

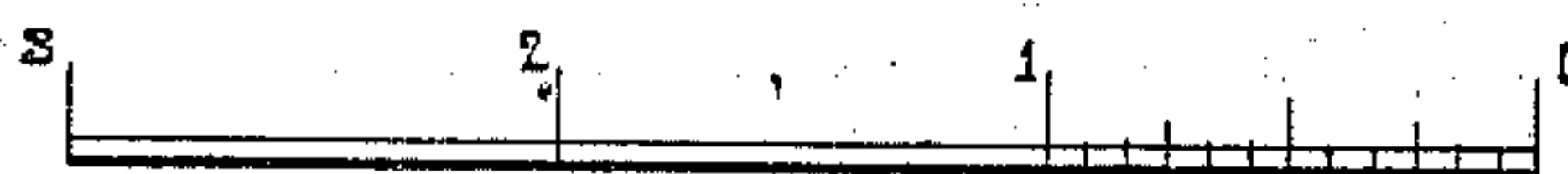
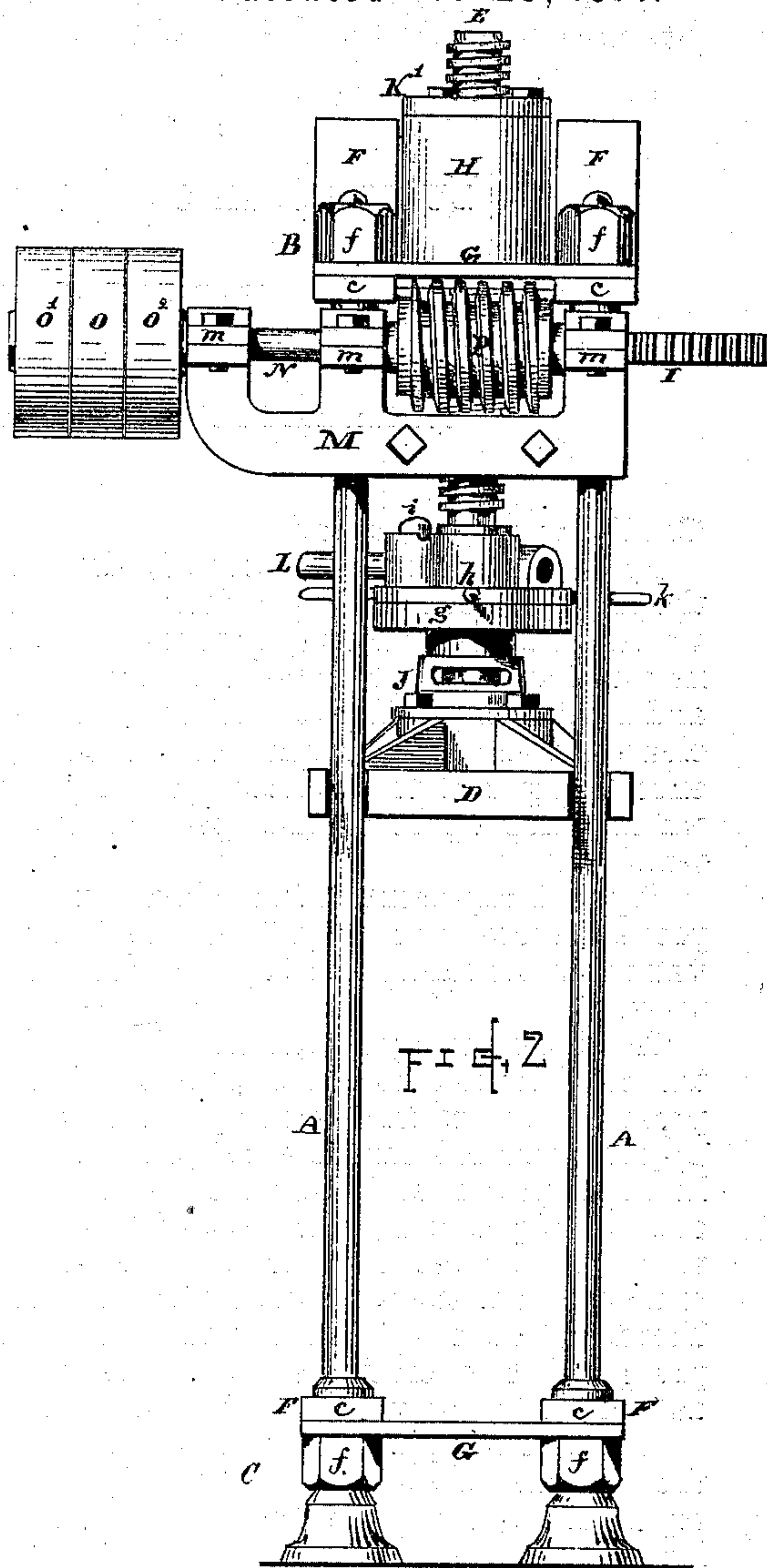
