means operatively mounted on said support means and being located in spaced relation to the discharge end of said feeding means in such a manner as to await and engage the depending portion of each section of cloth, driving means for shifting the cloth supporting means so that it is adapted to come into engagement with the depending portion of each section of cloth and thereby shift the cloth in such a manner that the remaining portion of cloth is adapted to drape across the cloth supporting means, first sensing means operatively mounted on the support means and being operatively connected to said driving means for starting said driving means when the presence of sections of cloth is sensed, and second sensing means operatively mounted on said support means and being operatively connected to said driving means for shifting the cloth supporting means in timed relation to the movement of section of cloth through the feeding means.

2. A cloth handling device for use with sewing machines and the like which is mounted on a support means, said cloth handling device comprising feeding means adapted to move successive sections of cloth after they have been stitched by a sewing machine so that a portion of each of the section of cloth is adapted to hang downwardly over the edge of the support means in a freely depending position, cloth supporting means operatively mounted on said support means and being located in spaced relation to the discharge end of said feeding means in such a manner as to await and engage the depending portion of each section of cloth, driving means for shifting the cloth supporting means so that it is adapted to come into engagement with the depending portion of each section of cloth and thereby shift the cloth in such a manner that the remaining portion of cloth is adapted to drape across the cloth supporting means, first sensing means operatively mounted on the support means and being operatively connected to said driving means for starting said driving means when the presence of sections of cloth is sensed, second sensing means operatively mounted on said support means and being operatively connected to said riving means for returning the cloth supporting means to its initial position in timed relation to the movement of sections of cloth through the feeding means, and adjusting means operatively associated with said second sensing means for predetermining the time that said second sensing means will actuate the driving means and shift the cloth supporting means so that said device is capable of accommodating sections of cloth of varying size.

3. A cloth handling device for use with sewing machines and the like which is mounted on a support means, said cloth handling device comprising mechanical feeding means for moving successive sections of cloth after they have been stitched by a sewing machine so that a portion of each of the sections of cloth is adapted to hang downwardly over the edge of the support means in a freely depending position, cloth supporting means operatively mounted on said support means and being located in spaced relation to the discharge end of said feeding means in such a manner as to await and engage the depending portion of each section of cloth, said cloth supporting means consisting of a movable element which shifts back and forth from a remote position to a position where it is adapted to be in engagement with the freely depending portion of the sections of cloth discharged from the feeding means responsive to the movement of the cloth past the feeding means, driving means for shifting the movable element so that it is adapted to come into engagement with the depending portion of the section of cloth so that each successive section of cloth is adapted to drape across the movable element in a marginally registered stack, and adjustable timing means operable to actuate said driving means for causing said movable element to move at different predetermined times in the cloth feeding cycle so that the movable element will optionally engage either of the flat surfaces of the cloth whereby each section of cloth will be adapted to drape over the movable element with one or the other flat surface presented upwardly.

4. The device of claim 3 further characterized in that the driving means includes a pneumatic ram which is connected to the movable element.

5. A cloth handling device for use with sewing machines and the like which are mounted on a support means, said cloth handling device comprising mechanical feeding means for moving successive section of cloth after they have been stitched by a sewing machine so that the sections of cloth are adapted to hang downwardly over the edge of the support means in a freely depending position, cloth supporting means operatively mounted on said support means and being located in spaced relation to the discharge end of said feeding means in such a manner as to await and engage the depending portion of each section of cloth, said cloth supporting means consisting of a movable element which shifts back and forth from a remote position to a position where it is adapted to be in engagement with the freely depending portion of the sections of cloth discharged from the feeding means responsive to the movement of the cloth past the feeding means, driving means for shifting the movable element so that it is adapted to come into engagement with the depending portion of each section of cloth discharged from the feeding means so that the sections of cloth are adapted to be successively draped across the cloth supporting means, a sensing element operatively disposed on the support means and being adapted to sense the presence of sections of cloth on the support means, a first microswitch operatively mounted on the support means and being connected to the sensing element and the feeding means for actuating the feeding means responsive to the presence of cloth on the support means, and a second microswitch mounted on the support means and being connected to said driving means for shifting the movable element in timed relation to the movement of the section of cloth through the feeding means.

6. A cloth handling device for use with sewing machines and the like which are mounted on a support means, said cloth handling device comprising feeding means for moving successive sections of cloth after they

have been stitched by a sewing machine so that the sections of cloth are adapted to hang downwardly over the edge of the support means in a freely depending position, cloth supporting means operatively mounted on said support means and being located in spaced relation to discharge end of said feeding means so as to receive the depending portion of each section of cloth, air blast means operatively mounted on said support means for impelling a portion of cloth discharged from the feeding means past the normal vertical plane in which the portion of the cloth is adapted to be momentarily suspended so that the portion of the cloth so impelled will drop on the opposite side of the cloth supporting menas from that portion not so impelled, whereby the sections of cloth are adapted to be successively draped across the cloth supporting means, sensing means for detecting the presence of cloth in the feeding means timing means operably associated with said sensing means for actuating the air blast means in timed relation to the feeding means, and valve means operatively associated with said air blast means for regulating the time when the air blast commences responsive to actuation by the timing means, the face of the cloth presented upwardly on the support means being dependent on the time said valve means directs the blast of air against the cloth.

