

(No Model.)

S. G. WILLIAMS & J. C. BURGESS.
PUNCHING AND SHEARING MACHINE.

No. 490,007.

Patented Jan. 17, 1893.

Fig. 1.

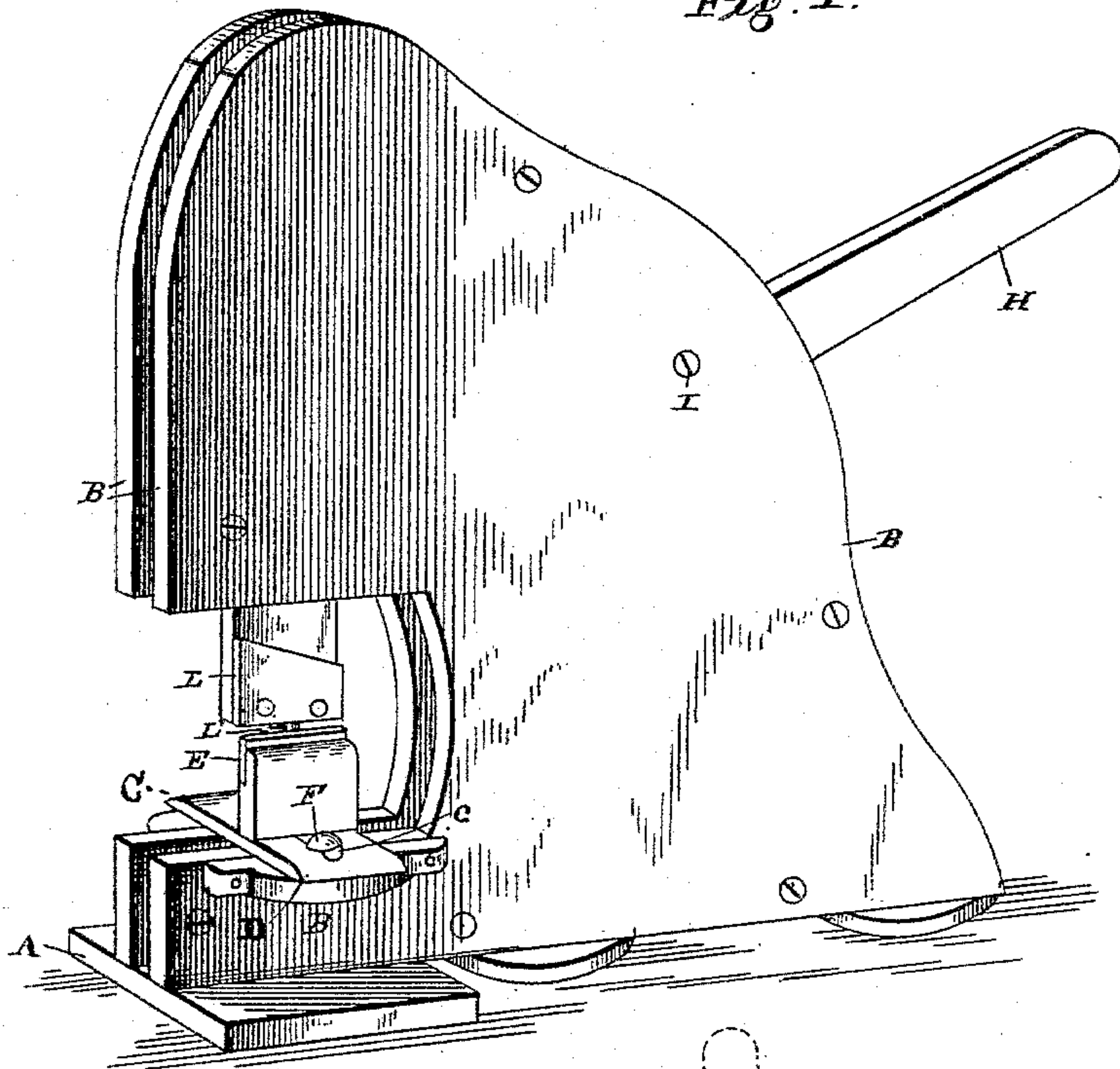


Fig. 2.

