

June 20, 1950

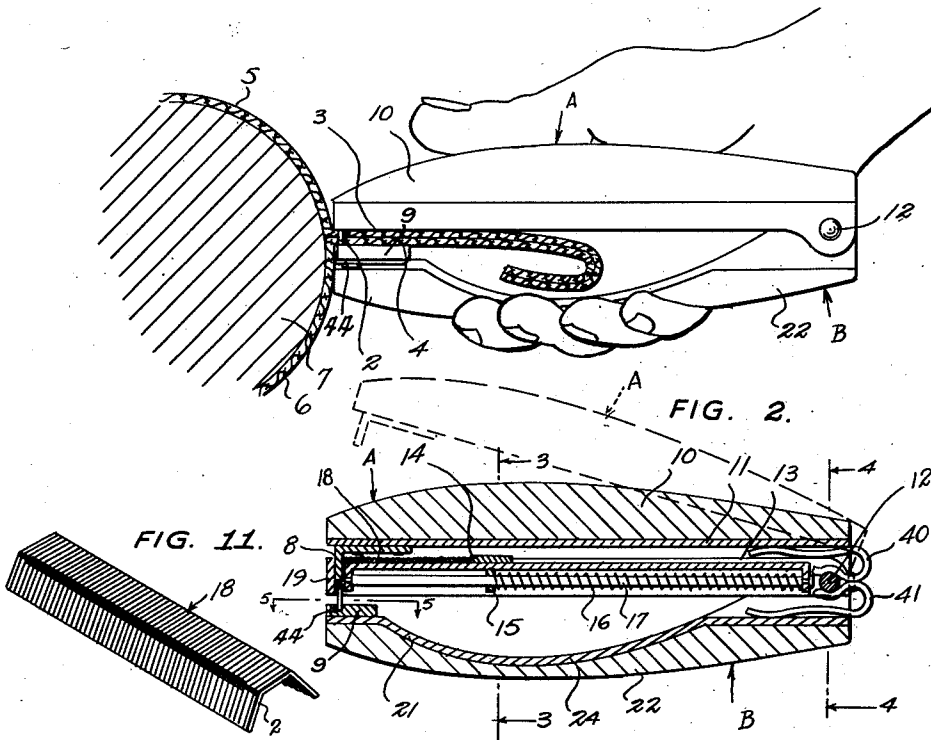
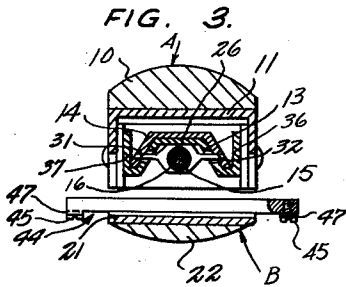
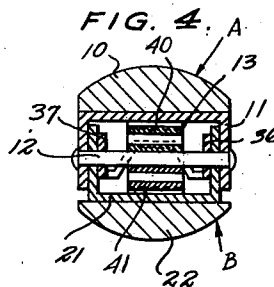
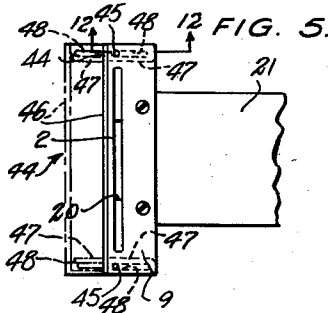
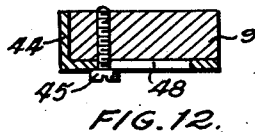
G. C. RICHARDS
APPARATUS FOR SECURING TOGETHER
OVERLAPPING PLIES OF MATERIAL

2,511,944

Filed July 15, 1947

2 Sheets-Sheet 1

FIG. 1.



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2 Sheets-Sheet 2

FIG. 6.

