

June 19, 1934.

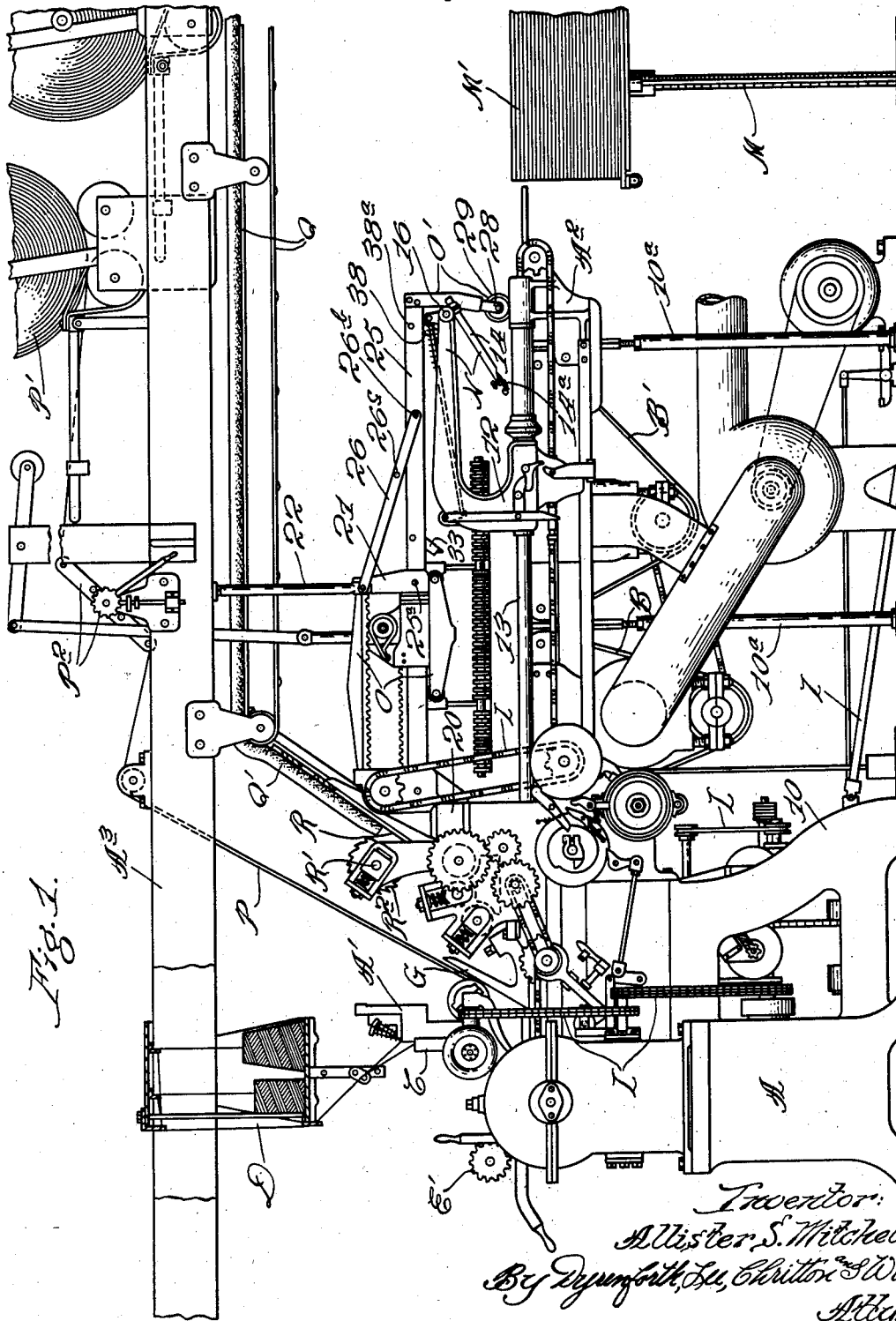
A. S. MITCHELL

1,963,710

UPHOLSTERY MAKING APPARATUS

Filed April 15, 1932

6 Sheets-Sheet 1



June 19, 1934.

