E. J. DUNKLEE.

CLOTH RENAPPING AND REFINISHING MACHINE.

APPLICATION FILED AUG. 23, 1917.

1,304,281.

Patented May 20, 1919.

5 SHEETS—SHEET 1.

Fig. 5.

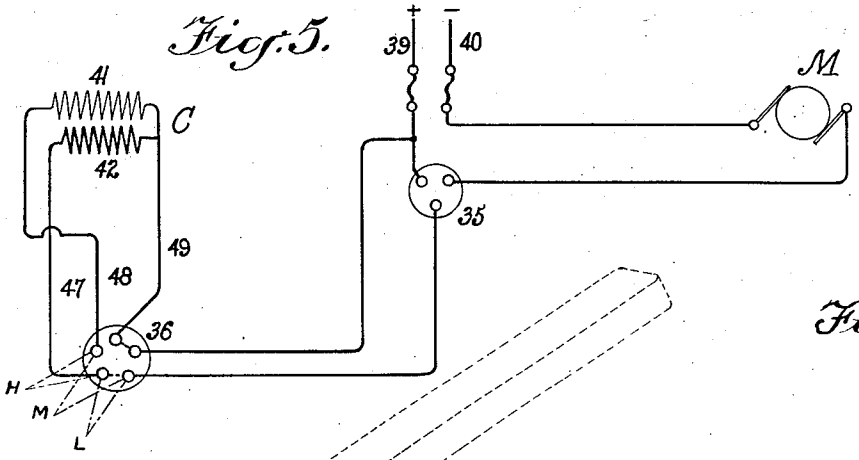


Fig. 1.

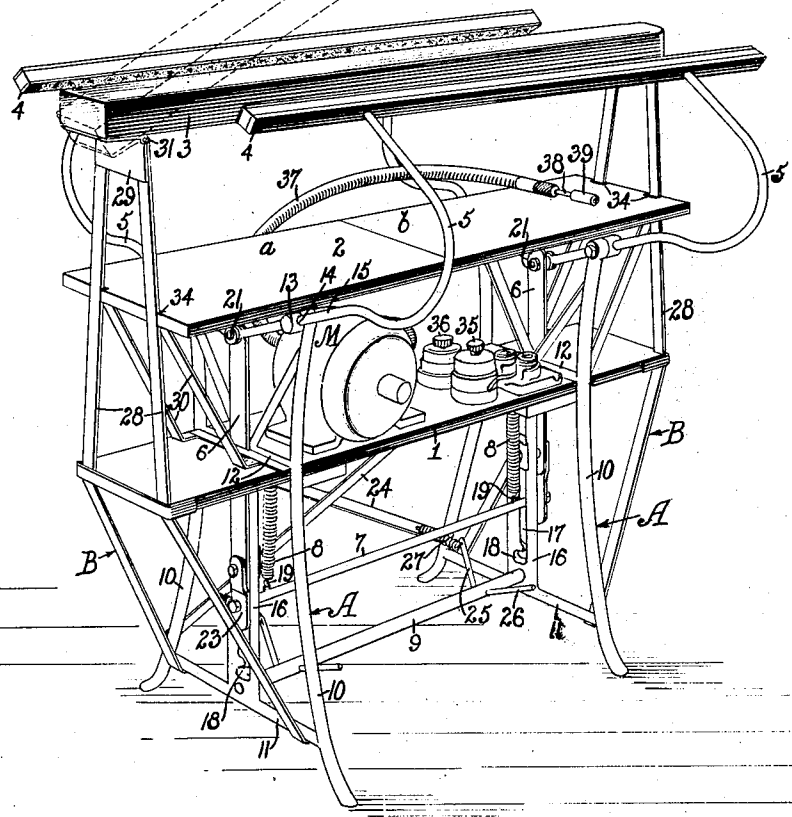
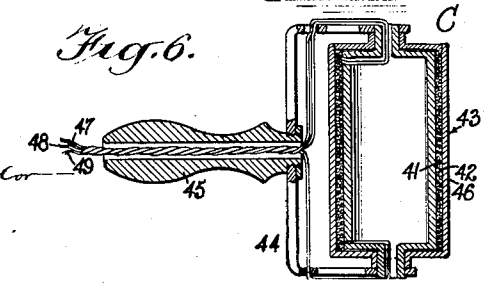


Fig. 6.



