(No Model.) 3 Sheets—Sheet 1.

J. L. MOORE.

MACHINE FOR MAKING UPHOLSTERERS' TUFTS.

No. 383,755. Patented May 29, 1888.

Fig. 1

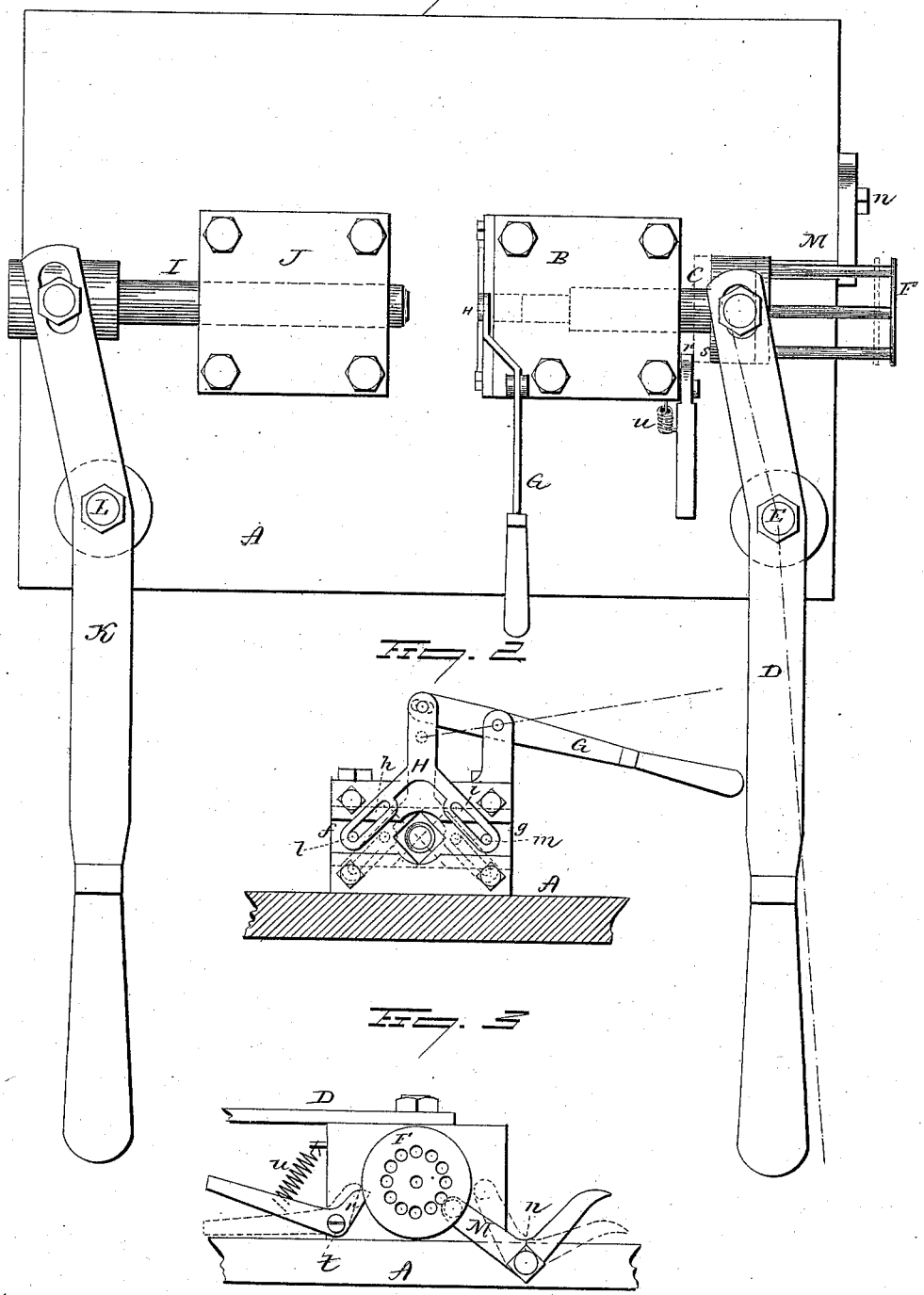

Fig. 2

Fig. 3

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Fig. 4

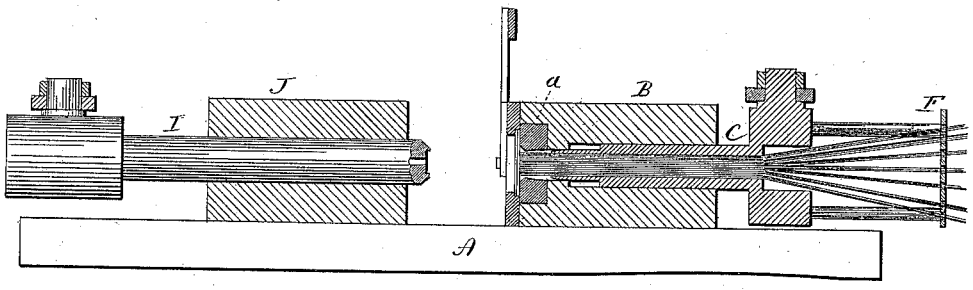


Fig. 8

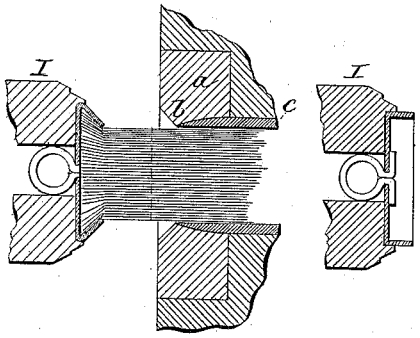


Fig. 5

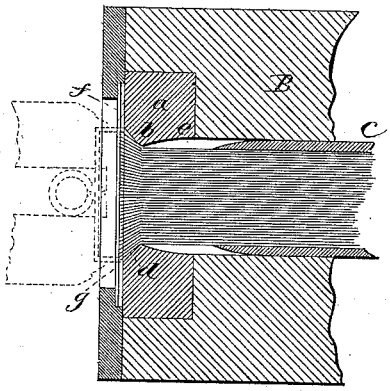


Fig. 9

Fig. 6

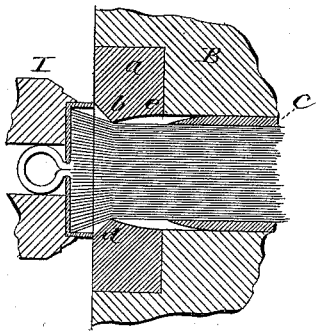
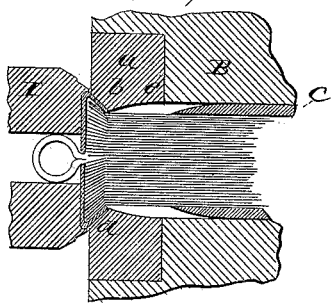


Fig. 7



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MACHINE FOR MAKING UPHOLSTERERS' TUFTS.

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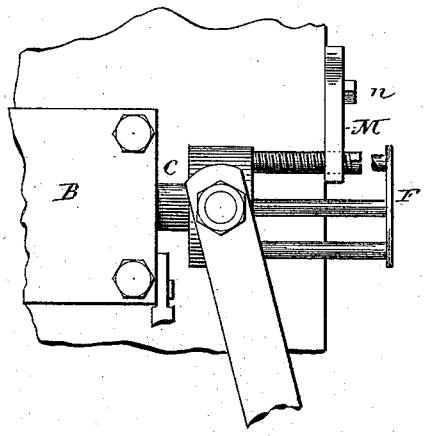
Fig. 10



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UNITED STATES PATENT OFFICE.

JAMES L. MOORE, OF STRATFORD, ASSIGNOR, BY MESNE ASSIGNMENTS, TO S. H. HUBBARD, OF BRIDGEPORT, AND JOHN K. BEACH, OF NEW HAVEN, CONNECTICUT.

MACHINE FOR MAKING UPHOLSTERERS' TUFTS.

SPECIFICATION forming part of Letters Patent No. 383,755, dated May 29, 1888.

Application filed May 10, 1886. Serial No. 201,674. (No model.)

To all whom it may concern:

Be it known that I, JAMES L. MOORE, of Stratford, in the county of Fairfield and State of Connecticut, have invented a new Improvement in Machines for Making Upholsterers' Tufts; and I do hereby declare the following, when taken in connection with accompanying drawings and the letters of reference marked thereon, to be a full, clear, and exact description of the same, and which said drawings constitute part of this specification, and represent, in—

Figure 1, a front or top view of the machine; Fig. 2, a transverse section looking toward the face of the die and showing the cutters; Fig. 3, a rear view showing the stops and the yarn guide-plate; Fig. 4, a longitudinal sectional side view; Figs. 5, 6, 7, and 8, detached longitudinal sectional views, enlarged for convenience of illustration; Fig. 9, a perspective view of one of the tufts. Fig. 10 shows the stop M as made adjustable to regulate the length of fiber.

