E. WILDER.

Paper-Collar and Cuff Machine.

No. 167,484. Patented Sept. 7, 1875.

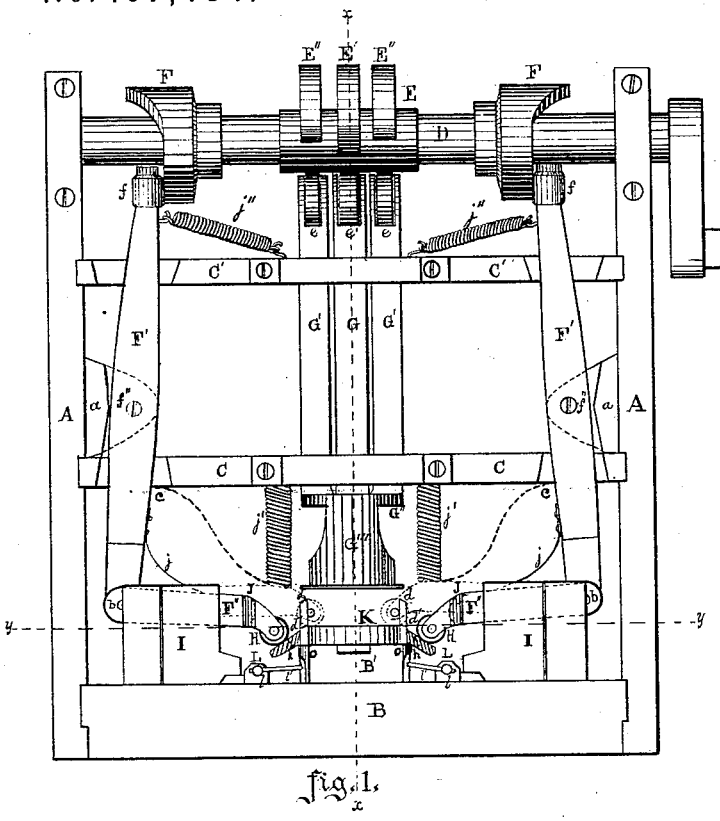

Fig. 1.

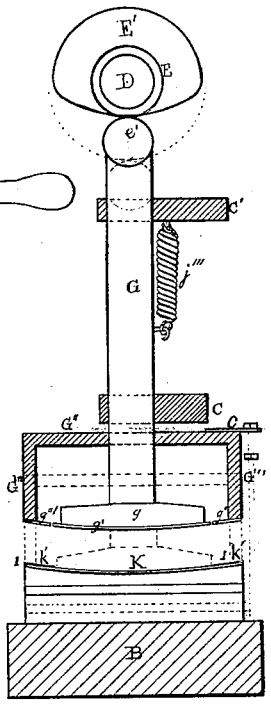

Fig. 2.

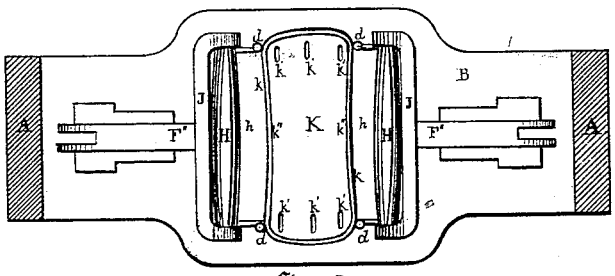

Fig. 3.

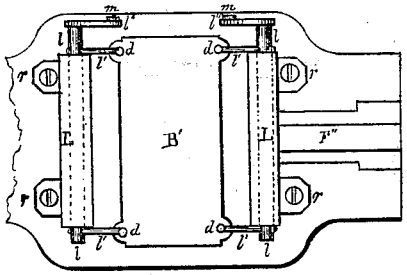

Fig. 4.

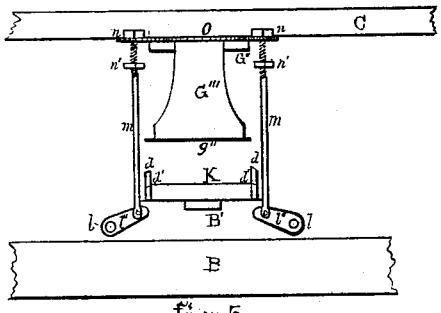

Fig. 5.