WITNESSES

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5 SHEETS—SHEET 2.

Fig. 2.

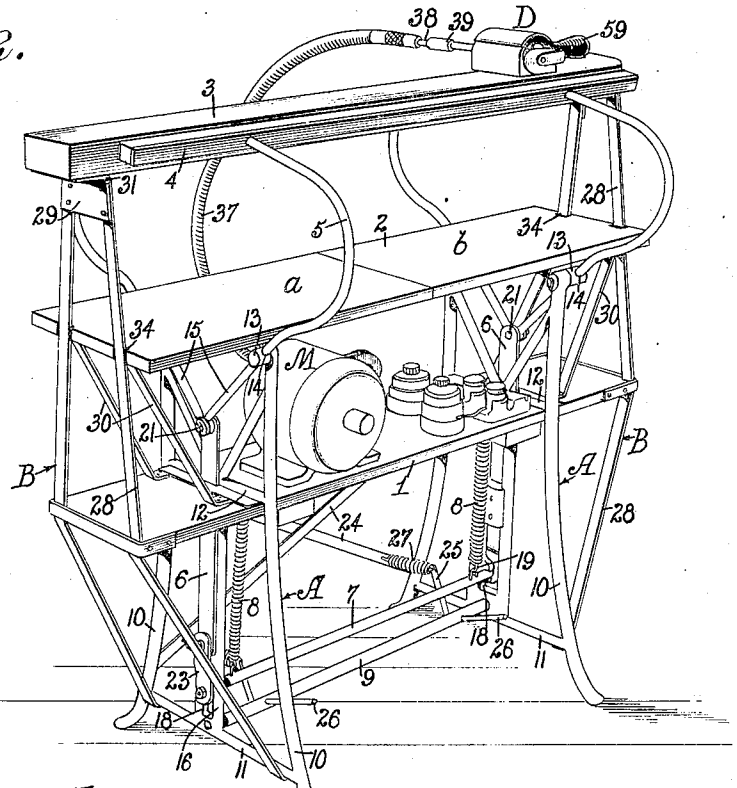
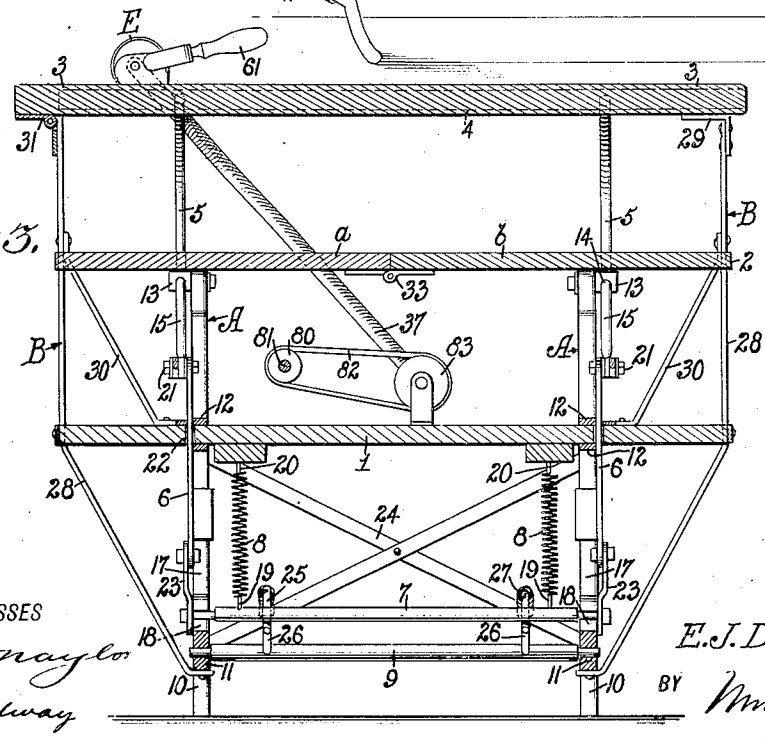


Fig. 3.



