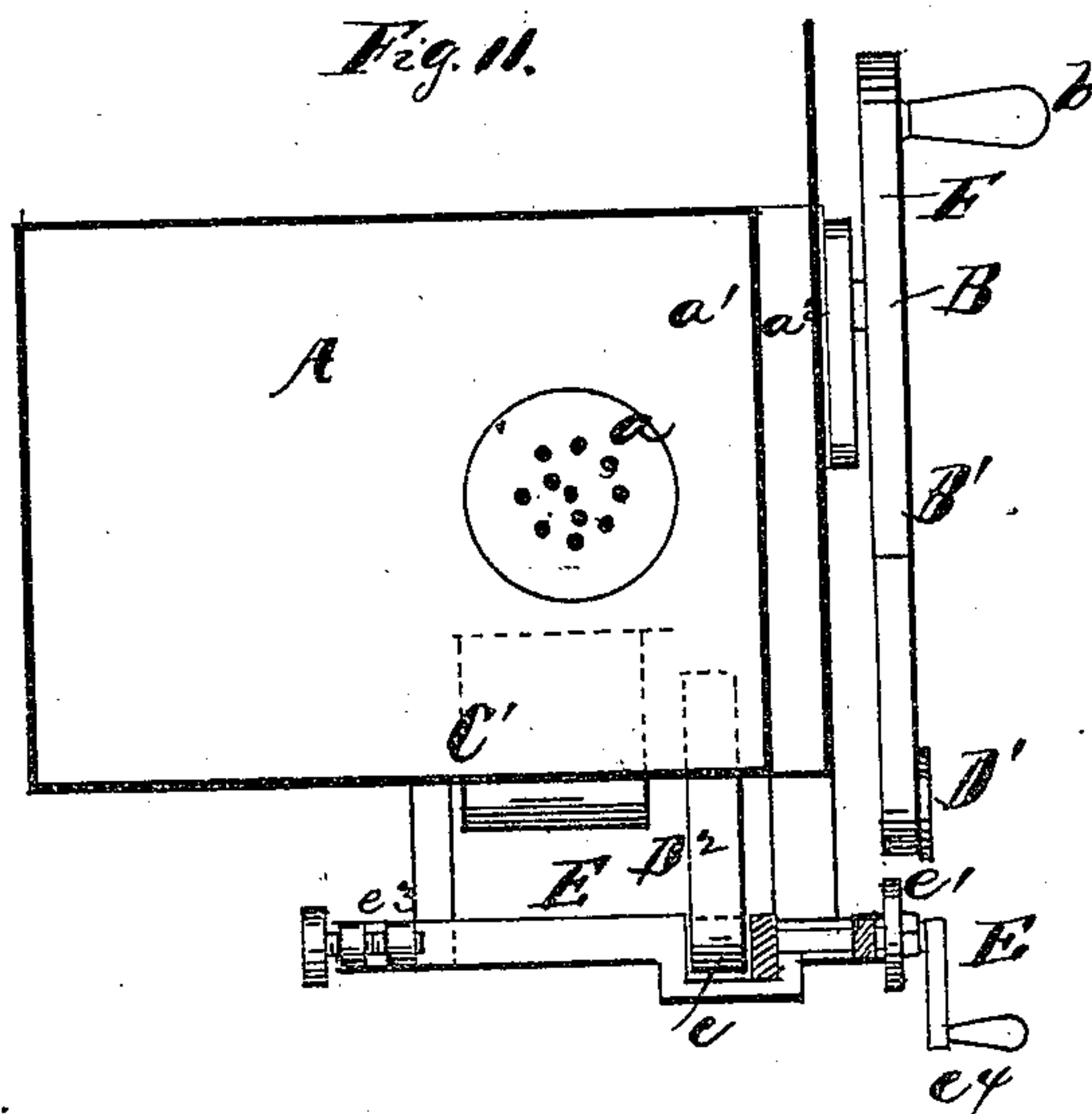
