No. 676,884. Patented June 25, 1901.

A. FRESCHL.

UPHOLSTERING APPARATUS.

(Application filed Apr. 10, 1899.)

(No Model.)

FIG. 1.

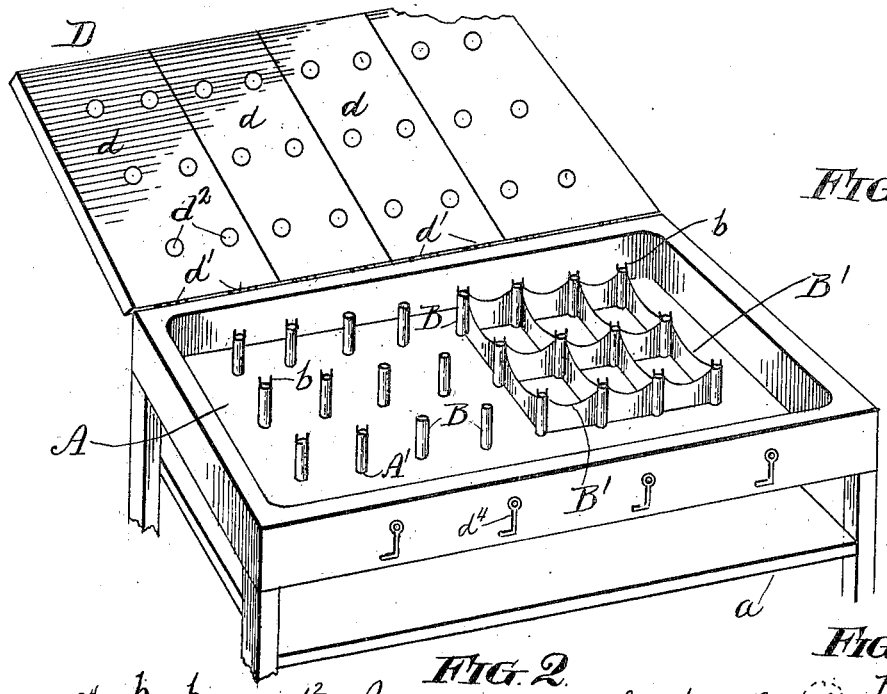


FIG. 4.

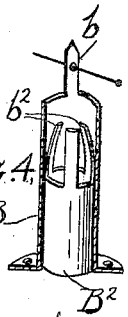


FIG. 2.

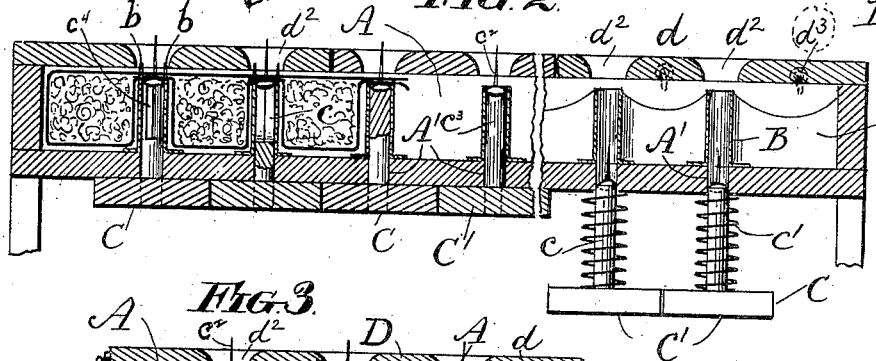
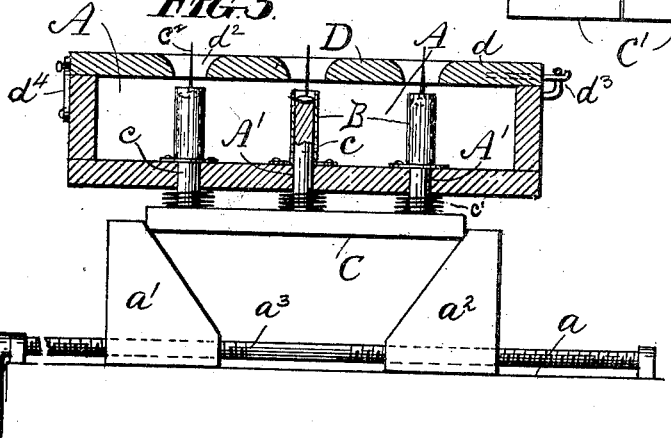


FIG. 3.