This invention relates to an improvement in the manufacture of that class of tufts for upholsterers' use in which the tuft is made from a mass of fibers and one end of the fibers inclosed in a back, the other ends being free spread to present a fibrous spherical-shaped surface. Heretofore in the manufacture of this class of tufts the fibers or yarns have been gathered in a sheet-like shape by stitches embracing the fibers, and then the fibers rolled into a cylindrical shape, and then the stitched ends inclosed in a metal back as a means for attaching the tufts.

The object of my invention is to avoid the stitching or preliminary gathering of the fibers or yarns, and it consists in the construction of the machine as hereinafter described.

A represents the bed of the machine; B, the die-holder fixed to the said bed. In the face of this die-holder the die *a* is arranged. The opening through the die corresponds in diameter, at its smallest portion, to the diameter of the mass of fiber which is to form a tuft, this smallest diameter being represented at *b*, Fig. 5. The outer face of the die is countersunk to form a mouth, *d*. Inside the contracted or narrow portion *b* the opening through the die is preferably enlarged, as at *e*. The opening through the die is continued through the holder B, and into this opening a tubular slide, C, is introduced, the internal diameter of which corresponds to the contracted portion of the die, the enlarged diameter of the opening through the die-holder permitting the free longitudinal movement of the tubular slide C.

The slide C is arranged for reciprocating movement by means of a lever, D, hung upon a fulcrum, E, on the bed, one arm of the lever forming a handle and the other being in connection with the slide C, as seen in Fig. 1, and so that under the movement of the lever the slide C may be moved from the position seen in Fig. 5 to that seen in Fig. 7 and returned.

The yarns or fibers from which the tufts are to be formed are introduced into and so as to be compressed by the slide C, as indicated in Fig. 4, and so as to be carried by the slide C in the operation of the machine. Preferably the yarns are introduced through series of holes in a guide-plate, F, attached to the slide C, as seen in Figs. 1, 3, and 4, and concentric therewith. The employment of the plate F with numerous holes enables the introduction of various colors, and so as to maintain such colors in their proper relative position to each other as the yarns are drawn through the slide C.

Across the face of the die cutters are arranged, and so as to move in a plane parallel with and close to the face of the die. These cutters are best made in the form of two slides, *f g*, (see Fig. 2,) the two cutters parallel with each other, and so that their adjacent surfaces will work one over the other. The adjacent edges of the two cutters are each made of V shape, so that when open they will stand on opposite sides of the opening in the die, as seen in Fig. 2. A reciprocating movement is imparted to these cutters by means of a lever, G, arranged to operate a slide, H, said slide H having diagonal slots *h i*, the one *h* adapted to work upon a stud, *l*, on the cutter *f*, and the slot *i* on a like stud, *m*, on the cutter *g*, and so that as the slide H is moved downward, as indicated in broken lines, Fig. 2, the cutters will be forced together, and so as to close over the opening through the die; or when raised, as indicated in Fig. 2, the cutters will

be separated to leave the opening exposed. If, then, the mass of yarns be introduced through the slide C, and with their ends projecting through the opening, say as seen in Fig. 8, and the cutters be then closed thereon the yarns will be cut substantially flush with the face of the die, and having been so cut the cutters upon being withdrawn will leave the ends of the fibers exposed through the opening in the die.

I is a follower, arranged in a guide, J, in axial line with the die and slide C. The face of the follower I is adapted to receive the back I′, which is to be applied to the yarns. This back is in the form of what is called a "button-back"—that is to say, a cup shaped disk, as seen in Fig. 6. The flange is adapted to enter the enlarged opening or countersunk face of the die, and so as to impinge upon the inclined surface of the opening in the die, as seen in Fig. 6. A reciprocating movement is imparted to the follower I, it may be by a lever, K, hung upon a fulcrum, L, on the bed, one arm terminating in the form of a handle and the other in connection with a follower, as seen in Fig. 1. The yarns having been cut, with their ends left standing in the expanding mouth of the die, as seen in Fig. 5, the cup-shaped metal back is placed in the follower, as also seen in Fig. 5, and then advanced, as indicated in broken lines, Fig. 5, until the edge of the flange of the back strikes the inclined or flaring mouth of the die, as in Fig. 6, and then a continued advance movement of the follower forces the back into the die, and by the inclined surface of the opening in the die the flange is forced inward, as seen in Fig. 7, and so as to closely embrace the mass of yarns exposed, thus firmly securing the back to the yarns. Then the follower I is withdrawn, as seen in Fig. 8, the required length for the projection of the fibers from the back, and this done the cutters are again brought into action and the yarns cut, as indicated by broken lines, Fig. 8. Immediately upon such cutting of the yarns they separate into spherical shape, as seen in Fig. 9, and the tuft is complete. With some classes of fiber it is advisable to subject them to a steaming or other treatment, in order to throw out the fibers into the full expanded shape. While the back with the fibers is withdrawn, as seen in Fig. 8, the slide C should be withdrawn for a new hold for the next tuft, and to limit the extent of movement of the slide C for this purpose a stop, M, is arranged back of the slide C, as seen in Fig. 1, against which the slide or lever will strike when withdrawn to the full extent. This stop may be adjusted for different lengths, it being understood that the longer the fiber for the same size of back the larger will be the tuft, and vice versa. To make the stop M so adjustable, it may be in the form of a screw, as seen in Fig. 10, and so that by turning the screw inward or outward the movement of the slide will be varied accordingly and consequently the length of fiber.

