A. B. HENDRYX.

Improvement in Mechanical-Movement for Converting Motion.

No. 130,371. Patented Aug. 13, 1872.

fig. 1

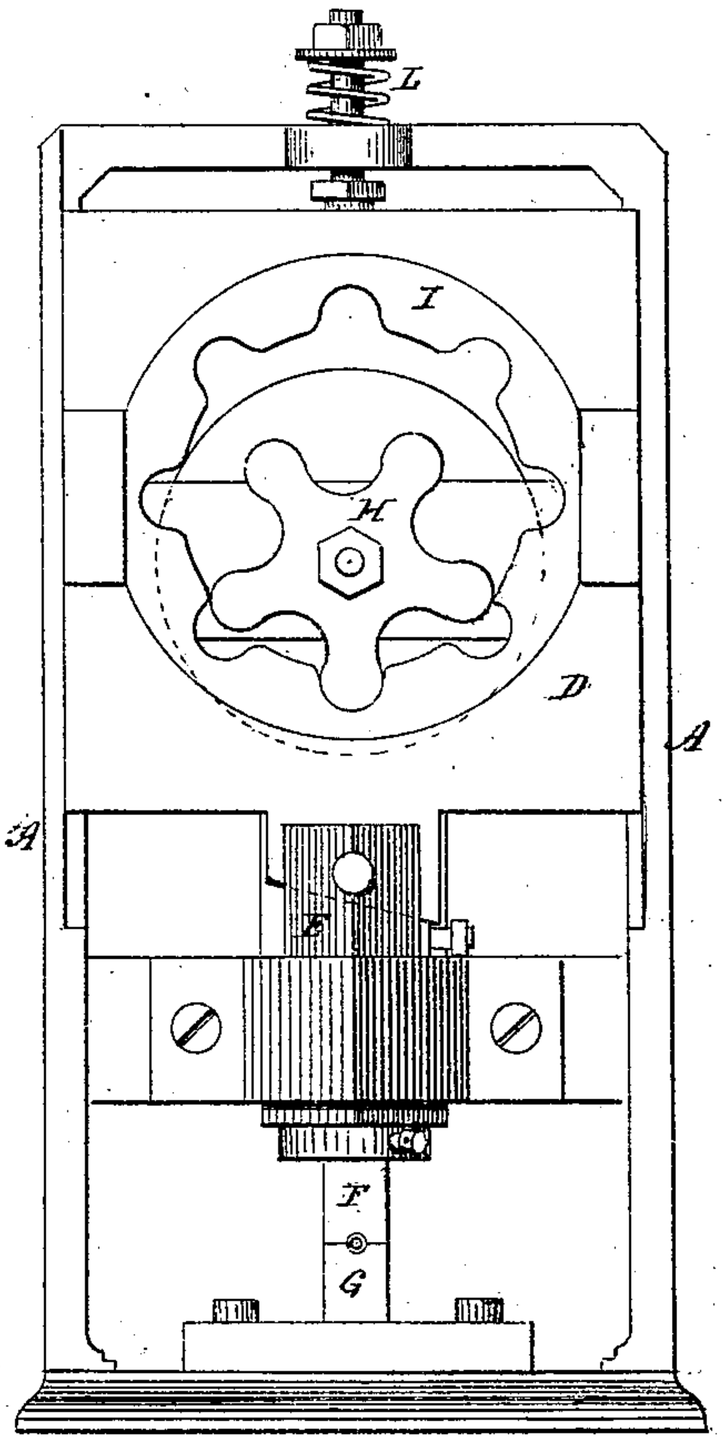


fig. 2