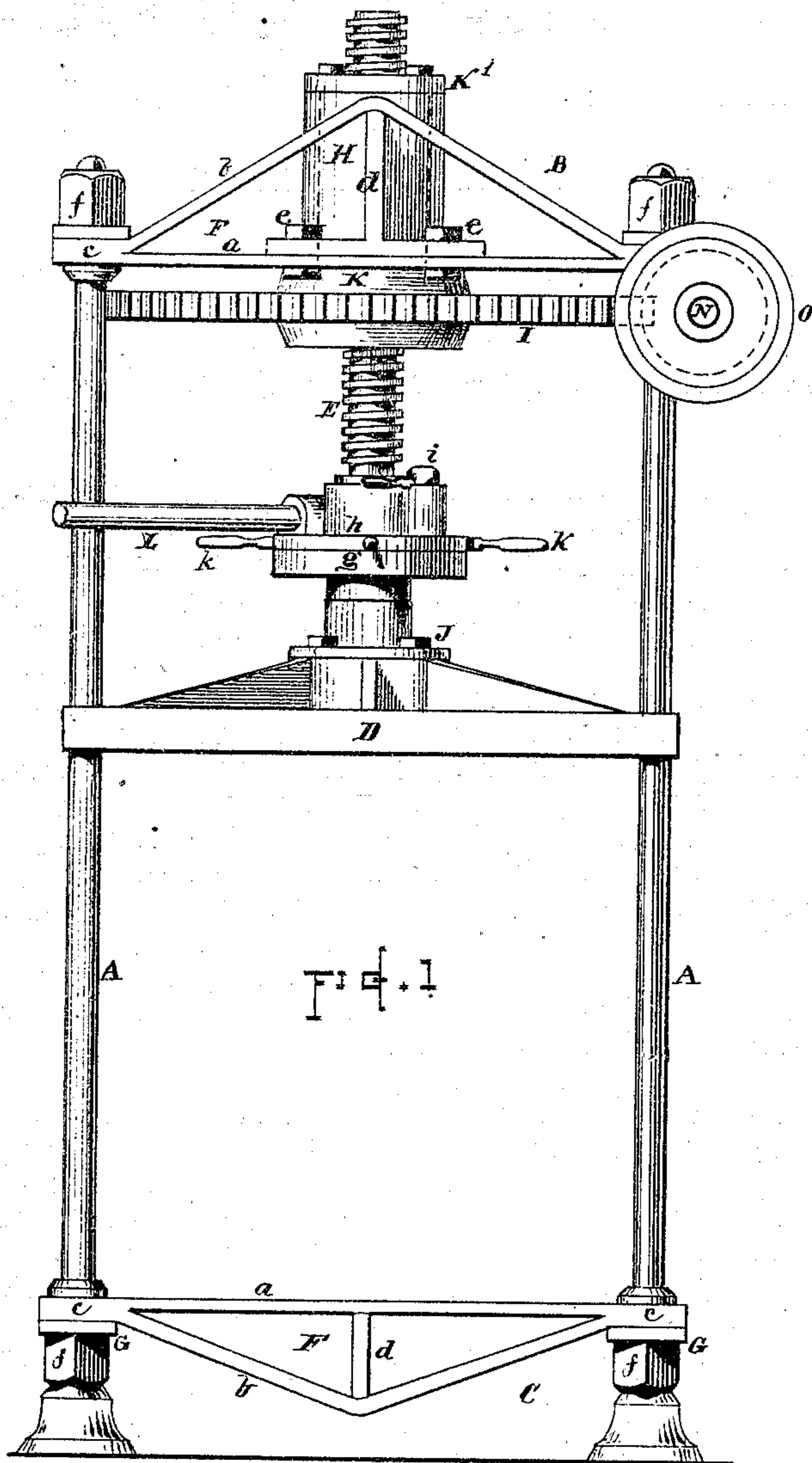
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L. J. KNOWLES.