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CLOTH RENAPPING AND REFINISHING MACHINE.

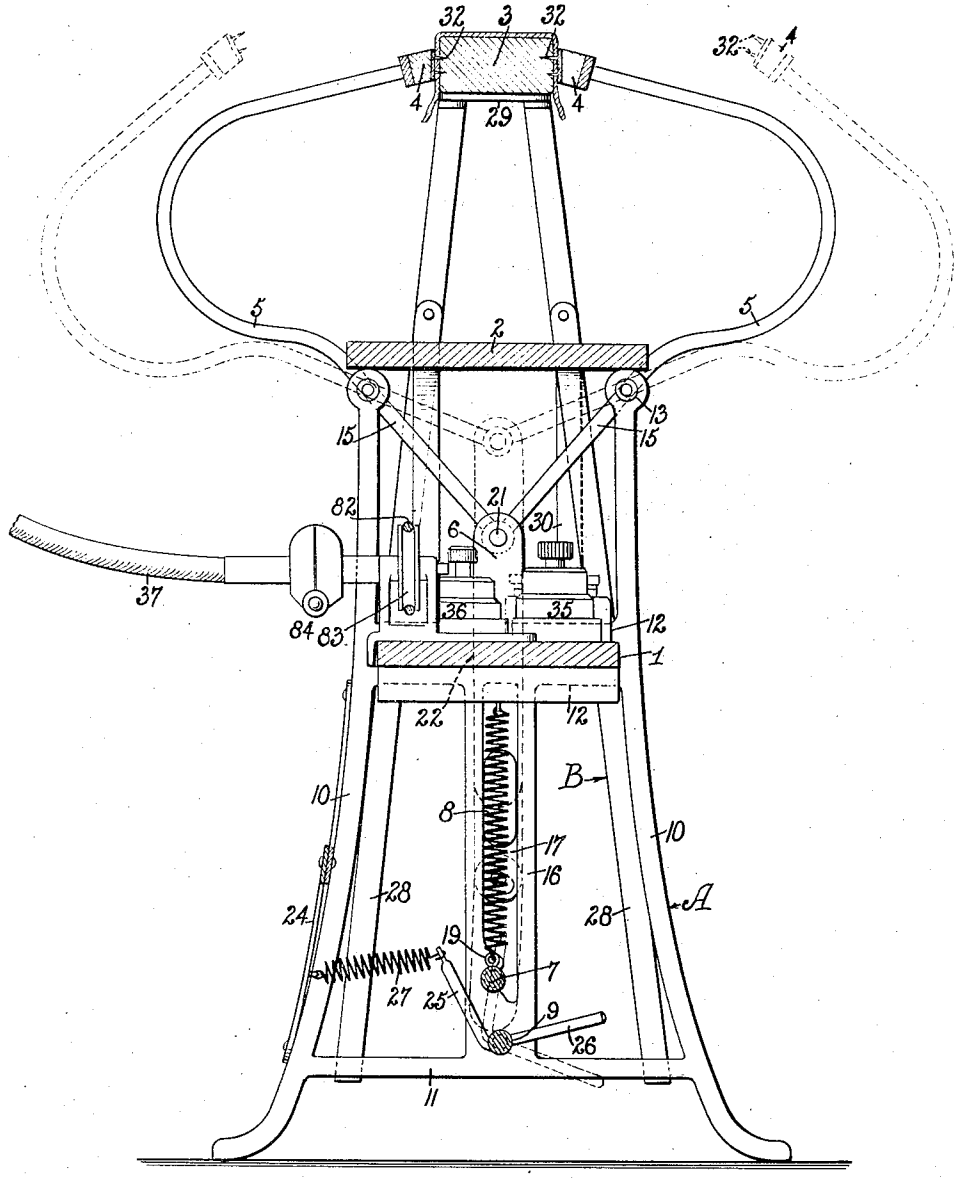
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5 SHEETS—SHEET 3.

Fig. 4.



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5 SHEETS—SHEET 4.

Fig. 7.

