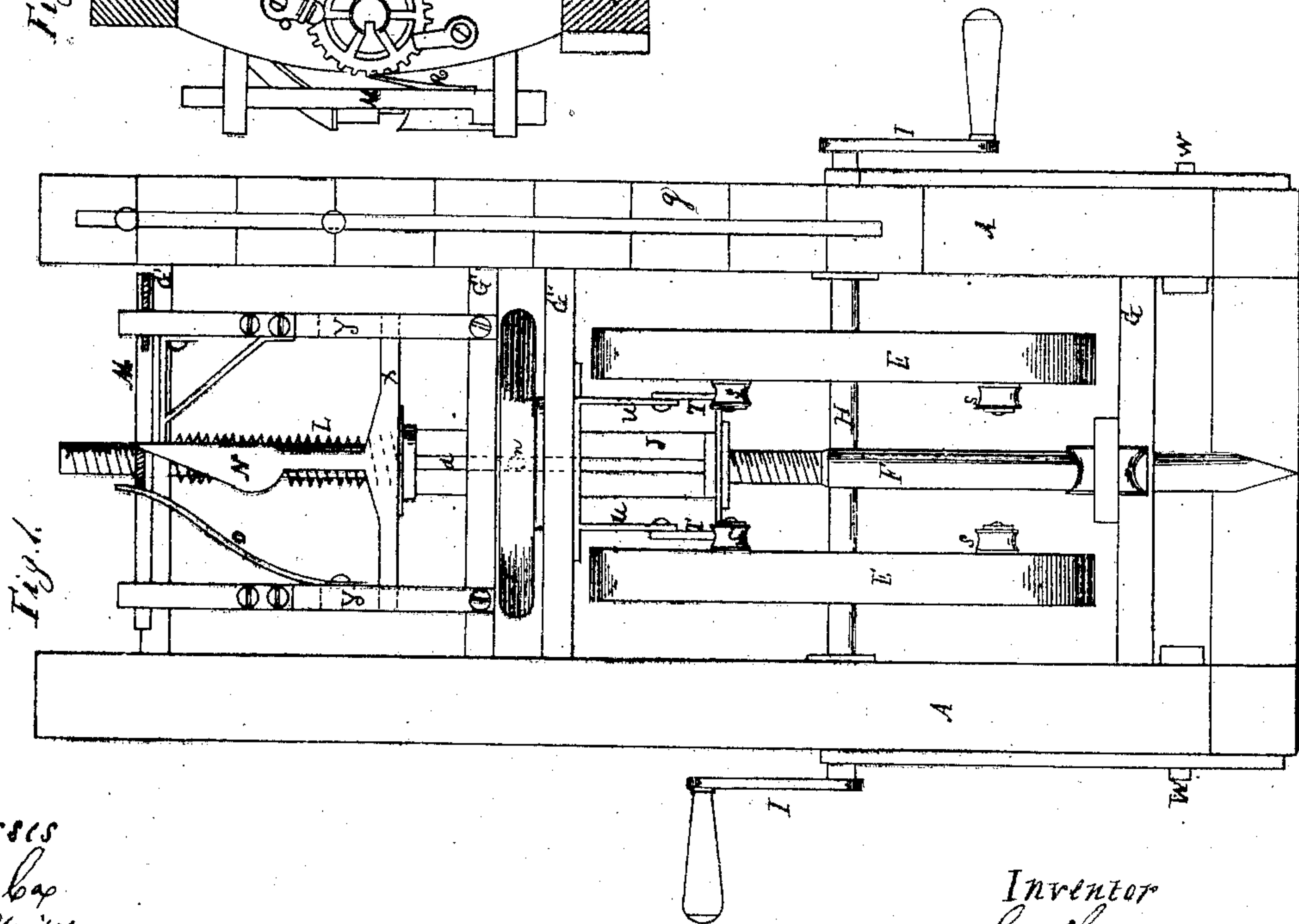
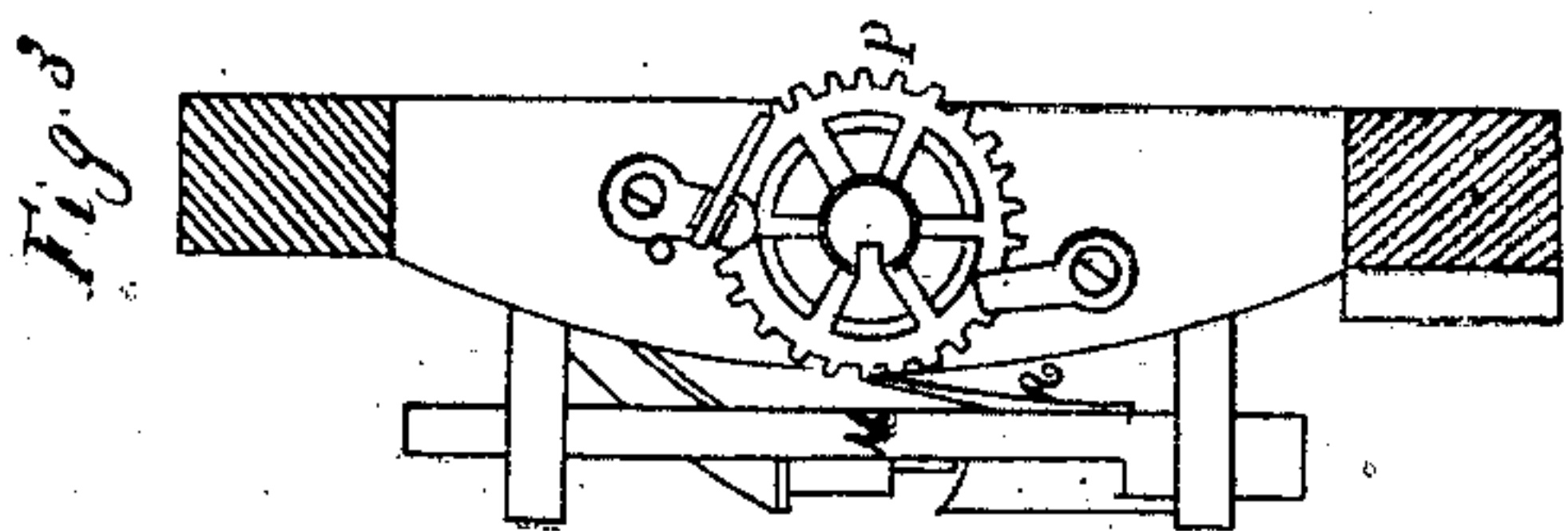
