

S. W. YOUNG.

2 Sheets--Sheet 1.

Machine for Making Eyelet Blanks.

No. 52,240.

Patented Jan'y 23, 1866.

Fig. 1

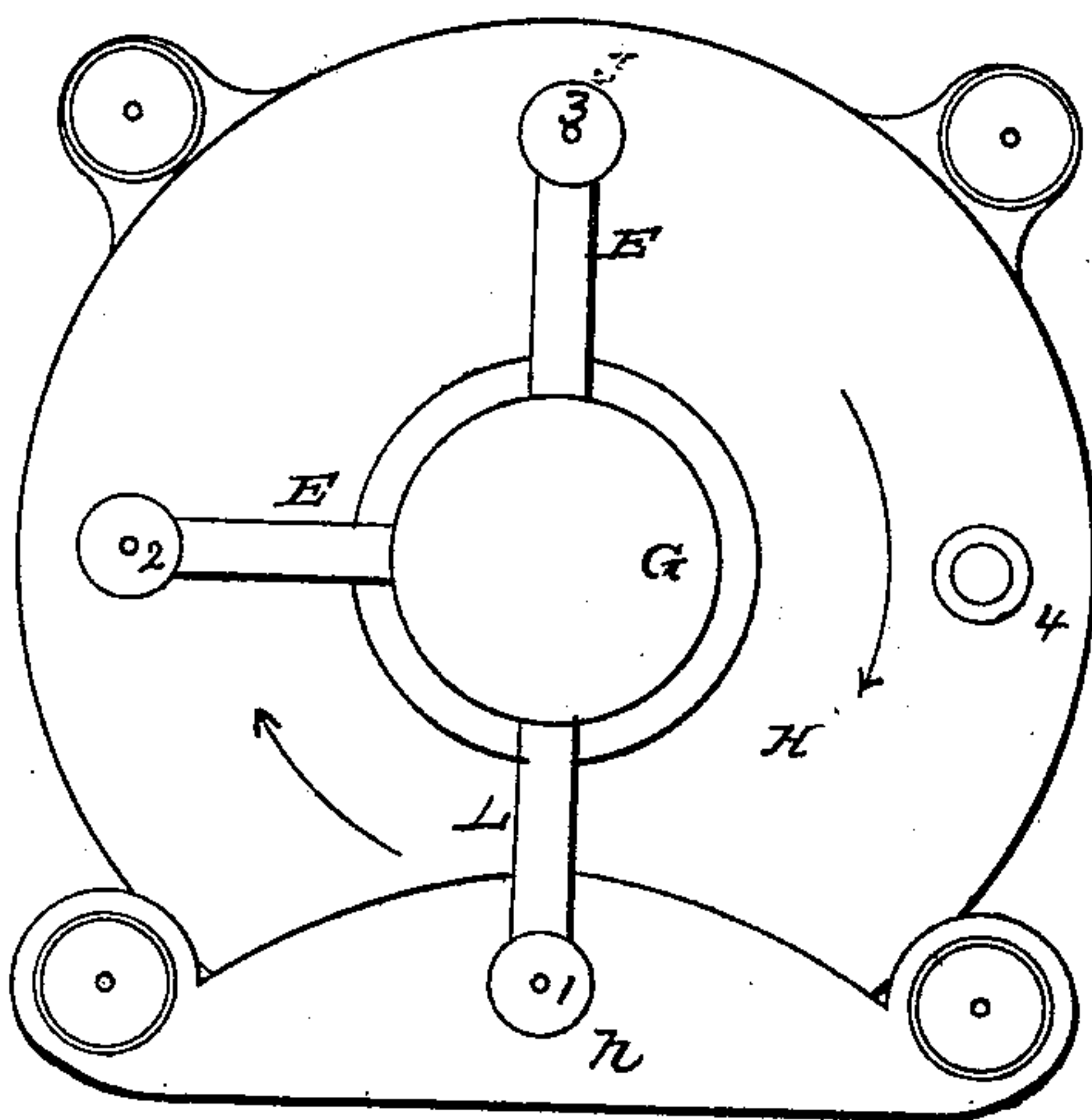


Fig. 5

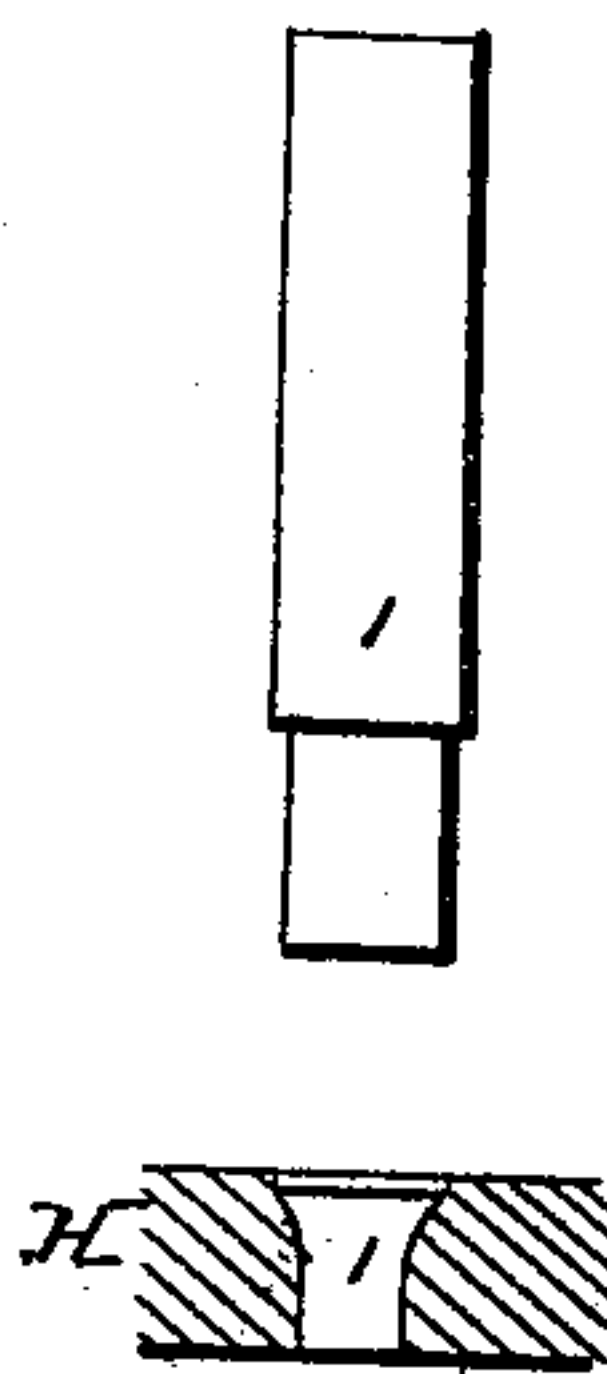


Fig. 6.