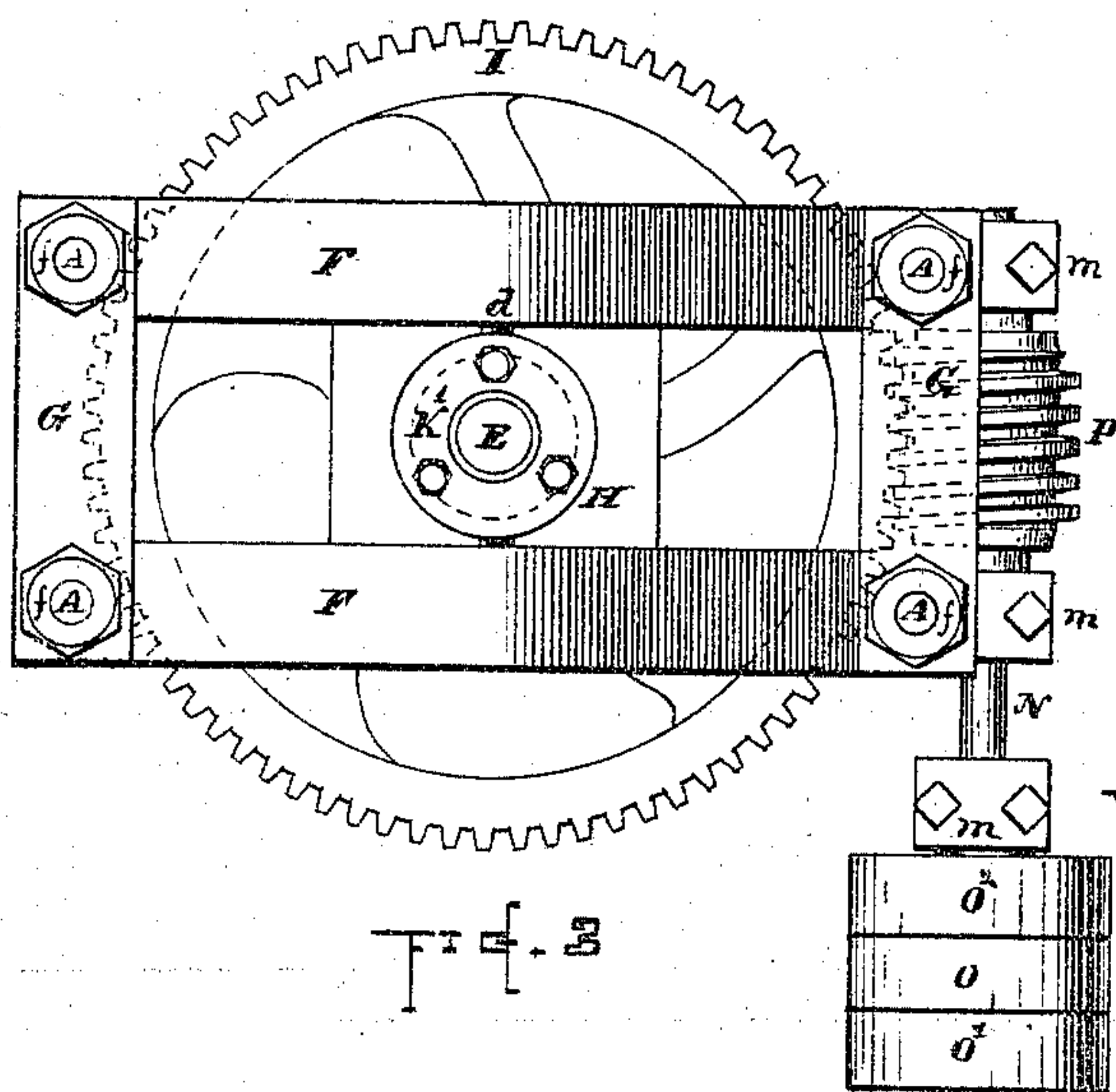
Improvement in Screw Presses.