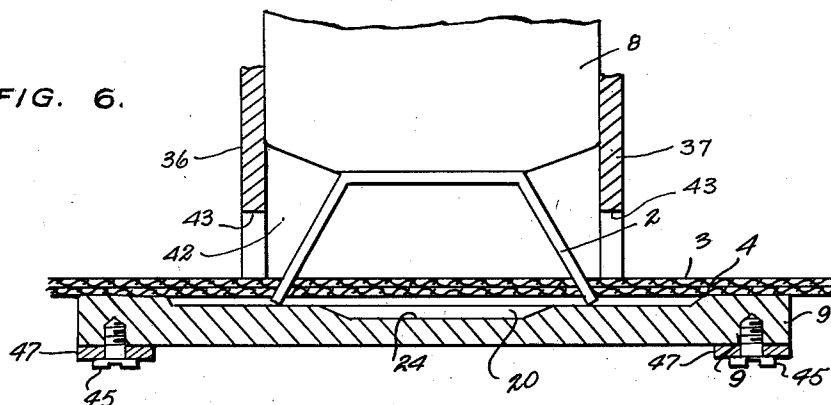


FIG. 7.

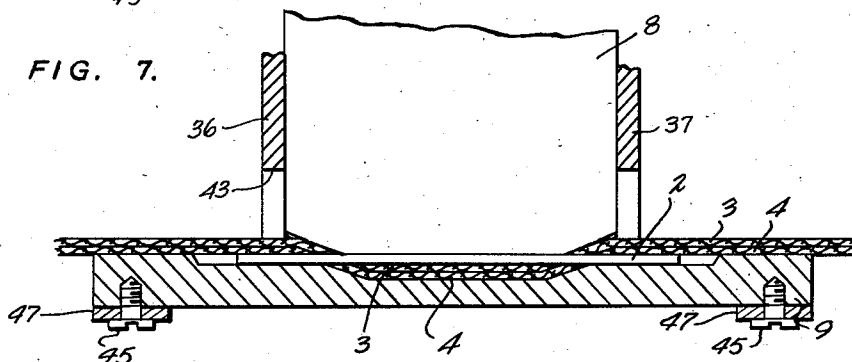


FIG. 9.

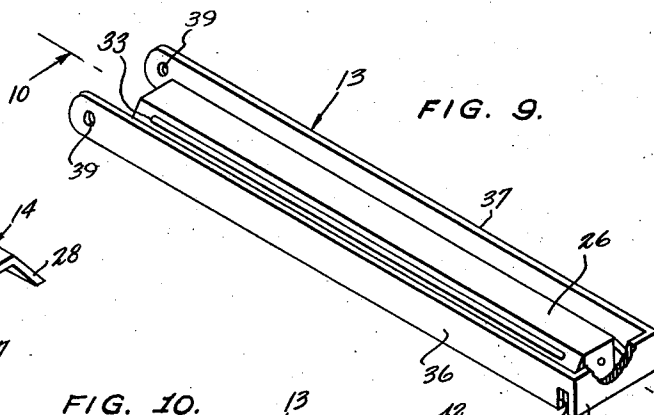


FIG. 8.

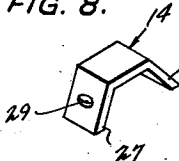
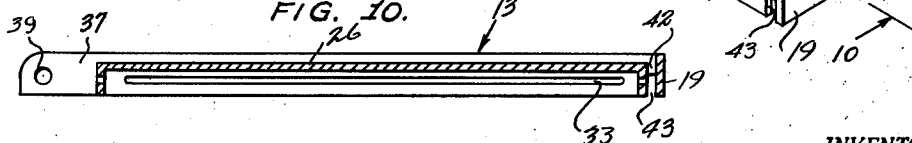


FIG. 10.



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UNITED STATES PATENT OFFICE

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Application July 15, 1947, Serial No. 761,032

2 Claims. (Cl. 1—49)

1

This invention relates to an apparatus for securing together the overlapping portion of a plurality of plies of material.

