No. 714,441. Patented Nov. 25, 1902.

J. C. BORGWARDT & W. CONSOER.

TUFTING MACHINE.

(Application filed Nov. 13, 1899.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.

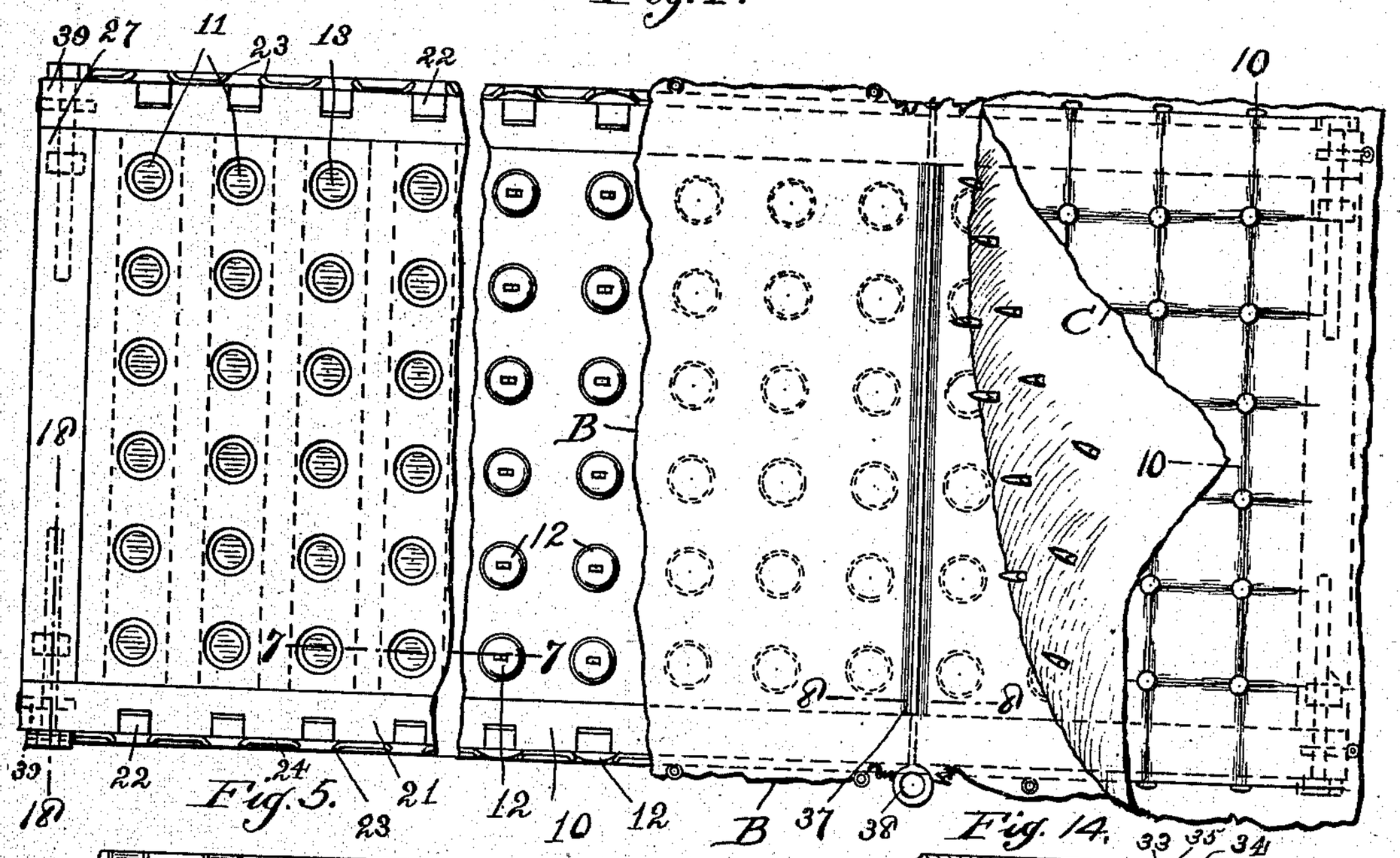


Fig. 5.

