Aug. 21, 1956 J. T. BOYES 2,759,273

APPARATUS FOR STEAMING, STRETCHING AND DRYING WOVEN FABRIC AND THE LIKE

Filed Sept. 22, 1952 2 Sheets-Sheet 1

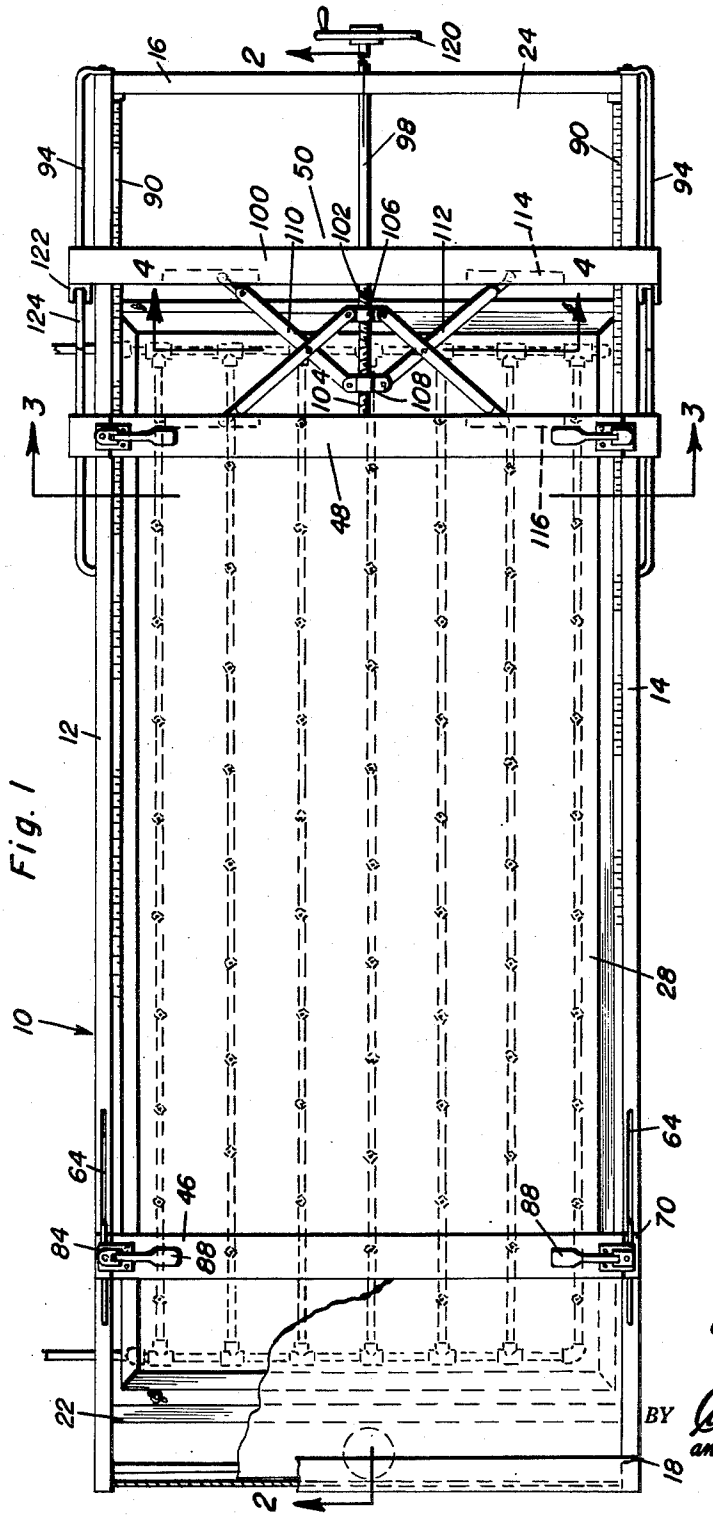


Fig. 1

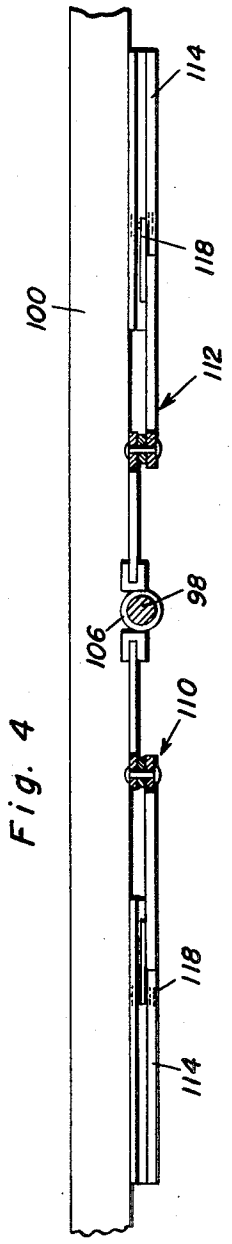


Fig. 4

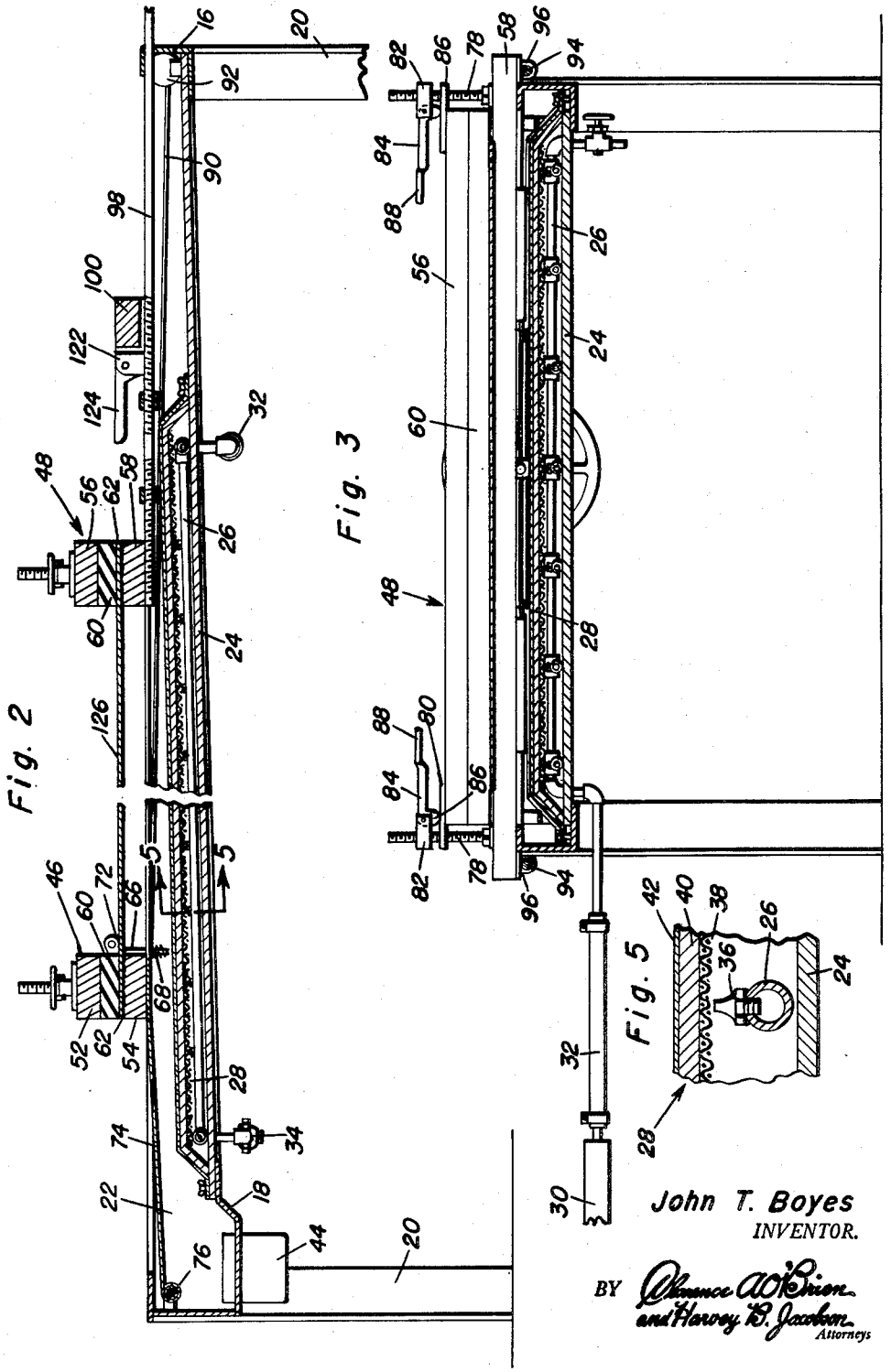
John T. Boyes
INVENTOR.

