

(No Model.)

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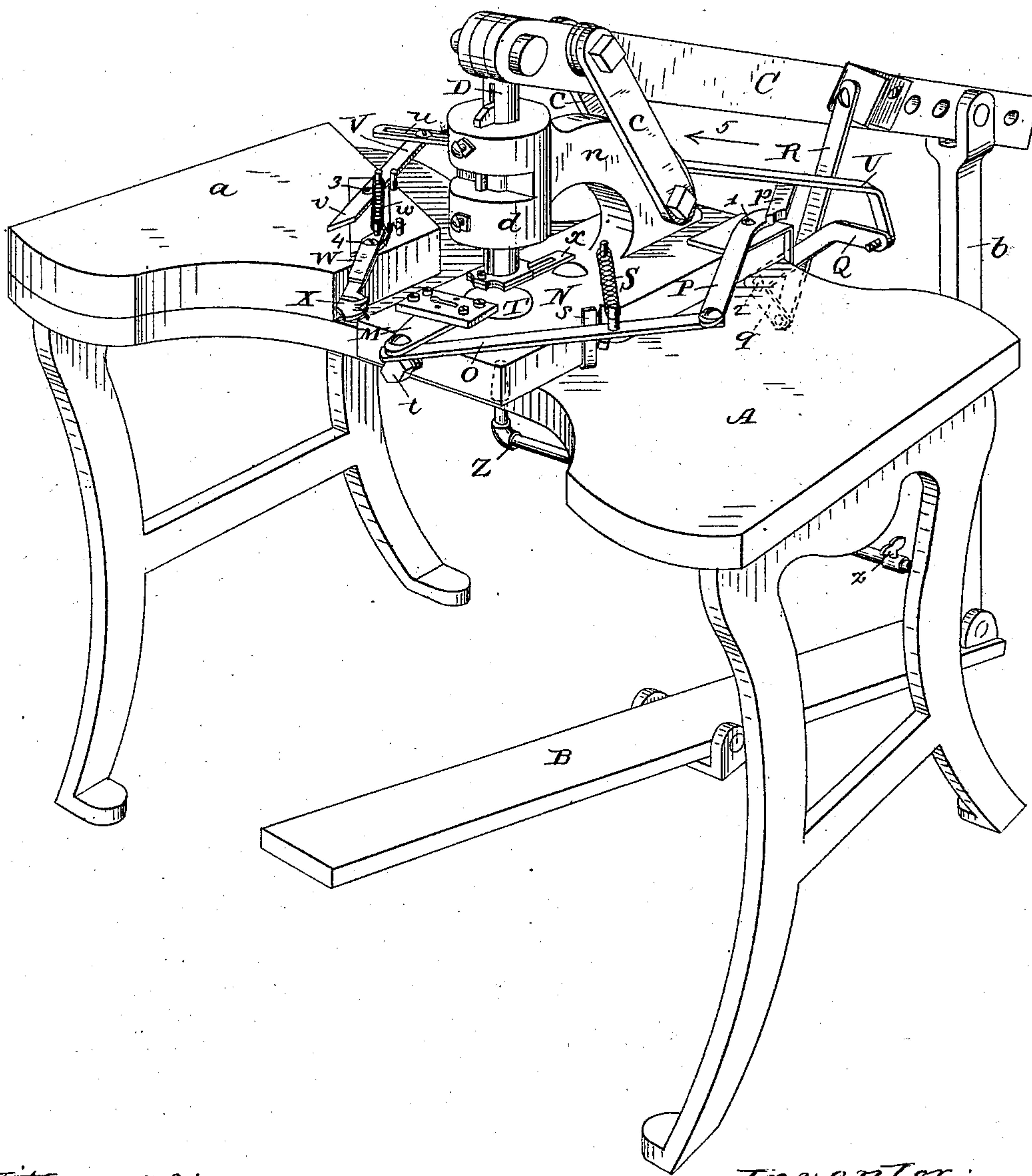
D. HARRIS.

MACHINE FOR MAKING BUTTON HOLE LININGS.

No. 282,078.

Patented July 31, 1883.

Fig. 1.



Witnesses:

A. N. Low  
J. S. Barker.

Inventor:

David Harris  
by L. M. Ledyard & Bliss  
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(No Model.)