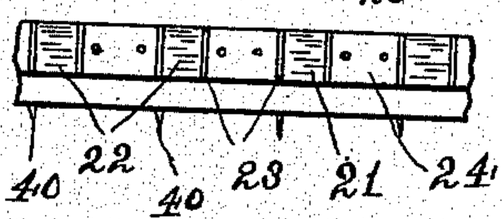


Fig. 14.

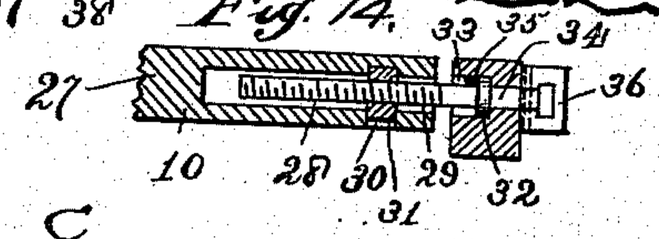


Fig. 2.

Fig. 3.

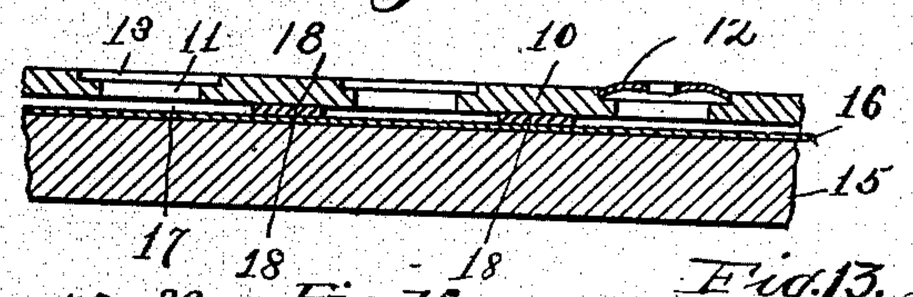


Fig. 4.

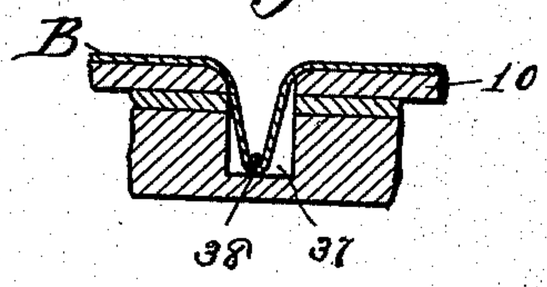


Fig. 15.

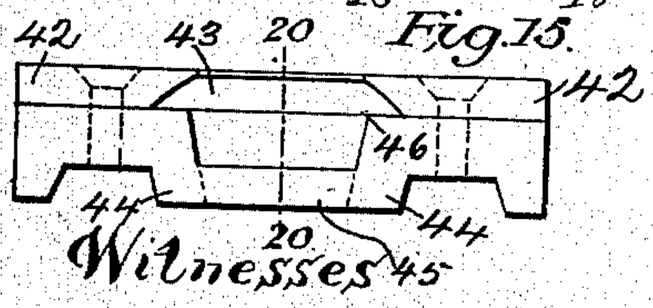


Fig. 13.

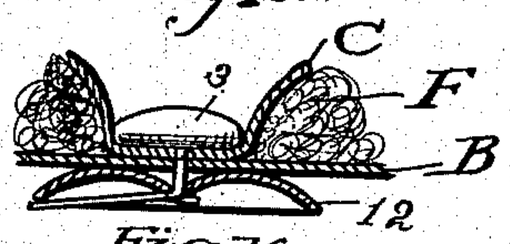
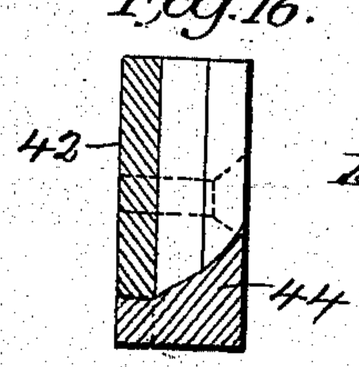


Fig. 16.



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J. C. BORGWARDT & W. CONSOER.

TUFTING MACHINE.

(Application filed Nov. 13, 1899.)

(No Model.) 2 Sheets—Sheet 2.