BY Clarence A. O'Brien and Harvey B. Jacobson
Attorneys

Aug. 21, 1956 J. T. BOYES 2,759,273

APPARATUS FOR STEAMING, STRETCHING AND DRYING WOVEN FABRIC AND THE LIKE

Filed Sept. 22, 1952 2 Sheets-Sheet 2



United States Patent Office 2,759,273 Patented Aug. 21, 1956

2,759,273

APPARATUS FOR STEAMING, STRETCHING, AND DRYING WOVEN FABRIC AND THE LIKE

John T. Boyes, Quincy, Ill.

Application September 22, 1952, Serial No. 310,855

12 Claims. (Cl. 34—151)

The present invention relates to a device for stretching and shaping various drapery and curtain materials and more particularly pertains to a device of the above character which will restore and rejuvenate various drapery and curtain materials, particularly those materials which have been subjected to repeated phases of dry cleaning.

These various materials after repeated dry cleanings, lose their original length and sheen. This invention is therefore designed to restore these various drapery and curtain materials to their original length and to revive their original sheen or finish, or in the case of new materials, to maintain their original lengths and finishes.

One of the objects of this invention is to provide a flexible stretching mechanism to accommodate any length of drapery or curtain, and any number of panels of drapery or curtains of the same materials, so that the stretching mechanism can maintain an even tension on the fibers of the materials during the entire process of returning the materials to their original length, or of increasing this tension as the requirements of each and every material might dictate to produce the desired result.

Another object of this invention is to provide a table over which the required number of drapery or curtain panels may be suspended during the relaxing of the fibers of the shrunken materials and the resetting of the same fibers after their original lengths are arrived at. Also, it is an object of the invention to build into this table the means of relaxing these fibers and to provide means also built into the table for resetting these fibers after the same have been relaxed and brought to their required length.

Another object of this invention is to provide a means of clamping and holding these various draperies without injury to the materials, which clamps are to provide a means of pressing into the draperies the necessary pleats that occur at the heads of all drapery or curtain panels.

Yet another object of this invention is to completely finish the drapery or curtain to the required dimensions.

These, together with various ancillary objects and features which will become apparent as the following description proceeds, are attained by this invention, a preferred embodiment of which is shown by way of example in the accompanying drawings, wherein:

Figure 1 is a top elevational view of apparatus embodying the present invention with certain parts being broken away for clarity of detail;

Figure 2 is a side elevation of the apparatus taken substantially along section line 2—2 of Figure 1;

Figure 3 is a sectional view of the apparatus taken along section line 3—3 of Figure 1;

Figure 4 is a sectional view of the apparatus taken substantially along section line 4—4 of Figure 1; and

Figure 5 is a sectional view on an enlarged scale of a portion of the table of the apparatus, being taken along section line 5—5 of Figure 2.

Referring now to the accompanying drawings in detail, it will be noted that like reference numerals are utilized to designate like parts throughout the various views.

The apparatus comprises generally a rectangular frame 10 consisting of side frame members 12 and 14, end frame members 16 and 18 and legs 20. The side and end frame members are preferably constructed of aluminum and are of generally channel shape. The legs 20 are also preferably constructed of aluminum and, in the preferred embodiment shown, are of angular shape. However, it is to be noted that other structural shapes and materials may be used without departing from the spirit of the invention. It will be noted however, that the end frame member 18 is specially constructed to form a deep channel having an elongated upper flange overlying a portion of the side frame members 12 and 14 to form an air plenum 22 for a purpose that will become later apparent.

Within the confines of the frame 10 and slanting upwardly from end frame member 18 to end frame member 16 is a table, which table supports steam coil 26. Secured at its peripheral edges to the table 24 is a covering 28 which covers the steam coil 26. Steam enters the steam coil 26 from the steam header 30, which header is connected with the coil 28 via flexible coupling 32. Steam entering the coil 26 from the header 30 passes through the coil and out a condensate header 34 at the lower end of the coil. Steam jets 36 are secured in the steam coil 26 at spaced intervals therealong to send concentrated streams of live steam into the covering 28, which covering disseminates the steam upwardly within the confines of the frame 10. As will be noted particularly from Figure 5, the covering 28 for the steam coil 26 comprises a copper screen 38, padding 40 and a removable covering 42 in order to thoroughly disseminate steam from the coil 26.