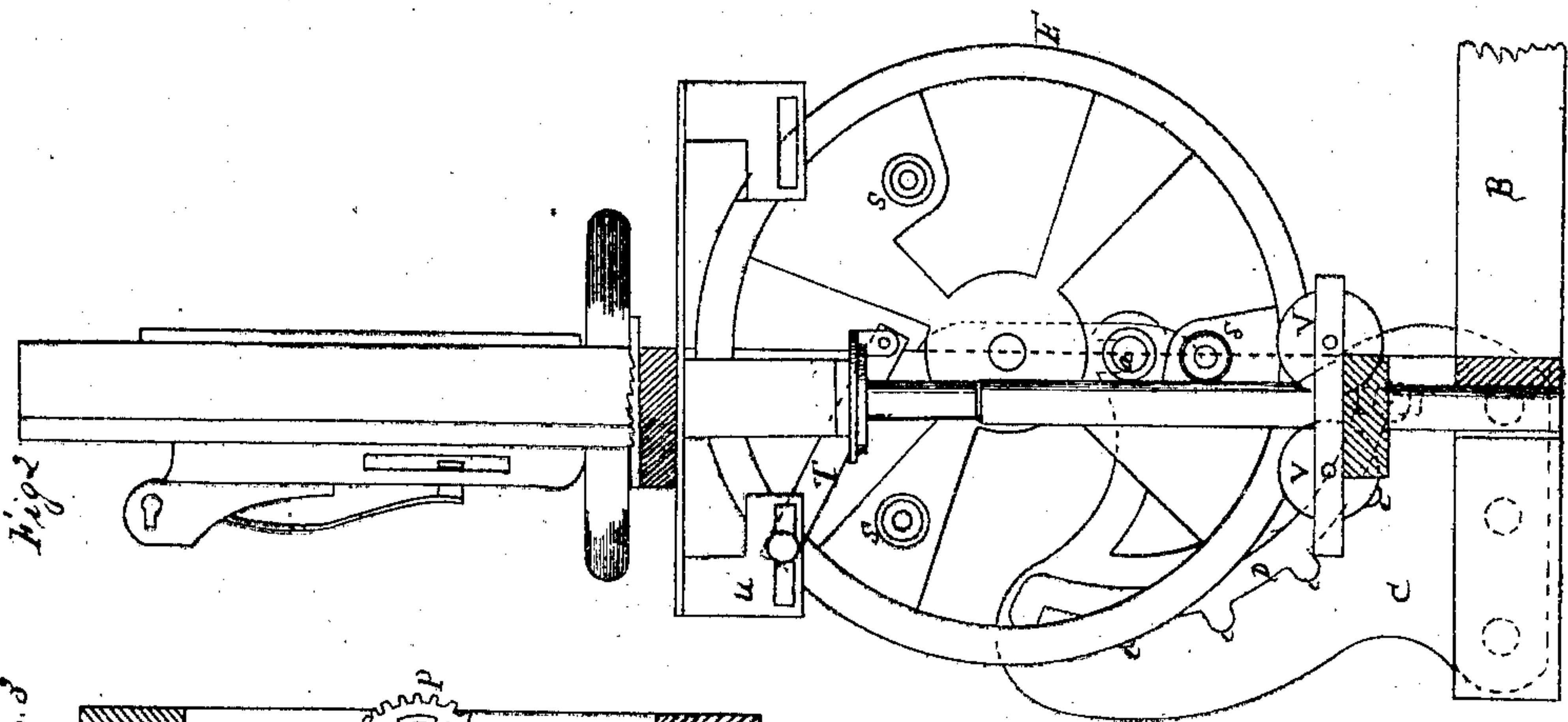