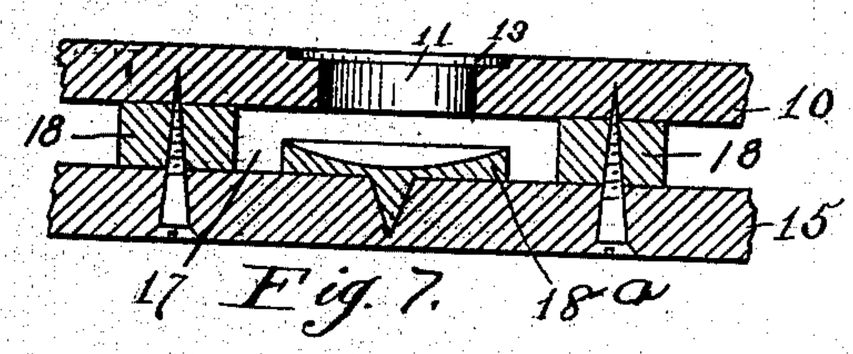


Fig. 7.

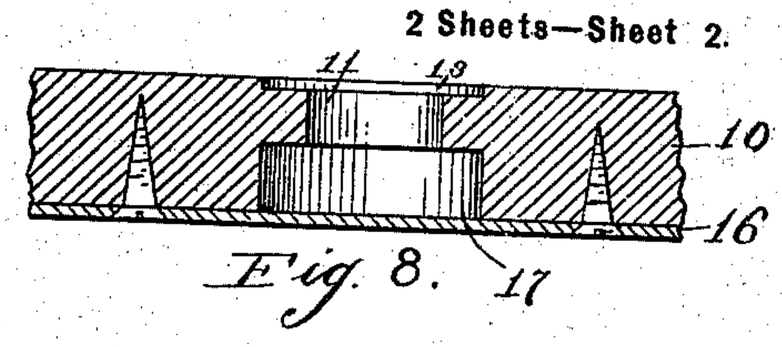


Fig. 8.

Fig. 9.

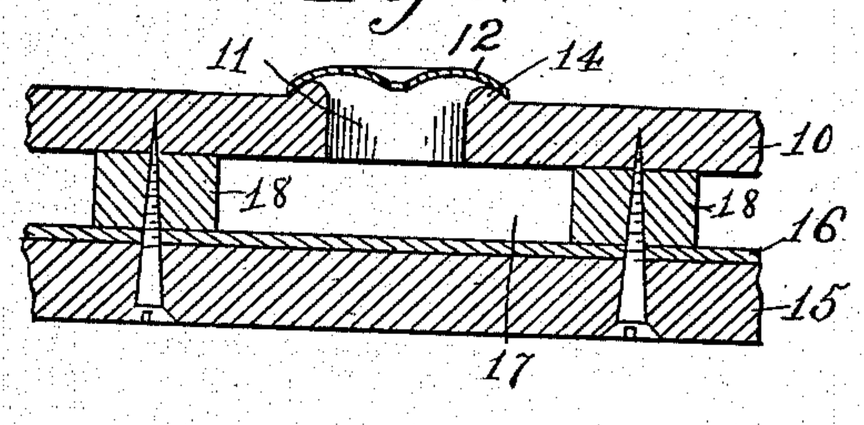


Fig. 10.

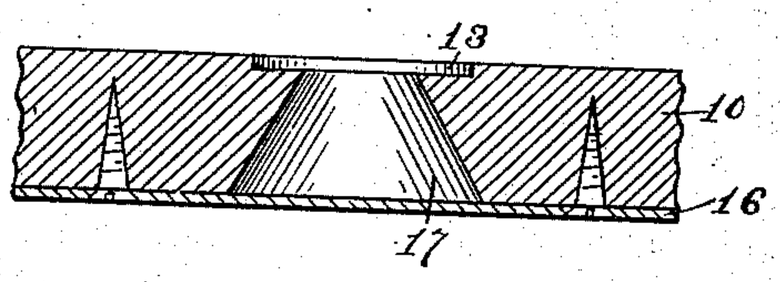


Fig. 6.