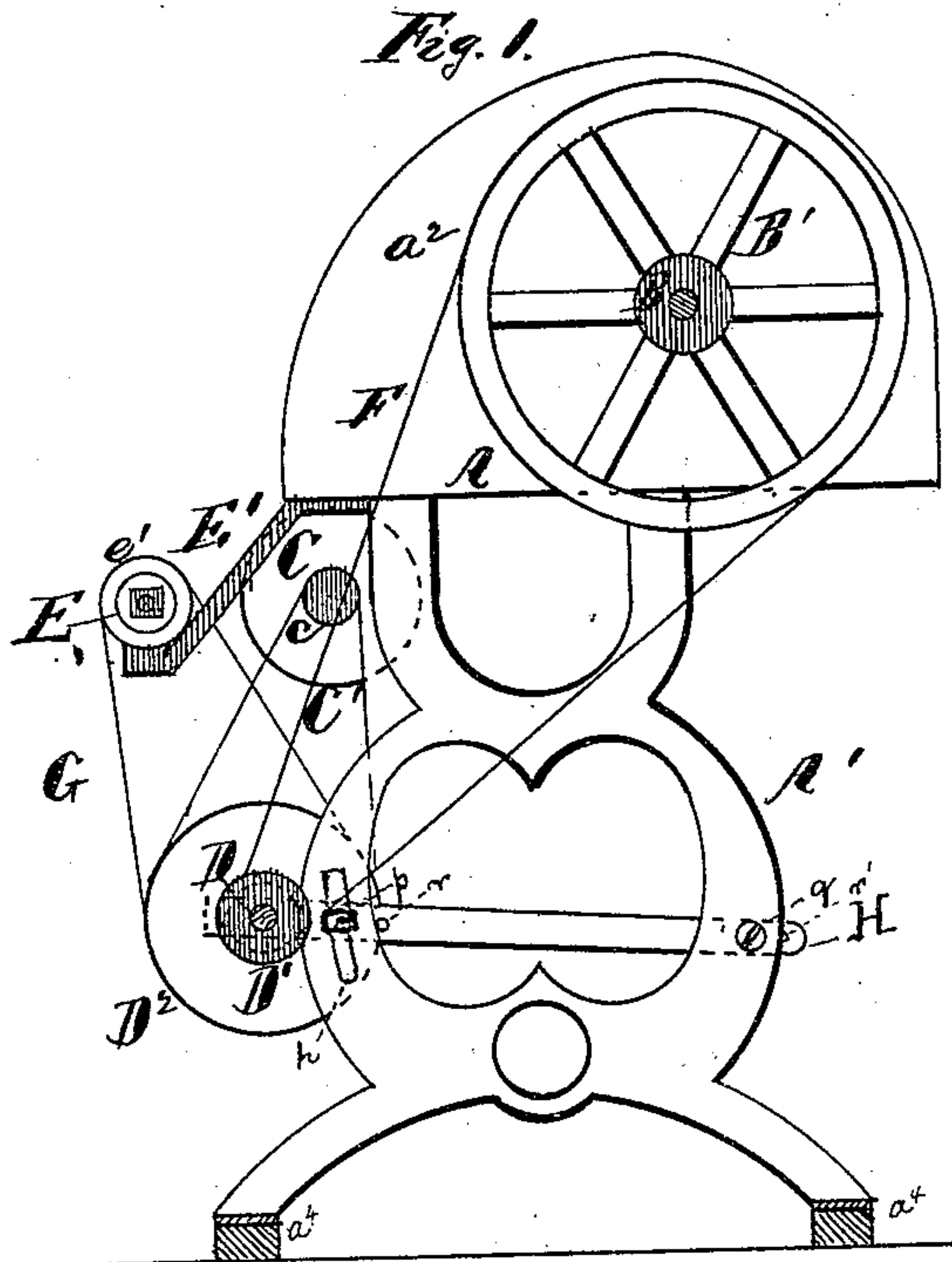