It is desirable at times to remove the slide C, as for the purpose of introducing new yarns. To permit this the stop M is hung upon a pivot, *n*, (see Fig. 3,) upon which it may be turned, as seen in broken lines, out of the path of the slide, so as to admit of its full withdrawal.

I find it advantageous to force the yarns or fiber into the back before the closing operation commences, and as seen in Fig. 6. To do this, I provide a stop, *r*, (see Fig. 1) in rear of the holder, B, and against which a shoulder, *s*, on the slide may strike, as indicated in broken lines, Fig. 1, as the slide advances. This stop *r* is hung upon a pivot, *t*, and is held up to its stopping position by a spring, *u*, but so that it may be turned away, as indicated in broken lines, Fig. 3. Under this arrangement in cutting the yarn I first bring the slide to a bearing against the stop *r*, and there cut the yarn, as before described and as seen in Fig. 5. Then, after advancing the follower to bring the back up into the mouth of the die, I turn the stop *r* out of the way of the shoulder *s*, and then advance the slide to its full extent, and so as to force the ends of the yarns into the cap before the closing operation commences, and as seen in Fig. 6. Then the closing operation is performed and the tuft cut as before. While I prefer this auxiliary stop *r*, it is not essential, as the yarns necessarily expand into the open mouth of the die, as indicated in Fig. 5, and so as to be practically embraced by the back.

For convenience of illustration I have represented the reciprocating movements of the slide C, the follower I, and of the cutters as made by hand; but such movement may be otherwise imparted without departing from the spirit of my invention. I therefore do not wish to be understood as limiting my invention to any particular means for imparting such movement to the respective parts.

I claim—

1. The combination of the die *a*, constructed with a flaring mouth, and a reciprocating slide, C, concentric with and in rear of said die, the said slide adapted to receive a mass of yarns or fiber, with a cutter arranged to work across the face of the said die, a reciprocating follower constructed to receive and carry a metallic cup-shaped back, the said follower being in axial line with said die, and mechanism, substantially such as described, for actuating the said slide, cutter, and follower, all substantially as and for the purpose described.

2. The combination of the die *a*, constructed with a flaring mouth, the tubular reciprocating slide C, in axial line and concentric with said die, and perforated guide-plate F, substantially concentric with said slide, with a cutter adapted to work across the face of said die, and a reciprocating follower constructed to carry a cup-shaped metal back, with mechanism, substantially such as described, for actuating the said slide, cutter, and follower, substantially as and for the purpose described.

3. The combination of the die *a*, constructed

with a flaring mouth, a reciprocating slide, C, concentric with and in rear of said die, the said slide adapted to receive a mass of yarn or fiber, a reciprocating follower constructed to receive and carry a metallic cup-shaped back, the said follower being in axial line with said die, and the two cutters *f g*, arranged in guides parallel with the plane of the die, one each side the opening through the die and adapted to work across the face of the die, with mechanism, substantially such as described, to impart reciprocating movement to said cutters, slide, and follower, all substantially as described.

4. The combination of the die *a*, constructed with a flaring mouth, auxiliary stop *r*, reciprocating tubular slide C, provided with a corresponding shoulder, *s*, a cutter adapted to work across the face of said die, and a follower, I, constructed to receive and carry a cup-shaped metal back and in axial line with said die, with mechanism, substantially such as described, for actuating the said slide, cutter, and follower, substantially as described.

5. The combination of the die *a*, reciprocating slide C, stop M, auxiliary stop *r*, a cutter adapted to work across the face of said die, and a reciprocating follower in axial line with said die and constructed to receive and carry a cup-shaped metal back, with mechanism, substantially such as described, for actuating the said slide, cutter, and follower, substantially as described.

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