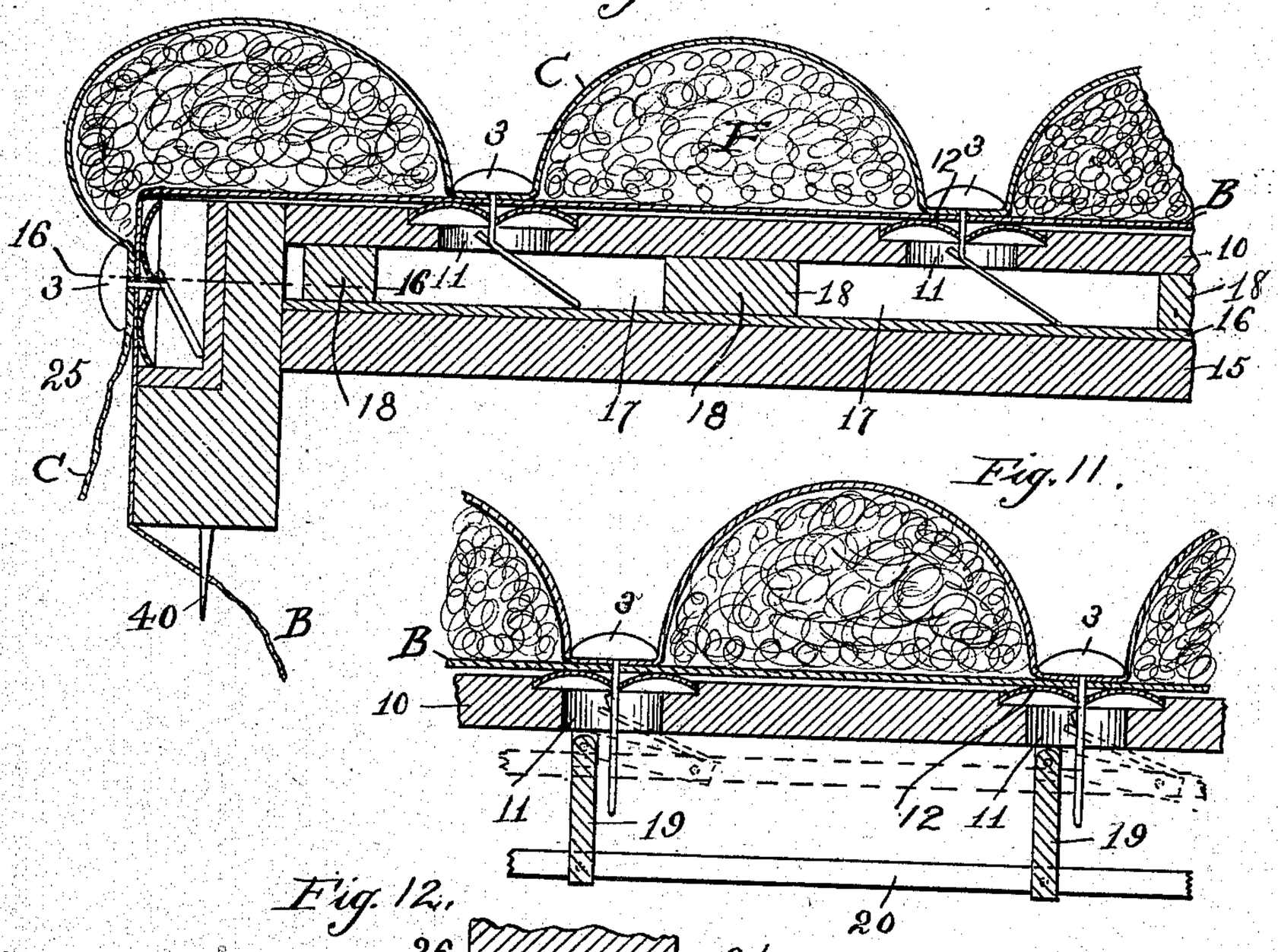
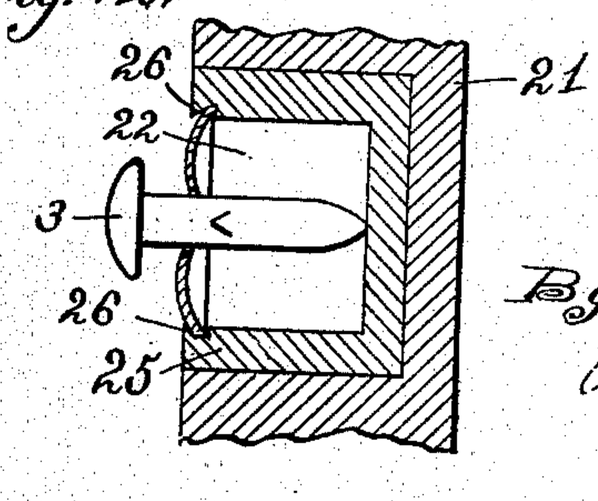


Fig. 11.