Mounted centrally of the lower flange of the end frame member 18 is a blower housing 44 in which a blower (not shown) is housed for blowing air into and through the air plenum 22 and over the covering 28 of the steam coil.

On the frame 10 extending between the side frame members 12 and 14 are mounted a stationary clamp 46, adjustable longitudinally of the frame members, and a movable clamp 48, the adjustable clamp being adapted to remain in its relatively adjusted position while a stretching mechanism 50 is provided for shifting the movable clamp 48, with respect to the stationary clamp in its adjusted position.

Each of the clamps 46 and 48 may comprise a pair of elongated blocks or members 52, 54 and 56, 58 respectively, the blocks of each clamp being juxtaposed upon another with the blocks 52 and 56 comprising the upper blocks and the blocks 54 and 58 comprising the lower blocks of each clamp 46 and 48 respectively. Mounted on the lower surface of each of the blocks 52 and 56 is a resilient pad 60, preferably of crude rubber. The upper surfaces of the blocks 54 and 58 are grooved or serrated as at 62 and the upper pieces or blocks 52 and 56 are cambered so that when the upper end lower blocks are pressed toward one another a compression space between the two blocks will be provided to take up the unevenness of the thickness of materials to be processed on the apparatus.

To adjustably mount the stationary clamp 46, the side frame members 12 and 14 are longitudinally slotted as at 64 adjacent the end frame member 18. Rods 66 extend through the slots 64 and are spring loaded at their lower ends as at 68 so that the tendency will be for these rods to be pulled downwardly through the slots 64. The upper end of each rod 66 is formed as a flat plate 70 which overlies an end of the block 54 and thereby frictionally

clamps this block against the side frame members 12 and 14. An upstanding finger grip 72 is provided on the flat plate 70 whereby when it is desired to move the stationary clamp 46, the rod 66 can be pulled upwardly and the clamp 46 slid into the desired position. To the bottom of the block 54 is secured one end of a flexible cover 74, the other end of which is wound on a spring loaded roller 76 secured to the end frame member 18. Thus, as the clamp 46 is adjusted the flexible strip 74 will be moved therewith thereby providing, in combination with the end frame member 18, an air duct for channelizing the flow of air from the blower housing 44 through the air plenum 22 to between the clamps 46 and 48.

As will be particularly apparent from Figures 1 and 3, the lower blocks of the clamps 46 and 48 are longer than the upper blocks and have their ends extending beyond the ends of the upper blocks to facilitate the mounting of a locking means to lock the top and bottom blocks or members of each clamp together under the desired tension required to suit the various materials to be clamped therebetween. Referring particularly to Figure 3, this locking means will be readily observed. Mounted on the ends of the bottom block or member 58 of the clamp 48 are a pair of upstanding threaded rods 78. Mounted on the upper surface of the block 56 at the ends thereof are horizontally extending plates 80 which extend beyond the ends of the block 56 and through which the upper portions of the threaded rods 78 extend in order to secure the upper and lower blocks 56 and 58 in vertical alignment. Threaded on the upper ends of the rods 78 are collars 82 and pivotally secured to these collars 82 are cam levers 84 formed with cam surfaces 86 adjacent their pivoted connections to the collars 82. The free ends of the levers 84 are provided with flat extensions 88 providing handles for pivoting the levers about the collars 84. In operation, the collars 82 are threaded on the rods 78 a desired distance and the levers 84 are pivoted to a horizontal position whereby the cam surfaces 86 frictionally engage the plates 80 and clamp the upper bar 56 to the lower bar 58. Although the above description has been made with reference to the clamp 48, it is to be noted that the same locking means is provided for the clamp 46.

Secured at one end to the lower portion of each of the rods 66 holding the stationary clamp 46 in place is a tape measure 90, the other end of which is wound in a case 92 mounted on the end frame member 16. It is to be noted that the tape measure 90 is spring wound within the casing 92 whereby as each rod 66 is moved to an adjusted position, the tape 90 will remain under tension.

To slidingly and guidingly mount the movable clamp 48 on the frame 10, the side frame members 12 and 14 are provided with guide rails 94. Yokes 96 mounted on the surface at the ends of the lower block 58 embrace these guide rails so that the clamp 48 can be moved longitudinally therealong.

