

H. BLUNDELL.  
Punching-Machine.

No. 212,535.

Patented Feb. 25, 1879.

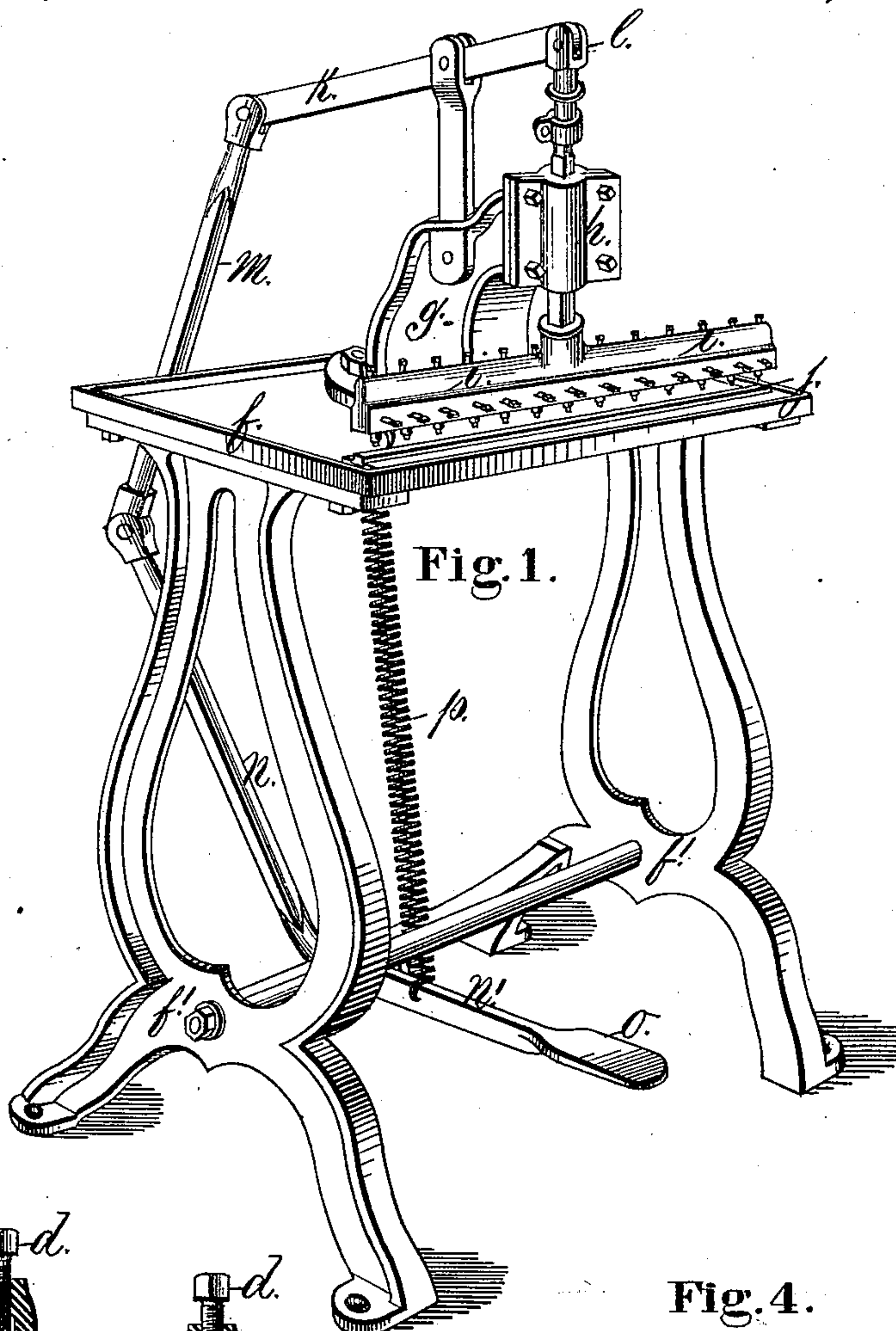


Fig. 2.