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1,963,710

UPHOLSTERY MAKING APPARATUS

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6 Sheets-Sheet 2

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UPHOLSTERY MAKING APPARATUS

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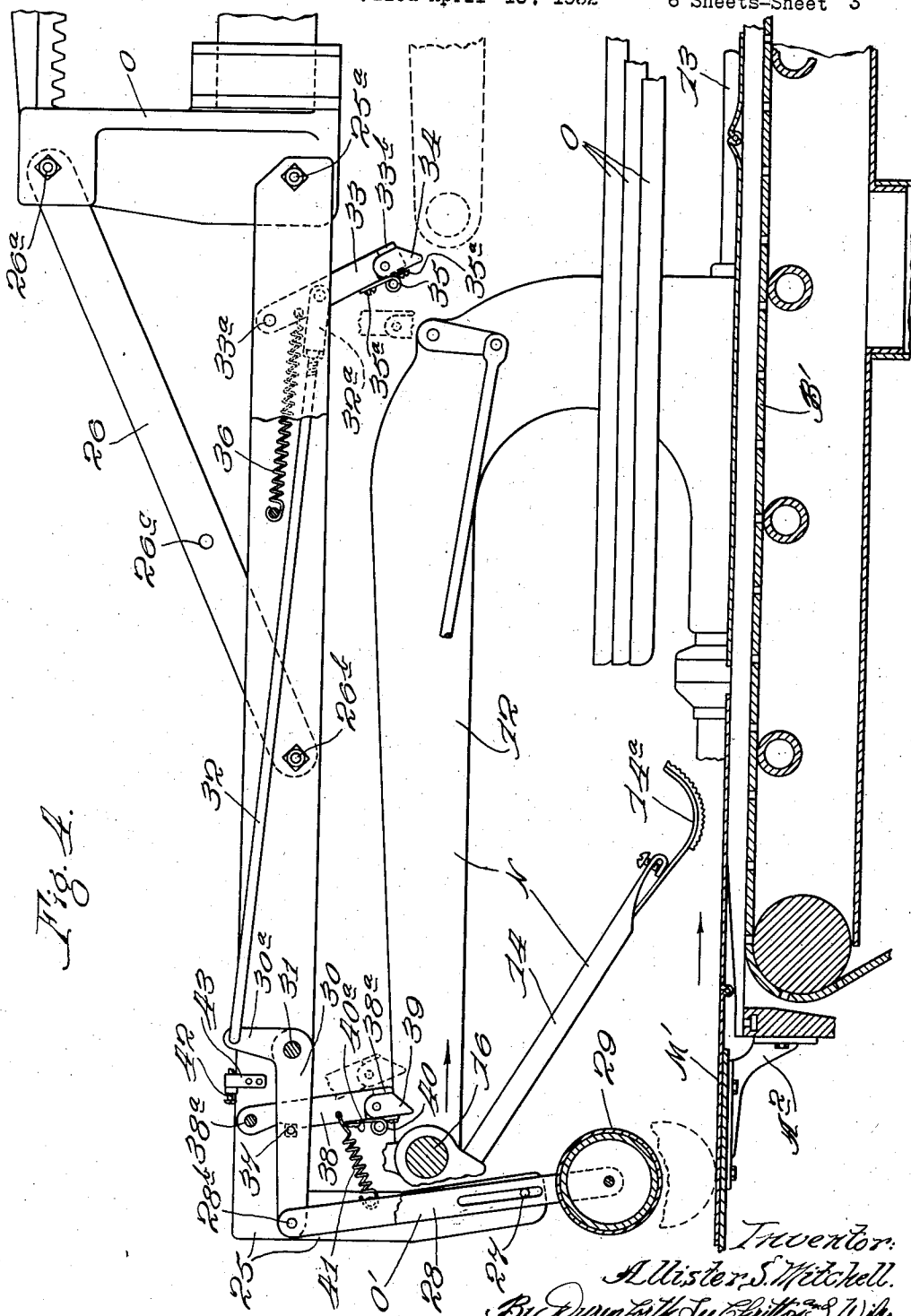


Fig. 4.