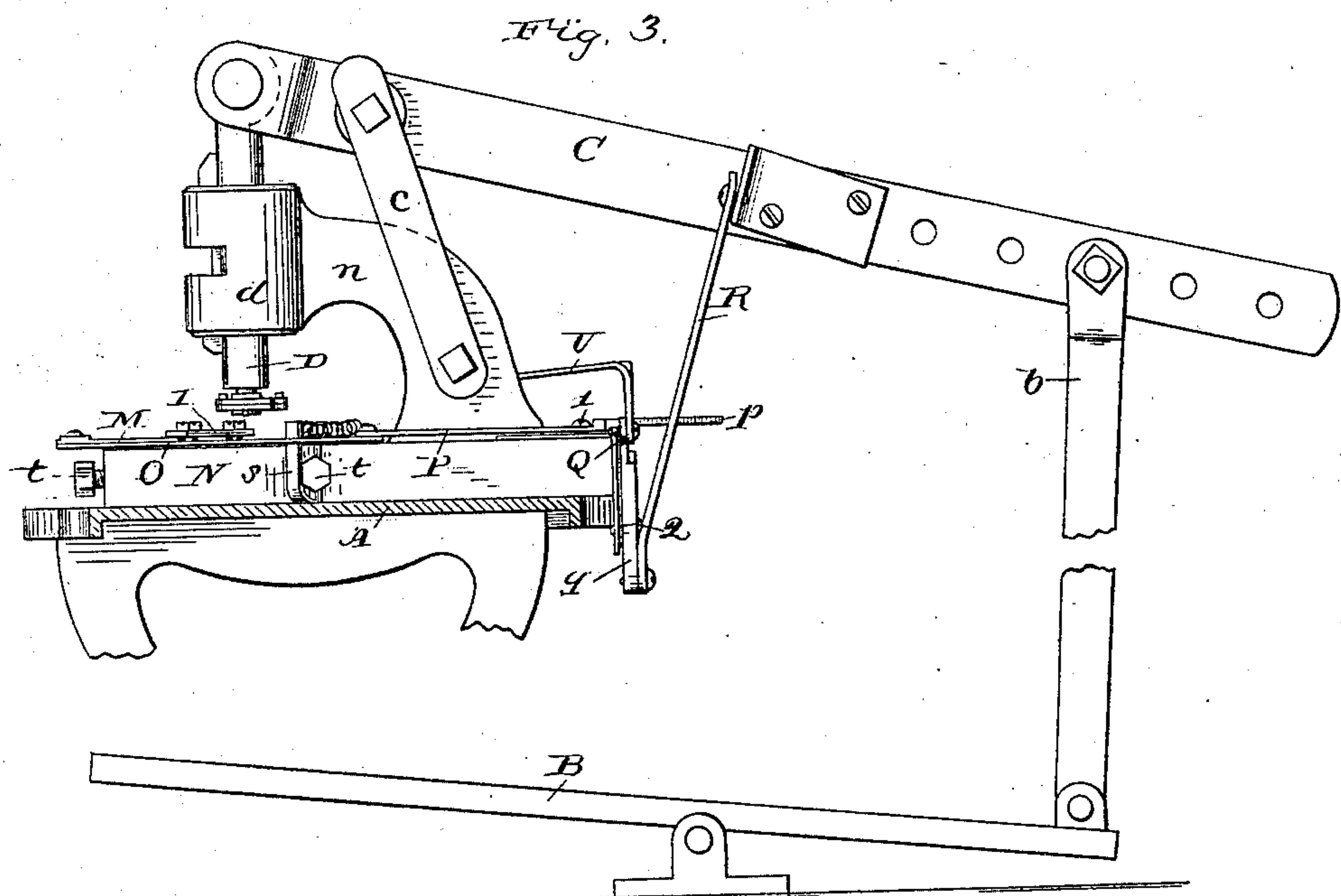
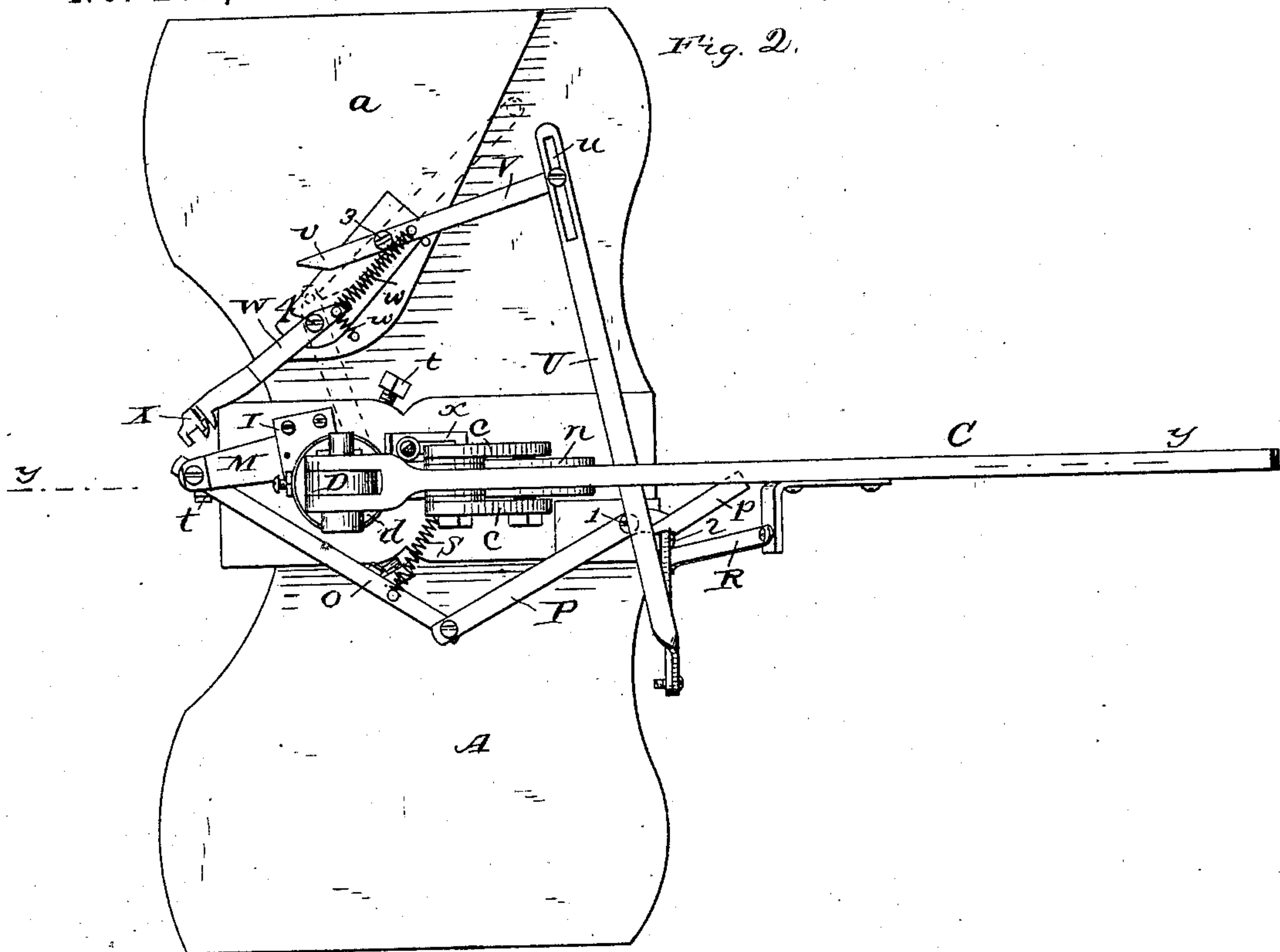
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D. HARRIS.