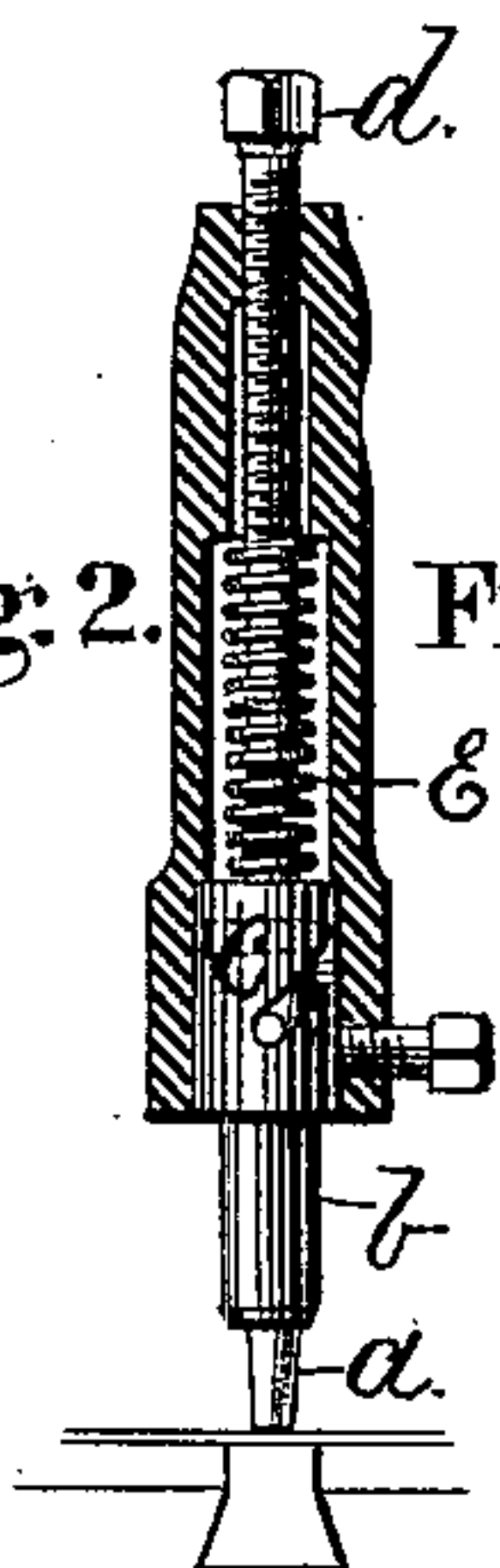


Fig. 3.

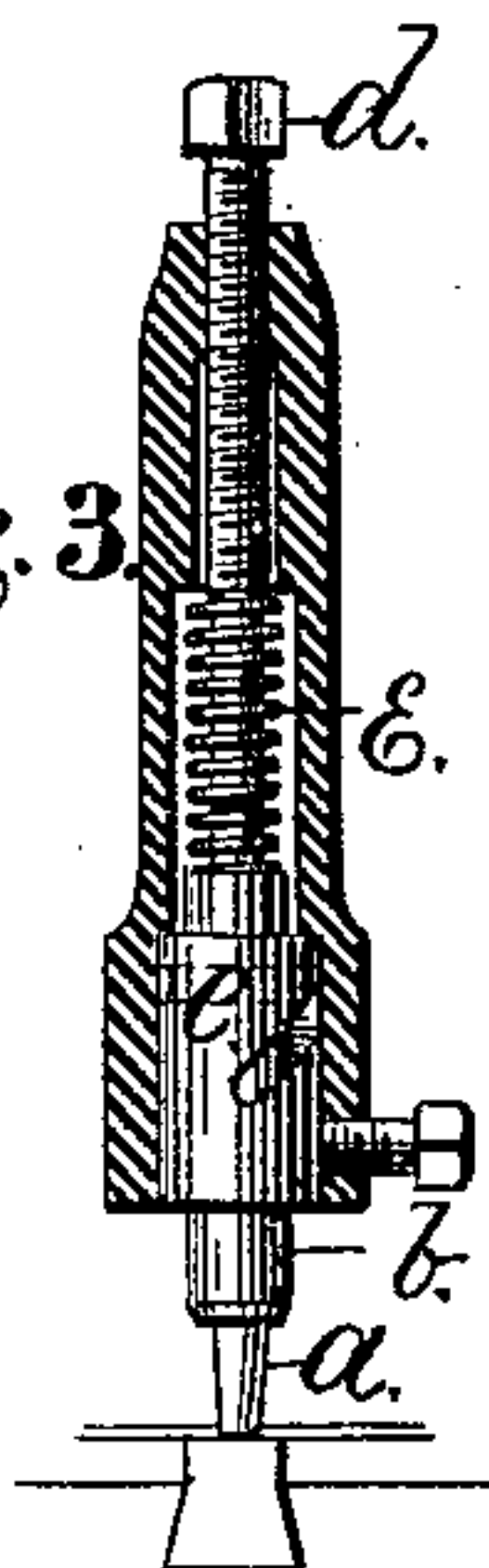


Fig. 5.