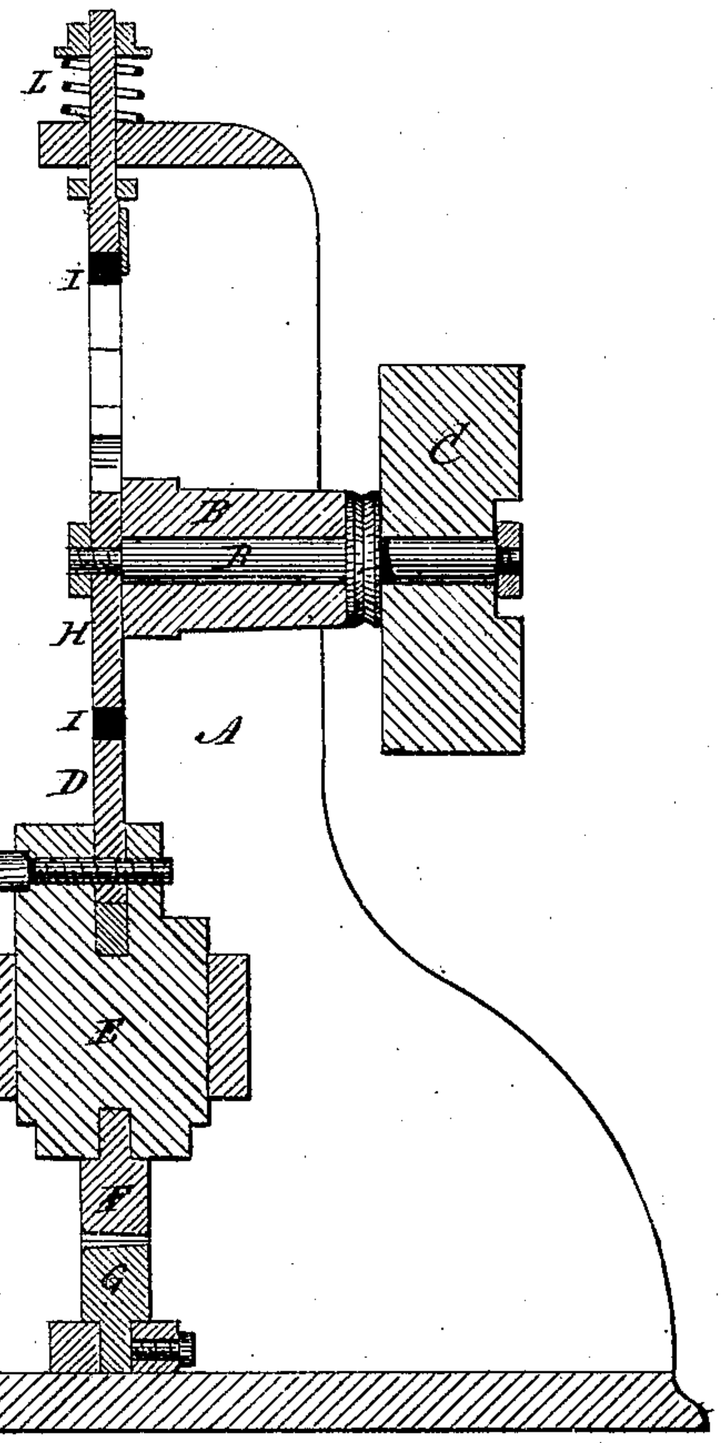
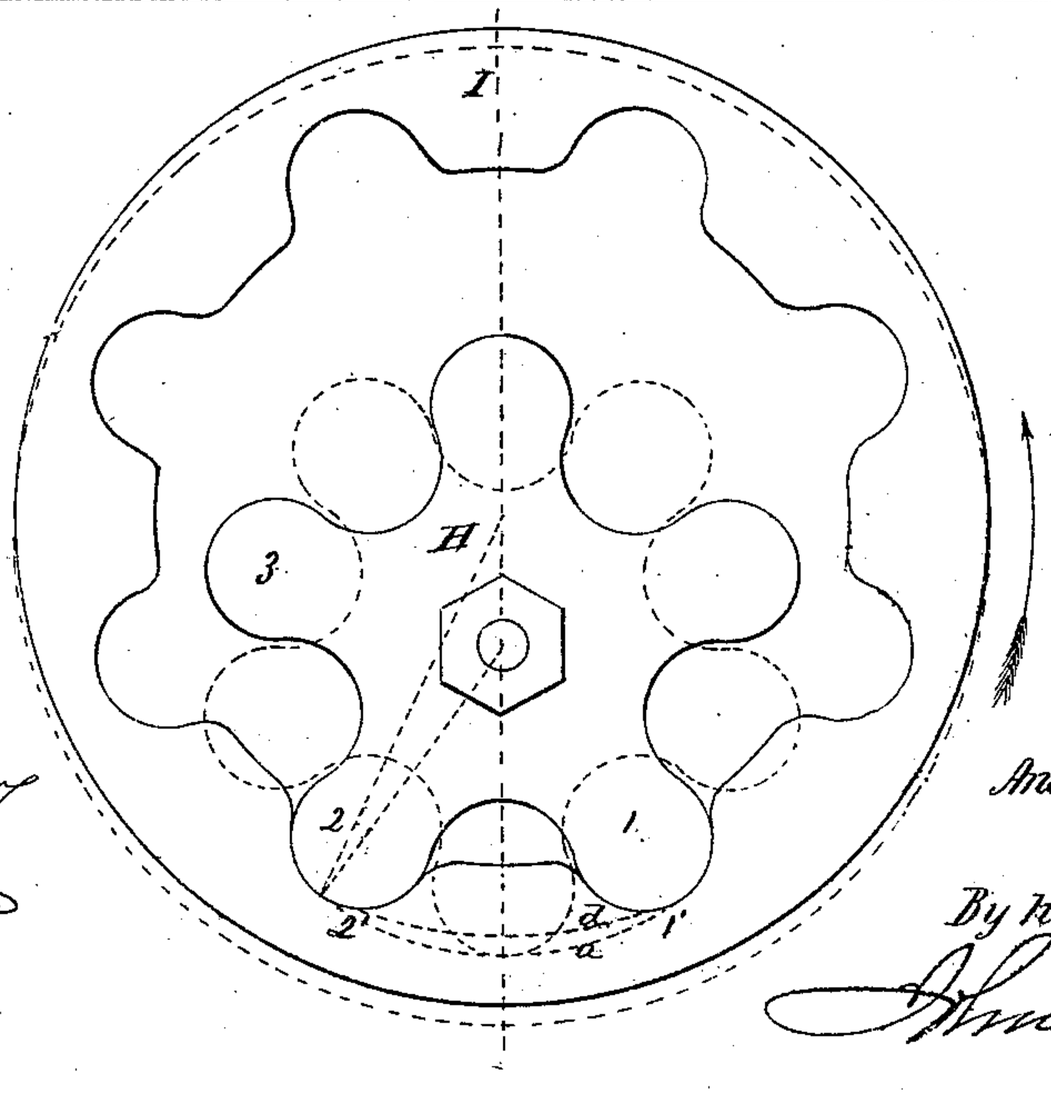