Fig. 12.



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UNITED STATES PATENT OFFICE.

JOHN C. BORGWARDT AND WILLIAM CONSOER, OF CHICAGO, ILLINOIS, ASSIGNORS TO ALFRED FRESCHL, OF CHICAGO, ILLINOIS.

TUFTING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 714,441, dated November 25, 1902.

Application filed November 13, 1899. Serial No. 736,833. (No model)

To all whom it may concern:

Be it known that we, JOHN C. BORGWARDT and WILLIAM CONSOER, citizens of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Tufting-Machines; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

Our invention relates to a novel construction in a tufting machine or apparatus, the object being to provide a device of this character which will enable the upholsterer to quickly make a complete tufted cushion for couches and other furniture; and it consists in the features of construction and combinations of parts hereinafter fully described and claimed.

In the accompanying drawings, illustrating our invention, Figure 1 is a top plan view of a tufting board or table forming a part of our machine and illustrating the various steps employed to form a finished cushion. Fig. 2 is a side elevation of same. Fig. 3 is a fragmentary sectional view on the line 7 7 of Fig. 1. Fig. 4 is a fragmentary section on the line 8 8 of Fig. 1. Fig. 5 is a fragmentary detail side elevation of the tufting board or table, showing another means for fastening the canvas or other fabric stretched over same. Fig. 6 is a detail sectional view on the line 10 10 of Fig. 1. Figs. 7, 8, 9, and 10 are fragmentary detail sections showing modified forms of construction of the tufting board or table. Fig. 11 is a fragmentary detail section showing a modified form of devices for bending the button-shanks. Fig. 12 is a detail sectional view on the line 16 16 of Fig. 6. Fig. 13 is a detail sectional view of a tufted cushion, showing the button bent and retained by the retaining-plate. Fig. 14 is a detail sectional view on the line 18 18 of Fig. 1. Fig. 15 is a top plan view of a modified form of guide-piece to be mounted on the sides of the tufting-board to receive the side retaining-plates. Fig. 16 is a section of same on the line 20 20 of Fig. 15.

One feature of our invention consists in providing a tufting-machine wherein all the steps of making a completed cushion are manually performed.

Another feature of our invention consists in providing suitable devices at the orifices of said openings to hold in place over same the retaining-plates, between which and the head of the button the cover and base of the cushion are held close together to form the tufts.

Still another feature of our invention consists in providing means for bending the shanks of the buttons below the retaining-plates to cause same to engage the latter and be held thereby against withdrawal.

Our tufting board or table 10 consists of a plane board of any suitable material provided at regular intervals with openings 11, corresponding in number and relative location with the buttons in the finished cushion. As said buttons 3 are generally used in combination with retaining plates or washers 12 on the under side of the cushion, said openings 11 are preferably surrounded at their orifices with suitable devices for holding said retaining plates in place over same. Said devices consist, preferably, of an annular countersink 13, surrounding the orifice of each opening and adapted to receive said retaining-plates 12. Said devices may, however, consist of an annular shoulder 14, as shown in Fig. 9, surrounding each of said openings 11 and adapted to enter the concave portion of the plate, and thereby hold same in place. Other devices of a similar nature could obviously be used; but we desire it to be understood that any means for holding said retaining-plates in place falls within the scope of our invention. Said board 10 is preferably sufficiently thin to permit the button-shank to project below same after passing through the retaining-plate and material above same, so that it can be readily bent by any suitable means. The said board 10 is preferably mounted parallel with and above another board 15, which is covered over its entire surface or at points below the openings 11 with sheet metal or a similar hard material 16, which is impervious to the point of the button-shank, so that when the latter strikes such hard surface and is pressed down upon the same it will be caused to bend, the bending-point being predeter-