MACHINE FOR MAKING BUTTON HOLE LININGS.

No. 282,078.

Patented July 31, 1883.



Witnesses:  
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3 Sheets—Sheet 3.

D. HARRIS.

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Fig. 4.

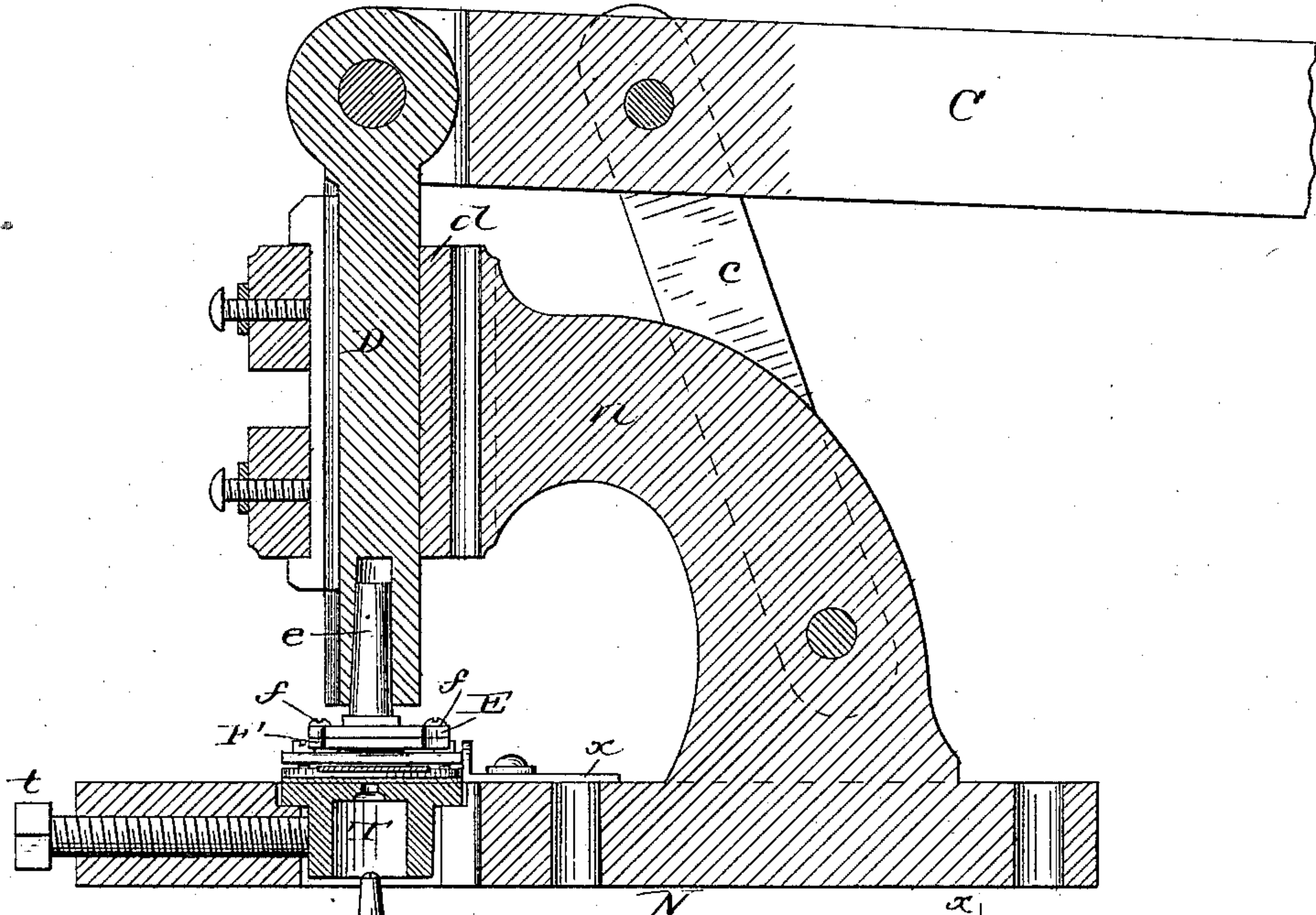


Fig. 5.