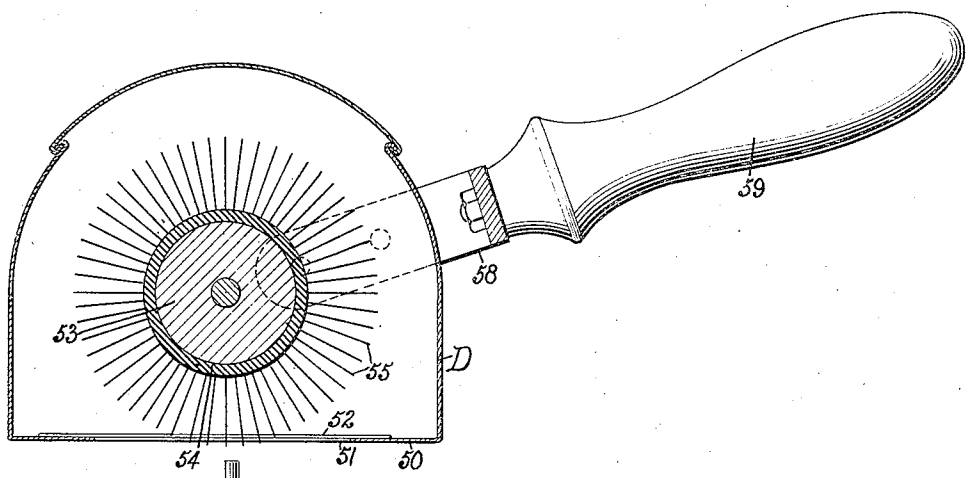
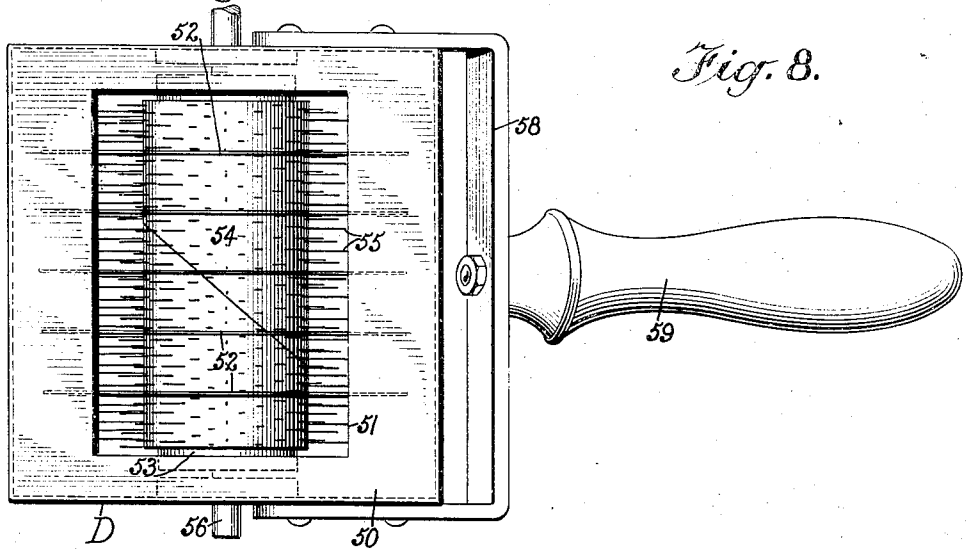


Fig. 8.



WITNESSES

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5 SHEETS—SHEET 5.

Fig. 9.