7. A cloth handling device for use with sewing machines and the like which are mounted on a support means, said cloth handling device comprising mechanical feeding means for moving successive sections of cloth after they have been stitched by a sewing machine so that a portion of each of the sections of cloth is adapted to hang downwardly over the edge of the support means in a freely depending position, cloth supporting means operatively mounted on said support means and being located in spaced relation to the discharge end of the feeding means so as to receive the depending portion of each section of cloth, sensing means for detecting presence of cloth in the feeding means, actuating means for shifting the depending portion of each section of cloth discharged from the feeding means into engagement with the cloth supporting means, timing means for controlling movement of the actuating means so that the sections of cloth are adapted to be successively draped across the cloth supporting means, said timing means being adjustable in such a manner so as to permit the feeding means to discharge the cloth on the cloth supporting means with either one of the other faces of the cloth presented upwardly, said timing means being further adjustable to adapt the device for use with cloth of varying lengths and cutting means including a reciprocating blade and slotted guard means displaced in upwardly spaced relation over and around the blades for severing the seam-connection between successive sections of cloth.

8. A cloth handling device for use with sewing machines and the like, said device comprising support means, feeding means for moving successive sections of cloth, cloth supporting means operatively mounted on the support means and located in spaced relation to the discharge end of the feeding means so as to await and receive the depending section of cloth discharged therefrom, a cloth directing means for directing the portion of cloth discharged from the cloth feeding means, sensing means for detecting the presence of cloth in the feeding means, timing means for activating the cloth directing means thereby engaging the portion of cloth immediately discharged from the feeding means with the cloth supporting means so that the sections of cloth are successively draped over the cloth supporting means in marginally registered relationship, said timing means comprising an actuating pin propelled along an adjustable predetermined distance by operative connection to the feeding means, and a switch operatively connected to the cloth directing means and adapted to initiate active operation of the cloth directing means when the actuating pin is at either one or the other extremity of the predetermined distance.

9. A cloth handling device for use with sewing machines and the like, said device comprising support means, cutting means operatively mounted on support means for severing the seaming between successive sections of cloth, said cutting means including a reciprocating blade and slotted guard means disposed in upwardly spaced relation over and around the blade, feeding means for moving successive sections of cloth, cloth supporting means operatively mounted on the support means and located in spaced relation to the discharge end of the feeding means so as to await and receive the depending section of cloth discharged therefrom, a cloth directing means for directing the portion of cloth discharged from the cloth feeding means, sensing means for detecting the presence of cloth in the feeding means, timing means for activating the cloth directing means thereby engaging the portion of cloth immediately discharged from the feeding means with the cloth supporting means so that the sections of cloth are successively draped over the cloth supporting means in marginally registered relationship, said timing means comprising an actuating pin propelled along an adjustable predetermined distance by operative connection to the feeding means, and a switch operatively connected to the cloth directing means and adapted to initiate active operation of the cloth directing means when the actuating pin is at either one or the other extremity of the predetermined distance.

10. A cloth handling device for use with sewing machines and the like, said device comprising support means, feeding means for moving successive sections of cloth, cloth supporting means operatively mounted on the support means and located in spaced relation to the discharge end of the feeding means so as to await and engage the depending section of cloth discharged therefrom, driving means for shifting the cloth supporting means beneath the discharge end of the feeding means, sensing means for detecting the presence of cloth in the feeding means, timing means for activating the driving means thereby bringing the cloth supporting means into engagement with the portion of cloth immediately discharged from the feeding means so that the sections of cloth are successively draped over the cloth supporting means in marginally registered relationship, said timing means comprising an actuating pin propelled along an adjustable predetermined distance by operative connection to the feeding means, and a switch operatively connected to the driving means and adapted to initiate active operation of the driving means when the actuating pin is at either one or the other extremity of the predetermined distance.

11. A cloth handling device for use with sewing machines and the like, said device comprising support means, feeding means for moving successive sections of cloth, cloth supporting means operatively mounted on the support means and located in spaced relation to the discharge end of the feeding means so as to await and receive the depending section of cloth discharged therefrom, air blast means for directing the portion of cloth discharged from the cloth feeding means, sensing means for detecting the presence of cloth in the feeding means, timing means for activating the air blast means thereby engaging the portion of cloth immediately discharged from the feeding means with the cloth supporting means so that the sections of cloth are successively draped over the cloth supporting means in marginally registered relationship, said timing means comprising an actuating pin propelled along an adjustable predetermined distance by operative connection to the feeding means, and a switch operatively connected to the air blast means adapted to initiate active operation of the air blast means when the actuating pin is at either one or the other extremity of the predetermined distance.

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