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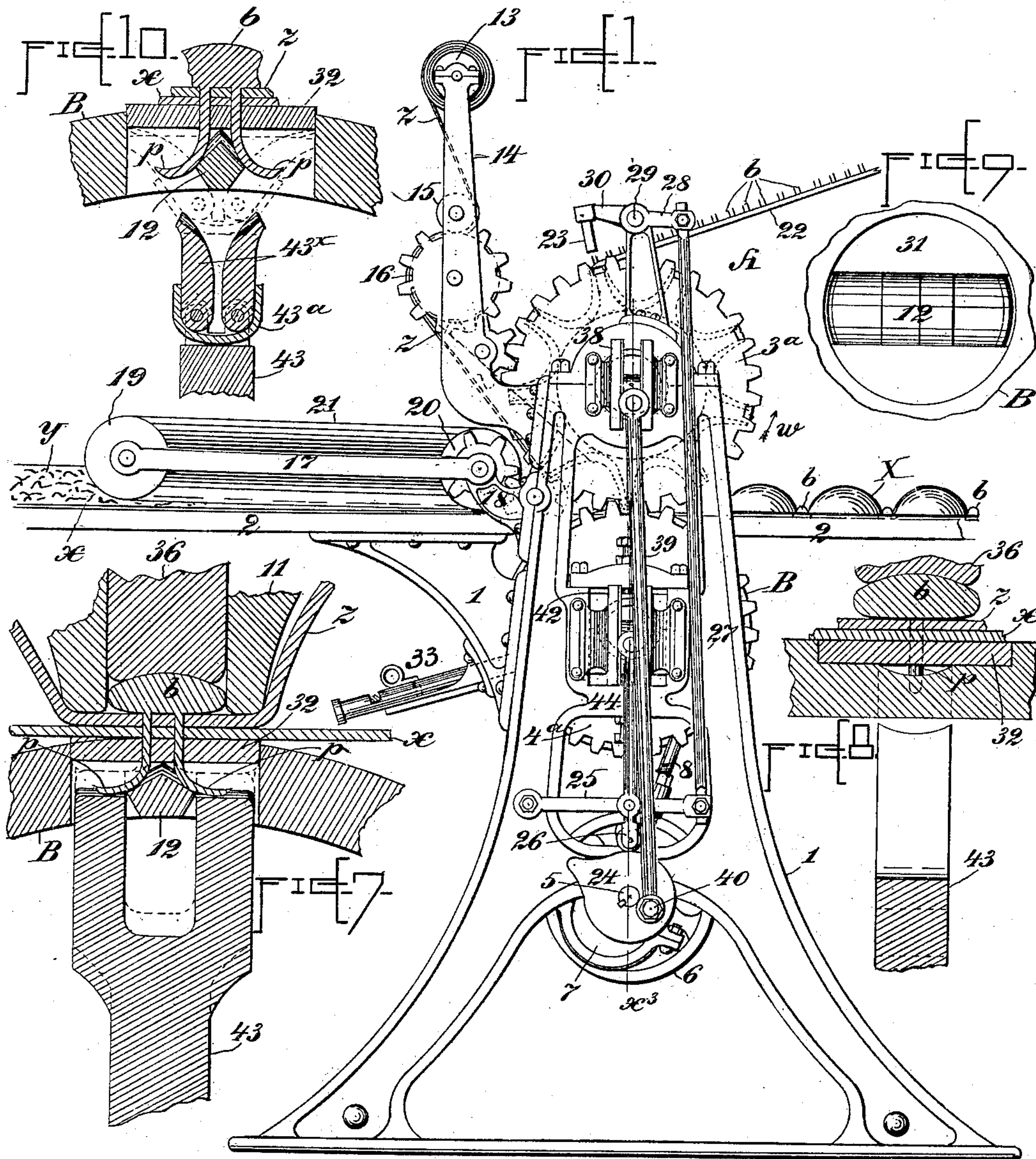
Patented Nov. 19, 1901.