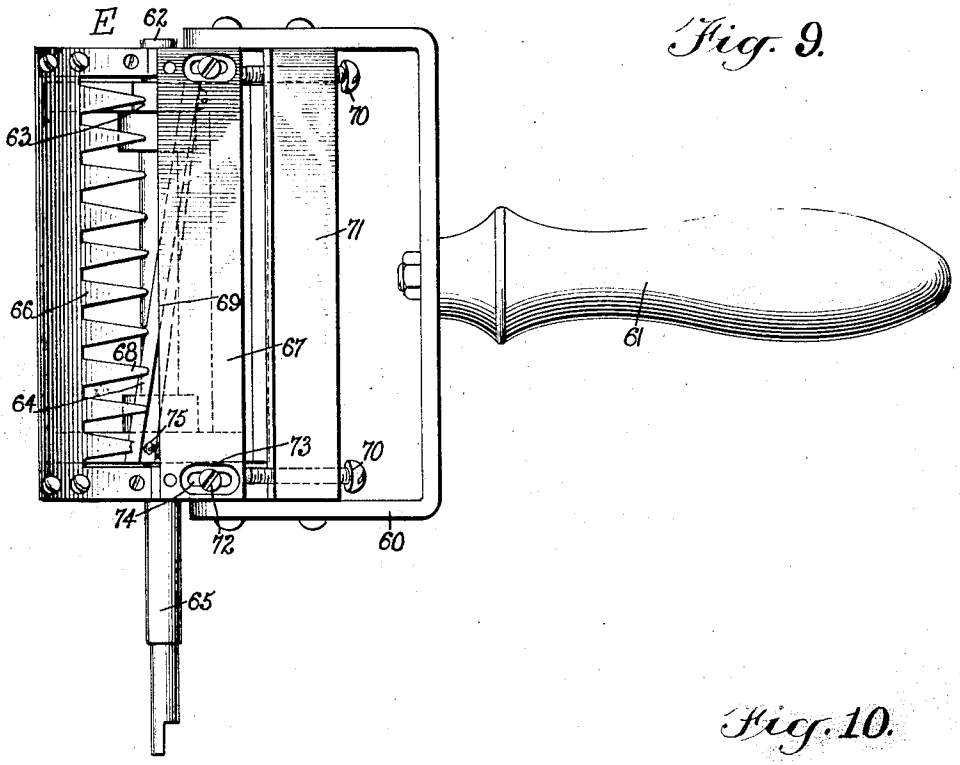
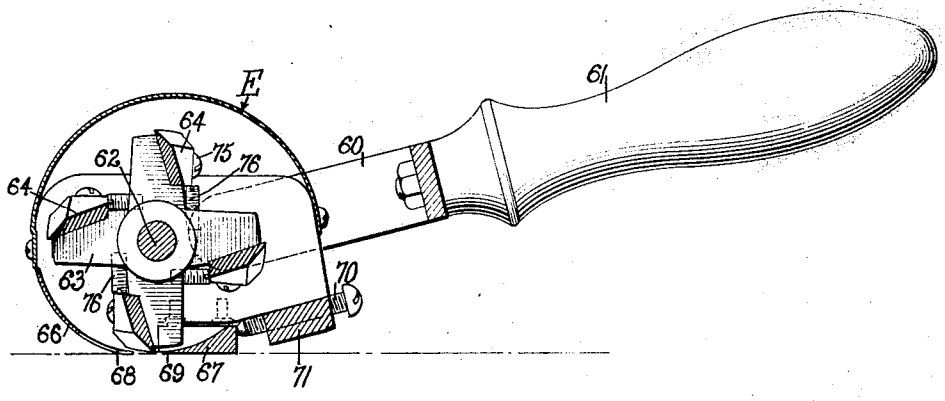


Fig. 10.



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UNITED STATES PATENT OFFICE.

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CLOTH RENAPPING AND REFINISHING MACHINE.

1,304,281. Specification of Letters Patent. Patented May 20, 1919.

Application filed August 23, 1917. Serial No. 187,847.

To all whom it may concern:

Be it known that I, EMRY J. DUNKLEE, a citizen of the United States, and a resident of Hackensack, in the county of Bergen and State of New Jersey, have invented a new and Improved Cloth Renapping and Refinishing Machine, of which the following is a full, clear, and exact description.

This invention relates to a cloth finishing machine adapted to be used by tailors or renovators of garments, whereby those portions of a garment which are shiny or have the nap worn off can be re-napped, cut and pressed so as to have the appearance of a new fabric.

The general object of the invention is to provide a cloth or garment napping machine embodying a table on which the cloth or garment can be held in stretched condition for enabling the napper, cutter and presser to operate most effectively thereon, the table embodying a board or holder on which the article to be re-napped is laid, and coacting spring-closed jaws for holding the article in smooth or stretched condition.

A more specific object of the invention is the provision of a table including novel means for closing the jaws by foot pressure and foot-operated releasing means whereby the jaws will spring open.