I. Hermance.
Drilling Stones.

Nº 76189

Patented Mar. 31/1868.



Witnesses
Cornelius Cox
A. D. Stockbridge

Inventor
Levi Hermance

United States Patent Office.

LEVI HERMANCE, OF HUDSON, NEW YORK.

Letters Patent No. 76,189, dated March 31, 1868.

IMPROVED STONE-DRILLING MACHINE.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, LEVI HERMANCE, of Hudson, in the county of Columbia, and in the State of New York, have invented new and useful Improvements in Stone-Drilling Machines; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

In the annexed drawings, making part of this specification, A and B represent two frames, which consist of sills placed parallel to each other, and suitably framed together. The frame B acts as a foundation for frame A, and for the machine, and is intended to lie upon the ground or floor, or wherever the machine may be placed. This frame B is provided on two sides with the metallic plates C C. Each of these plates is provided with a circular or curved slot, D, and at stated intervals in this curve are formed the recesses *e e*. Trunnion-bearings are also formed in the upper edges of these plates. Projecting from the sides of the frame A, at a short distance from its lower end, are the trunnions *a*, which rest in the bearings in the plates C C. Bolts *w w* pass through the sills of the frame A, at their lower ends, and then through the slots in the plates C C, resting in one of the recesses *e e*. The frame A may by these means be set at any desirable angle to frame B by simply removing bolts *w*, then turning the frame A to the desired angle, and again replacing the bolts to secure it in the desired position.