The stretching mechanism 50 which comprises the means for sliding the clamp 48 along the guide rails 94 comprises a shaft or rod 98 journaled through the center of the end frame member 16 and extending axially between the side frame members 12 and 14. Between the end frame member 16 and the movable clamp 48 is an elongated bar 100, the ends of which are slidably mounted on the guide rails 94 in the same manner as is clamp 48. The portion of the rod 98 disposed between the clamp 48 and the bar 100 is provided with both right and left hand threaded sections as indicated by the numerals 102 and 104 respectively. A collar 106 is threaded on right hand threaded section 102 and a collar 108 is threaded on left hand section 104. Secured to opposite sides of the collars 106 and 108 are sets of scissored levers 110 and 112 respectively. Trackways 114 and 116 are secured to the elongated bar 100 and the bottom member 58 of the movable clamp 48. Rollers 118 secured to the other ends of each set of scissored levers 110 and 112 are guidingly disposed in these tracks or guideways 114 and 116. Thus, upon actuation of the handwheel 120 rotating the shaft 98, the clamp 48 and the elongated bar 100 are moved toward and away from one another.

However, in order to prevent the movement of the elongated bar 100, channel brackets 122 are secured to the ends thereof and cam levers 124 are pivoted between the flanges of these channel brackets to frictionally contact the guide rails 94 and thereby firmly secure thte bar against movement.

In operation, the clamps 46 and 48 are first placed in their desired popsitions and a panel of drapery or curtain material 126 is clamped between the blocks of these clamps. Steam is introduced into the steam coil 26 and passes through the jets 36 under pressure and is disseminated up between the clamping blocks 46 and 48 to saturate the fibers of the drapery or curtain material 126. Then the elongated bar 100 is locked in place and pivoting the camming levers 124 to a horizontal position, and the handwheel 122 is turned moving the movable clamping form 48 toward the end frame member 16 and thus stretching the material to the desired length as indicated by the measurement on the tapes 90. When the drapery material 126 is stretched to its desired length, the steam pressure is cut off from the steam coil 26 and the blower in the blower housing 44 is then turned on to direct a flow of dry air through the air plenum 22 underneath the drapery material 126 to dry the fibers of the same. When the drapery material 126 is completely dried, it is removed from the frame restored to its desired length. Then, the apparatus, which includes the table 24 and the frame 10 may be pivoted up out of floor engaging position by virtue of the flexible couplings connecting the steam header to the steam coil.

From the foregoing description, the operation of the device is believed to be clearly understood and further description is believed unnecessary. However, since numerous modifications and changes will readily occur to those skilled in the art after a perusal of the foregoing specification taken in conjunction with the accompanying drawings, it is not desired to limit the invention to the exact construction shown and described; but, all suitable modifications and changes may be resorted to which fall within the scope of the appended claims.

Having described the invention, what is claimed as new is:

1. A device for stretching material comprising a frame, a table on said frame, spaced first and second clamping forms on said frame overlying said table for clamping material therebetween, steam means on said table for relaxing the fibers of material clamped between the clamping forms, stretching means on said frame for adjustably moving one of said forms with respect to the other, drying means on said frame, locking means on said clamping forms for holding material thereon, and locking means for said stretching mechanism, said clamping forms each comprising a pair of upper and lower elongated members and a resilient element secured to the bottom of said upper member, said lower member being longer than said upper member, said locking means including upwardly extending threaded rods secured to the ends of said lower members, plates secured to said upper members and overlying the ends of said lower members, said rods passing loosely through said plates and terminating thereabove, collars threaded on said rods, cam levers pivoted to said collars for frictionally engaging said plates.

2. A device for stretching material comprising a frame, a table on said frame, spaced first and second clamping forms on said frame overlying said table for clamping material therebetween, steam means on said table for relaxing the fibers of material clamped between the

clamping forms, stretching means on said frame for adjustably moving one of said forms with respect to the other, drying means on said frame, locking means on said clamping forms for holding material thereon, and locking means for said stretching mechanism, said stretching mechanism comprising an elongated bar transversely mounted on said frame adjacent one end thereof, a threaded actuating rod rotatably juornaled in said one end of said frame and extending axially into said frame, the threaded portion of said rod being disposed between said elongated bar and said one of said clamping forms, collars threaded on said actuating rod, scissored levers interconnecting said elongated bar and said one clamping form at one pair of their ends, the other pair of ends of said scissored levers being connected to said collars whereby rotation of said actuating rod will vary the distance between said elongated bar and said one clamping form.