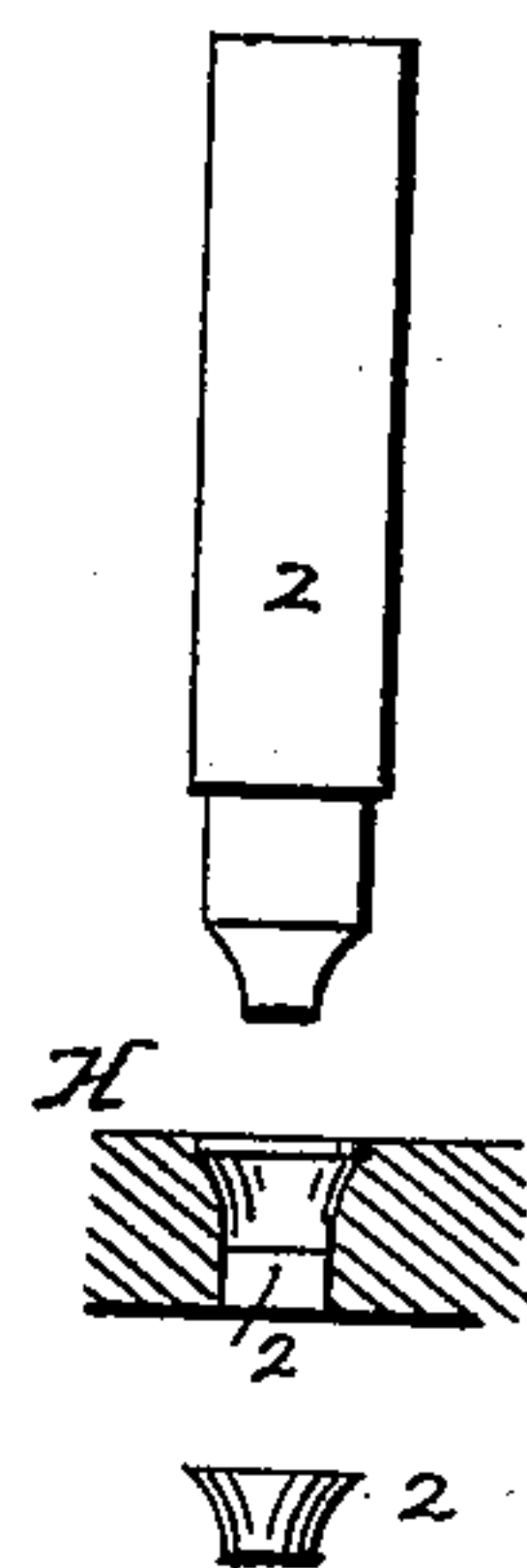


Fig. 2

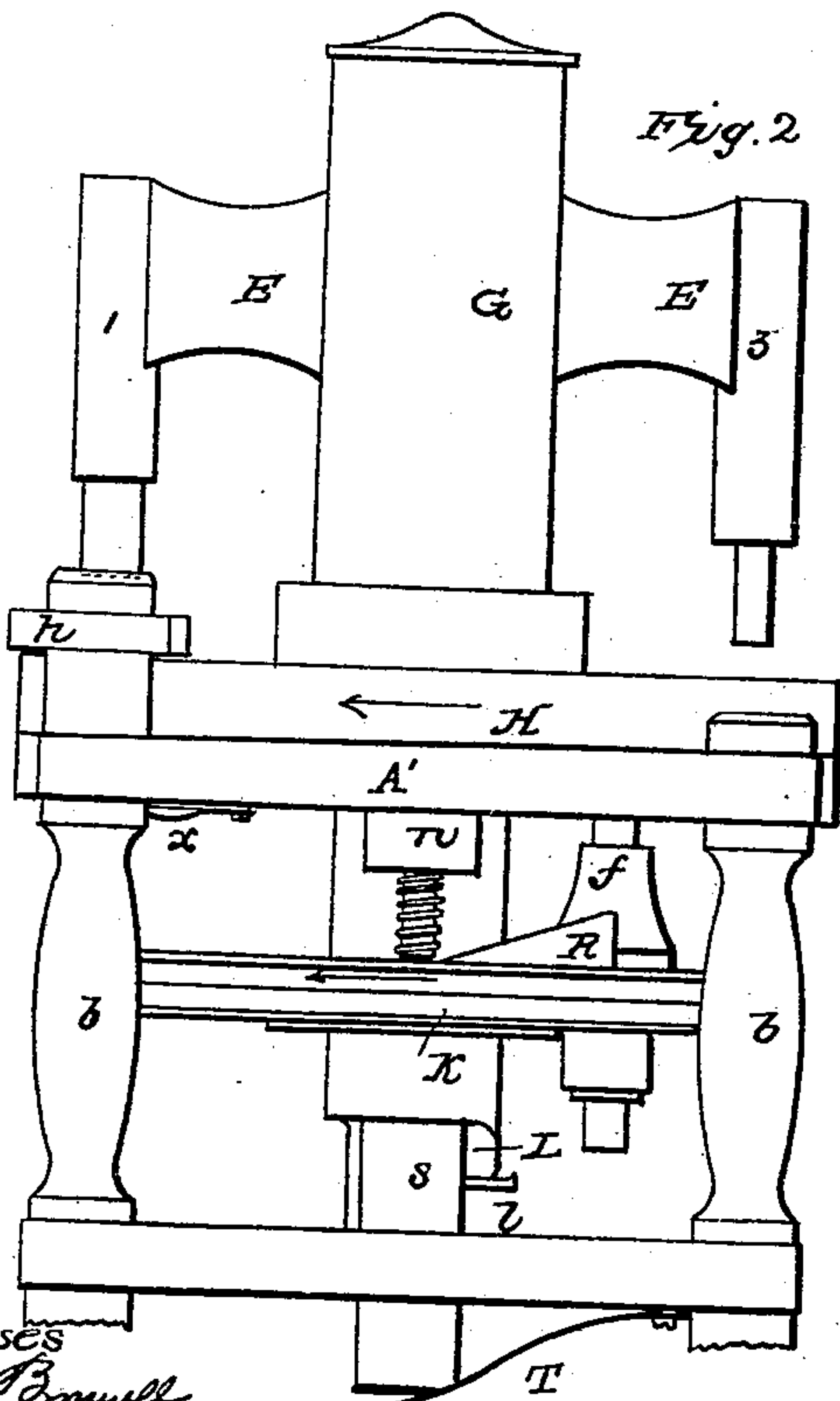


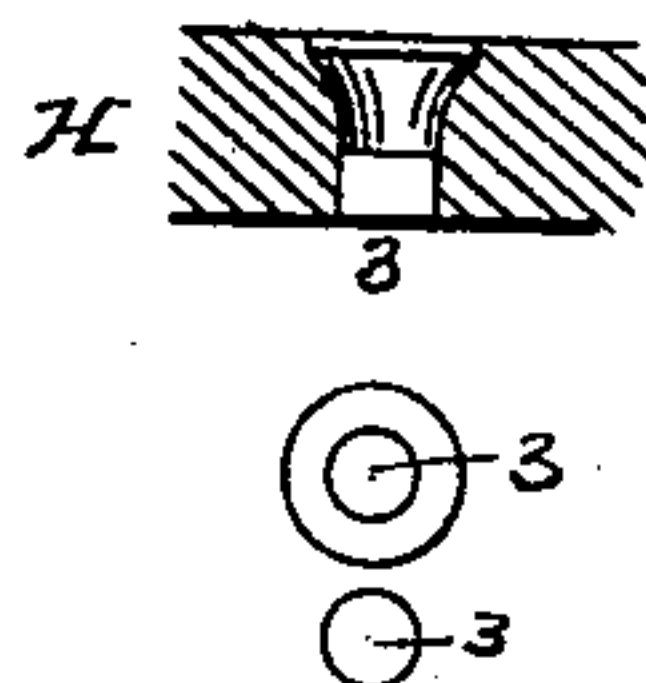
Fig. 7



Fig. 8



Fig. 8



Witnesses  
Josiah A. Bynum  
William Bynum

Inventor.  
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S. W. YOUNG.