mined by weakening the shank at a given point in the class of upholsterers' buttons preferably used in connection with our device. In this class of buttons the length of the shank below the bending-point is greater than the radius of the openings 11, so that it is necessary to provide a space of sufficient radius below the openings 11 to permit said end of said shank to enter freely. This may be accomplished by providing an intervening space 17 between the boards 10 and 15, as shown in Figs. 3, 6, 7, and 9, or by countersinking or enlarging the lower orifice of the openings 11, as shown in Figs. 8 and 10. In the last-named figures we have shown the metal plate 16 secured directly to the lower face of the board 10, which obviously performs the same function as when mounted upon the board 15. Where the intervening space 17 is employed, the same is formed by inserting cross-pieces 18 between the two boards 10 and 15 or in any other manner raising the board 10 out of contact with the board 15 or its covering 16. Instead of said sheet-metal covering 16 small circular plates 18^a may be secured to the board 15 below said openings 11 in any suitable manner, as shown in Fig. 7, the upper faces of said plates being concave to cause the button-shanks to bend more sharply than where a plane surface is used, as will be obvious. Other means for bending said button-shanks may also be employed—as, for instance, the device shown in Fig. 11, which consists of a plurality of parallel plates 19, pivotally secured to the lower face of the board 10 and depending therefrom, each of said plates passing underneath a line of said openings 11 to one side of the centers thereof and all pivotally connected to a cross bar or rod 20, by means of which said plates may be swung to the position indicated in dotted lines, thereby bending over any shank lying in their respective paths, or said plates 19 may also be omitted and the shanks bent by hand, if so desired. Said board is provided with side rails 21, provided with recesses 22, which open at the top and outer faces of said side rails. Adjacent said recesses 22 we provide suitable vertical guides 23 for receiving and holding retaining-plates in front of same. The said guides may be formed by securing plates 24 to the outer faces of said side rails 21 between each two recesses 22 and of a width to entirely cover the intervening space, the edges of said plates being bent slightly outwardly adjacent said recesses 22, thereby leaving small spaces between said plates and the adjacent face of the side rail, thus forming said guides. The innermost sides of said recesses 22 are also lined with sheet metal or similar hard material which will cause a button-shank to bend when forced against the same. Another convenient method for securing the same result consists in fitting into each recess 23 a casting 25, (shown in Figs. 6 and 12,) said casting having four walls, of which the two vertical side walls are provided on their inner faces with guide-grooves 26 to receive the retaining-plates. The same result will be accomplished by the construction shown in Figs. 15 and 16, where each recess in the side rails is provided with a back-plate 42, having a dish-shaped recess 43 to receive the washer, which is slipped in through the open top thereof and held in position by a face-plate 44, having a central portion 45 to permit the passage of the button, but of less diameter than the recess 43 to form retaining-shoulders 46, the bottom of the receptacle thus formed preferably being inwardly beveled, as shown in Fig. 16. The said side rails 21 may be made adjustable, as shown in Fig. 14, to accommodate various widths of cushions. Said board 10 is provided, preferably, with rigid end rails 27, provided at their ends with openings 28 to receive the ends of set-screws 29, a nut 30 being introduced through transverse recesses 31 and extending transversely in said openings 28 to engage said set-screws. The latter are provided with collars 32 adjacent their outer ends, which enter enlargements 33 of the openings 34 and are held in place therein by means of pins 35, intersecting said enlargements 33 of said openings 34. The outer ends of said screws 29 are provided with pivoted heads 36, which may be turned to lie against the outer faces of the side rails after the latter have been adjusted. When said tufting-table is designed for upholstering couch-tops in which a head-rest is formed, the said board is provided between its ends with a transverse groove 37, which terminates at the side rails 21, the latter being provided in alinement with and adjacent the bottom of said transverse groove with openings to permit the passage of a rod 38 therethrough and spanning said groove. The said groove 37 is adapted to recess a certain portion of the fabric forming the base of the cushion and forming the division between the body portion and head-rest portion of the cushion.