Fig. 5.

Fig. 3.

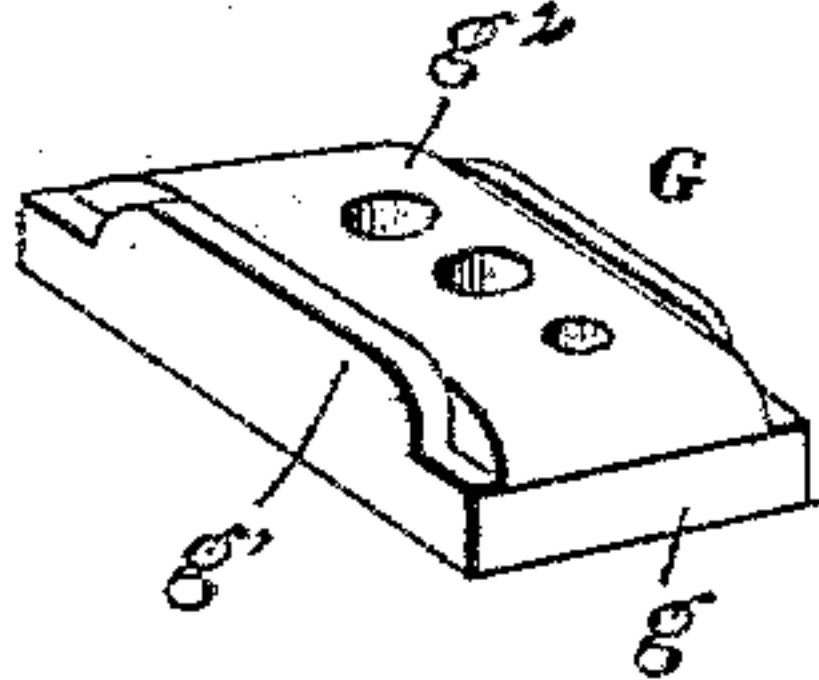
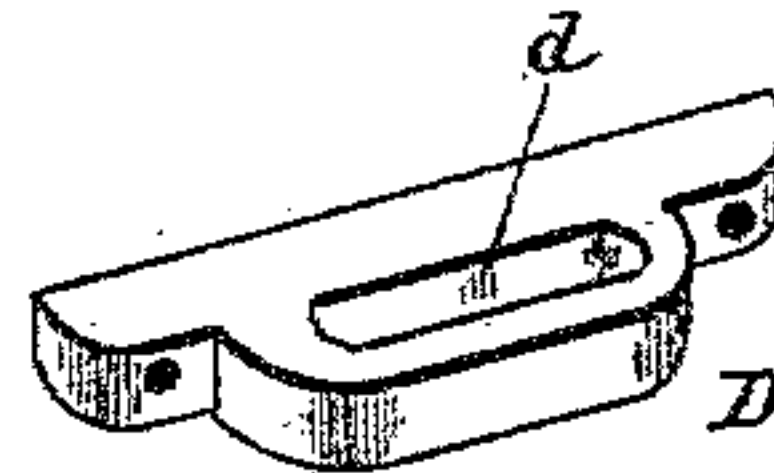