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Fig. 3

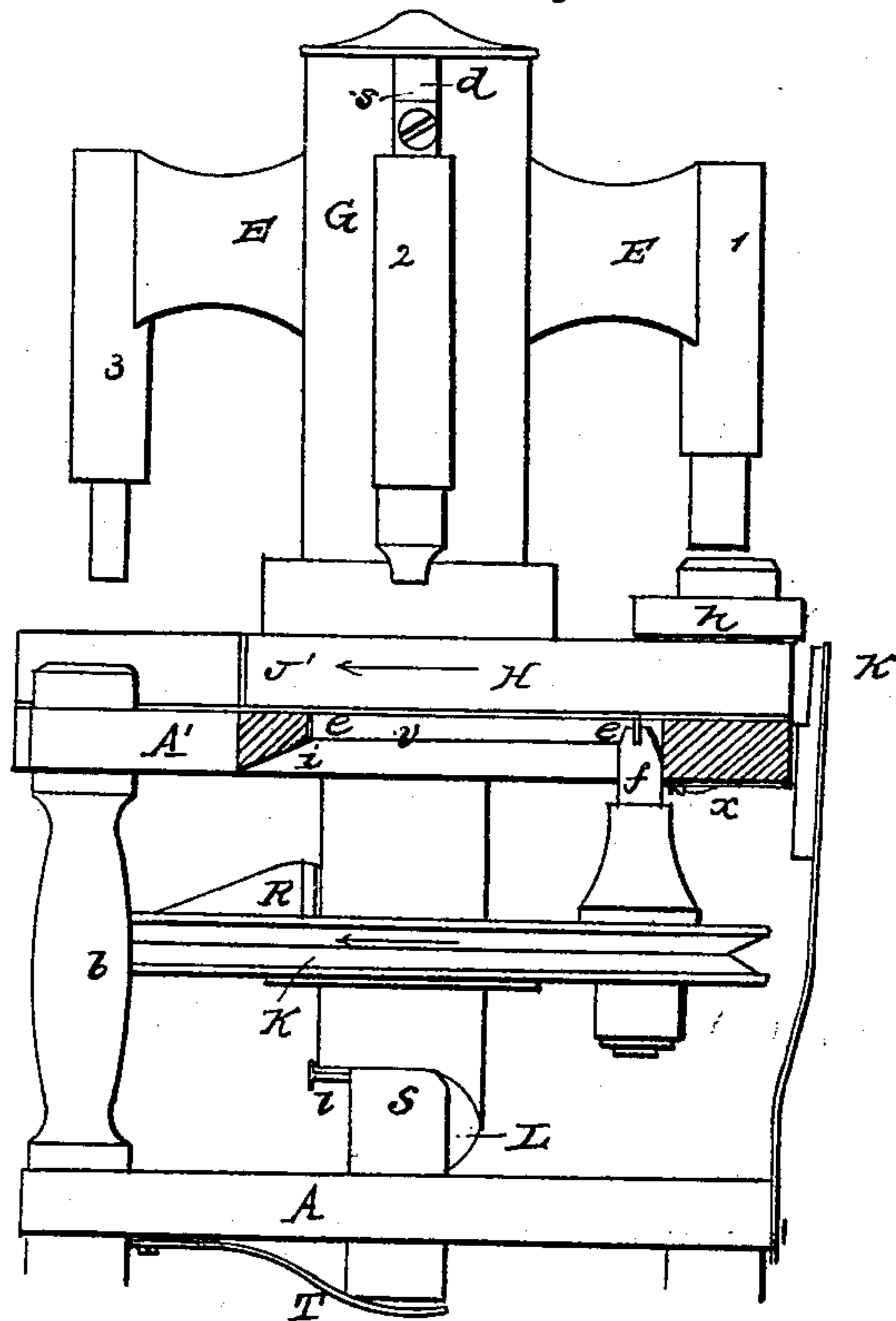
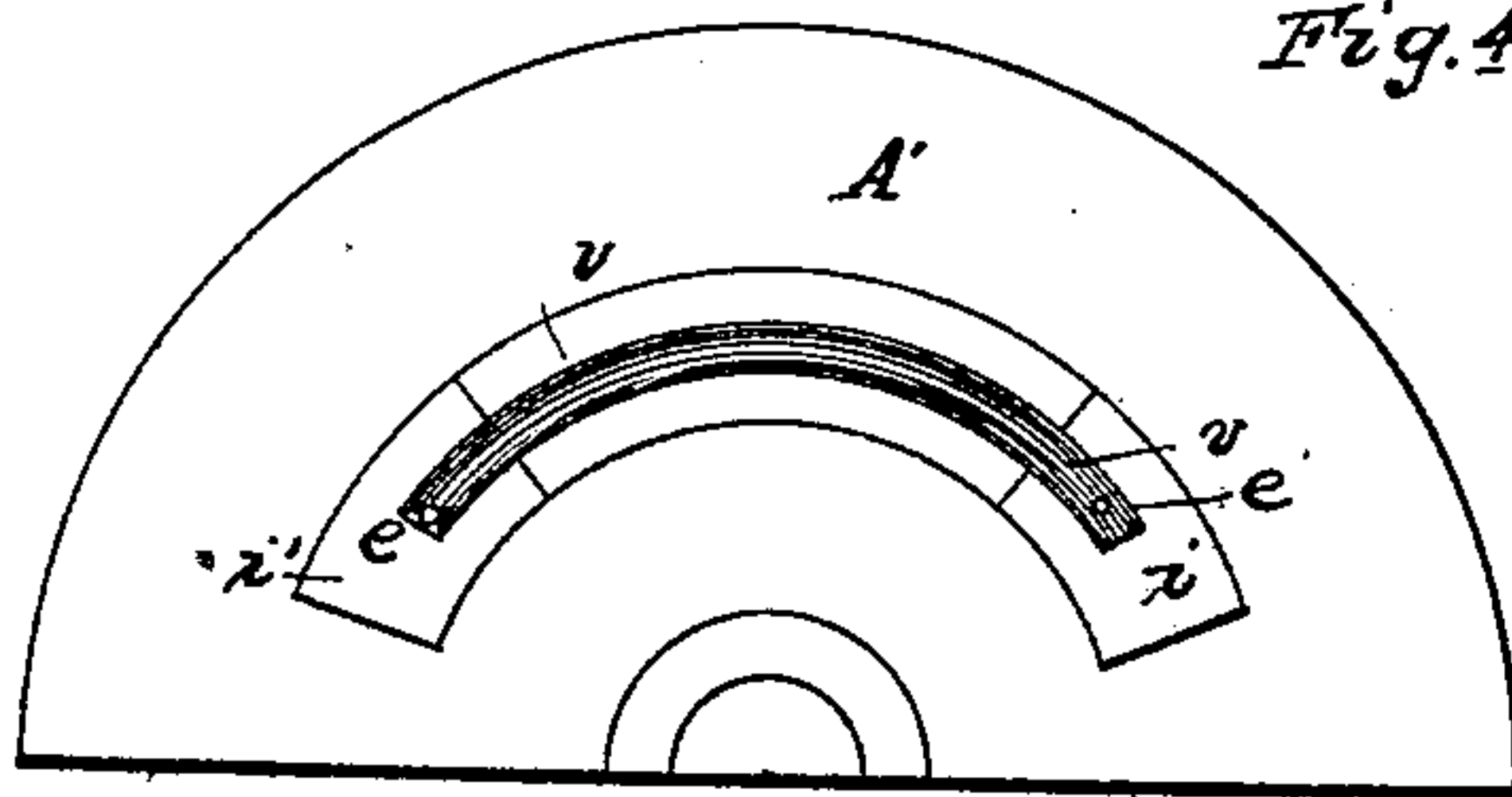