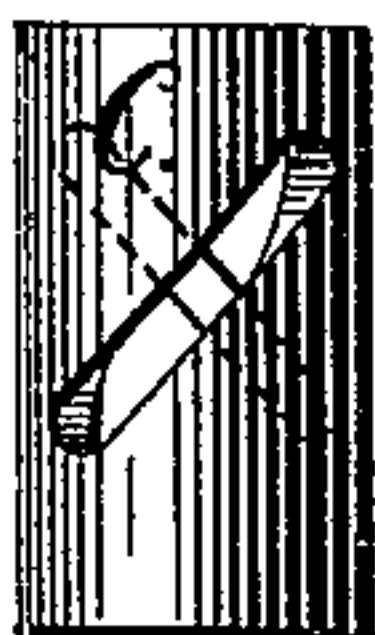
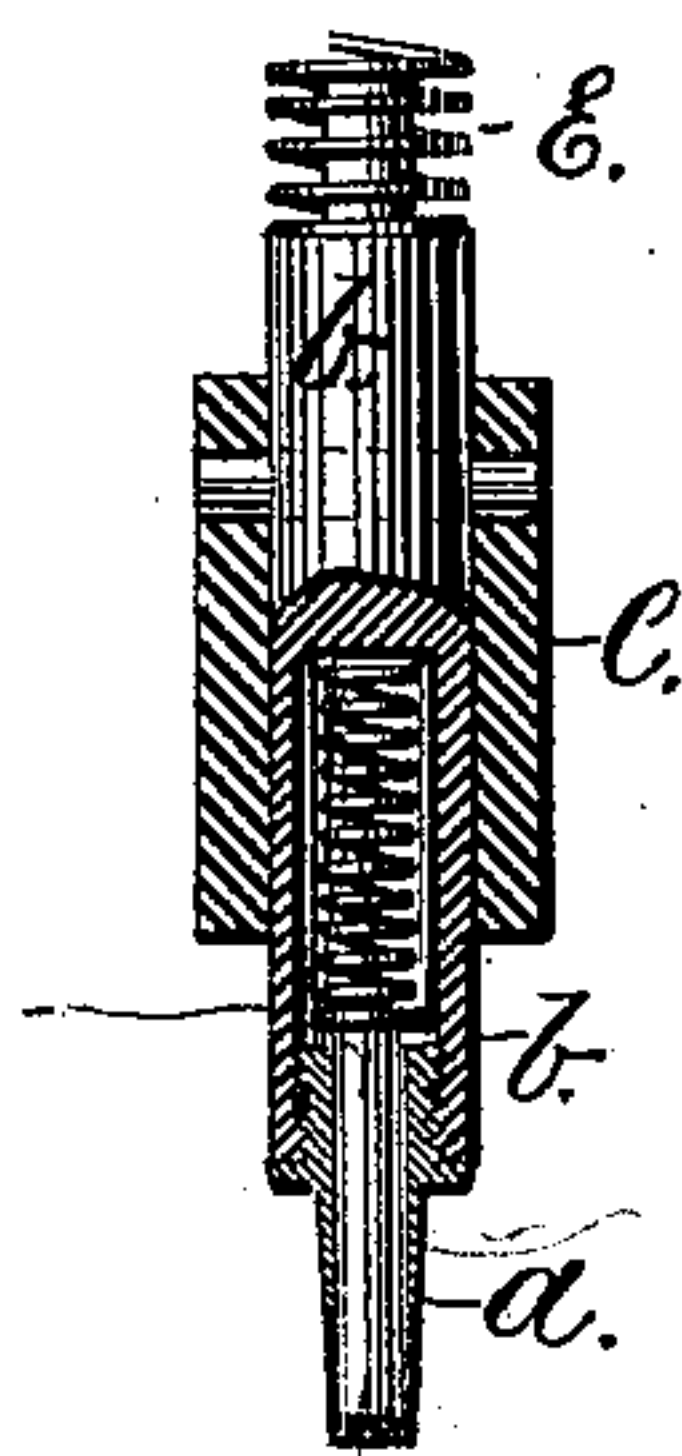


Fig. 4.



WITNESSES.

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# UNITED STATES PATENT OFFICE.

HENRY BLUNDELL, OF PROVIDENCE, RHODE ISLAND.

## IMPROVEMENT IN PUNCHING-MACHINES.

Specification forming part of Letters Patent No. **212,535**, dated February 25, 1879; application filed December 17, 1877.