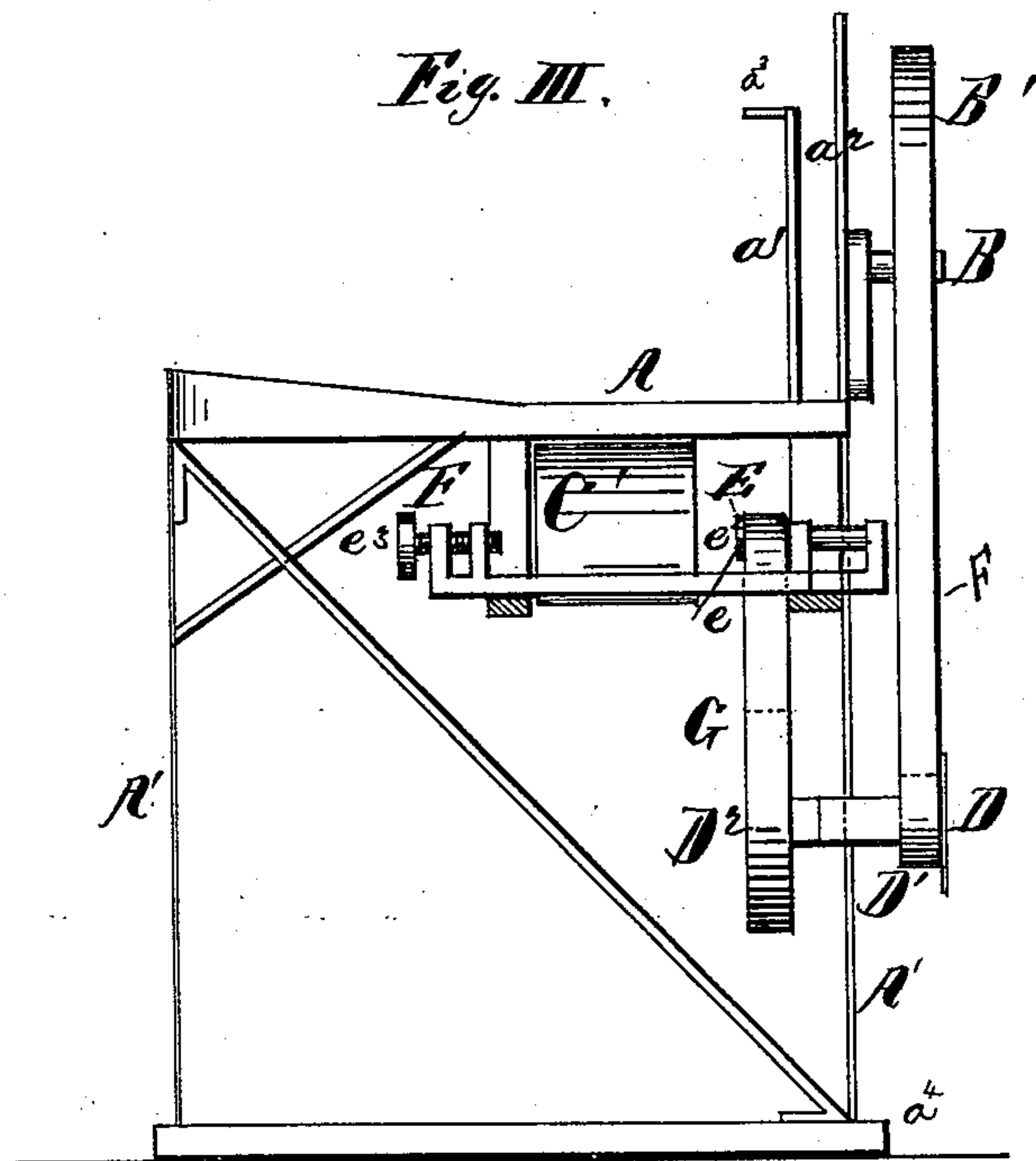
P. B. HILLYER.  
Combined Forge, Emery-Wheel and Drill.  
No. 217,795. Patented July 22, 1879.



