

# UNITED STATES PATENT OFFICE.

MARTIN BOYER, OF BIGLERVILLE, PENNSYLVANIA.

## PUNCHING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 602,721, dated April 19, 1898.

Application filed December 28, 1897. Serial No. 664,053. (No model.)

*To all whom it may concern:*

Be it known that I, MARTIN BOYER, residing at Biglerville, in the county of Adams and State of Pennsylvania, have invented a new and useful Punching-Machine, of which the following is a specification.

This invention relates to improvements in punching-machines; and the object of the same is to provide a machine which is simple in construction and effective in operation, the same being capable of rapid manipulation.

A further object is to provide a machine the capacity of which may be varied, so that holes of various sizes may be punched thereby.

With the above objects in view the invention consists of a support carrying a removable die, a plunger having a removable punch and provided at its upper end with a head having an opening therethrough, links pivoted to the support, a shaft rotatable in the opposite ends of said links and having an eccentric thereon which is movable in the opening of the head, so that as said shaft is actuated a reciprocatory movement is imparted to the plunger, and a removable lever for the shaft.

In order to enable others skilled in the art to which my invention most nearly appertains to make and use the same, I will now proceed to describe its construction and operation, having reference to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a perspective view of my invention; Fig. 2, a front elevation of the same. Fig. 3 is a detail view of the plunger-head, showing the eccentric therein, the shaft being illustrated in section. Fig. 4 is a vertical longitudinal sectional view through the plunger-head, the links, and the operating-shaft. Fig. 5 is a sectional detail view of the die-holder with the removable die therein and the lower end of the plunger, showing the removable punch in position.

Referring to the accompanying drawings, A indicates a supporting-plate which may be attached to the supporting object and having on its front face a central web B, from which extend horizontal arms C, which are formed adjacent the upper and lower ends of the web

and are perforated at their outer ends, which perforations are in line with each other. Movable vertically through the arms is the plunger D, which is provided with a vertical passage E at its lower end to receive the shank F of the removable punch G, said punch being secured therein by a pin H. Upon the upper end of this plunger the head I is formed, which is provided with a circular opening J, extending therethrough and transversely of the supporting-arms. Pivoted at their lower ends to the web, on opposite sides thereof, are the links K. Rotatable in the upper end of said links is the shaft L, having the disk M secured eccentrically thereon, said disk moving within the opening of the plunger-head.

One end of the shaft is reduced and squared, as illustrated at N, to receive the detachable operating-lever O, by means of which the shaft is rotated and the plunger reciprocated.

Formed on the web portion and extending horizontally therefrom beneath the lower arm C is a supporting-arm Q, having an aperture R extending therethrough at its outer end, and formed on its upper face about said aperture is the flange S, which receives the removable die T.

An oil-passage is provided in the head, so that the eccentric may be kept lubricated at all times to insure an easy movement of the same within the head.

In operation a die of desired size is positioned in the holder, and a punch of corresponding size is attached to the plunger. The article to be punched is placed upon the die beneath the punch and the lever operated, so that the shaft is rotated, which through the medium of the eccentric imparts a reciprocatory movement to the plunger, the pivoted links permitting the shaft to move horizontally as it is revolved, thus giving the plunger a vertical movement and causing the punch to engage the article being operated upon squarely and form a vertical hole therein, which would not be the case were it not for the links.

From the above description it will be seen that I have produced a punching-machine which is extremely simple in construction and capable of rapid manipulation, and also in

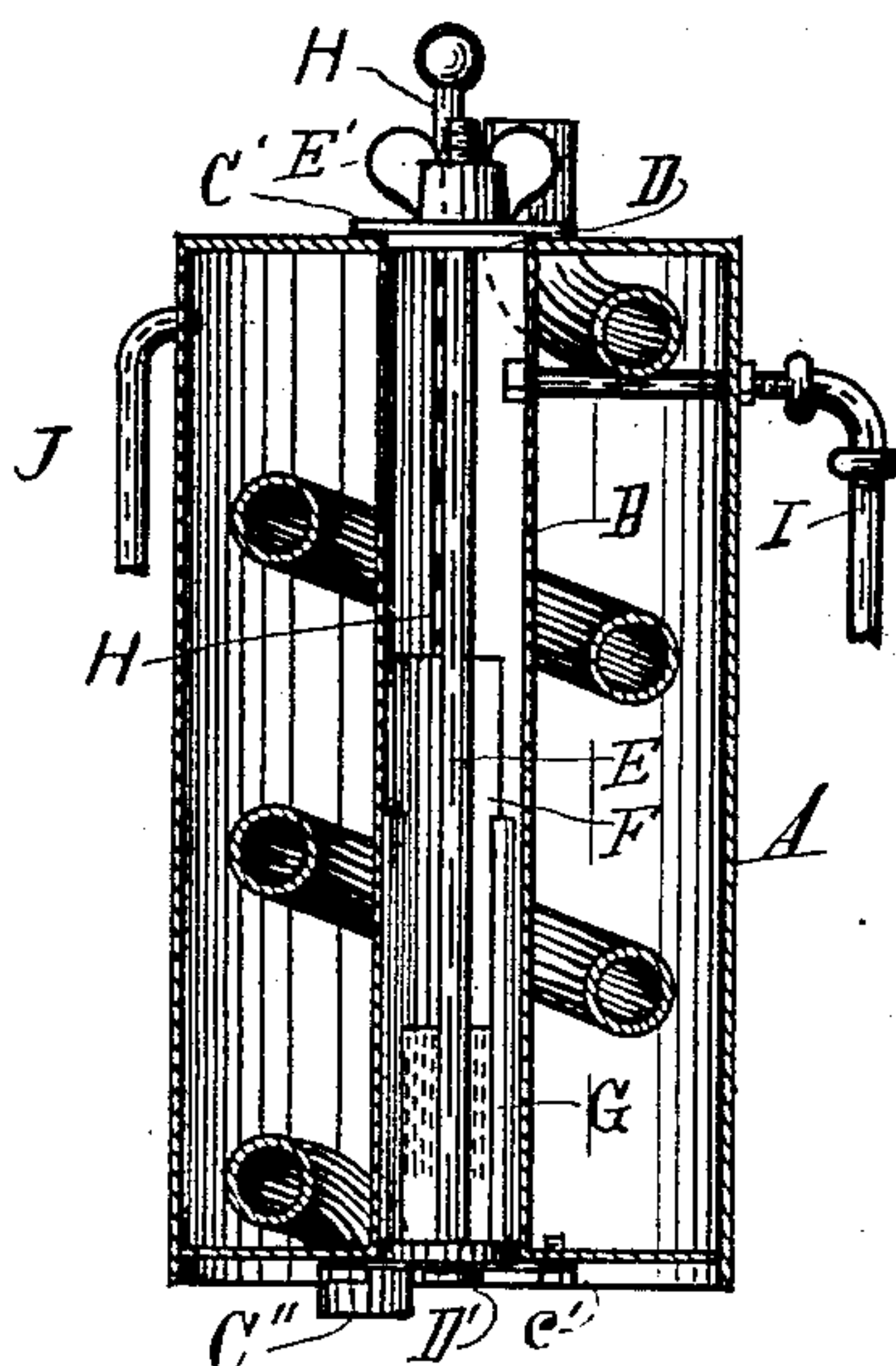
(No Model.)