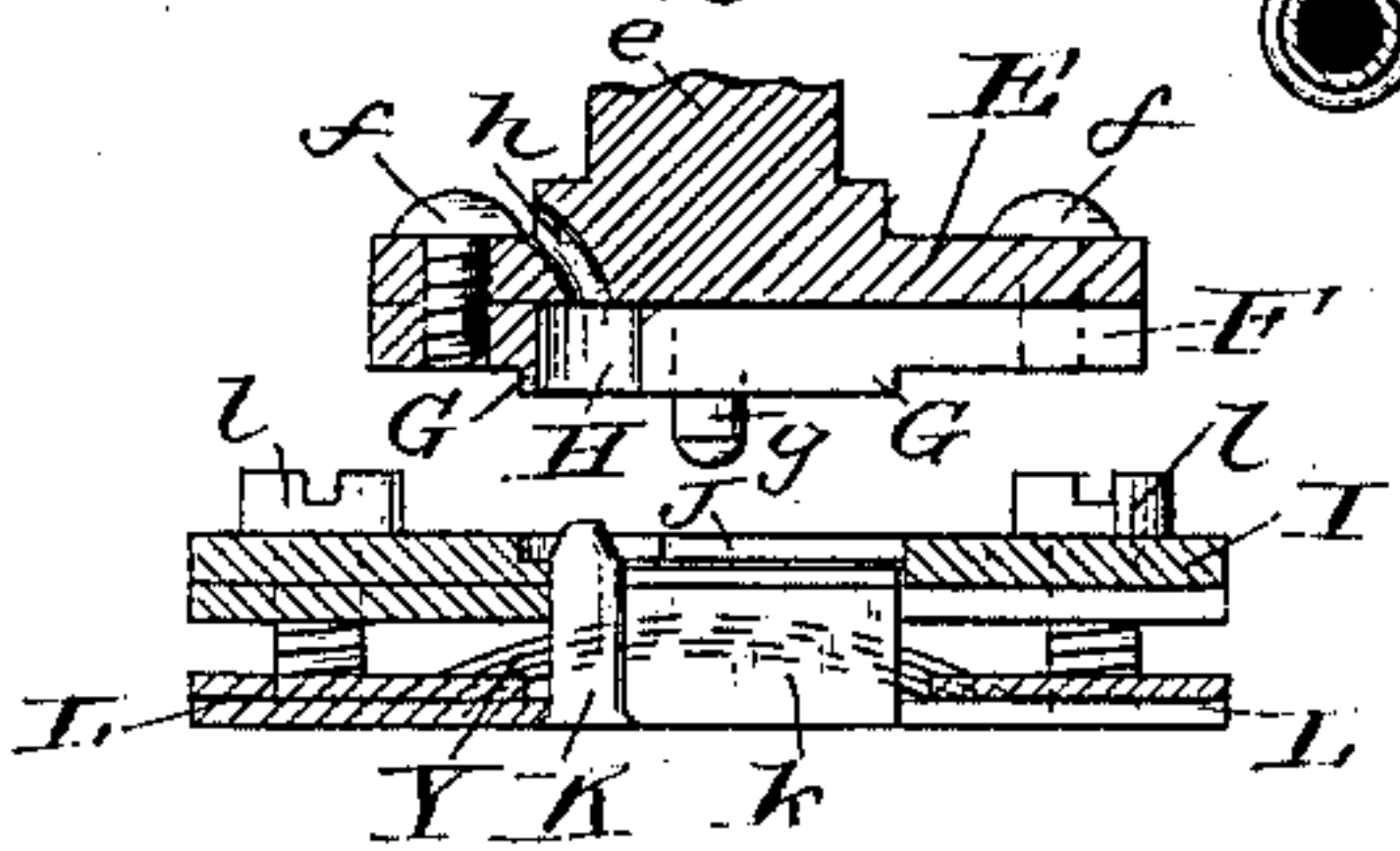


Fig. 6.

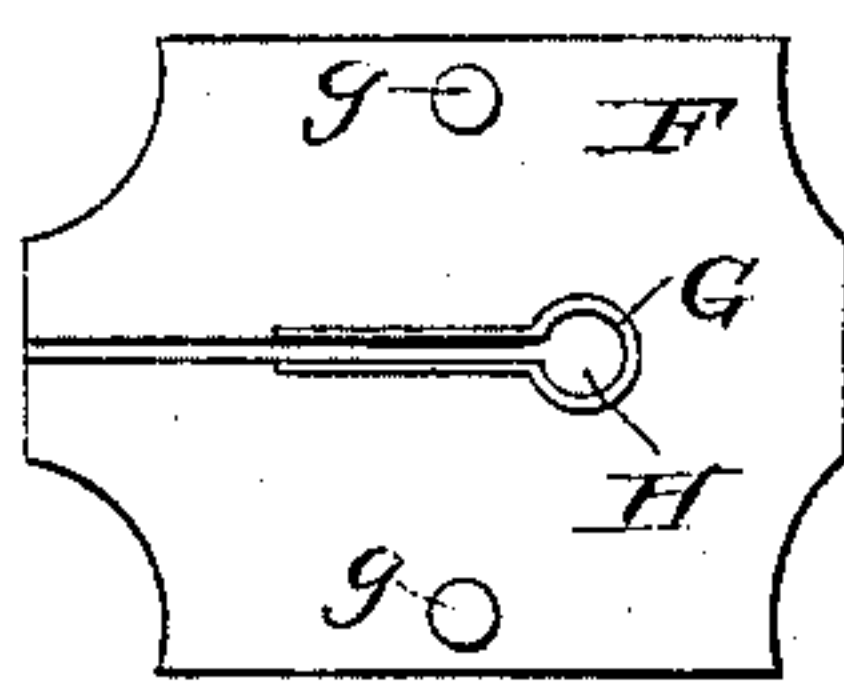


Fig. 7.