J. KASCHENBACH.
MACHINE FOR MAKING TUFTED FABRICS.

(Application filed Mar. 2, 1900.)

(No Model.)

3 Sheets—Sheet I.



WITNESSES:

J. W. Himm
Peter B. Ross

INVENTOR

John Kaschenbach

BY

Henry Conner
ATTORNEY

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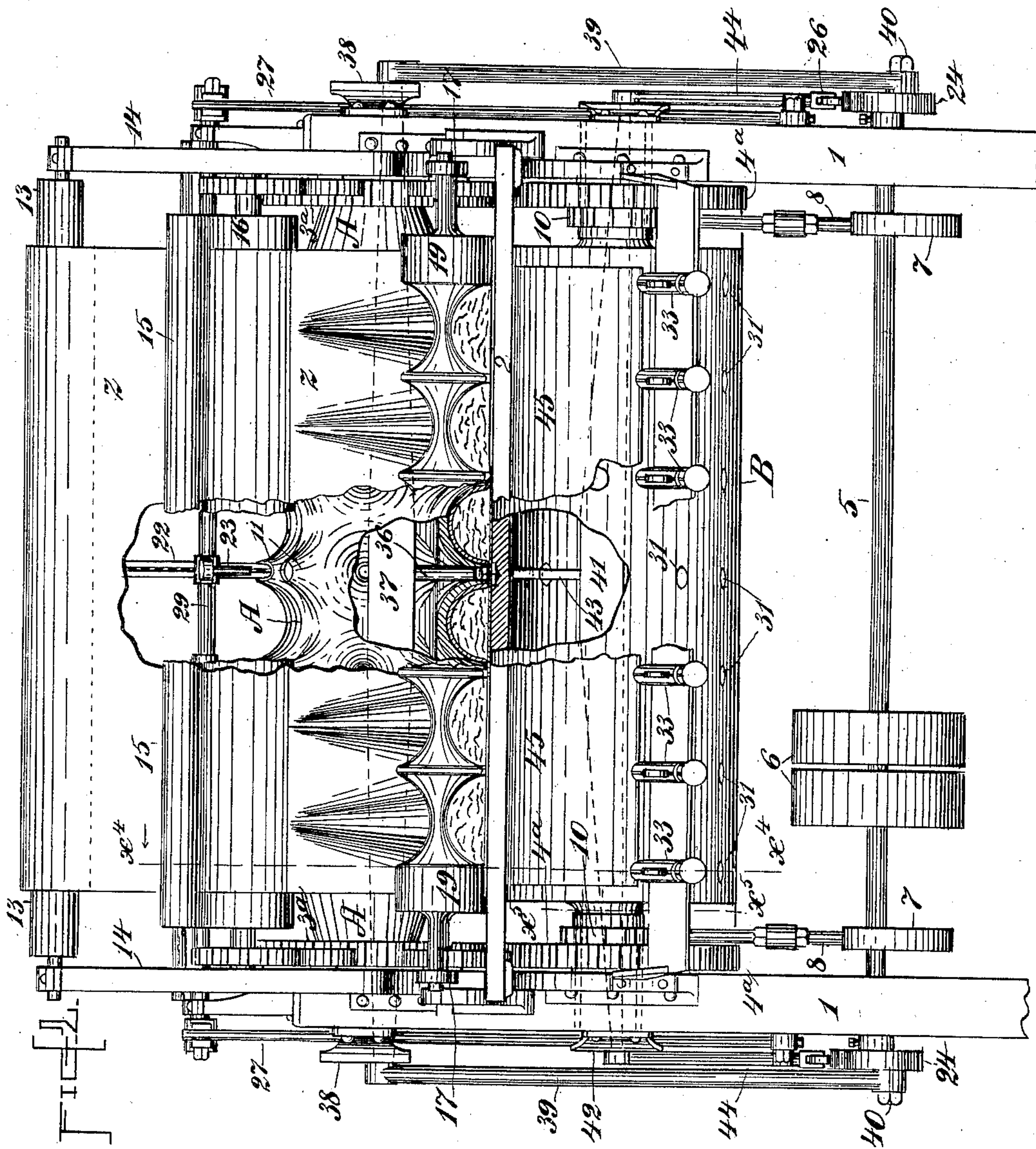
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J. H. Wiman
Peter A. Ross

INVENTOR

John Kaschenbach
BY
Henry G. ...
ATTORNEY.