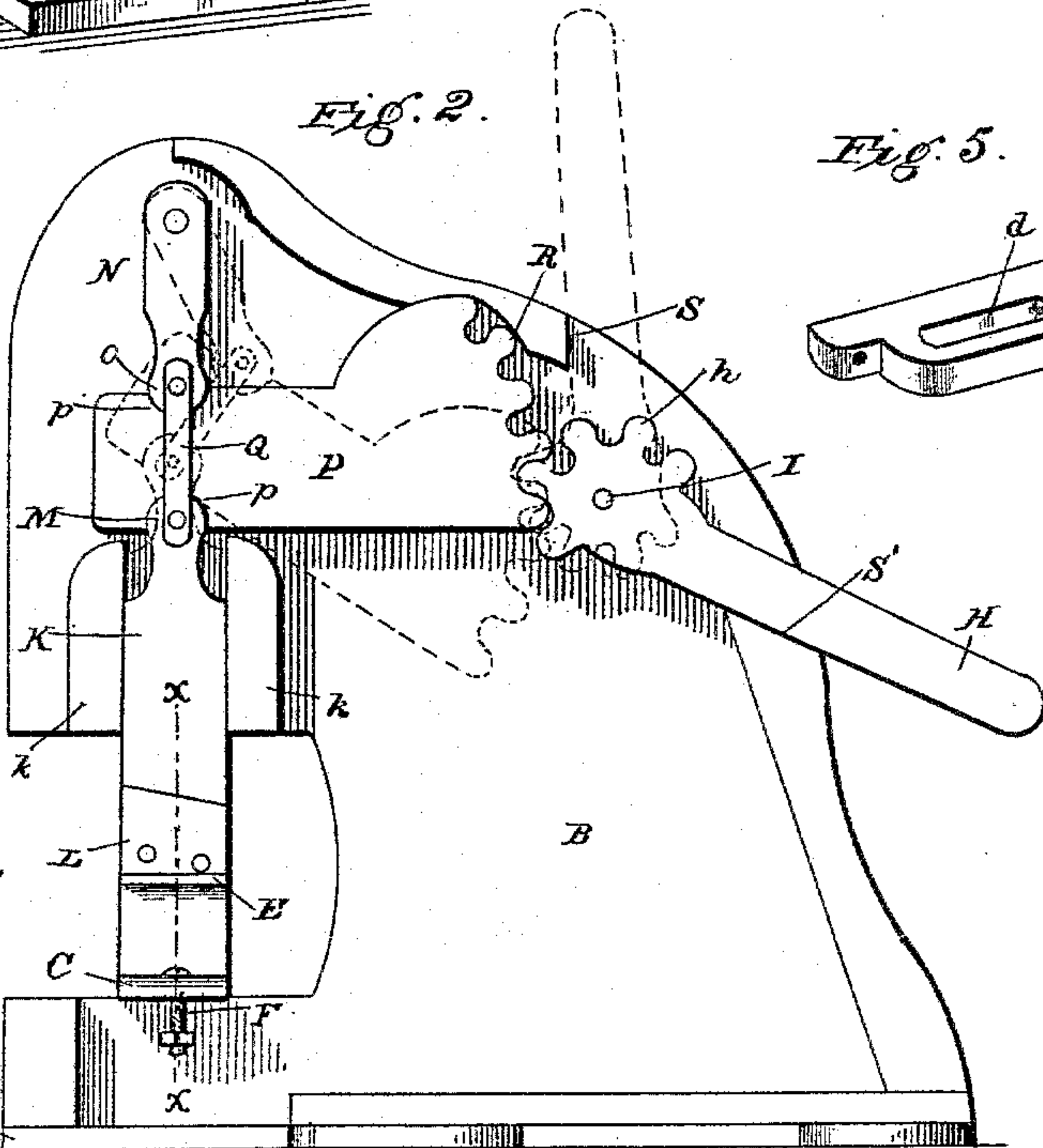
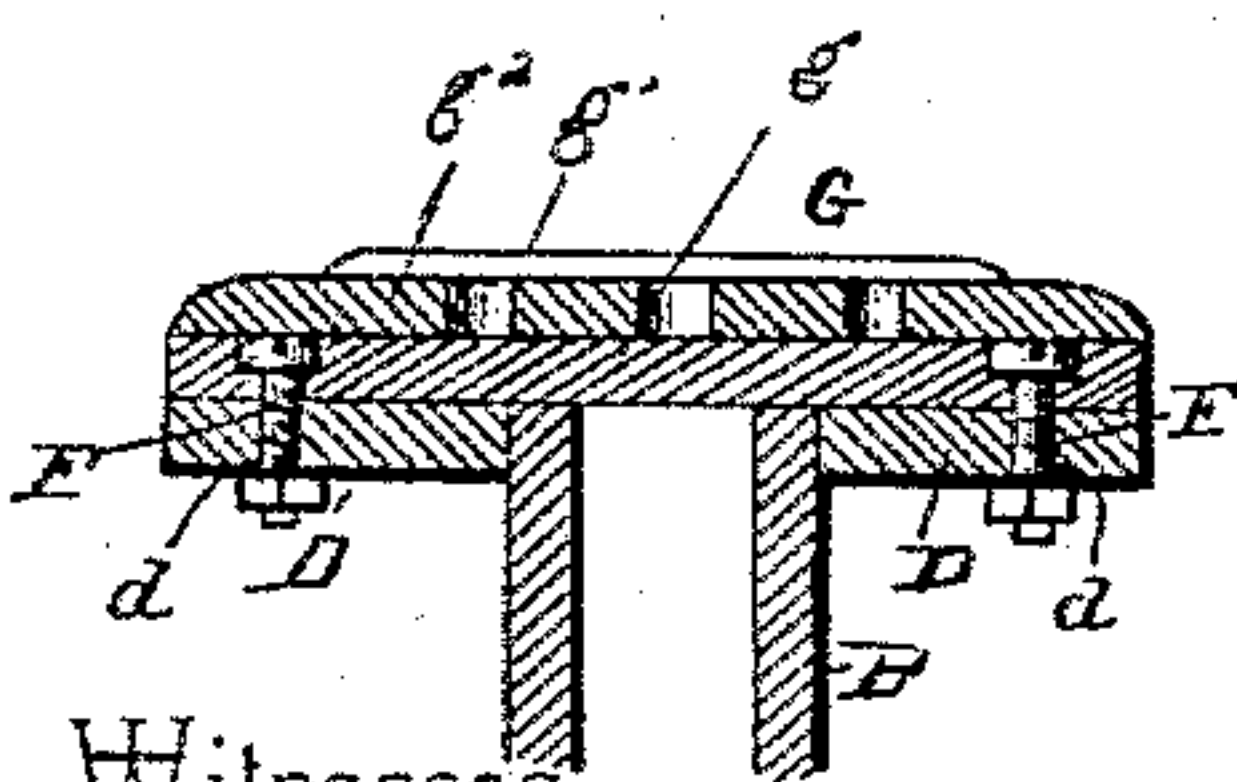