Witnesses
A. J. Bell
Thomas Montgomery

Inventor:
Alfred Freschl,
by J. M. Roberts
his atty.

UNITED STATES PATENT OFFICE.

ALFRED FRESCHL, OF CHICAGO, ILLINOIS.

UPHOLSTERING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 676,884, dated June 25, 1901.

Application filed April 10, 1899. Serial No. 712,570. (No model.)

To all whom it may concern:

Be it known that I, ALFRED FRESCHL, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Upholstering Apparatus; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to an improved apparatus for making tufted upholstery; and the object of the invention is to simplify the construction and operation of the device and thereby to lessen its cost.

With this end in view the invention consists in the matters hereinafter set forth, and particularly pointed out in the claims at the close of this specification.

A cushion or piece of upholstery which my invention is adapted to produce consists of an upper or outer covering of cloth *x*, leather, or the like, a lower covering or backing *y* of burlap, cardboard, or other suitable material, and a filling of hair, moss, or like material. Said filling *z* is divided into a number of elevated projections, the outer and inner coverings being secured together between said elevations at the base of the cushion, thereby forming on the outer surface of the cushion a plurality of depressions, in which are usually located buttons or tufts. The outer edges of the cushion may be finished in any manner suitable to the use to which it is to be put.

In the drawings accompanying this specification and forming a part hereof, Figure 1 is a perspective view of a mold-board and follow-board embodying certain of the parts of my invention, other parts being omitted from this view for greater clearness of illustration. Fig. 2 is a longitudinal sectional view of a machine exemplifying my invention, the left-hand section of the follow-board and pin-board being shown in the positions which they occupy when the parts are operated to form the cushion and the right-hand sections being in the positions which they occupy before the parts have been operated. Fig. 3 is a detail view of one of the forms of mechanism adapted to operate the tuft-button pins when the latter are assembled upon a suitable base. Fig. 4 is a detail view showing one form of retaining-pin and of the button-guide associated with the tuft-guards.

Like letters of reference refer to the same parts throughout the specification and drawings.

In the drawings the reference-letter A indicates a mold-board which may be of any desired form to correspond with the form of the cushion to be produced. In practice the mold-board will form the bottom of an open-top box having suitable vertical side and end walls, as is usual in this class of devices, and supported in any suitable manner—as, for example, by the uprights shown in the drawings.

In the base of the mold-board are formed openings A′ at the intended locations for the tuft-buttons. On the inner surface of the bottom of the mold-board are seated the hollow tuft-opening guards or posts B, they being spaced in its surface to correspond with the number and location of the depressions in the cushion and arranged opposite the points in the cushion at which the inner and outer coverings are secured together in tufting, one such guard or post surrounding each opening A′. These guards are tubular in form and are of a height about equal to that of the filling material when the latter is compressed. The purpose of these guards is to provide suitable means or ways for passing the tuft-buttons to place to be clenched to secure the coverings together to prevent the filling material from working through the openings A′ and to form guides for the folding of the cloth constituting the cover of the cushion into plaits or tufts.

The mold-board may be provided between the tuft-guards with a plurality of strips B′, which are set edgewise on the board longitudinally and transversely thereof and intersect each other at said guards, thereby forming on the board a plurality of separate molds or pockets within which the outer covering of the cushion may be depressed to form the cells therein. While said pockets or molds enable the cells to be formed with greater accuracy than when said strips or partitions are absent, it is of course to be understood that these strips may not be used and that the invention is complete in either form. Each guard may be provided, if desired, with one

or more upwardly-projecting pins *b*, which are adapted to pass through the fabric when the latter is plaited and retain it fixedly in position. It is to be understood that in some classes of work it is convenient and desirable to mark off the fabric at the points where the outer covering and the backing are to be secured together by the tuft-buttons between the elevations or tufts before it is placed in position upon the mold-board, and in order to insure the proper positioning of the marked points of the fabric these pins may be usefully employed. They may of course be dispensed with when such system of marking is not employed, the mold-board being complete and operative either with or without them. Each guard may also be provided with any suitable button-centering or guide device, the form which I have disclosed being an auxiliary inner tube B^2, having inwardly-curved spring-fingers b^2, which project well up toward the top of the guards.

The follow-board D is for the purpose of pressing the filling material into the cells or depressions formed in the outer covering and is provided with a plurality of circular openings D′, which are located opposite to and corresponding with the guards B, and through which the pins of the tuft-buttons project when the follower has been depressed and the pins raised sufficiently to thrust the shanks of the buttons through the coverings of the cushion, as hereinafter fully described.