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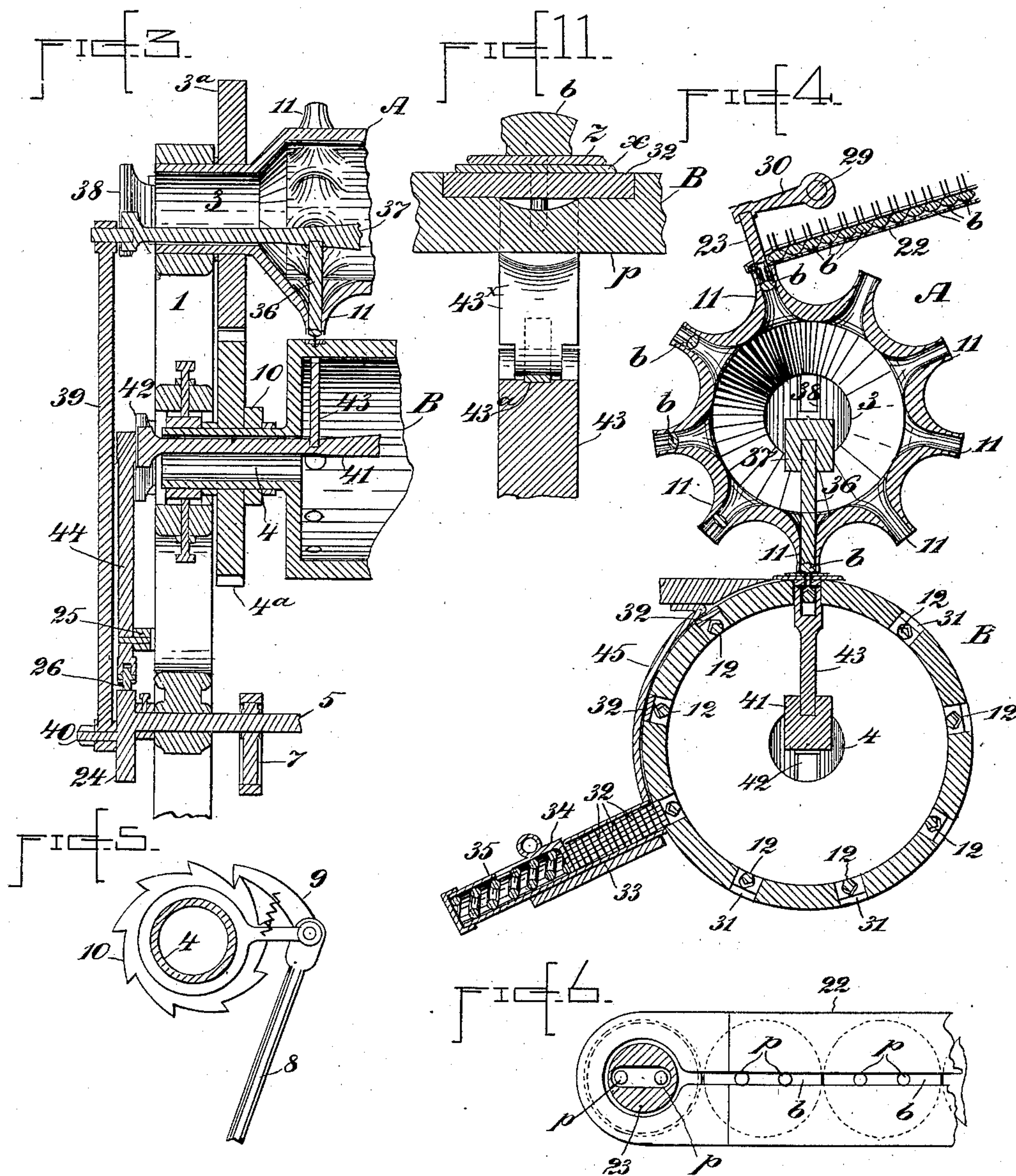
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3 Sheets—Sheet 3.



