

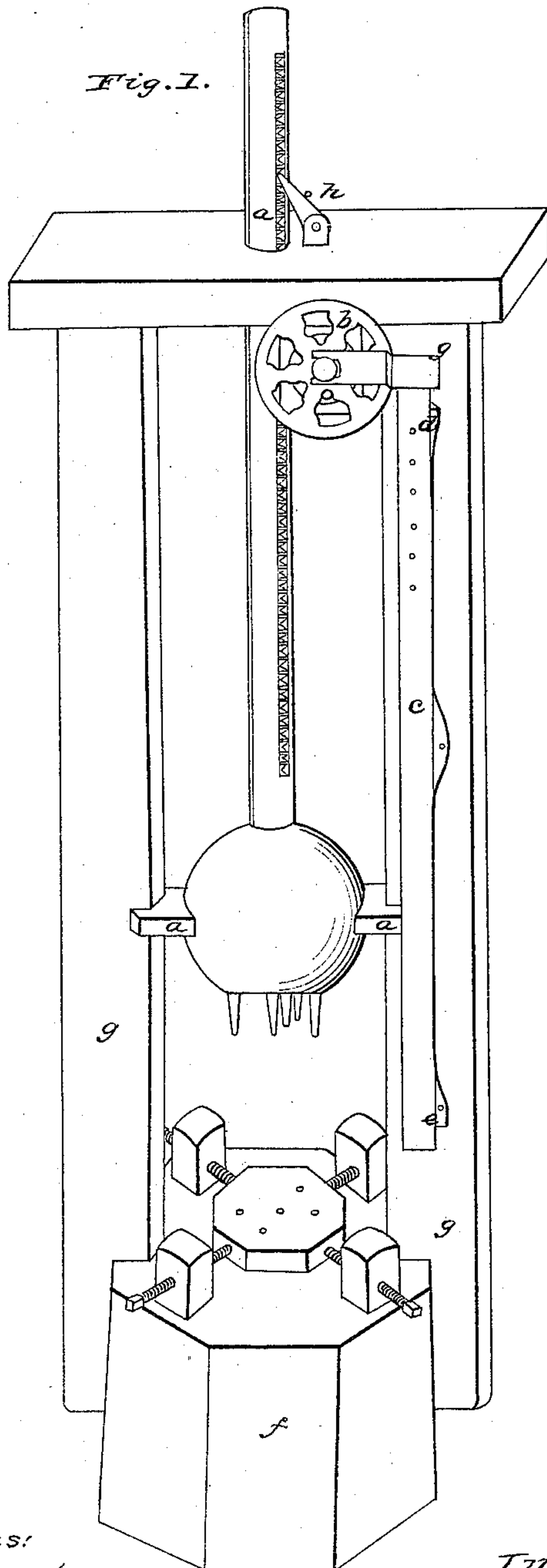
*S. Andrews.*

*Drop Hammer.*

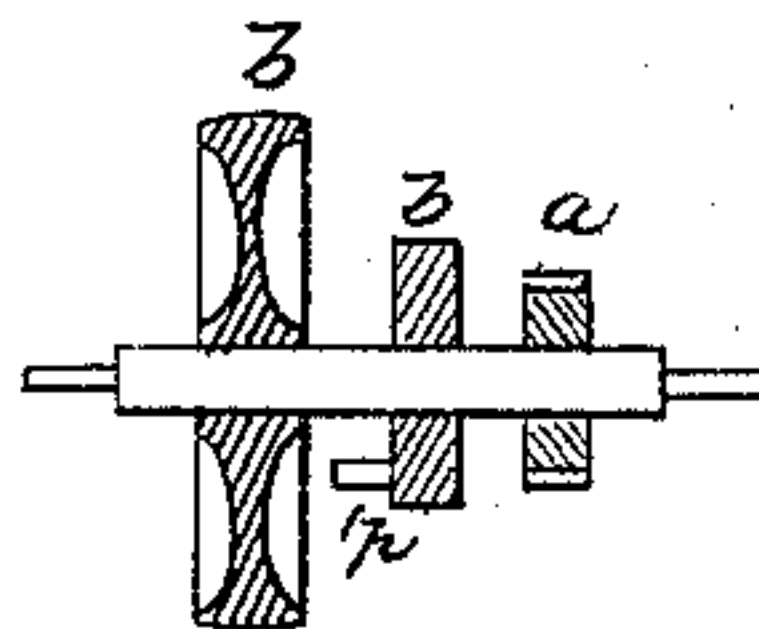
*N<sup>o</sup> 8,868.*

*Patented Apr. 13. 1852.*

*Fig. 1.*



*Fig. 2.*



*Witnesses:*  
*Solomon Andrews Jr.*  
*Edw. Johnson.*

*Inventor.*  
*Solomon Andrews.*



# UNITED STATES PATENT OFFICE.

SOLOMON ANDREWS, OF PERTH AMBOY, NEW JERSEY.