The follower has heretofore been composed of a single piece, operated by means of any suitable power-press—such, for example, as a screw-shaft or a cam. It is apparent that by employing a sectional follower the necessity for a power-press is dispensed with, thereby greatly reducing the cost of the device and making it much lighter and less cumbersome. When the integral follower is used, the pressure required to compress all of the filling material at once is very great and a power device is necessary to accomplish this function; but when a sectional follower is employed the smaller amount of material operated upon by each section requires much less pressure, and it has been found in practice that an operator of only ordinary strength can compress the filling material beneath each section to the desired compactness by merely bearing down upon the section of board corresponding to a part of the mold. In this manner the workman compresses the material successively beneath the sections by his own strength and the necessity of a press is obviated. In the sectional form of follow-board each section *d* is pivotally secured to one side of the mold, either permanently, as by a suitable hinge *d′*, or detachably, as by a suitable projection on the rear of the section passing through an eye on the side of the mold, as at d^3. Each section of the board is provided with its quota of openings and is adapted to be operated independently of each other section. In practice each section is preferably adapted to act in conjunction with two rows of guards B, thereby coöperating with a series of molds or pockets to form a strip or row of cells in the cushion. Each section is locked in position after being depressed by any suitable means—as, for example, by a simple pivoted latch d^4, taking over a pin or projection on the front end of the section or by an automatic spring-catch of any of the well-known forms. The pins upon which the tufting nails or buttons are supported are arranged in independent sections, which may be done either by arranging the pins in sections with the pins of each section mounted upon a section of a pin-board, as in Figs. 2 and 3, or by arranging the pins in sections in which each pin is in turn independent of all the other pins.

The pin-board C is provided with upwardly-projecting pins or posts *c* in position and number corresponding with the guards in the mold-board and the openings in the follow-board. Each pin or post is surrounded by a coil-spring *c′*, which is secured to the pin-board, and in the normal position of the parts rests at its upper end against the bottom of the mold-board at the guard corresponding to its post. The springs are compressed between the pin-board and mold when the former is operated and act to restore the board to its normal position after the pressure of the operating means is withdrawn. Each pin or post is intended to operate a tuft-button c^2 and may be plain, as at c^3, or provided with any suitable means affording a seat for the button, whereby the latter may be securely retained in position while passing through the material, but be easily detached when the pin-board is withdrawn—as, for example, at c^4, which indicates the well-known form of split tube employed in these machines.

The pin-board is normally below and separated from the mold-board by the springs *c′*, as shown in the drawings, so that the tuft-buttons c^2 are below the tops of the guards and out of contact with the cushion fabric.

The pin-board is made in sections C′, it being adapted to the size of the mold with which it may be associated. Each section is provided with its quota of pins corresponding in position to the openings in its complementary section of the follow-board and is adapted to be operated independently of each of the other sections. Each section is suitably supported in any convenient form of guides and is provided with its separate operating means, which may be similar to the means that would be employed for an integral board, though it is apparent that a much simpler mechanism and one more easily operated may be employed by making the pin-board sectional. One form of means which may be satisfactorily employed for the purpose of operating the sections of the pin-board is illustrated in Fig. 3 of the drawings, though of course it is to be understood that any other suitable means—such as a cam, an eccentric, or a screw

operated by a hand-wheel, or any other of the well-known forms of mechanism—may be employed without in any manner departing from the spirit of my invention. In this figure, *a* indicates a shelf or support extending lengthwise of the machine-frame. Mounted in suitable guides on the support are pairs of oppositely-opposed wedges a' a^2, the wedges of each pair being adapted to be drawn to and from each other by suitable oppositely-threaded screw-shafts a^3, operating in the well-known manner and bearing in the frame of the machine. It is obvious that one of the wedges of each pair may be stationary on the frame to furnish the bearing or seat for the screw-shaft, the other of each pair being movable. A pair of these wedges is associated with each section of the pin-board, so that it is apparent the sections are independently and separately operated. The sections rest upon the inclined faces of their wedges and are held in their proper position alined with the openings in the mold-board by means of any suitable guides, such as coacting ribs and grooves in the associated parts.