In using our tufting-board the operator first places his retaining plates or washers 12 in place over the openings 11 when it is desired to use washers, then lays his fabric B, which is to form the base of his cushion, over the board in proper position. If the cushion is designed to have a body and head-rest portion, he first depresses a fold of his base fabric or backing into said groove 37 and cuts slits in the ends of the fold to permit the rod 38 to pass therethrough. After passing said rod 38 through to prevent withdrawal of the "slack," as such fold is termed, he stretches the base fabric over the entire board to secure a smooth plane surface, the said fabric being secured either by pins passing through the depending portions and into openings 39 in said side and end rails, or preferably he forces said fabric over the ends of pins 40, projecting downwardly from the lower faces of said side and end rails, as shown in Figs. 5 and 6. The latter means of fastening is

simpler and more efficient. He then lays his marked cover C over the base fabric and passes a given line of the shanks of the buttons therein through a corresponding line of retaining-plates on the tufting-board, the latter being readily located by sense of touch. The lower ends of the shanks thus passed through are bent over by any of the above-described devices provided for the purpose. He then introduces his filling F on one or both sides of the line along which the cover is fastened, the said filling being obviously introduced in the proper manner to form the raised tufts in the cushion. Then the second line of button-shanks is passed through the corresponding line of retaining-plates, and so on until the cushion is completed. After the top tufts or body-tufts are finished the operator forms the side tufts, first plaiting the cover to take up the slack corresponding to the fullness of the body-tufts and then piercing it at the proper points by inserting a button-shank through the plait, passing the shank through its corresponding side retaining plate or washer 12. The successive steps in the formation of the cushion are illustrated in Fig. 1, which shows at the right-hand side, first, the apertures or openings 11 in the board or table before the washers are in place; second, the apertures after the washers 12 are inserted in their seats; third, a portion of the backing or base fabric B stretched over the washers in their seats; fourth, the fastening-rod employed to form the slack in the bottom fabric or backing to permit of the elevation or tilting of the head-rest section of the pad; fifth, a section of the top cover showing the button shanks or prongs inserted therethrough, and, sixth, a portion of the completed cushion, showing the formation of the tufts. After thus completing the cushion the base fabric is released, the rod 38 withdrawn, and the cushion removed.

By means of our device any unskilled person can after a week's practice compete with the most expert upholsterer in the production of tufted cushions.

We claim as our invention—

1. In a tufting-machine, a tufting-board provided at intervals with recesses, and stationary clenching devices in alinement with the orifices of said recesses and below the same.

2. In a tufting-machine, a tufting-board provided at intervals with perforations having orifices surrounded by devices for holding a retaining-plate in place over same.

3. In a tufting-machine, a tufting-board provided at intervals with apertures, each of said apertures being countersunk at its orifice to receive and hold a retaining-plate thereon.

4. In a tufting-machine, a tufting-board provided at intervals with recesses, said recesses having their orifices surrounded by devices for holding retaining-plates in position over same, and a hard material in alinement with the orifice of each of said recesses, whereby a button-shank pressed down upon the same will be bent.

5. In a tufting-machine, a tufting-board provided at intervals with recesses, said recesses having their orifices surrounded by annular grooves for holding retaining-plates in position over same, and a hard material in alinement with the orifices of said recesses adapted to resist and cause a button-shank to bend when forced down upon the same.

6. In a tufting-machine, a tufting-board having recesses therein at intervals, said recesses being of less area at their upper than at their lower ends, and a hard material in alinement with the orifice of each of said recesses, whereby when a button-shank is forced upon the same it will be bent.

7. In a tufting-machine, a tufting-board having recesses therein at intervals, each having a countersunk orifice adapted to receive and hold a retaining-plate in place over same, said recesses being of less area at their upper than at their lower ends, and a hard material in alinement with the orifice of each of said recesses, adapted to cause a button-shank forced down upon the same to bend.

8. In a tufting-machine, a tufting-board provided at intervals with recesses, and provided with side rails having recesses, said recesses in said board and said side rails being provided with adjacent devices for holding retaining-plates in place over same.

9. In a tufting-machine, a tufting-board provided at intervals with recesses in its top and sides, said recesses being bordered by devices for holding retaining-plates in position over same.

10. In a tufting-machine, a tufting-board provided at intervals with recesses in its top and sides, said recesses being bordered by devices for holding retaining-plates in position over same, and a hard material in alinement with the orifice of each of said recesses.