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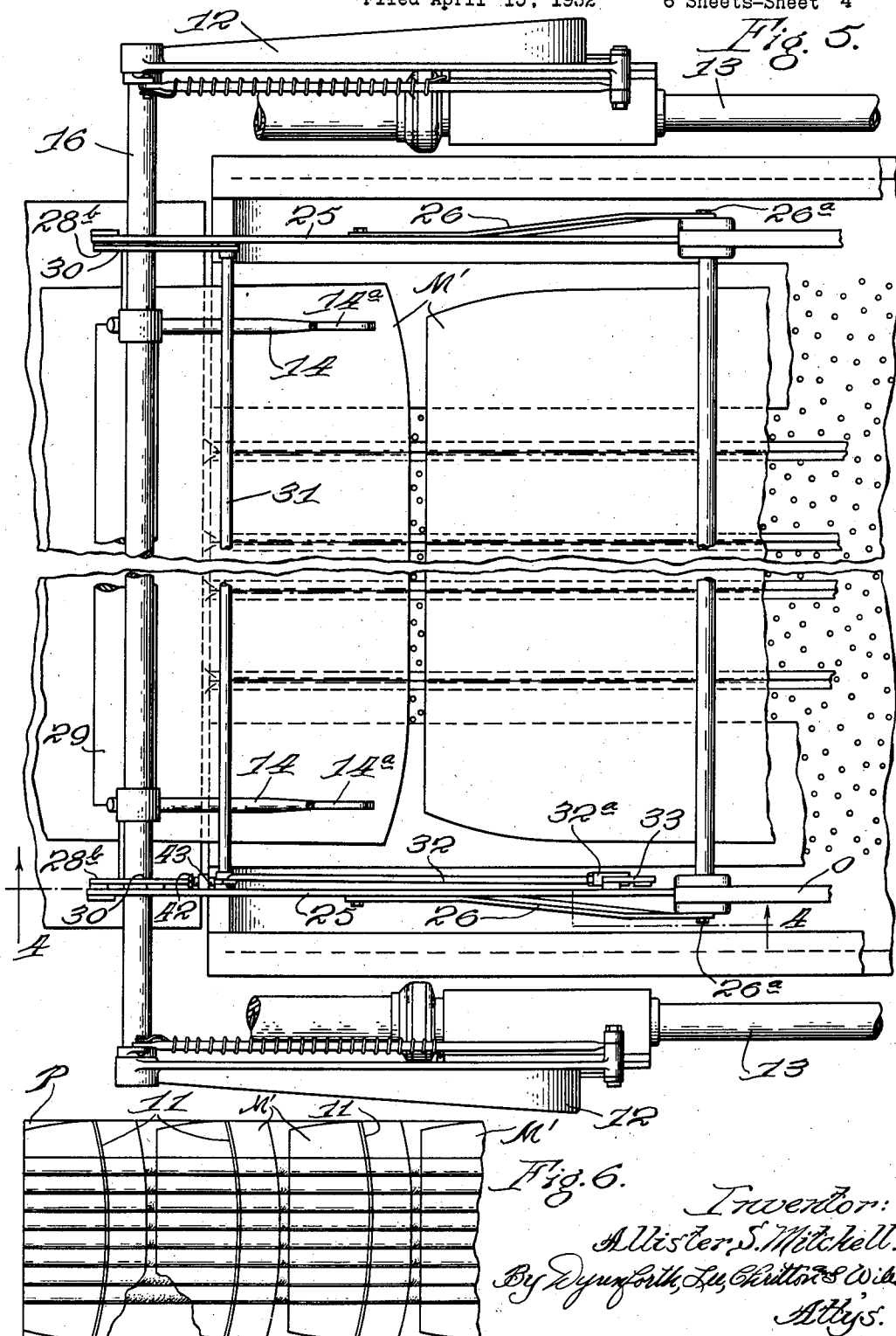
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Fig. 7.