Attest

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UNITED STATES PATENT OFFICE.

ELIHU WILDER, OF MANCHESTER, NEW HAMPSHIRE, ASSIGNOR TO IRA CROSS, OF SAME PLACE.

IMPROVEMENT IN PAPER COLLAR AND CUFF MACHINES.

Specification forming part of Letters Patent No. **167,484**, dated September 7, 1875; application filed March 10, 1873.

To all whom it may concern:

Be it known that I, ELIHU WILDER, of Manchester, in the county of Hillsborough and State of New Hampshire, have invented certain Improvements in Machines for the Manufacture of Cuffs and Collars, of which the following is a specification:

This invention relates to the method of forming the edges, and giving the body of the cuffs or collars a curved form, all at the same time with the operation of embossing the edges and cutting the button-holes, which are all performed by a system of plungers and bed, with suitable rollers, to be hereinafter more fully explained.

In the drawing, Figure 1 is a front elevation of the machine. Fig. 2 is a transverse vertical section on *x x* of Fig. 1. Fig. 3 is a plan view of the bed, &c., on *y y*. Fig. 4 is a plan view of the devices below the bed, shown in Fig. 3. Fig. 5 is a rear view in elevation of the plunger apparatus and bars for operating the rods, shown in Fig. 4.

A A are side pieces framed into or secured to a base, B, by screws or otherwise, to make a substantial frame, having cross-pieces C and C′, to hold the side pieces, and to serve as supports for the plunger-bars. D is a shaft supported at its ends in the side pieces A A, having on its middle a sleeve or enlargement, E, on which is a cam, E′, and on each side of it a cam, E″. Near the ends of D are two cams, F F. G is a plunger-bar, having at its upper end a friction-roller, *e′*, which bears against the cam E′. On each side of G is a similar plunger-bar, G′, having friction-rollers *e e* bearing against the cams E″ E″. F F are two cams of peculiar construction, against which, bearing sidewise, are levers F′ F′, having friction-rollers *f* on their upper ends. These levers F′ F′ are pivoted to brackets *a a*, fastened to the inside of standards A A, immediately above the cross-piece C. At the lower ends of levers F′ F′, are pivoted short levers F″ F″, which have at their inner ends stirrups J J, in which are journaled double spindle-rollers H H, having a convexity to suit the curve of the edge of the fabric to be operated upon, as will be more fully hereinafter explained. These roller stirrups and levers F″ are supported by and slide freely in guides I I, which rest on the base-piece B. At the lower end of plunger-bars G′ is a frame, G″, with end pieces, G‴ G‴, which end pieces have at the bottom metal plates *g″ g″*, and at the lower end of plunger-bar G is a foot-piece or former, *g*, having a plate, *g′*, below it, curved as represented in Fig. 2, below which is the bed-block, curved to correspond with the convexity of the plate-former *g′*. The edges of the plate *g′* are made slightly concave and straight at the ends where they meet the plates *g″* of the frame G‴ G‴, for a purpose hereafter to be explained. K is the bed, which is made concave to correspond with the plate *g′*, and has the edges *k k* made concave. On the inside of these are plates of metal inserted, as at *k″ k″*, to form the embossed work to imitate stitching or any other design. At *k′ k′ k′* are the button-hole formers. At the four corners are wires *d d d d* passing down alongside of block K, and through projections *o o* of under bed B′, to which wires *d* are fixed, short rods of wire *l′ l′* running through the ends of two rods *l l*, moved by them, and acting as rocker-shafts. On the ends of these rods *l* are cranks *l″ l″*, to which are pivoted connecting-rods *m m*, Fig. 5, on which rods *m* are screw-threads and fixed nuts *n n*, and adjustable nuts *n′ n′*, by moving which nuts *n′* the play of rod *m* is regulated by the plate O coming down upon them and forcing the rod downward, and thereby rocking rod *l*, which causes the wires *d d* to descend to the position, as seen in Figs. 1 and 5, at *d′*, to permit the finished work to be removed. The function of said wires *d* is to act as register-points in the four corners of the cuff, to hold the blanks while the edge is being turned. L is the box in which the rocker-shaft *l* is held, and is fastened to the bed B by screws at *r r r r*. Springs *j*, fastened at one end upon the levers F′ F′, rest upon the short lever F″, and keep the rollers H down upon the inclined planes *h h*. When, by the movement of the cams F, the levers are caused to throw said rollers inwardly, they roll up the inclined planes *h h*, and that part at J rises against springs *j′ j′*, situated so as to bear the roller hard down upon the work to be folded, which springs may be flat and fastened to