H represents a shaft, which lies crosswise of frame A, and having its bearings in the sills of said frame. This shaft is provided at each end with the crank-handles I I, and near its centre with the two balance-wheels E E. These wheels have three or more pins secured in their inner faces, and equidistant apart, and upon these pins are placed the small grooved wheels *s s*, the purpose of which will be hereinafter described.

F represents the drill-shaft, which may be of any convenient length and size. This shaft has a screw-thread cut upon it, above its centre, and passes through a long sleeve, J, which has also a screw-thread cut in it to correspond with the thread on the shaft. This sleeve has a long groove in one side of it. K represents a hand-wheel, which-surrounds the sleeve J, and has passing through it a pin, *n*, which enters the groove in the sleeve, and stations it with said sleeve. This hand-wheel is placed between the two cross-pieces G'' and G' of the frame A, and when it is turned in one direction causes the sleeve J, by means of its thread, to lower the shaft F. The shaft is raised of course by reversing the motion of this hand-wheel. Depending from the under side of the cross-piece G'' are two slotted guide-supports *u*.

T T represent two metallic bars, one end of each of which is connected to one of the plates *u* by means of a pin, which passes through the slot in said plate. The other ends of these bars are pivoted to the lower end of the sleeve J in any suitable manner. The bars T T are so situated with reference to the grooved wheels upon the balance-wheels E, that when the balance-wheels revolve, the grooved wheels *s s* catch under said bars, and elevating them a certain distance, suddenly pass from under them. These bars being connected to the sleeve, and the drill-shaft moving with said sleeve, of course the drill-shaft rises and falls at each rise and fall of the bars T T, thus giving three or more strokes to the drill at each revolution of the wheels E. A rotary motion is given to the drill during its work by means of a pawl, which catches into the teeth of a ratchet-wheel upon the drill-shaft, near its upper end.

P represents the ratchet-wheel, and M a bar, which has connected to it a spring-pawl, R. When this bar moves in one direction, the pawl catches in the teeth of the wheel P and gives it a partial rotation. The bar lies crosswise of the frame A, and has motion given to it by means of a spear-shaped arm, N. This arm N is connected to a cross-head, *x*, and this cross-head is connected to the upper end of sleeve J. When the sleeve and drill rise, the arm N strikes against a lug or projection on the bar M, and gives it an endwise movement, and when the arm descends, a spring, *o*, forces the bar back to its original position, so that its pawl will take fresh hold on the teeth of wheel P. Thus it will be seen that, while the drill-shaft is being given an endwise movement, it is also given a rotary movement.

I am aware that these movements have been given to the drill-shaft before, but not by the devices hereinbefore described. A spring, L, surrounds the drill-shaft for forcing it downward after it has been elevated by the bars T T. *g* represents a gauge-plate, which is provided with a long slot, through which passes a screw to

confine it to one of the sills of the frame A. This gauge can, by means of the slot and screw, be extended so as always to readily indicate the depth of hole which the drill has made. Inches and fractional parts thereof are marked upon the face of the gauge. The lower end of the drill-shaft works between two grooved wheels *u u*, which act as guides and braces for it, always keeping it in proper position.

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

1. The arrangement of the slotted plates *u u*, connecting-bars *T T*, and sleeve *J*, in combination with the wheels *E E*, having grooved pulleys *s s* on their inner faces, the whole arranged and operating substantially as specified.

2. The combination of the frame *A* and its bolts *w w* with the plates *C C*, having trunnion-bearings, curved slots *D*, and recesses *e e e*, whereby the frame *A* may be placed at any angle with the frame *B*, as specified.

In testimony that I claim the foregoing, I have hereunto set my hand, this 11th day of February, 1868.

LEVI HERMANCE.

Witnesses:

V. D. STOCKBRIDGE,

A. N. MARR.