An additional object is the provision of a stand or table which forms a support for the motor by which the napper and cutter are operated, and also on the stand are switches for controlling the circuit for the cutter and napper and for varying the temperature of the presser or ironer, and also on the table is arranged a shelf which forms a support for the various implements when not in use.

Additional objects of the invention are to provide simple, novel and effective napping and nap-cutting implements which are adapted to be connected one at a time with a motor through a flexible shaft.

With such objects in view, and others which will appear as the description proceeds, the invention comprises various novel features of construction and arrangement of parts which will be set forth with particularity in the following description and claims appended hereto.

In the accompanying drawings, which illustrate certain embodiments of the invention and wherein similar characters of reference indicate corresponding parts in all the views,

Figure 1 is a perspective view of the machine with the jaws in open position;

Fig. 2 is a similar view with the jaws closed and the nap cutter in position for use;

Fig. 3 is a central vertical section taken longitudinally of the machine with the napper in position for use;

Fig. 4 is an enlarged transverse sectional view of the machine;

Fig. 5 is a diagrammatic view of the circuit connections;

Fig. 6 is a sectional view of the presser or ironer;

Fig. 7 is a vertical section of the napper;

Fig. 8 is a bottom plan view thereof;

Fig. 9 is a bottom plan view of the cutter; and

Fig. 10 is a vertical transverse section thereof.

The machine embodies a stand or table which is adapted to rest on the floor and carries the motor switches and implements necessary for the operation of the machine in performing the three steps of napping the cloth, cutting the nap, and pressing the cloth for finishing the same.

The stand or table comprises a pair of upright frames A, a fixed horizontal shelf 1, a removable horizontal shelf 2 above the first-mentioned shelf, a board or holder 3 for the cloth or article to be re-napped, jaws 4 coöperating with the board or holder, arms 5 for supporting the jaws, vertical slides or followers 6 for swinging the arms to open and close the jaws, a latch member or foot presser bar 7 for moving the followers 6 downwardly, springs 8 for moving the followers 6 upwardly to open the jaws, a releasing pedal 9 for releasing the foot latch member 7, and end frames B which support the cloth holder or board 3 on the main frames A and shelf 1.

Each frame A embodies a pair of legs 10, a bottom cross member 11, and a pair of intermediate horizontal cross members 12 between which latter the board forming the shelf 1 lies, with the ends of the shelf extending beyond both frames A. The members 10 project upwardly above the shelf 1, and pivotally mounted therein are bearing members 13. Each bearing member 13 has an opening 14 therein through which the straight portion 15 of a jaw-carrying arm 5

slides. Each frame A has a centrally disposed member 16 provided with a vertical slot 17 and movable up and down in this slot are the ends of the latch bar 7, there being a notch 18 at the bottom of each slot 17 for permitting the latch bar 7 to be engaged therein for holding the jaws in closed position, as clearly shown in Fig. 4. The springs 8 are of the helical extension type and have their lower ends connected at 19 with the foot-actuated latch bar 7, and their upper ends are connected at 20 with the under side of the shelf 1. The jaw-carrying arms 5 are arranged in pairs with an arm for one jaw opposite to the corresponding arm of the other jaw, and the lower ends of the companion jaws are connected by a pivot 21 with the upper end of a slide or carrier 6, which latter moves through a vertical slot 22 in the shelf 1, as clearly shown in Fig. 3. The lower ends of the slides 6 are connected by links 23 with the ends of the foot-actuated latch bar 7. At the rear of the machine are cross bars 24 lying under the shelf 1 and extending from one frame A to the other, whereby the stand or table is stiffened. The foot-actuated latch bar is released from the recesses 18 by upwardly extending arms 25 on the treadle bar 9 which has forwardly extending arms or members 26 by means of which the operator's foot can cause the treadle to be oscillated to swing the arms 25 into engagement with the latch bar 7 for releasing the latter, this movement of the arms 25 being indicated by the full and dotted line positions shown in Fig. 4. When the latch bar 7 is thus released the springs 8 move the slides 6 upwardly so that the arms 5 and jaws 4 move from the full to the dotted-line position, Fig. 4. The releasing treadle is normally held out of engagement with the latch bar 7 by means of springs 27 which are connected with the arms 25 and with the cross bracing strips 24.