WITNESSES:

J. H. Hliman
Peter P. Ross

INVENTOR

John Kaschenbach

BY

BY
Henry Connell
ATTORNEY

UNITED STATES PATENT OFFICE.

JOHN KASCHENBACH, OF WILKESBARRE, PENNSYLVANIA, ASSIGNOR OF ONE-HALF TO CHRISTIAN S. E. SPOERL, OF WILKESBARRE, PENNSYLVANIA.

MACHINE FOR MAKING TUFTED FABRICS.

SPECIFICATION forming part of Letters Patent No. 686,738, dated November 19, 1901.

Application filed March 2, 1900. Serial No. 7,048. (No model.)

To all whom it may concern:

Be it known that I, JOHN KASCHENBACH, a citizen of the United States, residing at Wilkesbarre, in the county of Luzerne and State of Pennsylvania, have invented certain new and useful Improvements in Machines for Making Tufted Fabrics, of which the following is a specification.

This invention relates to improvements in the class of rotary tufting-machines of which that illustrated in the United States Patent No. 622,901, granted to C. S. E. Spoerl April 11, 1899, is an example; and the important objects of the invention are to provide against distortion of the machine under heavy strains, to provide an improved button feeding and setting mechanism, and to provide a washer-feeding mechanism.

In the accompanying drawings, which illustrate an embodiment of the invention, Figure 1 is a side elevation of the machine. Fig. 2 is a front or end elevation of the machine as seen from the left in Fig. 1. Fig. 3 is a fragmentary vertical section taken in the plane of the drum-axis at line x^3 in Fig. 1. Fig. 4 is a fragmentary vertical transverse section through the drums at x^4 in Fig. 2, but on a somewhat larger scale than the principal views. Fig. 5 is a fragmentary sectional detail view of the ratchet mechanism, the section being at line x^5 in Fig. 2. Fig. 6 is a fragmentary detail plan view of the button-feeding device. Figs. 7, 8, and 9 are sectional detail views of the clenching mechanism on a relatively large scale. Figs. 10 and 11 are similar views of another slightly different form of the button-clenching mechanism.

1 is a strong frame of any kind, but preferably of metal, for supporting the mechanism, and 2 is the fixed bed of the machine in said frame. Extending across the space between the sides of the frame 1 and rotatively mounted in the latter are the tufting-drum A and the lower or anvil drum B. These drums are hollow, with large tubular journals 3 and 4, respectively, as best seen in Figs. 3 and 4, and the drums are geared together by gears 3^a and 4^a. On the driving-shaft 5 in the lower part of the frame are tight and

loose pulleys 6 and eccentrics 7 7, each of which operates, through a rod 8, a hook-pawl 9, Fig. 5, which engages a ratchet-wheel 10 on the journal of the drum 4. Thus rotation of the shaft 5 imparts intermittent rotative impulses to the drums in the direction of the arrow w in Fig. 1.

The tufting-drum A has radial tufting-tubes 11, Fig. 4, arranged in circumferential series. As here shown, there are nine tubes in a series; but this is not important so long as they are properly spaced for tufting. The number of series of these tubes will depend on the length of the drum and the width of the fabric made. Between these tubes, both laterally and circumferentially, the surface of the drum is formed concave, so as to mold the surface of the stuffed fabric.

The drum B is a cylinder and has clenching-anvils 12 in its periphery arranged in series to correspond with the ends of the tufting-tubes 11 as the drums rotate intermittently.