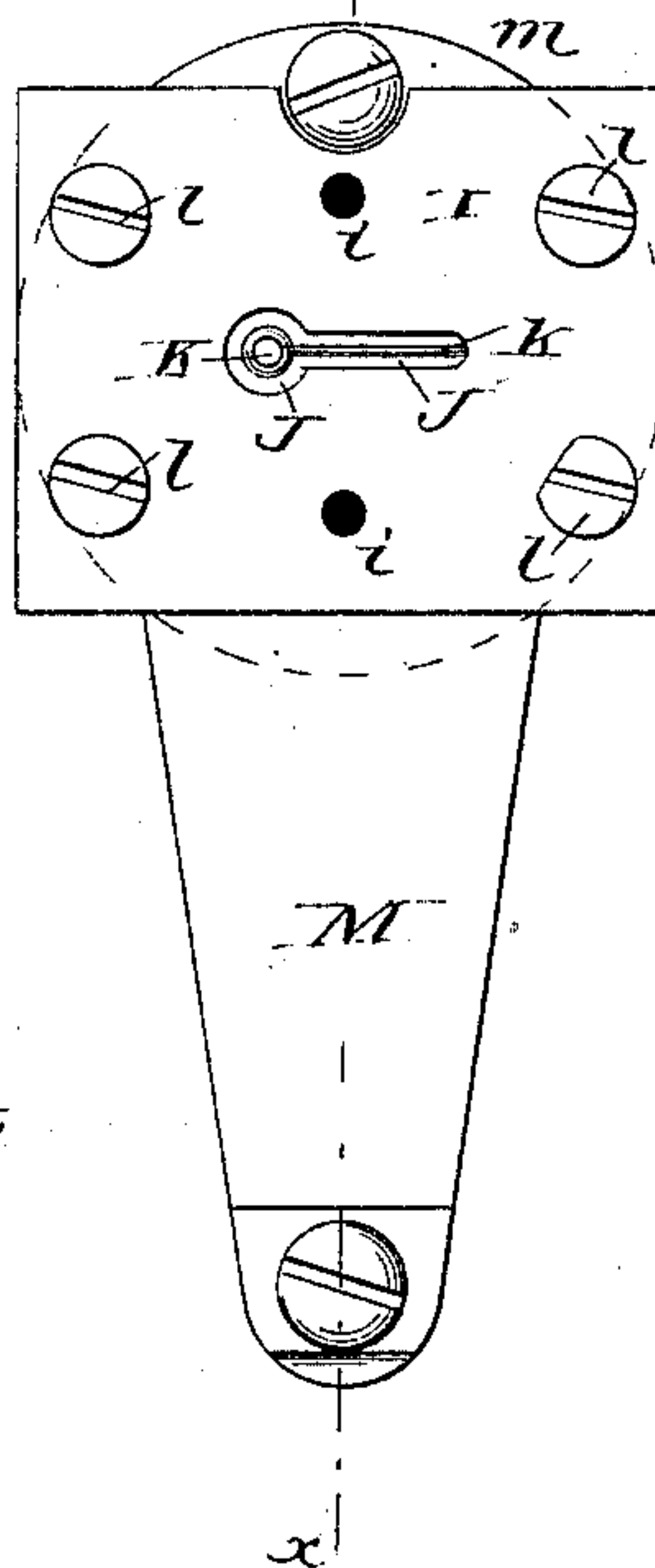
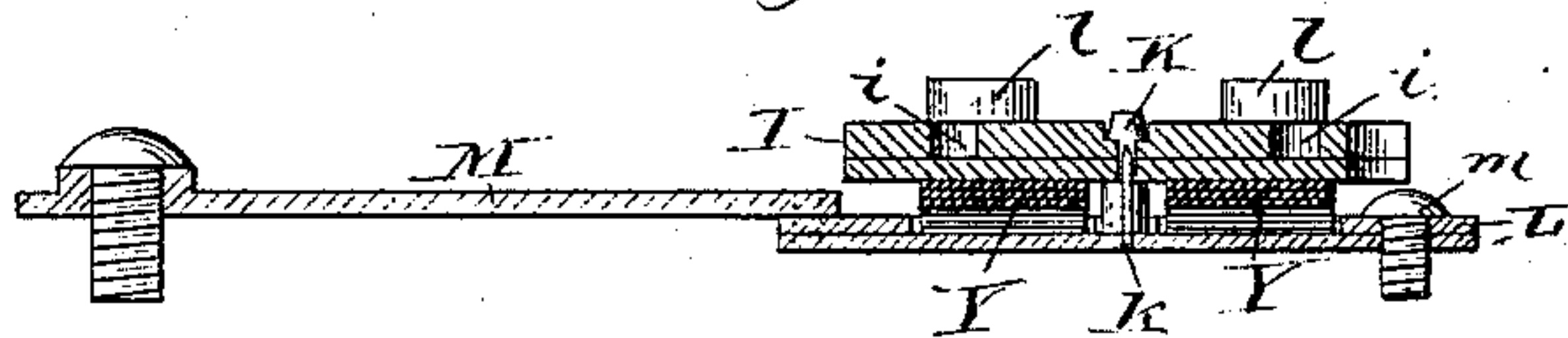


Fig. 8.



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# UNITED STATES PATENT OFFICE.

DAVID HARRIS, OF BROOKLYN, NEW YORK.

## MACHINE FOR MAKING BUTTON-HOLE LININGS.

SPECIFICATION forming part of Letters Patent No. 282,078, dated July 31, 1883.

Application filed December 2, 1882. (No model.)

*To all whom it may concern:*

Be it known that I, DAVID HARRIS, a citizen of the United States, residing at Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Machines for Making Button-Hole Linings, of which the following is a specification, reference being had therein to the accompanying drawings.

The object of this invention is to strike up or punch a bead or embossed surface upon a piece of leather, and at the same time condense a portion of the leather which forms the bead, and thereby render the bead more dense and firm, and therefore stronger, than the material was before such operation, whereby I am enabled to produce a button-hole lining of great strength, and which is specially adapted to support the strain or pull of buttons, particularly upon shoes and similar articles.

The invention consists in certain novel features of construction and operation, as will be hereinafter fully explained.

Figure 1 is a perspective view of a machine constructed in accordance with my invention. Fig. 2 is a plan view of the same. Fig. 3 is a side view, the bed-plate being in section. Fig. 4 is a view partly in section on line *y y*, Fig. 2. Fig. 5 is a vertical section, enlarged, of the embossing and cutting mechanism, taken on the same section-line. Fig. 6 is a bottom view of the die. Fig. 7 is a detached view, enlarged, of the matrix and cutter; and Fig. 8 is a vertical section on line *x x*, Fig. 7.