## DROP-PUNCH.

Specification of Letters Patent No. 8,868, dated April 13, 1852.

*To all whom it may concern:*

Be it known that I, SOLOMON ANDREWS, M. D., of the city of Perth Amboy, county of Middlesex, and State of New Jersey, have  
5 invented new and useful Improvements in a Machine which I denominate a "Drop-Punch;" and I do hereby declare that the following is a full and exact description,  
reference being had to the accompanying  
10 drawings and to the letters of reference marked thereon.

The nature of my invention consists in the peculiar construction of the drop-punch, and the mode of lifting and discharging it.  
15 To enable others skilled in the art to make and use my invention I will proceed to describe its construction and operation.

I construct my machine in some respects similar to a drop-hammer—the anvil and  
20 guide rods may be the same; but the hammer or drop is made with a long stem extending through a hole in the cross-head above and one guide or ear on each side at or near its lower end, as shown at (a)  
25 Fig. 1 in the drawing annexed. The stem may constitute the chief part of the weight of the drop, and its length serves to guide the punch fixed in its lower end with greater accuracy, even if it be fitted loosely into  
30 the hole above. This drop I make of cast-iron, and in one side of the stem is a row of cogs within its periphery, extending from the upper end nearly to the bottom, into which a pinion operates to lift it. This pin-  
35 ion is shown at (a) in the sectional Fig. 2, is fixed to and revolves with a shaft at the upper end of the guide rods (g) Fig. 1, on which shaft is a tight and loose pulley (b) Figs. 1, and 2. The power is applied by a  
40 band running always on the loose pulley, which is made to slide upon the shaft and is thrown into gear by bringing it in contact with the tight pulley from which is a projecting pin, (p) Fig. 2, which is thus  
45 brought between the spokes of the loose pulley and fixes it to the shaft like a clutch—or the tight pulley may be dispensed with, and the pin project from a hub attached to the pinion.

50 A lever (c) working on a pin at or near the center of one of the guide rods serves to move this loose pulley into and out of gear, by the upward and downward motion of the drop; a cam on one of the ears or  
55 guides, striking cams on the upper and lower end of the said lever. These cams are

marked (d) and (e). The height to which the drop is to be lifted is regulated by moving the upper cam (d) either up or down on the lever (c).

60 The pinion is never thrown out of gear with the drop, but runs forward and backward with the upward and downward motion of it. It will be observed that the drop is made to discharge itself at any given  
65 point in its upward motion, and that it throws itself into gear instantly, when it has completed its stroke; a very important matter in the saving of time; for the quicker the drop starts up after its stroke the more  
70 time is afforded the operator to adjust his work under the drop-punch, and the loss of time at this point is a great objection to all other punching machines.

The anvil and guide rods are marked (f) 75 and (g).

A pawl on the cross-head marked (h) catches and holds the drop up when required, by falling under the cogs in the stem. This may be drawn out at any time  
80 by the foot pressing on a lever or in a stirrup below, connected to the said pawl by a cord running over a pulley.

The punch or punches are fixed into the lower end of the drop by screw, plug or  
85 dovetail, or in any other way, and may be made of steel, iron or brass. Even hickory or other hard wood may be used for punching iron. I usually use brass or composition, having the punch cast in the required  
90 form about  $\frac{1}{16}$  of an inch too large in diameter. The face is then filed smooth and it is fixed into the drop. By letting it fall upon the die, which is made of steel and hardened, and properly secured to the anvil be-  
95 low, the punch is at once fitted to the die however irregular may be the shape or form of the hole in the die; and by using a punch softer than the die the latter is not injured, by slight deviations of the punch. If the  
100 punch needs sharpening, I put under it a piece of flat steel or iron and let it batter thereon; then let it fall into the die and it is sharpened.

I do not claim constructing the hammer 105 with a long stem and making the same serve as a guide—but

I claim as my invention and desire to secure by Letters Patent—

1. The hammer or drop provided at the 110 same time with a stem to serve as one of its guides, and one guide on each side at or near



its lower end, substantially as herein specified.

2. I also claim as my invention the manner of lifting and discharging the hammer  
5 or drop by means of the cogs in its stem and the pinion operating therein; the fall of the hammer or drop bringing the said pinion into gear with the motive power, and its up-

ward motion releasing or discharging it therefrom at any given point, substantially 10 as herein described.

SOLOMON ANDREWS.

Witnesses:

JOHN D. SEE,  
SOLOMON ANDREWS, Jr.