Fig. 1 shows the base fabric x , the filling material y , the top fabric z , and the completed tufted fabric X as it emerges from the machine.

In order to shape the materials as they enter between the drums, the construction now to be described may be employed. The base fabric x is drawn over the bed or table 2 and into the bite of the drums, and the filling material is placed thereon as needed. The top or cover fabric is led in from a roll 13 in a frame 14, passing about and between an idler 15 and a roll 16, driven by gears from the drum A. On the table or bed 2 is a shaper for the filling, comprising a frame 17, connected at one end to the main frame at 18. In this frame are rotatively mounted two rolls 19 and 20, formed as seen in Fig. 2—that is, each has a series of circular disks, which are alined with the respective series of tubes 11 on the drum A, and concave spaces between the respective disks. The roll 20 is driven by gearing from one of the drums, and about the two rolls is an endless apron 21, of canvas or other suitable fabric. This apron takes somewhat the shape of the drums 19

and 20, and the former shapes and molds the filling as it passes to the drums to receive the buttons.

The buttons *b*, each of which has two prongs *p*, are fed automatically to the tubes 11 of the tufting-drum by means that will now be described, premising that ordinarily each button has its head covered with plush or some soft material of a similar character.

The inclined button-tracks 22 are situated above the drum A and alined with the respective series of tubes 11. The buttons are supplied by hand and slide down the track, their prongs projecting upward through a slot in the cover of the track, as seen in Fig. 6. The track ends over a tube 11, and a plunger 23 presses the button down head first into the tube to the proper extent. The plungers 23 are actuated at the proper times by cams 24 on the main shaft 5 through the medium of levers 25, each bearing a roller 26, which rests on a cam 24, and rods 27, which extend up and are coupled to arms 28, fixed to the opposite ends of a rock-shaft 29, which has on it arms 30, to which the respective plungers 23 are secured. The soft material on the heads of the buttons hold them frictionally in the tubes 11. Rotation of the drum A brings the tubes 11, charged with buttons, down to the clenching-point on the drum B. This drum B has, in addition to the anvils 12, recesses or apertures 31, which are bridged by the anvils and which are by preference circular, and the anvils are set in or below the outer surface of the drum B to an extent sufficient to allow room in the recess for a washer 32, of leather, felt, or other suitable penetrable material. The means for placing the washers in their recesses over the anvils 12 will now be described with especial reference to Fig. 4.

Supported on the frame of the machine and alined with the several circumferential series of washer-recesses 31 are tubular washer magazines or holders 33, each provided with a plunger or follower 34 and spring 35. The spring and follower keep the washers pressed up to the face of the drum B, and when the latter is intermittently rotated it stops with a series of the recesses 31 coincident or in register with the magazine 33, so that a washer is pressed from each magazine into a recess. The rotation of the drum brings these washer-filled recesses to the button receiving and clenching point at the top of the drum. There are now presented at this point a series of buttons *b* in the tubes 11, situated above the fabric, and washers 32, under the fabric and registering with the tubes 11, each washer overlying an anvil 12. The series of buttons *b* are now driven downward, their prongs *p* passing through the fabrics *z* and *x* and through the washers 32, this being effected by a series of plungers 36, Figs. 3 and 4, on a plunger-bar 37, which extends through the tubular journals of the drum A. This bar plays in guides 38 on the frame and is actu-

ated by rods 39, coupled at their lower ends to crank-pins 40 on the cams 24.

Simultaneously with the driving down of the buttons through the fabric and the spreading of their prongs on the anvils in the drum B clenching devices for said prongs are operated upward by mechanism now to be described.

A clenching-bar 41 extends through the hollow or tubular journals of the drum B and plays in guides 42 on the frame, and on this bar are fixed a series of forked clenching-plungers 43, Figs. 7, 8, and 9, the branches of which pass up at each side of the anvil 12 and clench the prongs *p* of the button onto the washer. The bar 41 is actuated simultaneously with the bar 37 by means of the cams 24, levers 25, rollers 26, and rods 44, which extend up from the levers 25 to the respective ends of the clenching-bar.