fig. 3



Witnesses.
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A. J. Tibbitts

Andrew B. Hendryx
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Howe & Earle

UNITED STATES PATENT OFFICE.

ANDREW B. HENDRYX, OF ANSONIA, CONNECTICUT.

IMPROVEMENT IN MECHANICAL MOVEMENTS FOR CONVERTING MOTION.

Specification forming part of Letters Patent No. **130,371**, dated August 13, 1872; antedated August 7, 1872.

To all whom it may concern:

Be it known that I, ANDREW B. HENDRYX, of Ansonia, in the county of New Haven and State of Connecticut, have invented a new and Improved Mechanical Movement for Converting Motion; and I do hereby declare the following, when taken in connection with the accompanying drawing and the letters of reference marked thereon, to be a full, clear, and exact description of the same, and which said drawing constitutes part of this specification, and represents, in—

Figure 1, a front view; Fig. 2, a vertical central section; and in Fig. 3, a diagram enlarged to illustrate the operation.

This invention relates to an improvement in device for converting rotary into reciprocating movement, and for convenience of illustration I show it in the accompanying drawing as applied to a power-press for swaging purposes, it being peculiarly applicable for this purpose, where rapid and short strokes are required. This invention consists in the arrangement of a toothed wheel within an internally-toothed wheel or plate of larger diameter and eccentric to the said first-named toothed wheel, so that the two will engage at one point only, the one revolving upon a fixed center imparting to the other, revolving upon a movable center, a corresponding rotary movement and at the same time a reciprocating movement, as more fully hereinafter described.

A is the frame of the press, of any common or convenient construction. B is the driving-shaft, arranged in bearings B′, and to which power is applied through a pulley, C, or otherwise. D is the slide, which moves freely up and down in suitable guides, as in common power-presses, this slide being in connection with the die-holder E to cause the die F to work up and down upon the fixed die G. On the shaft B a toothed wheel, H, is arranged, and on the slide an internally-toothed wheel or plate, I, is arranged of larger diameter than the wheel H, and eccentric thereto, the wheel H being in such relative position to the plate I as to work within the said plate, as seen in the drawing, so that in revolving the teeth of the wheel H will engage the corresponding teeth or notches in the plate I and cause that to revolve. At some convenient point a spring, L, is arranged of sufficient power to raise the slide. This revolution of the wheel H and plate I will be explained by reference to Fig. 3. As there represented in solid lines, the two teeth 1 2 of the wheel H lie in corresponding recesses 1′ 2′ of the wheel or plate I, the said two recesses and teeth in this position being equidistant from a vertical line through the center of the two wheels. The wheel H revolving will, in consequence of the engagement of the teeth, cause the plate I also to revolve, and as the plate I is held up against the wheel H, the tooth 2 advancing, (the revolution being in the direction of the arrow,) it approaches the center or vertical line on the line *a*, that being the circumferential line from the center of or in the path of the wheel H. The plate I being eccentric to the wheel H, and revolving, its natural circumferential line or path would be *d;* but as the bearing of the wheel H is fixed and that of the wheel I movable, the wheel H will carry the plate I down in the path of the wheel H or upon the line *a*, as denoted in broken lines, Fig. 3, from that point rising again until the tooth 2 takes the place of the tooth 1, and the tooth 3 the place of the tooth 2, in a new recess or tooth of the wheel I, and so continuing, each tooth of the wheel H making a depression of the plate I, and consequently of the slide to which it is attached. By this construction great rapidity of action may be attained, the transition from the rotary motion of the wheel H to reciprocating motion of the slide being extremely easy. I have represented the plate I as fixed to the slide and the wheel H upon a fixed bearing; but it will be observed that these conditions may be reversed with reversed results—that is, the plate I may be revolved upon a fixed center, and working upon the wheel H on the slide or movable center will impart to the wheel H the same reciprocating movement before described as imparted to the plate, and by increasing the size of the wheel I two or more wheels, H, may be applied to the inside of the plate I operating in like manner. If two wheels are used—by which means the spring may be dispensed with—it will be necessary that there be an odd number of recesses upon the internal diameter, in order that the two teeth of one wheel engage, as described, for the teeth 1 and 2 in Fig. 3, while on the other wheel only one tooth engages. In such

case one tooth carries the slide in one direction, the other two having permitted such movement, and the other two, as they advance, engage first one tooth on one wheel and two on the other; then two on one and one on the other.

While illustrating the invention as applied to power-presses, it will be readily seen by those familiar with mechanical movements that this may be applied to other purposes. I do not, therefore, confine myself to this application.

I claim as my invention—

The arrangement of a toothed wheel, H, and an internally-toothed wheel, I, of larger internal diameter than the external diameter of the toothed wheel, the said wheel I being arranged eccentric to the wheel H, so that the two will engage at but one point, the one revolving upon a fixed center and the other movable, whereby a reciprocating movement is imparted from the fixed to the movable, substantially as described.

A. B. HENDRYX.

Witnesses:

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