cross-piece C at *c*. Springs *j'' j''*, which are fastened to the upper end of levers F' F', keep the friction-roller hard against the cams F F. The rods G G' G' have friction-rollers *e' e e*, which are kept against their corresponding cams E' E'' E'' by coiled springs fastened to the under side of cross-piece C' and to the rods, (not shown in the drawing, Fig. 1, but in Fig. 2,) in the section, as at *j'''*.

The operation is as follows: The blanks for cuffs or collars being properly prepared and the size to suit the bed-plate, one is placed on the bed K, so that the wires *d d* will fit the corners; a partial turn of the crank-handle will cause the cams E' and E'' E'' to force the bars G and G' G' downward, G being a little in advance, and the presser-foot and plate *g* and *g'* press the material down in close contact with bed K. Cams E'' E'' then force G' G', and the side frames G''' also, in contact by the plate *g''*. At the same time cams F force the upper ends of levers F' F' outwardly, and the roller H is carried into the position shown in dotted lines, Fig. 1, but above the plate *g'*, carrying over the edge of the cuff with it. The crank being carried further, the rollers retire just enough to permit the bar G to rise, and with it the presser-foot and plate *g g'*, while the two side plates *g'' g''* are held down upon the blank cuff to prevent its removal, as seen in dotted lines at 1 1, Fig. 2. Immediately the rollers run forward again under the plate *g'*, and by the pressure of the springs *j* and *j'*, roll down smoothly the edge previously turned.

The position of the rollers, as seen in Fig. 1, in solid lines, shows them below the top of the bed K, resting on the inclined planes *h h*, and under the edge of the cuff-blank; hence, when they are forced forward to the other position they turn the edge of the paper over the plate *g'*, which, being hollowed out, gives the proper concave outline, as seen at *k'' k''*, Fig. 3. At the same time the end plates *g''*, pressing the paper down on the button-hole formers *k' k' k'*, the holes will be cut through, and the stitch-former *k''* will crease the paper all around by the sharp embossing edge *k''*. When the presser and plate *g* and *g'* rise again, the rollers H H, by the shape of cams F F, are run under *g* and *g'*, and carry the folded edge inwardly and down upon the body of the cuff, and iron it closely in contact, thus completing the folding. The register-wires *d d d d* are then withdrawn below the top surface of bed K, and the finished cuff is removed.

Having described my machine, what I claim is—

1. The bed K, having a concave surface longitudinally, button-hole formers, and edge-creasers *k''*, combined with the former *g*, composed of a middle plate, *g'*, and end plates *g''*, substantially as and for the purpose described.

2. The bed K, constructed as described, combined with the standard gage-rods *d*, operated automatically, substantially as and for the purpose described.

3. The combination of the cams F E' E'', levers F', plungers G G', carrying the formers *g' g''*, and levers F'' carrying rollers H H, substantially as and for the purpose described.

4. The combination of the cams E' E'', with the flanges G G', carrying independently the plates *g' g''*, for the purpose of folding and holding the blanks at the same time.

5. The combination, in a paper collar and cuff machine, of the shaft carrying the cams F E' E'', plungers G G', which operate independently the former-plates *g' g''*, levers F', which operate the rollers H, the bed K, with gage-rods *d*, having the automatically-reciprocating vertical movement, all substantially as and for the purpose described.

ELIHU WILDER.

Witnesses:
WM. R. SINGLETON,
C. D. IRELAN.