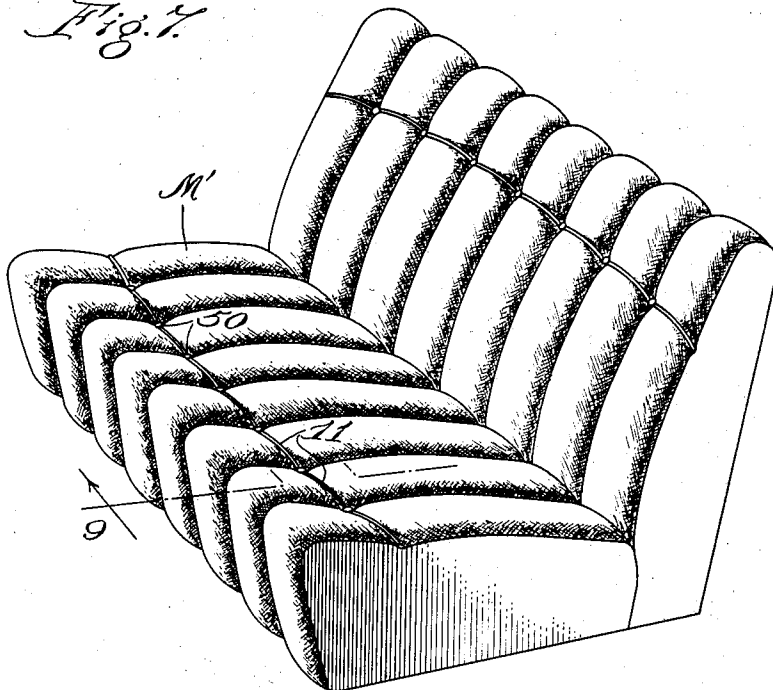
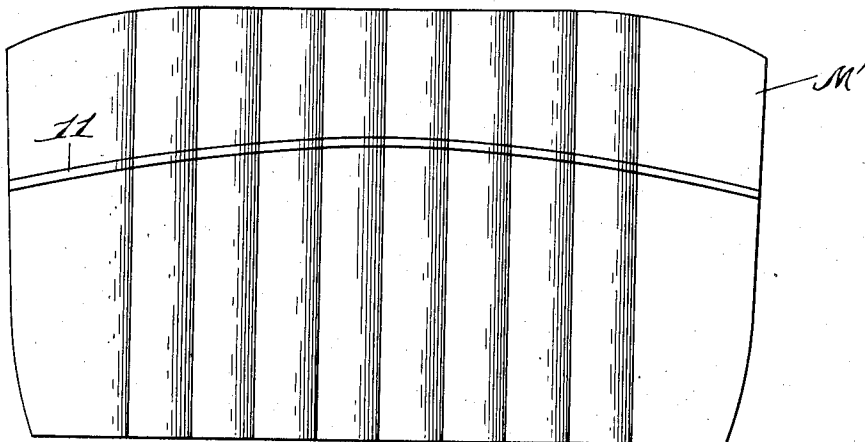


Fig. 8.



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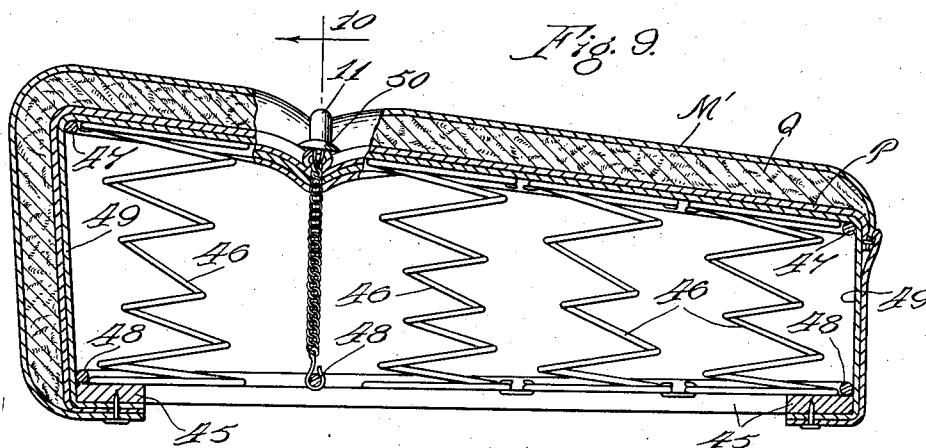


Fig. 10.

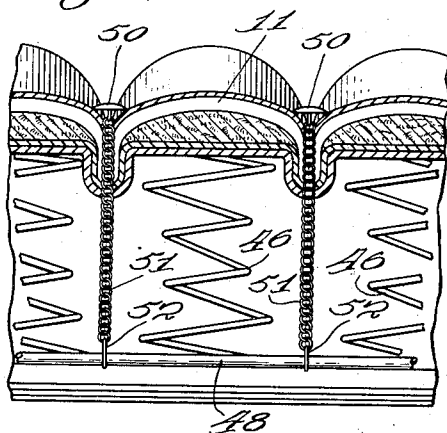


Fig. 11.

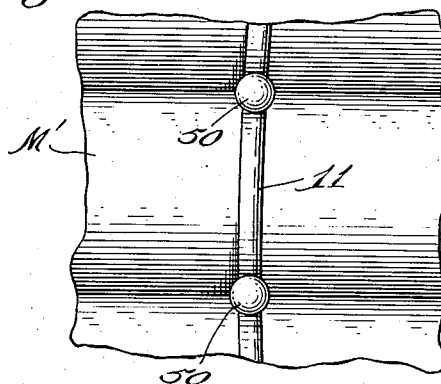


Fig. 14.