Fig. 4.



Witnesses

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Inventors

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UNITED STATES PATENT OFFICE.

SAMUEL G. WILLIAMS AND JAMES C. BURGESS, OF CINCINNATI, OHIO.

PUNCHING AND SHEARING MACHINE.

SPECIFICATION forming part of Letters Patent No. 490,007, dated January 17, 1893.

Application filed September 7, 1892. Serial No. 445,231. (No model.)

To all whom it may concern:

Be it known that we, SAMUEL G. WILLIAMS and JAMES C. BURGESS, citizens of the United States, residing at Cincinnati, in the county of Hamilton and State of Ohio, have invented a new and useful Punching and Shearing Machine, of which the following is a specification.

Our invention relates to improvements in machines for punching and shearing metal, and it has for its object to provide improved power mechanism for operating the movable shear-blade or punch whereby advantages may be gained in the matter of greater facility, rapidity and accuracy.

With this and other objects and advantages, which will appear in the following description, in view, the novel features being particularly pointed out in the appended claims, the invention consists in a certain novel construction and combination of devices which will be described in detail in connection with the accompanying drawings, wherein:

Figure 1 is a perspective view of a machine embodying our invention; Fig. 2 is a side view, with one of the side plates removed to show the interior construction, the parts being shown in full lines in the positions they assume when the punch or blade-carrying shaft is depressed and in dotted lines in the positions they assume when said shaft is elevated; Fig. 3 is a detail view of the adjustable die which is substituted for the stationary shear-blade when the punch is to be used. Fig. 4 is a detail vertical section upon line *x x* of Fig. 2, showing the die plate in position thereon. Fig. 5 is a detail view, in perspective, of one of the ears to which the pedestal is bolted, to show the slot therein.