The art of making slip covers for furniture lies in the ability of the worker to achieve a neat, snug fit at all corners or rounded portions of the furniture to be covered. Conventionally, the ply of material or cloth is cut into various-shaped pieces, according to the general contour of the object. The overlapping portions of these pieces are then placed over and around the object and secured or pinned together at the various places where seams are desired. In accordance with the usual practice, the worker holds several straight pins in his mouth, grasps the edges of the pieces of cloth firmly with his hands, and then pins the overlapping portions of the pieces of cloth at intervals to conform to the shape of the article of furniture. The act of attaching the edges of the pieces of cloth is very difficult, because it is necessary to pin same close to the object in order to secure a proper fit.

Accordingly, an object of the invention is to provide an apparatus for pin-stitching together the overlapping portions of plies of material or cloth wherein a substantially U-shaped deformable fastener or staple after penetration of said overlapping portions is subjected to a squeezing action to effect a straightening thereof.

Another object of the invention is to provide an apparatus for pin-stitching together the overlapping portions of plies of material or cloth wherein a substantially U-shaped deformable fastener or staple is caused to completely penetrate the overlapping portions in such manner that it may subsequently be easily withdrawn, without damage to said portions, by application of a pulling force at either end thereof.

A further object of the invention is to provide an apparatus for pin-stitching together the overlapping portions of plies of material or cloth in which a substantially U-shaped deformable fastener or staple is supported in a position so as to penetrate said overlapping portions and in which the projecting ends and the connecting bight portion of the staple are subjected to a squeezing action to effect straightening of the staple following penetration of the overlapping portions.

A still further object of the invention is to provide an apparatus for securing together the overlapping portions of plies of material or cloth which is simple in structure, easy to operate, and commercially feasible.

2

Other objects and advantages will become apparent from the following description.

An embodiment of a specific application of the invention is illustrated by way of example in the accompanying drawings, wherein:

Figure 1 is a side elevation of an apparatus according to the present invention, showing overlapping portions of plies of material or cloth in the position of securing same together.

Figure 2 is a longitudinal vertical section through the apparatus, the full line indicating such apparatus in closed position and the dotted line indicating the position of the frame 11 of the upper jaw for reloading the carriage with a strip of staples.

Figure 3 is a transverse vertical section, taken along the line 3—3 of Figure 2.

Figure 4 is a similar section, taken along the line 4—4 of Figure 2.

Figure 5 is a fragmentary plan of a portion of the anvil of the lower jaw, taken on the line 5—5 of Figure 2.

Figure 6 is an enlarged vertical view, partially in section, illustrating the anvil provided with the transverse groove and the staple-driver blade respectively engaging the ends and the connecting bight portion of the U-shaped deformable staple after penetration of the overlapping portions of plies of material or cloth, but before the strengthening thereof has been effected.

Figure 7 is a similar view to Figure 6, showing the staple, and staple-driver blade upon completion of the straightening operation.

Figure 8 is a perspective view of the follower.

Figure 9 is a perspective view of the carriage for supporting an elongated strip of U-shaped deformable staples.

Figure 10 is a longitudinal vertical section through the carriage shown in Figure 9, taken along the line 10—10.

Figure 11 is a perspective view of an elongated strip of substantially U-shaped deformable staples.

Figure 12 is a sectional view taken on the line 12—12 of Figure 5.

As illustrated in Figure 1, the overlapping portions 3 and 4 of the two plies of material or cloth 5 and 6, respectively, fitted over and around the surface of an article of furniture 7 are in the process of being secured together by means of a deformable staple 2, said staple being of substantially U shape, as shown in Figure 11.

The apparatus for applying the deformable staple 2 to the overlapping portions 3 and 4 of the two plies of material or cloth 5 and 6 com-

3

prises a pair of jaws A and B mounted for closing movement with respect to each other and between which the overlapping portions 3 and 4 of the two plies of material or cloth 5 and 6 are adapted to be interposed. The jaw A comprises a frame 11 having a handle 10 surrounding its exterior surface and secured thereto, said frame being channel-shaped, as shown in Figure 4, and is pivotally mounted at its rear end to a cross-pin 12. The jaw B includes a frame 21 having a handle 22 surrounding its exterior surface and secured thereto, said frame 21 being likewise of channel shape, Figure 4, and is pivotally mounted at its rear end to the cross-pin 12. Mounted in coacting relation with the cross-pin 12 and the frame 11 of jaw A and the frame 21 of jaw B for normally urging the jaws away from each other is a spring means, said means embodying a spring 40 having an end thereof resting upon the upper surface of said pin 12 and its other end extending forwardly and bearing against the under surface of the frame 11, and a spring 41 having an end thereof resting against the under surface of said pin 12 and its other end extending forwardly and resting upon the upper surface of the frame 21.