3. A device for stretching material comprising a frame, a table on said frame, spaced first and second clamping forms on said frame overlying said table for clamping material therebetween, steam means on said table for relaxing the fibers of material clamped between the clamping forms, stretching means on said frame for adjustably moving one of said forms with respect to the other, drying means on said frame, locking means on said clamping forms for holding material thereon, and locking means for said stretching mechanism, said table being slanted from one end of said frame to the other, said other end of said frame forming an air duct, said drying means including blower means on said frame for forcing air through said duct over said table, a flexible cover forming the upper wall of said duct, one end of said flexible cover being secured to said second form, the other end of said cover being wound on a spool at said other end of said frame.

4. A device for stretching material comprising a frame, a table on said frame, spaced first and second clamping forms on said frame overlying said table for clamping material therebetween, steam means on said table for relaxing the fibers of material clamped between the clamping forms, stretching means on said frame for adjustably moving one of said forms with respect to the other, drying means on said frame, locking means on said clamping forms for holding material thereon, and locking means for said stretching mechanism, said steam means comprising a steam coil overlying said table, jets on said coil and covering means on said table overlying said coil for disseminating steam from said jets.

5. A device for stretching materials comprising a frame including side and end frame members, first and second clamping forms spacedly mounted on said side frame members, guide rails on said side frame members at one end portion thereof, said first clamping form being slidably mounted on said guide rails, the other end portion of said side frame members being provided with slots, means adjustably mounting said second clamping form in said slots, and a stretching mechanism on said frame for moving said first clamping form relative to said second form, said stretching mechanism comprising an elongated bar, means adjustably mounting said bar on said guide rails, pairs of scissored levers, each pair of scissored levers having one set of ends interconnecting said first form and said elongated bar, collars interconnecting the second set of ends of said levers with one another, a rod reversely threaded through said collars for moving the levers of each pair toward and away from one another.

6. A device as set forth in claim 4, wherein said clamping forms each comprise a pair of upper and lower elongated members, and a layer of resilient material secured to one of said members in position facing the other.

7. A device as set forth in claim 4, wherein said clamping forms each comprise a pair of upper and lower elongated members, and a layer of resilient material secured to one of said members in position facing the other, the facing surface of said other member being serrated.

8. A device as set forth in claim 4, including cam means operatively associated with each of said clamping forms to cammingly lock the same in position clamping material therebetween.

9. A device as set forth in claim 6, wherein the locking means for said stretching mechanism comprises a cam member operable to hold the stretching mechanism in adjusted position.

10. A device as set forth in claim 4, wherein the frame comprises spaced apart side members, guide rails on said side members at one end of the frame and slidingly supporting said first clamping form thereon, said side members being provided with slots at the opposite end of said frame remote from said guide rails, means adjustably mounting said second clamping form in said slots, and stretching mechanism on said frame for moving the first clamping form on said guide rails to shift the same in the frame with respect to said second form.

11. A device as set forth in claim 4, wherein the frame comprises spaced apart side members, guide rails on said side members at one end of the frame and slidingly supporting said first clamping form thereon, said side members being provided with slots at the opposite end of said frame remote from said guide rails, means adjustably mounting said second clamping form in said slots, stretching mechanism on said frame for moving the first clamping form on said guide rails to shift the same in the frame with respect to said second form, and clamping means positioned for cooperation with said guide rails for securing said first clamping form in adjusted position thereon.

12. A device as set forth in claim 4, wherein the stretching means comprises an abutment member, means to clamp the same in adjusted position on said frame, scissored levers drivingly connected between said abutment member and one of said clamping forms, and screw threaded driving means for relatively opening and closing said scissored levers.

References Cited in the file of this patent

UNITED STATES PATENTS

431,074	Peterson	July 1, 1890
687,177	Caldwell	Nov. 19, 1901
1,989,871	Luxenberg	Feb. 5, 1935
2,213,879	Evans	Sept. 3, 1940
2,214,923	Glover	Sept. 17, 1940
2,289,299	Westover	July 7, 1942
2,345,232	Boushelle	Mar. 28, 1944
2,423,391	Kozloff	July 1, 1947
2,608,322	Hansen et al.	Aug. 26, 1952
2,645,863	Morrison	July 21, 1953