Fig. 4



WITNESSES

Isaac A. Bunnell  
William Bunnell

INVENTOR

Solomon W. Young



# UNITED STATES PATENT OFFICE.

SOLOMON W. YOUNG, OF PROVIDENCE, RHODE ISLAND.

## IMPROVEMENT IN MACHINERY FOR MAKING EYELET-BLANKS.

Specification forming part of Letters Patent No. 52,240, dated January 23, 1866.

*To all whom it may concern:*

Be it known that I, SOLOMON W. YOUNG, of Providence, in the county of Providence and State of Rhode Island, have invented an Improvement in Machines for Making Eyelet-Blanks; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a plan of my improved machine. Fig. 2 is a side elevation of the same. Fig. 3 is a front elevation and section. Fig. 4 is a plan of a portion of the under side of plate A' of the frame. Figs. 5, 6, 7, 8, 9 are details which will be explained in the course of the description.

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

My invention consists in arranging a set or series of punches to operate in combination with a set of equiform dies having a rotative carrying movement in such a manner that the successive operations of cutting and shaping and punching and discharging the eyelet-blank may be performed simultaneously by the several punches and dies between the carrying movements of the latter, so that an eyelet-blank is delivered complete at each movement.

As represented in the drawings, the frame of the machine consists of two bed-plates, A A', united firmly by means of four posts, b b b b. From the central portion of the upper plate, A', a hollow slotted post, G, extends upward and serves as a guide to the sliding plunger S, inclosed therein. From three slots, d, in said post G extend as many arms E, which are attached to the sliding plunger within, and hold at their extremity three vertical punches, 1 2 3, at equal distances asunder, Figs. 1 and 3. In a circular die-plate, H, which rests upon the plate A' of the frame, are formed four dies, 1 2 3 4, at equal distances asunder, three of which dies are beneath the punches 1 2 3, and the fourth is operated upon by a spring-punch, C, Figs. 2 and 8, from beneath the die-plate H, for the purpose of discharging the eyelet-blank from the dies when it is completed.

A simultaneous vertical movement is imparted to the several punches 1 2 3 on the sliding plunger S by means of the revolving cam L, Figs. 2 and 3, on the hub of the driving-

wheel K bearing against the stud-pin l on the said plunger to produce a forcible descending movement, and a spring, T, bearing against the lower end of said plunger to elevate the punches after the descending stroke is completed and the plunger is released by the cam L.