The jaw A is provided with a means for supporting a strip 18 containing a plurality of substantially U-shaped deformable fasteners or staples 2 arranged in side-by-side relation with their ends projecting toward the other jaw B and in position to penetrate the interposed plies of material upon relative closing movement of the jaws. The staple supporting means includes a longitudinally extending carriage frame or magazine 13, the two sides 36 and 37 of which are received within the sides of the frame 11 of the jaw A, the rear end of each of the sides 36 and 37 being provided with an aperture 39 for the reception of the cross-pin 12 therethrough. The front end of the carriage frame 13 terminates in a cross-bar or stop 19. Extending forwardly from a point contiguous the rear end of the frame 13 and terminating at a point adjacent to and spaced from the inner surface of the stop 19 is a trackway 26 having diverging sides. The space 42 intermediate the terminating point of the trackway 26 and the inner surface of the stop 19 are of a width sufficient to accommodate the connecting bight portion of a staple 2 and to permit reciprocatory movement therethrough of a staple-driver blade 8 carried by the inner face of the frame 11 of the jaw A to be subsequently described. Each of the sides 36 and 37 of the carriage frame 13 is provided with a slot 43, the slot being in alignment with the space 42 and being for the accommodation of a complemental end of a leg of the U-shaped staple 2. Mounted for sliding movement upon the trackway 26 of the carriage frame 13 is a follower 14, said follower being of a shape similar to the trackway, the legs 27 and 28 thereof being adapted to ride over the converging sides of the trackway. The legs 27 and 28 of the follower 14 are each provided with an aperture 29, through which the arms 31 and 32 of a cross-bar 15 extend, the bar being mounted for sliding movement along a longitudinal rod 17 carried by the trackway 26. The front end of the rod 17 is supported in the complemental end wall of the trackway 26, and the rear end of said rod is supported in the complemental end wall of the trackway. The arms 31 and 32 of the cross-bar 15 ride in a pair of longitudinal slots 33 in the sides of the trackway 26. Mounted in surround-

4

ing relation on the rod 17 is a compression spring 16, the forward end of the spring bearing against the cross-bar 15, and its rear end bearing against the inner surface of the rear end wall of the trackway 26. Such compression spring urges the follower 14 forwardly, that is, in the direction of the stop 19. As a result, a strip 18 containing a plurality of substantially U-shaped deformable staples 2 that have been placed on the trackway 26 of the carriage frame 13 in front of the follower 14 is urged toward the space 42, the stop 19 limiting the extreme forward movement of the strip 18 so that the foremost staple 2 is positioned within the space 42 in direct alignment of the staple-driver blade 8.

On the confronting faces of the jaws B and A is a means for respectively engaging the projecting ends and the connecting bight portion of a staple 2 upon relative closing movement of the jaws to effect straightening of the staple following penetration thereby of the interposed overlapping portions of the plies of material or cloth, such means embodying an anvil 9 provided with a transverse groove 20 on the inner face of the frame 21 of the jaw B and the staple-driver blade 8 on the inner face of the frame 11 of the jaw A. The length of the blade 8 and the groove 20 in the anvil 9 is at least equal to the length of the staple 2 when in straightened condition. The groove 20 of the anvil 9 comprises like end portions formed with aligned horizontal floors and an intermediate downwardly-offset portion providing a cavity 24 for the accommodation therein of that part of the plies of material or cloth underlying the bight portion of staple 2. Carried by the forward end of the anvil 9 is an adjustable gauge plate 44 for determining within certain limits the point at which the staples are to be applied to the overlapping portions with respect to the article of furniture 7. Gauge plate 44 comprises a plate 46 substantially coextensive with the front edge of anvil 9 and a pair of laterally-spaced horizontal legs 47 which underlie the anvil 9. Legs 47 are formed with longitudinal slots 48 therein which slidably receive screws 45 threaded into the under surface of anvil 9. By loosening the screws 45, the plate 46 may be moved from the full line position, Figure 5, where it is seated against the forward edge of anvil 9, to the broken line position which may be any distance forwardly of such forward edge within the limits of slots 48. Re-tightening of screws 45 secures gauge plate 44 in a selected forwardly-adjusted position where it will abut furniture article 7 and space the point of insertion of staples 2 therefrom in a manner readily understood.