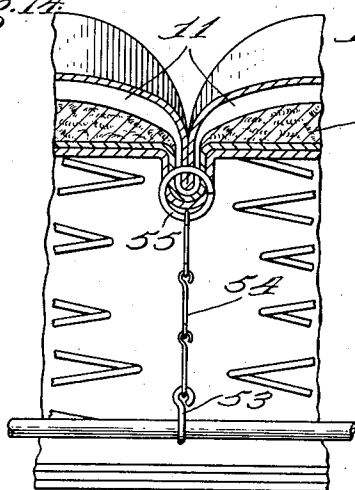


Fig. 13

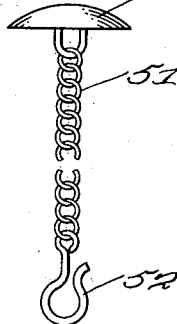
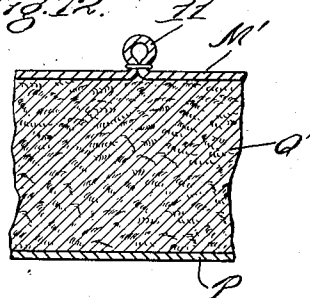


Fig. 12.



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UNITED STATES PATENT OFFICE

1,963,710

UPHOLSTERY MAKING APPARATUS

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Application April 15, 1932, Serial No. 605,512

14 Claims. (Cl. 45—138)

This invention relates particularly to upholstered cushions adapted for use in automobiles, etc., and to a method and machine for manufacturing the same.

The primary object is to provide a cushion of improved construction and appearance, and an improved machine and method which will greatly facilitate manufacture of the stuffed, pleated upholstery.

10 An important purpose of the present invention is to provide a machine particularly adapted to the use of pre-cut covers having a transverse welt.

15 In the use of the improved machine, as preferably constructed, pre-cut covers, a lining-fabric, and strips of batting are fed through the machine; the pre-cut covers being lowermost as the work is fed through the machine; the lining-fabric has formed therein upstanding seam-ridges; the pre-cut covers are fed, seriatim, over a suitable bed and provided with upstanding seam-ridges and intervening depressed pleats, or pipes, the seam-ridges of the covers becoming nested within the seam-ridges of the lining-
25 fabric; strips of cotton-batting, or the like, are drawn through with the fabrics and fill the pleats; and the upstanding, nested seam-ridges of the lining-fabric and of the pre-cut covers (suitably spaced) are sewed by means of sewing mechanisms mounted on a cross-beam above the path of the materials, each sewing-mechanism preferably comprising a head carrying a sewing-needle and looper-needle.

30 The work is fed continuously through the machine. The lining is a continuous fabric; the cotton batts are continuous strips; and the cover-fabric preferably is pre-cut to provide covers, which, in the operation of the machine are sewed to the lining. If desired, the batts fed to the
40 pleats are periodically broken to correspond with spaces between cushions, so that the upholstery produced is a continuous piece composed of a series of cushions connected by short lengths of lining-fabric. The lining-fabric may be cut at
45 the spaces between cushions to effect separation of the cushions.

50 In the present machine, use is made of a suction-conveyor and associated spaced ridges adapted to form seam-ridges and intervening pleat-fullnesses in a fabric; and, for the purpose of adapting the machine to handle with great facility pre-cut covers, the present invention employs, in combination with the device mentioned, cover-placing mechanism adapted to position the covers, one at a time, over the conveyor and the

ridges at the upper side of the conveyor, and contacting depressing devices, or pleat-formers, which operate to depress linear portions of the cover into the spaces between the ridges and thus bring the cover fabric within the effective
60 action of the suction conveyor. The seam-ridges of the cover are at the same time formed over the ridges associated with the conveyor. Preferably, the formers travel in cycles and are depressed progressively in pairs, first at the medial line of the machine and then in both directions laterally therefrom. The effect is to progressively pleat the cloth over the ridge-bars associated with the conveyor from the intermediate portion of the cloth laterally and progressively in both directions.
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The present machine embodies certain improvements over the one described in my Patent No. 1,918,284, the application for which was filed
70 October 30, 1930.