No. 122,259.

Patented Dec. 26, 1871.



— SCALE OF FEET —



Inventor

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Witnesses

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UNITED STATES PATENT OFFICE.

LUCIUS J. KNOWLES, OF WORCESTER, MASSACHUSETTS.

IMPROVEMENT IN SCREW-PRESSES.

Specification forming part of Letters Patent No. 122,259, dated December 26, 1871.

To all whom it may concern:

Be it known that I, LUCIUS J. KNOWLES, of the city and county of Worcester and Commonwealth of Massachusetts, have invented certain new and useful Improvements in Screw-Presses; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawing which forms a part of this specification, and in which—

Figure 1 represents a front elevation of my improved screw-press. Fig. 2 represents a side elevation of the same, and Fig. 3 represents a plan view.

The nature of my invention consists: First, in the combination and arrangement, in a screw-press, of devices for operating the same, whereby the operation can be accomplished either by hand or power, as hereinafter described. Second, in a peculiarly-constructed wrought-iron truss with welded ends for supporting the top and bottom of the press, as hereinafter set forth. Third, in the combination, with the top of the press and the operating-screw, of a movable nut, as and for the purpose hereinafter described.

In the drawing, the part marked A represents the vertical bolts or standards which connect the top B and bottom C of the press to each other. D indicates the platen, and E the screw. The top B and bottom C of the press are each formed with wrought-iron trusses F, which are made of flat bars of wrought-iron, the tie pieces *a* and truss pieces *b* being welded solidly together at their ends *c*, while at their central part they are held separated by studs *d*, which latter may be made of cast or wrought metal, as preferred. The ends of the standard-bolts A pass through the end of the trusses F at the center of the welded portion *c*, and transoms or cross-plates G are arranged across the ends of the trusses upon the bolts A, to retain the trusses at the proper distance from each other. The parts are secured together by the nuts *f* on the ends of the standard-bolts A, as illustrated. A vertical sleeve-bearing piece, H, is supported between the trusses F at the top of the press, which sleeve-bearing is in this instance provided with a broad horizontal flange at its lower end, through which are arranged the bolts *e e*, whereby it is secured to the pieces *a* of the trusses F. It is also made with vertical flanges which form the studs *d* of the top trusses. With-