*To all whom it may concern:*

Be it known that I, HENRY BLUNDELL, of the city and county of Providence, and State of Rhode Island, have invented new and useful Improvements in Punches; and I hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, and the letters of reference marked thereon, being a part of this specification.

This invention relates to improvements in punching-machines for leather and sheet metal, &c., where a series of punches are attached to one bar and all are moved by means of a treadle and toggle-levers, which will be more fully hereinafter described, and set forth in the claims.

Figure 1 represents a punching-machine, in which a number of punches are operated simultaneously by means of a foot-treadle hinged at the rear of the frame, and which, with the lower toggle-bar, is made in one piece, and thus while a great throw is given to the punches, which are raised a considerable distance to allow of the insertion and adjustment of the material to be punched, great power is exerted in the act of punching. Fig. 2 is a sectional view of one punch, shown in contact with the material to be punched. Fig. 3 is a sectional view of the same punch, shown in the position when passing through the material and partially rotated. Fig. 4 is a modification of the punch, shown enlarged. Fig. 5 is a view of the sleeve provided with the curved slots, by which rotation is imparted to the punch.

Similar letters of reference indicate corresponding parts.

In the drawings, *a* represents the punch proper, made in the usual manner, slightly tapering, with a flat or slightly-concaved end and smooth cutting-edge, such as is usual in punches for cutting holes into paper, leather, textile or other yielding material, as also into metal plates. *b* is the socket in which the punch is secured. *c* is a sleeve, which is provided with curved slots, in which a pin or pins slide, so as to give a partial rotation to the punch. This sleeve may be secured to the punch and the pin or pins to the stationary frame,

in which the punch is free to partially turn and reciprocate; or the sleeve may be fixed, and the pin or pins secured to the punch or punch-socket. *d* is an adjusting-screw, by which the punch can be readily adjusted. *e* is a coiled spring, pressing against the punch, and allowing the same to yield to the pressure, and thus partially rotate by means of the curved slots in the sleeve *c*.

*f* is a table, and *f' f'* the standards by which the table is supported. *g* is a bracket, secured to the table and supporting the slide *h*, in which a reciprocating rod slides, to the lower end of which the cross-bar *i* is secured, in which the punches (shown enlarged in Figs. 2, 3, 4, and 5) are secured. *j* is a raised punch-bar, on which the punches act, and on which the material to be punched is laid. *k* is a hinged lever, connected at *l* with the vertically-reciprocating bar to which the punch-head or cross-bar *i* is secured, and at the other end with the toggle-jointed lever *m*. *n* is the lower toggle-jointed lever, made in one piece with the foot-lever *n'*, and hinged to the frame. It is provided with the foot-plate *o*. *p* is a coiled tension-spring, by which the lever *n'* is raised when the pressure is released and the punches withdrawn.

The operation of the machine is as follows: A corset into which holes are to be punched for the insertion of eyelets, a piece of leather to be punched for receiving the rivets in making hose, or any other material into which a number of holes are to be punched, is laid on the table and adjusted on the punch-bar *j*. The treadle *o* is depressed by the foot of the operative, when, by means of the hinged lever *n, n', m*, and *k*, the cross-bar *i*, carrying the punches, is pressed on the material until the pressure exceeds the resistance of the springs *e e*, when the several punches will automatically adjust themselves to any variation of thickness in the material to be punched. The toggle-jointed levers *m n* will now be nearly on a line, and their leverage, with a slight pressure at *o*, will exert a great and increasing pressure on the punches, which, as the springs *e* yield, will be partially rotated, and thus a number of holes cut with ease.

Having thus described my invention, I

claim as new and desire to secure by Letters Patent—

1. The combination, with the punch *a*, arranged to yield and partially rotate, of the spring *c* and adjusting-screw *d*, by which the resistance of the punch can be adjusted, substantially as and for the purpose set forth.

2. In a perforating-machine, the combination of the punch-carrier *i*, operated, substantially as described, by means of the toggle-levers and slides, with the series of punches, each having its spring *e* adjustable by means of a vertical

set-screw, whereby the different resistances along the material are compensated, substantially as and for the purpose described.

3. In a multiple perforating-machine, the combination, with the table *f*, of the punch-bar *j*, the bracket *g*, slide *h*, and reciprocating punch-carrier *i*, arranged and operating substantially as and for the purpose described.

HENRY BLUNDELL.

Witnesses:

JOSEPH A. MILLER,

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