The invention is illustrated in a preferred embodiment in the accompanying drawings, in which—
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Fig. 1 is a broken side elevational view of an upholstery machine embodying the invention; 80
Fig. 2, a broken longitudinal sectional view; Fig. 3, a plan view of a pre-cut cover provided with a transverse welt; Fig. 4, an enlarged broken sectional view of a cloth tensioning device, taken as indicated at line 4—4 of Fig. 5; Fig. 5, a broken
85 plan view of the piece-placing and cloth-tensioning devices; Fig. 6, a broken plan view of the pleated upholstery as it leaves the machine; Fig. 7, a perspective view of a completed upholstered seat and back; Fig. 8, a plan view of a seat cushion before fasteners are applied to the welt of the cushion cover; Fig. 9, a broken sectional view of a cushion, taken as indicated at line 9—9 of Fig. 7; Fig. 10, a transverse sectional view, taken as indicated at line 10 of Fig. 9; Fig. 11, a broken detail plan view of a seat cushion; Fig. 12, an enlarged broken sectional view of a stuffed pleat; Fig. 13, a broken elevational view of a fastening device; and Fig. 14, a broken sectional view showing a modified form of fastening.
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In the machine-embodiment illustrated, A designates a main frame which is equipped at its front end with a vertically adjustable cross-head A', the frame being provided with a bed extension A² over which the covers are fed; A³, a
105 frame-work which serves as a support for a batt-conveyor and other devices disposed over said frame; B, a front suction-conveyor mounted in the bed of the machine; B', an auxiliary conveyor disposed back of the conveyor B; B² (Fig. 2), 110

longitudinally extending ridge bars which extend over both conveyors and have their ends extending through peripheral grooves in a forming-roll mounted on the cross-head A'; C, a series of sewing-mechanisms mounted on the cross-head and actuated by a common shaft C'; D, a thread-supporting device supported on the frame A³; E, E', a pair of front feed rolls by which the upholstery is drawn through the front end of the machine; F, a forming-roll disposed back of and carried by the lower-portion of the cross-head A', said roll having spaced grooves through which the ridge-bars B² extend; G, a series of lining creasers mounted on a transverse bar G' carried by the bed; H, a front batt-forming roll which coats with a concave H'; I, I', an auxiliary pair of batt-feeding rolls journaled in supports carried by the main frame, said auxiliary rolls being periodically arrested to cause severance of the batts; J, a shearing edge forming a part of the concave H' and disposed immediately back of the front batt-feeding roll H; K, mounting blocks carried by the main frame and supporting the batt-feeding rolls and associated concave; L, sprockets, chains, gears, etc., which serve to drive various parts of the machine in timed relation; M, a slowly elevated fabric support, which serves to elevate a stack M' of pre-cut covers; N, piece-placing mechanism adapted to position the pre-cut covers on the bed of the machine; O, fabric-forming mechanism cooperating with the suction conveyors and the ridge-bars in forming the covers into seam-ridges and intervening pleat-fullnesses; O', a cloth-tensioning device adapted to keep the covers in a flat smooth position while being handled by the mechanism N; P, a lining fabric which is drawn from a roll P' about a tensioning device P² and thence to the forming-roll F; Q, a conveyor supported on the frame A³ and conveying the batts Q'; R, a series of guides or short chutes mounted on the main frame and serving to guide the batts to the rolls I and I'; and R' a transverse shaft equipped with toothed batt-feeding and directing disks R² which serve to effectively direct and feed the batts through the chutes R.

The frame A may be of any suitable construction. In the illustration given, a bed-extension A² is shown supported at its front end on a pedestal 10 of the main frame, and at its rear end on adjustable legs 10a.

The machine need not be described in detail, as the construction, with the exception of cloth tensioning device O', is similar to the construction described in my application Ser. No. 572,691, filed November 2, 1931.

In the plan views shown in Figs. 3, 6 and 8, it will be noted that cover fabric M' is provided with a transverse welt 11 (see also Fig. 12), which, in accordance with the present invention, may be sewed in the fabric prior to its introduction into the machine. The cushions, after being formed by the machine, are separated by short spaces, at which point they are connected by the lining-fabric P. After a series of cushions, say 100 feet in length, has been formed, the lining-fabric may be severed between the cushions.

From my companion application it will be understood that the piece-placing mechanism N comprises a goose-neck slide 12 which is mounted to reciprocate upon guide-members 13, and is provided with pusher-arms 14 whose lower front extremities are equipped with yielding friction-members 14^a which are adapted to frictionally engage the front corner-portions of a

cover-fabric and slide the fabric forwardly over the suction-conveyor into proper position to be engaged by the fabric-former O. The pusher-arms are secured to a rock shaft 16 journaled in the goose necks 12.

The fabric-forming mechanism O, also described in the companion case, is supported at its front end upon a frame member 20, and its rear end by a member 22 attached to the framework A³.

It has been found that when the pusher-arms 14 advance a cover-fabric M', having the transverse welt 11, there is a tendency for the rear portion of the fabric to curl up over the intermediate portion and thereby interfere with the proper functioning of the fabric-forming mechanism O. This difficulty has been overcome in the present machine by means of the cloth tensioning device O'. As a further aid to the tensioning effect, the front suction conveyor B may be operated at a slightly higher speed and with a greater suction than the auxiliary conveyor B'.