in the vertical sleeve-bearing piece H is arranged a revolving nut, K, having fixed to its lower end a large gear, I, and through its center passes the press-screw E. The nut K and gear I are supported within the sleeve-bearing H by a collar, K', secured to the top of the nut and projecting over the end of the sleeve, as shown. The lower end of the screw E is secured to the top of the platen D by means of the swivel-plate J, and a reversible ratchet device and a hand-lever, L, are combined with the screw just above said plate, by means of which the screw can be easily revolved by hand in either direction. The reversible ratchet device consists of a plate, *g*, rigidly secured to the screw-spindle E, and provided with an annular row of holes formed through it in a vertical direction. Directly above the plate *g*, and secured to the screw-spindle E by a suitable collar, is a loose plate, *h*, upon one part of which is a socket for the hand-lever L, and on the other part, in a position to correspond with the holes in the plate beneath, is a vertical socket, in which works a dog, *i*, which drops into the holes in the plate *g* and thereby locks the plates *g* and *h* together for action. The lower end of the dog *i* is beveled off at one side, so that when the plate *h* is moved in one direction the dog *i* will slip past the holes, and when moved in an opposite direction it will engage the plate *g* and thereby operate the screw E, when the plate *h* is swung back and forth by means of the hand-lever L. The direction in which the screw is turned can be reversed by reversing the position of the dog *i*. Notches are formed upon the opposite sides of the sockets, into which the handle of the dog fits to hold it in either of its positions. The plate *h* is provided with short handles *k*, to facilitate the operation of running the screw up or down when there is no pressure on the parts and it is not required to use the hand-lever L. The ends of the platen D are grooved out to fit around the standards A, which thereby serve to guide and retain it in proper position. A bearing-frame, M, is clamped to the standard-bolts A at one side of the press, and a horizontal shaft, N, is supported in bearings *m* on said frame M. The shaft N is provided with a driving-pulley, O, and loose pulleys O¹ O², to receive the belts for operating said shaft in either direction. Said shaft N is also provided with a worm-screw, P, which meshes with and operates the gear I and nut K.

It will be observed that the platen D of the press can thus be moved up or down either by operating the hand-lever L which turns the screw E while the nut K remains stationary, or by suitable motive-power applied by belts or otherwise to the shaft N, which causes the nut K to revolve while the screw E remains still. When the nut K is operated the screw E will make a partial revolution until the hand-lever L is brought into contact with one of the standards A, which will hold the screw from further rotary motion.

It will be observed that by making the top and bottom of the press with wrought-iron trusses in the manner herein described the requisite strength for the parts is obtained with the use of comparatively little weight of metal, and by welding the ends of the trusses as stated the bars *a* and *b* are prevented from moving upon each other and thereby injuring the bolts A, and the parts are rendered as firm and rigid as those made of cast metal, while they are not, like cast metal, liable to break with sudden strains.

It will also be observed that the driving-shaft N is in a stationary position at the top of the press, so that the pulleys O O¹ O² are always in the same place, thus permitting the use of a short driving-belt without guide-pulleys, or of the use of gears in the driving-connections.

The power devices for operating the revolving nut K may be made in a somewhat different form when desired, the gear I being arranged above or below the bearing H, and the shaft N at any convenient side of the press, and the revolving nut K can be used for presses in which the hand-operating devices are omitted and the screw-spindle rigidly fixed to the platen.

The advantages of a combined hand and power press such as above described will be evident to all, inasmuch as it enables the operator to conveniently and easily remove articles from the press at times when the mill-power is not in operation.

Having described my improved screw-press, what I claim therein as new and of my invention, and desire to secure by Letters Patent, is—

1. The combination, with the screw E and platen D of a screw-press, of devices for operating the same, constructed and arranged substantially as herein shown and described, whereby the press may be operated either by power or by hand.

2. The combination, with the platen D, screw E, and press top, of the reversible ratchet device *g h i*, hand-lever L, nut K, gear I, and worm-shaft P N, substantially as and for the purposes set forth.

3. The frame of the press, constructed as herein described, of the standards A, transoms or cross-pieces G and wrought-iron trusses F with welded ends *c*, combined and arranged substantially as shown and set forth.

4. The combination, with the top of the press and screw E, of the bearing piece H and revolving nut K, constructed and operating substantially as and for the purpose set forth.

5. The combination, with the screw E, standard A, and platen D, of the revolving nut K, gear I, worm P, shaft N, and frame M, substantially as shown and described.

LUCIUS J. KNOWLES.

Witnesses:

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