D. W. BOYES & J. R. DENISON.  
RANGE BOILER.

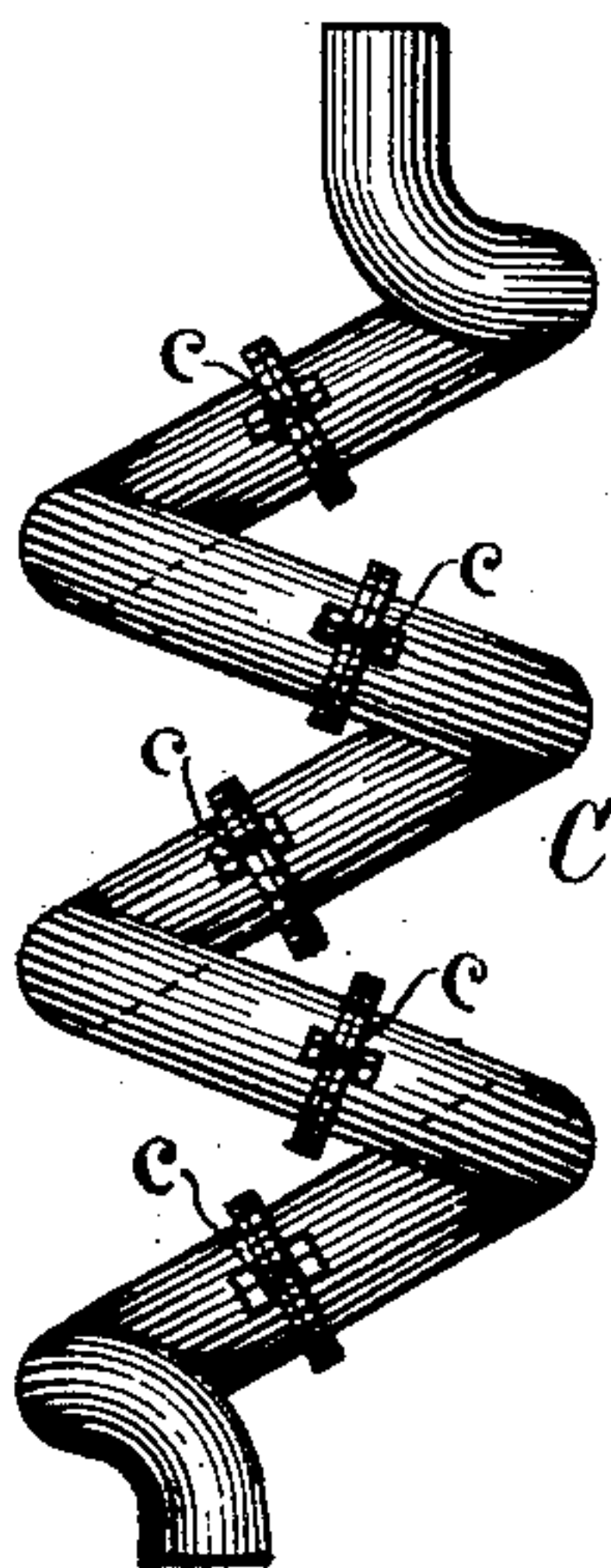
No. 602,722.

Patented Apr. 19, 1898.

*Fig. 1.*



*Fig. 2.*



Witnesses.

*George Shafer*  
*W. C. Camp.*

Inventor.  
*David W. Boyes*  
*James R. Denison*  
By *Chas. J. Gilley*  
Attorney