In the form described above the pins of each section are mounted together upon a suitable base to compose a unitary structure, whereby a single operative mechanism, as a cam or eccentric, &c., may be employed to effect the adjustment or operation of all of the pins of each section. By this arrangement of supplemental or complementary sections of the pins and follower it is apparent that the same apparatus may be used for producing large cushions or upholstered pieces, as for lounges or couches, or it may be used to simultaneously construct two smaller pieces, as for small cushion-work, in which latter case each workman operates independently, as if operating a separate apparatus. In this way the possibilities of each apparatus are multiplied. While the supplemental arrangement of sections is of advantage for the reasons above enumerated, it is of course apparent that they may be used independently of each other and that a sectional follow-board may be associated in the same apparatus with an integral pin-board or that a sectional arrangement of pins or section pin-board may be used in conjunction with an integral follow-board. Each of these elements has its advantages and capabilities independent of the character of the other, while at the same time they are susceptible of conjoint use to obtain results that do not follow from the use of either in connection with a different type of the other.

In Fig. 4 is illustrated a form of guard that may be advantageously employed. In this form the pins *b* are provided with eyes through which holding-pins may be inserted to prevent the backing from being thrown off by the pressure of the filling material, if for any reason the follower be removed.

In the use of this apparatus the tuft-buttons are first put in place on the pins. When no inner guides, such as B^2, are employed, the buttons may be simply passed head down through the guards of the mold-board. When inner guides are used, the pins are lowered and the buttons are positioned beneath the mold. The fabric constituting the outer covering is then laid face down upon the mold-board and the plaits are formed in the usual manner, those in the edge of the material being secured by any suitable means to the rim of the mold-board. The filling material is then placed loosely upon the outer covering after the cells have been formed therein, the mold being filled by the material to a depth considerably greater than the depth of the cells, so that it will be packed to the required firmness when pressed into said cells by the follow-board. The inner covering or backing is placed in position over the filling material and the workman then presses each section of the follow-board to place as the work progresses and locks it securely against displacement by the means employed. The sections of the follow-board compress the filling-material compactly in the cells formed by the plaits in the fabric and bring the inner and outer coverings together at points above the guards, where they are secured by the tuft-buttons. The sections of the pins are then operated by means of the mechanism provided for this purpose, the tuft-buttons upon the pins of each section being forced through the covering as they are operated. The shanks of the buttons are clenched or turned over by any suitable tool, and the operation of the apparatus is then complete. When the operating means used in connection with the sections of the pins is restored to its normal position, the coil-springs c' or the other suitable means employed will carry the pins back to their normal positions.

It is perfectly apparent that numerous changes may be made in the means and mechanism employed without departing from the spirit and intent of my invention. For example, each section of the pins of Figs. 2 and 3 may be provided with a single large spring in lieu of the many small coil-springs c' to return the section to its normal lowered position or the grooves and ribs in the opposing faces of the section and wedges may interlock to effect the return of the sections when the wedges are separated. The operating means for the sections of the pins may be varied to employ any of the well-known forms of mechanism—such as an eccentric, a cam, or a screw—as the character of the device employed is immaterial, and such changes do not depart from the scope of my invention. The divisions or sections of the follow-board may of course be varied to suit the requirements of the work to be done and the sections may be adapted to act in conjunction with one row or a plurality of rows of guards. The same statement is true of the pins. The invention contemplates any predetermined division of either of these means. If the cushion is to

be provided with square or "biscuit" tufting, the arrangement of guards, as shown, may be employed, preferably, in connection with the partitions; but for leather upholstery "diamond" tufting is preferable, for which I prefer to use the mold without partitions and with the guards or tufting devices in staggered arrangement. Various other changes in the details of the means employed may be made within the scope and spirit of my invention.

Having described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In an upholstering apparatus, the combination of a sectional pin-board, and means for independently operating each section thereof, substantially as described.

2. In an upholstering apparatus, the combination with a mold-board having hollow guards, and a follow-board having openings corresponding to said guards, of a pin-board composed of sections separately operative, substantially as described.

3. In an upholstering apparatus, the combination with a mold having hollow guards provided with button-guides, and a follow-board having openings adapted to register with said guards, of a sectional pin-board, and means to operate said sections independently, substantially as described.

4. The combination with a mold-board having tufting devices, of a pin-board and a follow-board, divided in complementary sections, substantially as described.

5. The combination, of a mold-board consisting of several series of molds or pockets, a follow-board constituted of several sections, and a sectional pin-board, the sections of the follow-board and pin-board being supplemental, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

ALFRED FRESCHL.

Witnesses:
HARVEY YEAMAN,
JOSIAH MCROBERTS.