A represents the base of the machine, B B the parallel vertical side plates, bolted together and to the base, and C the pedestal which is adjustably attached to the horizontal ears, D D, at the front of the frame and carries the stationary shear-blade, E. These ears are provided with slots, *d d* at right-angles to the slots, *c c*, in the pedestal, adjusting bolts, F F being passed through the registering slots.

In Fig. 3 is shown a die-attachment, G, which may be substituted for the pedestal when punching is to be done with the ma-

chine, said attachment comprising the base-plate, *g*, adapted to be bolted to said ears, D D, and provided with guiding-wings, *g' g'*, and the perforated slide, *g²*, having a series of dies for the reception of the punch.

H represents the operating-lever, fulcrumed between the parallel side-plates upon the pivot-bolt, I, said lever being provided with a toothed head, *h*, at its front end.

K represents the vertical, sliding shear-shaft, arranged to operate between parallel guides, *k k*, and carrying at its lower end the shear-blade, L and the punch, L', either of which may be used, independently. The upper end of this shear-shaft is provided with a rounded head, M, and above the same is arranged the swinging-link, N, pivotally connected to the side-plates, at its upper end, and provided at its lower end with a rounded head, O, similar to that upon the upper end of the shear-shaft, and disposed vertically above the same.

The power-arm, P, is provided at its front end, in opposite sides or edges with the rounded sockets, *p p*, to receive the heads upon the adjacent ends of the shear-shaft and link, said heads being held in place in such sockets by the lifting-strap, Q, which is pivotally connected at its opposite ends to the heads, and lies in contact with the side of the power arm. The rear end of this power-arm is provided with a toothed-segment, or segmental series of teeth, R, to mesh with the toothed head of the operating-lever, the periphery of said segment being an arc of a circle of which the center is the head upon the upper end of the shear-shaft.

In operation, when the free or rear end of the operating lever is elevated, as shown in dotted lines in Fig. 2, the rear end of the power-arm, by the operation of the intermeshing toothed-segments, is depressed, thereby swinging the lower end of the link rearwardly and, by means of the lifting strap, elevating the shear-shaft, as shown in said figure. When the free end of the operating-lever is depressed as shown in full lines in said figure the rear end of the power-arm is elevated, the lower end of the link is swung forward over the shear-shaft, and in alignment therewith, and said shear shaft is depressed. Thus, the elevation of the shear-shaft is accomplished by

throwing the lower end of the swinging link out of alignment with said shaft, and the depression thereof is accomplished by returning said link to alignment with the shaft.

- 5 The shear-shaft is held in place by vertical guides and is thereby caused to travel in a straight vertical line and therefore the deflection of the swinging parts from which the shaft is suspended will cause the elevation of
10 the latter. Stops S S' limit the swinging movement of the operating lever.

Having thus described our invention, what we claim and desire to secure by Letters Patent is:—

- 15 1. In a punching and shearing machine, the combination of a swinging link, a longitudinally movable shear-shaft aligned with said link, a power-arm fulcrumed near one end to the adjacent ends of the link and shear shaft,
20 and provided at the other end with a toothed-segment concentric with the fulcrum upon the shear-shaft, and a toothed operating lever meshing with said segment, substantially as specified.
- 25 2. In a punching and shearing machine, the combination of a longitudinally movable shear-shaft, an oppositely disposed swinging

link, a power-arm provided in opposite sides with sockets to receive heads upon the opposing ends of said shear-shaft and link, a toothed- 30 segment upon the opposite end of the power-arm, concentric with the head upon the shear-shaft, as described, and an operating lever having a toothed head to mesh with said segment, substantially as specified. 35

3. In a punching and shearing machine, the combination with the parallel side plates and parallel guides arranged there-between, of the vertically-movable shear-shaft, provided at its upper end with a head, a swinging link 40 provided at its lower end with a head, a power arm provided with sockets to receive said heads and having a toothed-segment concentric with the head upon the shear-shaft, the lifting strap, and the operating-lever, substantially as specified. 45

In testimony that we claim the foregoing as our own we have hereto affixed our signatures in the presence of two witnesses.

SAMUEL G. WILLIAMS.
JAMES C. BURGESS.

Witnesses:

G. W. MARTIN,
W. S. HARRISON.