The cloth holder or board 3 is comparatively long and narrow so that it is possible to insert the same into a coat sleeve or trousers leg. The frames B which support the holder 3 are formed in any suitable manner, as, for instance, by metal strips 28 which have their lower ends fastened to the bottom bars 11 of the frames A and have their upper ends connected together by cross pieces 29, the intermediate portions of the metal strips 28 being fastened to the ends of the main shelf 1. Braces 30 are employed between the shelf 1 and the portions of the strips 28 between the shelf 1 and the cloth-holding board 3. As shown in Figs. 1 and 3, the left end of the cloth holder 3 is connected by a hinge 31 with the left end frame B, and the other end of the board 3 simply rests on the right end frame B. By being mounted in this manner the cloth or garment-holding board 3 can be raised as indicated by dotted lines Fig. 1, for permitting coat sleeves or trousers legs to be placed on the board. The jaws 4 are adapted to cooperate with the side faces of the board 3 and they are so positioned that when closed they lie below the top surface of the board so as not to interfere with the implements to be used on the cloth for re-napping the same. The jaws are provided with pins or teeth 32 which pass through the cloth and enter the board 3 so as to keep the cloth stretched while being treated.

The removable shelf 2 is made in two sections *a* and *b* connected together by a hinge 33, and the outer ends of the sections are provided with notches or recesses 34 to engage the braces 30 or strips 28 to hold the shelf against lateral displacement, the said shelf resting on the upper ends of the frame A and lying between the pairs of opposite arms 5. On this shelf the napper, cutter and presser are adapted to be laid when not in use.

The shelf 1 forms a support for the electric motor M and the switches 35 and 36 for the motor and the presser or ironer, respectively. The motor M has a flexible shaft 37 connected with the shaft of the armature, and attached to the rotatable element 38 of the flexible shaft 37 is a socket or chuck 39 for connection with the shaft of the napper or cutter.

In the diagram shown in Fig. 5 the motor M is connected with the wires 39 and 40 of the supply circuit, one side of the motor circuit including the two-point switch 35 for opening or closing the motor circuit and for closing and opening the presser or ironer circuit C. In the circuit of the presser C is the switch 36 having means for connecting either one or both of the heating windings 41 and 42 in circuit to obtain a low, medium or high heat.

The presser or ironer C embodies a roller 43, Fig. 6, which is journaled in a yoke 44 that has a handle 45. Within the roller and in close proximity to the metallic shell 46 thereof are the windings 41 and 42, which heat the shell 46 to the desired temperature for pressing or ironing the cloth. The wires 47, 48 and 49 extend from the switch 36 to the presser or ironer C through the handle 45 thereof.

The napper shown in Figs. 7 and 8 comprises a casing D which has a flat bottom 50 formed with a rectangular opening 51 across which extend parallel wires 52 so as to engage the cloth and keep the same in proper condition for napping. In the casing is a roll 53 which has spirally wound on its circumference a leather or other strip 54 which carries a plurality of steel wire teeth 55 of such length that the extremities of the teeth projecting downwardly pass out of the opening 51 just far enough to act on the cloth

over which the napper is passed, so as to raise a new nap. The teeth 55 are arranged close together and the roll or brush rotates at a high speed so that a uniform nap can be produced by the passing of the device over a worn surface of a piece of cloth. The shaft 56 of the napping brush has an extended end 57 shaped to interlock in the socket or chuck 39 of the flexible shaft of the motor. The casing of the napper has a yoke 58 rigidly fastened thereto, and on this yoke is a handle 59 whereby the operator grasps the napper to move the same back and forth over the cloth to be renapped, while the motor M rotates the brush. The bottom of the casing being flat, the brush is always maintained at the proper relation to the cloth with which the flat bottom of the casing engages.