11. In a tufting-machine, a tufting-board provided at intervals in its top with recesses having countersunk orifices, and having recesses in its sides, said side recesses being open at the top.

12. In a tufting-machine, a tufting-board provided at intervals in its top with recesses having countersunk orifices, and having recesses in its sides, said side recesses being open at the top and bordered by guides for receiving retaining-plates.

13. In a tufting-machine, a tufting-board provided at intervals in its top with recesses having countersunk orifices, and having recesses in its sides, said side recesses being open at the top and lined on their innermost sides with a hard material.

14. In a tufting-machine, a tufting-board provided at intervals in its top with recesses having countersunk orifices, and having recesses in its sides, said side recesses being open

at the top, lined on their innermost sides with a hard material, and bordered at their orifices by guides for receiving retaining-plates.

15. In a tufting-machine, a tufting-board comprising two boards mounted one over the other, the lowermost board being covered with a hard material, and the uppermost board being provided at intervals with perforations.

16. In a tufting-machine, a tufting-board comprising two boards mounted one over the other, the lowermost board being covered with a hard material, and the uppermost board being provided at intervals with perforations bordered by devices for holding retaining-plates in place over same.

17. In a tufting-machine, a tufting-board comprising two superimposed boards the uppermost of which is provided with perforations at intervals, and the lowermost of which is covered with a hard material under each of said perforations, and means for providing an intervening space of greater diameter than said perforations between the said lower orifice of each of said perforations and the top of said lowermost board.

18. In a tufting-machine, a tufting-board comprising two superimposed boards the uppermost of which is provided with perforations at intervals, and the lowermost of which is covered with a hard material under each of said perforations, and an intervening space between said boards.

19. In a tufting-machine, a tufting-board provided in its top with recesses at intervals, and between its ends with a transverse groove adapted to receive slack in the goods forming the base of the cushion, and forming the dividing-line between the head-rest portion and body of the cushion.

20. In a tufting-machine, a tufting-board provided in its top with recesses at intervals, a transverse groove between the ends of said board adapted to receive slack in the goods forming the base of the cushion, and means for holding said slack against withdrawal from said groove.

21. In a tufting-machine, a tufting-board provided in its top with recesses at intervals, a transverse groove in said board between its ends adapted to receive slack in the goods forming the base of the cushion, and a pin adapted to pass through said slack portion to hold same against withdrawal from said groove.

22. In a tufting-machine, a tufting-board provided in its top and sides with recesses at intervals and between its ends with a transverse groove closed at its ends and adapted to receive slack in the fabric forming the base of the cushion, and a pin adapted to pass through openings in the closed ends of said groove and through said fabric to hold said slack against withdrawal.

23. In a tufting-machine, a tufting-board comprising a lower board covered with a hard material, a perforated board divided between its ends mounted over said lower board so as to leave an intervening space, rigid end pieces on said board, recessed side rails, and devices passing through said side rails at the point of division of the upper board for holding slack fabric in the space between the two parts of said upper board.

24. In a tufting-machine, a tufting-table provided in its top with a series of recesses surrounded at their orifices with devices for holding retaining-plates in place over same, and devices on said board for securing the base fabric for a cushion stretched over said board.

25. In a tufting-machine, a tufting-table provided in its top with a series of recesses surrounded at their orifices with devices for holding retaining-plates in place over same, and devices on said board for securing the base fabric for a cushion stretched over said board comprising pins projecting downwardly from the lower face of said board adjacent its edges.

26. In a tufting-machine, a tufting-board provided at intervals with recesses, and adjustable side rails on said board provided with recesses in line with the recesses of the board, and having clenching devices, and bordered by plates offset at their edges to form guides for receiving and holding washers.

27. In a tufting-machine, a tufting-board provided in its top with recesses at intervals and between its ends with a transverse groove adapted to receive the cover material, side rails on said board, and a pin passing through the openings in said side rails and through said recess for holding said material against withdrawal.

In testimony whereof we affix our signatures in presence of two witnesses.

JOHN C. BORGWARDT.
WILLIAM CONSOER.

Witnesses:
RUDOLPH WM. LOTZ,
WM. B. SNOWHOOK.