Four dies are employed in the operation, and they are located at the quarter-points of a circle in the die-plate H, and the said plate has an intermittent rotative movement of one-quarter of a revolution after each operation of the punches, for the purpose of carrying each die to be operated upon by each punch successively. This is accomplished by means of a yielding stud, f, Figs. 3 and 9, arranged in a vertical position on the wheel K, in connection with four fixed pins, e' e'', &c., in the under side of the die-plate H, and protruding through the curved slot v in the plate A', Figs. 3 and 4. At each revolution of the wheel K the upper end of the stud is brought into contact with the protruding pin e', at the entrance of the slot v, by reason of the inclined surface i at this end of the slot, against which the end of the stud bears, and as the pin e' protrudes beyond the inclined surface its end is caught by the end of the stud f, and carried to the position shown at e'', Fig. 4, when the stud f meets and is depressed by the inclined surface i', and removed from contact with the pin e at this point, and the rotation of the die-plate is arrested.

The die-plate is held stationary during the operation of the punches by means of the spring-latch k, which enters a catch or notch, j, in both the bed-plate and die-plate H, and prevents the latter from turning in either direction. This latch is unfastened and the die-plate permitted to resume its rotation at the proper time by means of the tripping-plate x, which, by contact with the sliding stud f, as the wheel K revolves, swings against the said latch and throws it out of the notch j, as shown in Fig. 3.

The discharging-punch C, Fig. 8, is arranged to slide vertically in a barrel, n, which is secured in the bed-plate A', Fig. 2, and said punch is driven forcibly upward into the die above by means of the wedge R on the wheel K for the purpose of removing the finished eyelet-blank therefrom.

The punch 1 and die 1, Fig. 5, cut the disk 1 from sheet metal. The punch 2 and die 2,



Fig. 6, shape the said disk into the form 2, required for the eyelet-blank. The punch 3 and die 3, Fig. 7, punch out the center or disk piece, which closes the small end of the blank and completes the operation. The punch C, Fig. 8, is driven upward against the small end of the eyelet-blank as it rests in the die, and is thus discharged therefrom.

The several parts being arranged as described, the operation is as follows: Power being applied to the machine by means of a band running on the wheel K, the sheet metal is introduced beneath the clearer *h* to the cutting-punch 1, which descends and cuts a disk from the sheet, leaving it in the die, and ascends, the clearer freeing it from the sheet preparatory to repeating the operation. The die-plate H then rotates one-quarter of a revolution, carrying the next die beneath the cutting-punch 1, which descends and cuts another disk from the sheet, leaving it in the second die. At the same time the shaping-punch 2, by its descending movement, drives the disk first cut, which, by the rotation of the die-plate, has arrived beneath it, into the die, stretching the disk from its periphery downward and depressing the center, leaving it in the form of an inverted bell, which is the form required for the eyelet-blank. The punches then ascend, and the die-plate again rotates, carrying the die, with the shaped eyelet-blank, beneath the cutting-punch 3, the disk last cut beneath the shaping-punch 2, and an empty die beneath the cutting-punch 1, to which a fresh

surface of the sheet-metal is supplied, and the punches descend, No. 1 cutting a fresh disk, No. 2 shaping the last disk cut, and No. 3 punching the center disk from the small end of the eyelet-blank. The punches again ascend, the die-plate rotates, and the fourth empty die is carried beneath the cutting-punch 1, the disk last cut beneath punch 2 to be shaped, the blank last shaped beneath the cutting-punch 3 to be finally punched, and the blank last punched and completed is carried over the discharging-punch C, which is driven upward at the same time that the other punches descend, and the disk first cut is delivered from the machine in the form required for an eyelet-blank, one such being produced with each revolution of the driving-wheel and with each intermittent rotation of the die-plate.

I do not claim a rotating bed for carrying the dies, as the same has been previously used in rivet-machines; neither do I claim any of the parts except in combination as hereinafter specified.

What I claim is—

The combination and arrangement of the four punches 1, 2, 3, and C, substantially as described, with a series of four or more equiform dies, the same being constructed and operated by means substantially as described, for the purpose specified.

SOLOMON W. YOUNG.

Witnesses:

ISAAC A. BROWNELL,  
WILLIAM BROWNELL.