After the cloth is napped it is necessary to trim the fibers so that the nap will be of uniform length and to correspond with the nap of the cloth where it is not worn away. This trimming of the nap is done by the cutter shown in Figs. 9 and 10. This cutter E comprises a casing to which is rigidly fastened a yoke 60 having a handle 61, and in the casing is a rotary cutting element including a shaft 62, cruciform members 63 and helical cutting blades 64 having their cutting edges arranged at the same radial distance from the shaft 62. The shaft has an extension 65 at one end shaped to interlock in the socket 39 of the flexible shaft 37 of the motor. The casing has a serrated or toothed plate 66 which coöperates with a cutter bar 67 to form a base which rides on the cloth as the cutter is in operation. The tips of the teeth or serrations 68 are slightly spaced from the sharp edge 69 of the cutter, and in this space the cutting blades 64 successively operate on the nap to sever the same by the coaction of the blades 64 and cutting bar 67. The cutting bar 67 can be adjusted back and forth by means of set-screws 70 threaded in the rigid base bar 71 of the casing, and clamping screws 72 pass through slots 73 in the cutting bar 67 and screw into the heads 74 of the casing, whereby the bar 67 is rigidly clamped in place. The blades 64 are adjustable on the arms of the frames or carriers 63 by means of clamping screws 75 which pass through the ends of the blades and screw into the arms of the carriers or frames 63. The blades are adjustable radially by the use of set screws 76 threaded in the carrier 63 in such position that the inner edges of the blades bear against the outer ends of the gage or set screws. In this manner the blades can be accurately positioned with respect to the cutter bar. After the cloth has been renapped and the nap cut to proper length the cloth is finished by passing the heated roller, presser or ironer C thereover.

If desired, the flexible shaft 37 may be indirectly connected with the motor M through a speed-reducing transmission consisting of a pulley 80, Fig. 3, on the shaft 81 of the motor, a belt 82 passing around the pulley, and a pulley 83 driven by the belt and connected with the rotary element of the flexible shaft 37 through a universal coupling 84 of any approved construction, as shown in Fig. 4.

From the foregoing description taken in connection with the accompanying drawings, the advantages of the construction and method of operation will be readily understood by those skilled in the art to which the invention appertains, and while I have described the principle of operation, together with the device which I now consider to be the best embodiment thereof, I desire to have it understood that the device shown is merely illustrative and that such changes may be made when desired as fall within the scope of the appended claims.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:

1. A machine of the class described comprising a supporting structure, a cloth-holding means, a motor on the structure, a flexible shaft connected with the motor, and an implement connected with the flexible shaft and movable on the said holding means.

2. A machine of the class described comprising a supporting structure, a cloth-holding means at the top thereof, a shelf under the said holding means, a motor on the shelf, a flexible shaft connected with the motor, and an implement connected with the flexible shaft and movable over the said holding means.

3. A machine of the class described comprising a supporting structure including a shelf, a cloth-holding means above the shelf, jaws coöperating with said means, arms supporting the jaws, means for movably supporting the arms on the structure, slides connected with the arms and passing through the shelf, foot-operated means connected with the slides for moving the arms to open and close the jaws, a motor on the shelf, a flexible shaft connected with the motor, and an implement connected with the flexible shaft to move over the said holding means.

4. A machine of the class described comprising a pair of frames, a shelf supported on the frames, end frames on the first-mentioned frames and shelf, a second shelf composed of hingedly connected sections mounted on the first-mentioned frames and engageable with the second-mentioned frames, a cloth-holding board mounted on the end frames, jaws coöperating with said board, means mounted on the first-mentioned frames for operating the jaws, a motor on the first-mentioned shelf, a flexible shaft connected

with the motor, and an implement connected with the free end of the flexible shaft and movable on the article held on the board by the jaws.

5. A cloth renapping and refinishing machine comprising a cloth-holding means, a motor, an implement driven by the motor and movable over the cloth-holding means, a switch for the motor, an ironer movable over the cloth-holding means, and a heat regulating switch for the ironer.

6. A renapping and refinishing machine comprising a supporting structure including cloth-holding means, a motor on the structure, a manually movable implement connected with the motor and movable over the cloth-holding means, a switch on the structure for the motor, an ironer movable over the cloth-holding means, and a heat controlling switch on the structure and connected with the ironer.

7. In a renapping and refinishing machine, the combination of a cloth-holding means, a motor associated with said means and having a flexible shaft, an implement connected with the shaft for operating on the cloth on the holder, said implement embodying a bodily movable structure with a rotatable element therein, and a detachable connection between the said element and the flexible shaft.

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