Figs. 10 and 11 illustrate a slightly different form of the clenching device. In this modification the branches 43^x of the clenching-plungers are hinged, so that they may spread apart in clenching, being held against spreading by a U-spring 43^a.

Obviously the ratchet feeding device, which rotates the drums A and B intermittently, will be set to operate when the button setting and clenching devices are at rest.

The washers may be filled into the magazine 33 by drawing back the follower 34 and inserting them in front of the latter. There may be a keeper-shield 45 about the drum B above the magazines to insure against the placed washers being dislodged.

The hollow journals of the drums A and B are made large in order to afford strength and rigidity to resist the heavy strain put on these drums in the operation of tufting and to provide room for operating the plungers for driving and clenching the buttons wholly inside of the drums, thus avoiding a long stroke of the plungers. As these latter must withdraw clear of the drum, so that the latter may rotate, it is found in practice that the strain on the drum is apt to throw it out of line with the plungers when the latter have a long stroke and pass diametrically through the drum from above, as in some forms of these machines.

Having thus described my invention, I claim—

1. A machine for making tufted fabrics comprising a bed to support the material, a tufting-drum above said bed, a clenching-drum below the bed, means for imparting intermittent rotary impulses to said drums in unison, means extending through the hollow or tubular journals of the tufting-drum for driving the button-prongs through the fabrics, means extending through the hollow or tubular journals of the clenching-drum for clenching the prongs of the buttons as they are driven, and the said tubular journals of the drums, substantially as set forth.

2. A machine for making tufted fabrics comprising a bed to support the material, a tufting-drum above said bed, a clenching-drum below the bed, means for imparting intermittent rotary impulses to said drums in unison, means extending through the hollow or tubular journals of the tufting-drum for driving the button-prongs through the fabrics, means extending through the hollow or tubular journals of the clenching-drum for clenching the prongs of the buttons as they are driven, the said tubular journal of the drums, and means for feeding the buttons automatically to the radial tubes of the tufting-drum, substantially as set forth.

3. A machine for making tufted fabrics comprising a bed to support the material, a tufting-drum above said bed, a clenching-drum below the bed, means for imparting intermittent rotary impulses to said drums in unison, means extending through the hollow or tubular journals of the tufting-drum for driving the button-prongs through the fabrics, means extending through the hollow or tubular journals of the clenching-drum for clenching the prongs of the buttons as they are driven, the said tubular journals of the drums, and means for supplying washers to washer-recesses in the clenching-drum at the clenching-points, substantially as set forth.

4. A machine for making tufted fabrics comprising a bed to support the material, a tufting-drum above said bed, a clenching-drum below the bed, means for imparting intermittent rotary impulses to said drums in unison, means extending through the hollow or tubular journals of the tufting-drum for driving the button-prongs through the fabrics, means extending through the hollow or tubular journals of the clenching-drum for clenching the prongs of the buttons as they are driven, the said tubular journals of the drums, means for feeding the buttons automatically to the radial tubes of the tufting-drum, and means for supplying washers to washer-recesses in the clenching-drum at the clenching-points, substantially as set forth.

5. A machine for making tufted fabrics comprising a bed to support the material, a tufting-drum with hollow or tubular journals above said bed, a clenching-drum with hollow or tubular journals below the bed, means for imparting intermittent rotary impulses to said drums in unison, means extending through the hollow or tubular journals of the tufting-drum for driving the button-prongs through the fabrics, means extending through the hollow or tubular journals of the clenching-drum for clenching the prongs of the buttons as they are driven, whereby the drum rotates independently of the bar, and a former for the material, consisting of the frame 17, the forming-rollers 19 and 20, adapted to rest on the material and having substantially the form shown, and the endless apron 21, substantially as set forth.