The cloth tensioning device is provided with a pair of L-shaped supporting-arms 25 and supporting-bars 26, which are attached to the rear of the fabric-former O by means of bolts 25a and 26a. The arms and bars are attached together by bolt 26b and the bars 26 are provided with intermediate perforations 26c so that in case it is desired to hold the device out of operative position the bolt 26b may be opened and arms 25 raised to a position which will permit the bolt to engage the perforation 26c.

The lower ends of the supporting-arms 25 are equipped with guide-pins 27 which engage slots in the roller-carrying arms 28. A roller 29 is journaled in the arms 28 and said arms are pivotally connected at 28b to rock-arms 30 of the rock-shaft 31 which is journaled in the supporting arms.

In order to automatically raise the roller 29, at the proper time to permit the next cover-fabric to be placed on the underlying table A², a rod 32, having an adjustable yoke 32a, is provided to connect a rock-arm 30a, which is formed integrally with one of the rock-members 30, to an actuating-lever 33. The lever 33 is pivoted to one of the supporting-arms 25 at 33a and extends down into the path of the shaft 16 of the reciprocating piece-placing mechanism. The lower end of the lever is provided with a pawl 34, which normally is held back against a stop 33b by means of a spring 35, which is held in position by screws 35a. A tension spring 36 is provided to urge the lever rearwardly. It will be understood that the shaft 16 can only move the lever 33 during its forward movement.

A square stud 37 is mounted on one of the rock-members 30 and a lever 38, which is pivoted at 38a and provided with a notch adapted to engage the stud, serves as a trigger for holding the rock-member in its upper position. Like its companion lever 33, the lever 38 is provided with a stop 38a for a pawl 39, and a spring 40, held by screws 40a, holds the pawl in position. A tension spring 41 urges the lever into engagement with the stud 37. The downward travel of the roller 29 may be limited by means of an adjusting screw 42 mounted in a bracket 43 mounted on the supporting arm 25.

The operation of the fabric-tensioning device will be readily understood. When the piece-placing mechanism N moves forward with a cover-fabric, the shaft 16 will trip the lever 38 and thereby permit the roller to drop into

engagement with the fabric. Near the forward end of its travel the shaft will strike the lever 33 which in turn will raise and reset the roller in its upper position.

5 The completed cushions may be attached to a suitable spring structure, as shown in Fig. 9, which may comprise a wooden frame 45, helical springs 46 mounted thereon, upper and lower spring frames 47 and 48, and a burlap covering 10 49. The cushions are shown stretched over the structure and tacked to the wooden frame in the well known manner.

In order to secure the cushions in position and produce a very attractive tufted effect, a novel 15 fastening is employed which may comprise a button 50, a chain 51 connected thereto, and a hook 52 on the lower end of the chain. A hole is pierced in the cushion at each point where the welt 11 crosses the seam-ridges which are be- 20 tween the pleats, and the hook and chains are inserted through the openings and drawn down to permit the hook to be snapped onto the spring frame 48. It will be understood that the chain passes through the welt and seam-ridge, thereby 25 gripping the cushion at its strongest point and distributing the stress along the reinforced seam lines of the cushion. A seat cushion and back cushion both may be anchored in this way, as shown in Fig. 7, and a very attractive and dur- 30 able structure will be obtained.

Fig. 14 illustrates a modification in which, instead of employing a button, a hook 53 and chain 54 are connected to the cushion by means of a small ring 55 which pierces the nested seam- 35 ridge and the welt.

The foregoing detailed description has been given for clearness of understanding only, and no unnecessary limitations should be understood therefrom, but the appended claims should be 40 construed as broadly as permissible, in view of the prior art.

What I regard as new, and desire to secure by Letters Patent, is:

45 1. In combination in a machine of the character set forth: a bed which includes longitudinal ridges over which a fabric may be formed; piece-placing mechanism adapted to carry cover-fabrics forwardly to forming position; and 50 fabric-tensioning mechanism including a normally elevated fabric-engaging member cooperatively related to said piece-placing mechanism and adapted to be lowered on to the cover-fabric to tension the same while it is being moved forwardly by said piece-placing mechanism. 55

2. A machine as specified in claim 1, in which the mechanism which includes said fabric-engaging member is actuated by said fabric-placing 60 mechanism to effect raising and lowering of said fabric-engaging member.