Similar letters of reference indicate corresponding parts in all the figures.

In the drawings, *A a* is a table, the part *a* being shown as elevated upon the part *A* for convenience in pivoting some of the mechanism thereto; but such construction is not indispensable.

*B* is a foot-treadle, pivoted below the bed-plate and within convenient reach of the operator when sitting in front of the machine.

*b* is a link pivoted at its lower end to the treadle and adjustably attached at its upper end to lever *C*, which is mounted upon and pivoted to the upper end of vibrating bars *c c*.

*D* is a die-carrier reciprocating in the end of a support-standard.

I will now describe the die, matrix, and punching and cutting mechanism, referring more particularly to Figs. 4, 5, 6, 7, and 8.

*E F* is a die composed of two members, the shank *e* of the upper member being mounted in and carried by the die-stock *D*. (See Fig. 4.) For convenience of manufacture and repair, I construct this die in two parts, the lower member, *F*, being attached to the upper member, *E*, by suitable screws, *f f*, or otherwise. The lower member or plate is provided upon its working-face with an-embossing rib or bead, *G*, the circular portion of which surrounds a circular eye, *H*, its legs extending upon opposite sides of a slit or throat in said plate to such length as may be required.

*g g* are guide pins or studs projecting downwardly from the die, and adapted to enter holes *i i* in the upper face of the matrix *I*. (See Fig. 7.) The matrix is provided upon its upper face with a recess, *J*, corresponding in form to the embossing rib or bead *G*, and with a slit or opening in the center of the straight portion of the recess, which slit communicates with a round hole in the center of the circular part of the recess. (See Figs. 5 and 7.) I sometimes make this matrix in two pieces of substantially the same area and thickness, as indicated in Fig. 5. This matrix is mounted upon a swinging carrier, *L M*, pivoted to the bed-plate *N* by a stud or screw, *m*, (see Figs. 7 and 8,) and is connected with the part *L* by means of four studs, *l l*, upon which it is free to rise and fall when actuated, and for a purpose which will be hereinafter fully explained.

*y y* are semi-elliptical springs interposed between the part *L* of the carrier and the matrix *I*.

*K* is a punch carried by the part *L*, and having its upper end supported in a round hole in the matrix.

*k* is a knife, also carried by the part *L*, and having its upper end supported in a slit, which is central in the straight portion of the recess in the matrix, and which has been heretofore referred to. (See Figs. 5, 7, and 8.)

*h* is a throat in the part *E* of the die, communicating at its lower end with the opening *H* within bead *G*.

I will now describe the mechanism for moving



ing the matrix to a position underneath the die and removing it therefrom. Referring to Figs. 1, 2, 3, O is a link or draw-bar, pivoted at one end to the free end of the part M of the matrix-carrier and at its opposite end to the end P of a horizontal lever, which is pivoted at 1 to the bed-plate N. The opposite end, *p*, of this lever projects rearwardly from the bed-plate and into the path of the end Q of a vertical bell-crank lever, which is pivoted at 2 to the table A, and has its end *q* connected by a link, R, with the lever *c*. The position and relation of these levers and links are shown particularly in Fig. 1, the lower part of the bell-crank lever and its pivot being in dotted lines.

S is a spiral spring, connected at one end to link O and at its opposite end to bed-plate N.

*s* is a stop projecting from bed-plate N to engage with link O.

*x* (see Figs. 1, 2, and 4) is a stop to engage with the rear end of the matrix and insure that it shall be stopped in proper position to receive the die.

By an examination of the drawings it will be readily seen that when the front end of the treadle is depressed and the rear end of the lever C is raised the link R, connected upon the bell-crank lever Q *q*, will cause the end Q of such lever to engage with the end of lever P *p*, and thus pulling upon link O will swing the matrix from the position shown in Figs. 1 and 3 into position shown in Figs. 2 and 4. When the treadle is released the rear end of the lever C falls, thus returning the end Q of the bell-crank lever to the position shown in Fig. 1, and the spring S returns lever P *p*, link O, the matrix, and its carrier to the position shown in Fig. 1.

T is an adjustable matrix-support, consisting, essentially, of a horizontal face-plate perforated centrally and having a downwardly-projecting horizontal flange. It is located in an opening in the bed-plate, where it is adjusted and held firmly in proper position by means of three set-screws, *ttt*, and in proper position to support the matrix and its carrier firmly against downward thrust. U is a horizontal link, pivoted at one end to the end Q of the bell-crank lever, its opposite end being slotted, as at *u*, and connected by means of a large-headed stud or bolt to one end, V, of a lever, which is pivoted at 3 to the elevated portion *a* of the table. The front end, *v*, of this lever is beveled.

W is a lever pivoted at 4 to the table, and carries at its front end a stripper, X, provided with one or more downwardly-turned spurs.