6. In a machine for making tufted fabrics,

the combination with the hollow tufting-drum provided with a longitudinal row of tubes and with large, tubular journals, of the bar 37 extending through said journals from end to end of the drum, the plungers 36 on said bar and adapted to enter the tubes in the said longitudinal row on the drum, means for actuating said plungers, and a clenching-drum under and rotating in unison with said tufting-drum, substantially as set forth.

7. In a machine for making tufted fabrics, the combination with the hollow tufting-drum, its hollow journals, and means within the same for driving the buttons, of the hollow clenching-drum B, having in its periphery anvils 12, the bar 41, extending through the said drum and its journals and provided with forked clenching-plungers, the hollow journals of the drum B, and means for operating said plungers, substantially as set forth.

8. In a machine for making tufted fabrics, the combination with means for driving the prongs of the buttons down through the fabric, of the supporting-drum B, having spreading-anvils 12, and washer-recesses 31, means for clenching the prongs of the buttons, means for intermittently rotating said drum, and means for automatically supplying washers to said washer-recesses, substantially as set forth.

9. In a machine for the purpose specified, the combination with the lower, anvil-drum B, provided with recesses to receive the washers, and means for rotating said drum, of the washer-magazines 33, each arranged with its delivery end next the drum and provided with a follower and spring, substantially as set forth.

10. The combination with the anvil-drum, of the tufting-drum, having radial tubes 11, of the button-track 22, adapted to supply the buttons point uppermost, the plungers 23, mechanism for operating said plungers when the drum is at rest, and mechanism for rotating the drums together alternately with the operations of the plungers, substantially as set forth.

11. A machine for tufting fabrics, having a hollow tufting-drum provided with radially-projecting tubes, means for supplying buttons to the tubes thereof at their outer ends, means for driving the said buttons, situated within the drum and extending out through the hollow journals thereof, and said hollow journals, substantially as set forth.

12. A machine for tufting fabrics, having an intermittently-rotating, hollow, clenching-drum, provided with spreading-anvils arranged in series and adapted to be brought successively to the clenching-point by the rotation of said drum, and means for driving and clenching the buttons, substantially as set forth.

13. A machine for tufting fabrics, having a tufting-drum, means for rotating said drum continuously by intermittent impulses, means for driving the pronged buttons carried by

said drum, a supporting and clenching drum adjacent to said tufting-drum, means for rotating the clenching-drum continuously by intermittent impulses, and means for clenching the prongs of the buttons, substantially as set forth.

14. A machine for making tufted fabrics in a continuous manner, having a rotating tufting-drum and a supporting-drum which rotates in unison with said tufting-drum, substantially as set forth.

15. The combination with the rotating supporting and clenching drum B, having recesses to receive washers, and means for supplying washers to said recesses as the drum rotates, of the shield 45, to keep the washers from escaping from the said recesses, substantially as set forth.

16. In an upholstering-machine, in combination, a supporting-frame, two upholstering-rollers journaled thereon and adapted to pass the upholstering materials between them, and holding mechanism for the means for securing together the materials to be upholstered.

17. In an upholstering-machine, in combination, a supporting-frame, two upholstering-rollers journaled thereon, and adapted to pass

the upholstering materials between them, and a holder on one of said rollers, for the means for securing together the materials to be upholstered.

18. In an upholstering-machine, in combination, a supporting-frame, two upholstering-rollers journaled thereon, and adapted to pass the upholstering materials between them, holding mechanism for the means for securing together the materials to be upholstered, and means for rotating said upholstering-rollers.

19. In an upholstering-machine, in combination, a supporting-frame, two upholstering-rollers journaled thereon, and adapted to pass the upholstering materials between them, holding mechanism for a button-staple, means for clenching said button-staple, and means for rotating said upholstering-rollers.

In witness whereof I have hereunto signed my name, this 28th day of February, 1900, in the presence of two subscribing witnesses.

JOHN KASCHENBACH.

Witnesses:

DON A. GILBERT, Jr.,
CHRISTIAN E. SPOERL.