3. A machine as specified in claim 1, in which a fabric-forming mechanism is disposed above said bed and carries the mechanism which in- 65 cludes said fabric-engaging member.

4. A machine as specified in claim 1, in which the mechanism which includes said fabric-engaging member comprises a stationary supporting 70 frame and lever-mechanism mounted thereon serving to actuate said fabric-engaging member, said lever-mechanism being equipped with a latch device and re-setting device actuated by said piece-placing mechanism.

5. In a machine of the character set forth: a 75 bed which includes longitudinal ridges over which a fabric may be formed; reciprocating piece-

placing mechanism; and cooperating fabric-tensioning mechanism comprising a stationary frame, a rear pair of levers mounted on said frame, a transversely disposed fabric-engaging member suspended from said levers; a latch device normally supporting said levers in elevated position, a front lever mounted on said frame and equipped with a re-setting arm, and a link connecting one of the rear levers and the front lever. 80

6. A machine as specified in claim 5, in which the latch device and the re-setting arm are actuated by said piece-placing mechanism. 85

7. In a machine of the character set forth: a bed over which cover-fabrics may be fed and formed, said bed including spaced longitudinal 90 ridges; formers disposed above said bed and co-acting therewith to form pleat fullnesses and intervening fabric-ridges in said cover-fabrics; piece-placing mechanism operating in timed relation to said formers and serving to carry cover-fabrics forwardly over said bed; and fabric-tensioning mechanism actuated by said piece-placing mechanism and including a fabric-engaging member normally occupying an elevated position 95 and adapted to be lowered on to the fabric while the fabric is being moved forwardly by the piece-placing mechanism. 100

8. Means of the character set forth in claim 7, in which the fabric-tensioning mechanism includes a frame mounted on the rear portion of 105 the frame which carries said formers and includes, further, lever-mechanism carried by said first-mentioned frame and actuated by said piece-placing mechanism.

9. In combination in a machine of the character 110 set forth: a bed over which cover-fabrics may be fed and formed to provide pleat-fullnesses and intervening fabric-ridges; a frame mounted above said bed and equipped with fabric-forming mechanism cooperating with said bed; forwardly and 115 rearwardly reciprocating piece-placing mechanism adapted to carry cover-fabrics forwardly and position them upon said bed; and fabric-tensioning mechanism comprising a frame mounted on and projecting rearwardly from said first- 120 mentioned frame, lever-mechanism mounted on said second-mentioned frame and actuated by said piece-placing mechanism, and a transversely disposed fabric-engaging roll normally supported in elevated position by said lever-mechanism and adapted to lower said roll on to the cover-fabric after the cover-fabric is moved forward by the piece-placing mechanism.

10. In a machine of the character set forth, a bed equipped with a suction-conveyor, and with 130 spaced, longitudinally disposed ridge-bars disposed over said conveyor; forming mechanism disposed above said bed and including formers adapted to be lowered between said ridge-bars; forwardly and rearwardly reciprocating piece- 135 placing mechanism mounted on said bed and operating in timed relation with respect to the operation of said forming-mechanism; and fabric-tensioning mechanism, including a transversely disposed fabric-engaging member and actuating 140 means therefor actuated by said piece-placing mechanism.

11. In a machine of the character set forth: a fabric-placing mechanism; a fabric-tensioning device associated therewith; and means operable 145 by said fabric-placing mechanism for automatically moving said tensioning device into and out of fabric-engaging position.

12. In a machine of the character set forth: 150

a reciprocating piece-placing mechanism; a tensioning device adapted to engage and tension a piece of fabric while being moved by said piece-placing mechanism; and means actuated by said mechanism for controlling the operation of said tensioning device.

13. In a machine of the character set forth: a reciprocating piece-placing mechanism; and a fabric-tensioning means comprising a fabric-engaging member, mechanism for moving said member from operative position, and trigger means for holding said fabric-engaging member in inoperative position, said means being releasable by engagement with said piece-placing mechanism.

14. In a machine of the character set forth:

a bed which includes longitudinal ridges over which a fabric may be formed; a reciprocating piece-placing device provided with a rock-shaft having arms adapted to engage an underlying fabric; a fabric-tensioning device provided with a roller adapted to engage and iron out said fabric; lever mechanism adapted to be engaged by said rock-shaft near the front portion of its travel to move said roller from engagement with the fabric; and means for holding said roller in inoperative position, said means being releasable by said rock-shaft when the rock-shaft is near the rear limit of its travel.

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