*w w* are springs attached to the inner shorter end of lever W, one of these springs being also attached at one end to lever V *v*, these springs serving to hold these levers in the position indicated in Fig. 1 and in full lines, Fig. 2. The vertical distance between the upper and lower points of the stripper X is about equal to the distance between the horizontal planes of the upper face of the matrix and the lower

face of the die when the die is at about its highest point.

In Fig. 4 I have shown the die-stock D, having upon its front face a key seat or groove, in which is fitted a key adjusted by set-screws, as is customary in various presses, and need not therefore be specifically described.

Z is a gas-pipe, the tip or burner of which is arranged in close proximity to the hollow under surface of the matrix-support to supply heat, which I employ for the purpose of assisting in the production of a suitable bead, the hole in the horizontal face-plate of this support facilitating the passage of the heat to the matrix and die.

*z* is a stop-cock in the gas-pipe.

The machine may be operated as follows:

Supposing all of its parts to be in a position indicated in Fig. 1, the operator makes a suitable blank by cutting a piece of leather into oblong or oval shape, and of such size as will lie upon the matrix I between the heads of set-screws *ll* and the holes *ii*, (see Fig. 7,) the blank being in suitable temper. The operator then depresses the treadle, raising the rear end of lever C, which operation not only depresses the die and die-stock, but also, by means of levers P Q and link O, swings the matrix upon the set-screw *m*, carrying the matrix and blank into proper position under the die, when a continued movement of the treadle in the same direction presses the die down upon the blank and thrusts a portion of the leather into the recess J J, thus raising the desired bead. This movement also thrusts the matrix down upon the part I of the matrix-carrier until the punch K and knife *k* cut the slit in the leather; and the punch is thrust through the small hole in the blank, thus further compressing the leather into the circular portion of the recess and materially increasing the density and firmness of the bead around the eye of the button. While this movement of parts has been effected the link U has been thrust in the direction indicated by the arrow 5, swinging the lever V *v* upon its pivot until the end *v* has been thrust past the inner end of lever W. When the parts are being returned to the position shown in Fig. 1, the link U, moving in an opposite direction, moves the levers V *v* W first into the position indicated in dotted lines, Fig. 2, whereby the stripper X is caused to traverse both the upper face of the matrix and the lower face of the die, thus stripping the button-hole lining from either the matrix or the die in case it adheres to either of them. Just before the link *b* reaches the limit of its downward travel the end *v* of the lever escapes from the inner end of lever W and permits springs *w* to return that lever and the stripper to the position shown in Fig. 2.

Although I have shown in the drawings a machine which I have devised and operated for the carrying out of my invention, I do not wish to be limited to the precise construction or arrangement of parts shown, as many modi-



fications might be made therein without departing from the spirit of my invention. Nor do I wish to be limited to the use of a movable matrix, because the matrix might be made stationary and the die so constructed as to be alternately moved over the matrix and away from it. Nor do I wish to be limited to making the matrix movable for the purpose of thrusting the button-lining down against the punch K or the knife *k*, as mechanism might be employed to thrust said punch and the knife upwardly through the matrix.

I do not claim in this case any of the inventions herein described and shown, except those specifically set forth in the claims, preferring to claim all other patentable inventions herein shown in another application which I am about to file as a division of this case.

What I claim is—

1. In a machine for making button-hole linings, the combination, with a matrix provided with a circular opening adapted to receive a punch, a slit adapted to receive a knife, and a recess surrounding the opening and the slit, of a movable die provided with a bead corresponding to the recess, substantially as set forth.

2. In a machine for making button-hole linings, the combination of a movable matrix provided with a recess, substantially of the form shown at J, and die provided with a correspondingly-shaped rib, as at G, the means for moving the matrix under the die, and means for depressing the die, substantially as set forth.

3. In a machine for making button-hole lin-

ings, the combination of a die and matrix adapted to form a bead, substantially as set forth, and a movable stripper adapted to remove the button-hole lining, substantially as set forth.

4. In a machine for making button-hole linings, the combination, with the die, of a matrix adapted to be moved into the path of the die and to be withdrawn therefrom, and a knife adapted to cut a button-slit, substantially as set forth.

5. In a machine for making button-hole linings, the combination, with the matrix and a die, of the guide-pins *g g*, adapted to engage with the matrix, substantially as set forth.

6. In a machine for making button-hole linings, the combination, with a movable matrix and a die, of a stop to limit the movement of the matrix when being thrust under the die, substantially as set forth.

7. In a machine for making button-hole linings, the combination of the die, the matrix, and the matrix-support, substantially as set forth.

8. In a machine for making button-hole linings, the combination of the die, the matrix, and the matrix-support, provided upon its under side with a recess adapted to be heated by gas, substantially as set forth.

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

DAVID HARRIS.

Witnesses:

WILLIAM MACKEY,  
GEO. R. STONE.