Witnesses:  
*J. D. Smith*  
*Richard Green*

Inventor:  
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Per: *Henry G. Smith*  
*Atty.*

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# UNITED STATES PATENT OFFICE.

PHILETUS B. HILLYER, OF ROCHESTER, MINNESOTA, ASSIGNOR TO MARTIN J. HURD, OF SAME PLACE.

## IMPROVEMENT IN COMBINED FORGE, EMERY-WHEEL, AND DRILL.

Specification forming part of Letters Patent No. 217,795, dated July 22, 1879; application filed November 26, 1877.

*To all whom it may concern:*

Be it known that I, PHILETUS B. HILLYER, of Rochester, in the county of Olmsted and State of Minnesota, have invented a new and useful Improvement in Combined Forge, Emery-Wheel, and Drill, of which the following is a specification.

This invention relates to forges which have blower-operating and tool-operating devices attached; and it consists in certain improvements, hereinafter more particularly described and claimed, whereby all the belts operating said devices may be loosened or tightened at once.

In the accompanying drawings, Figure 1 represents an end elevation of my improved machine. Fig. 2 represents a plan view, and Fig. 3 represents a side elevation, of the same.

In said drawings, A' designates the metal frame of the machine, which rests securely on feet or bases  $a^4$ , extending at the bottom along its sides. This frame is preferably made open to receive the tool-operating devices, hereinafter described, and allow the working of the same. It supports the flat fire-bed A, which has its front portion suitably inclined to form an anvil.

To said fire-bed, at the rear of the fire-space, is firmly attached an upright furnace-back,  $a^1$ , having a projecting top piece or ledge,  $a^3$ . This top piece prevents any coals or sparks from flying upward over the top of said back. Behind said back  $a^1$  is a taller wall or shield of metal,  $a^2$ , rising from the rear edge of fire-bed A, and leaving between itself and back  $a^1$  a space which is accessible to the outer air, and is cooled by currents of the same naturally caused by the heat of the fire and the consequent vacuum. Thus a double wall and cooling air-space are interposed between the fire and the belting, hereinafter described.

Shield  $a^2$  is provided on its rear or outer face with a bearing for shaft B of driving-belt wheel B', which transmits motion through driving-belt F to a pulley, D, carried by one end of a bar, H. The other end of said bar H is pivoted to frame A' at one side thereof. Said frame A' is provided, not far from shaft

D, with a curved slot,  $h$ , through which extends a clamping-bolt,  $p$ , or other attaching device, whereby the said bar may be adjusted up or down and secured at will in any desired position. Said bar is adjustable horizontally and longitudinally by means of two longitudinal slots or series of holes,  $r r'$ , arranged, respectively, in or near the opposite ends of said bar, and by clamping devices  $p q$ , which pass through said slots or holes, and also through frame A'. These devices consist, preferably, of the ordinary screw-threaded bolt and clamping-nut, and the forward one,  $p$ , passes through slot  $h$ , already described, said forward clamping device being identical with the one which controls the upward and downward adjustment of bar H.

Shaft D carries a belt-wheel,  $D^2$ , which, by means of belts G and C, gives motion to pulley  $c$  on the shaft of blower C', and to pulley  $e^1$ , which turns drilling-tool E. Said drilling-tool is supported by a strong metal bracket or frame, E', attached to frame A'. On the other end of this bracket or frame E' is a tightening or feeding screw,  $e^3$ , whereby the article operated on is forced up to the drill.

Only one of the belts G and C can be conveniently used at the same time unless a very broad belt-wheel should be used, as  $D^2$ . Fig. 1 shows both belts applied. A single belt is, however, preferably used, only the blower and forge or the drill being operated at a time.

Instead of the drill, an emery-wheel or other rotary tool may be employed.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

In combination with the wheels and belts of the machine, the slotted frame A', the pivoted longitudinally-slotted bar H, and the clamping devices  $p$  and  $q$ , whereby all the belts may be tightened or loosened by a single adjustment, substantially as set forth.

P. B. HILLYER.

Witnesses:

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L. H. HUMASON.