In operation of the apparatus of the invention, with the gauge plate 44 set at the desired point, the overlapping portions 3 and 4 of the two plies of material or cloth 5 and 6, respectively, are interposed between the jaws A and B with the part of the overlapping portions beyond the point of desired attachment being placed in the cavity 24. The operator then applies a squeezing force to the jaws A and B to effect relative closing movement of the jaws. The initial application of such force causes the staple-driver blade 8 to bear down upon the connecting bight portion of the U-shaped staple and move the ends of the legs of the latter into contact with the interposed overlapping portions and thence penetrate through the latter and into direct engagement with the end portions of the transverse groove 20 of the anvil 9, as shown in Figure 6. Continued appli-

5

cation of such force causes relative movement of the blade 8 and anvil 9 with respect to each other, thereby resulting in the deformation of the staple into a substantially straightened condition, as shown in Figure 7, whereupon the operator arrests the application of such force. With the cessation of this force, the jaws will move away from each other under the action of the springs 40 and 41.

Whenever reloading of the trackway 26 with another strip 18 of staples is required, the spring 40 is withdrawn, and the frame 11 raised. While the frame 11 is raised, the follower 14 is pushed back, and the strip 18 inserted on the trackway 26 in between the follower 14 and the stop 19, whereupon the frame is again lowered and the spring 40 replaced.

I claim:

1. Apparatus for temporarily securing together the overlapping portions of a plurality of plies of material comprising a pair of jaws mounted for closing movement with respect to each other and between which a plurality of plies of material are adapted to be interposed, a longitudinally extending magazine positioned underneath the inner face of one of said jaws and connected thereto for supporting a plurality of substantially U-shaped deformable fasteners arranged in side by side relation with their ends angularly projecting outward toward the other of said jaws, means for feeding the foremost of said fasteners into position for penetrating said interposed plies of material upon relative closing movement of said jaws, a transversely disposed staple driver blade on the inner face of said one jaw at the front end of said magazine, an anvil provided with a transverse groove of a length equal to the length of the fastener in straightened condition, and a recessed portion in said anvil between the ends of the groove of a depth sufficient to receive the plies of the material to be fastened together, whereby when said device is closed the driver blade engages the bight of the fastener and forces the angularly disposed ends outwardly into the groove in the anvil and pins the plies of the material together.

6

2. Apparatus for temporarily securing together the overlapping portions of a plurality of plies of material comprising a pair of jaws mounted for closing movement with respect to each other and between which a plurality of plies of material are adapted to be interposed, a longitudinally extending magazine positioned underneath the inner face of one of said jaws and connected thereto for supporting a plurality of substantially U-shaped deformable fasteners arranged in side by side relation with their ends angularly projecting outward toward the other of said jaws, means for feeding the foremost of said fasteners into position for penetrating said interposed plies of material upon relative closing movement of said jaws, a stop on the forward end of said magazine and engageable with the foremost fastener for retaining said fastener in its position for penetration, a transversely disposed staple driver blade on the inner face of said one jaw at the front end of said magazine, an anvil provided with a transverse groove of a length equal to the length of the fastener in straightened condition, and a recessed portion in said anvil between the ends of the groove of a depth sufficient to receive the plies of the material to be fastened together, whereby when said device is closed the driver blade engages the bight of the fastener and forces the angularly disposed ends outwardly into the groove in the anvil and pins the plies of the material together.

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