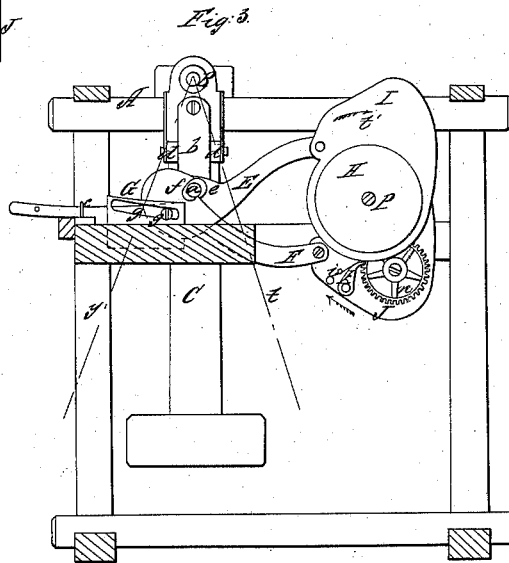
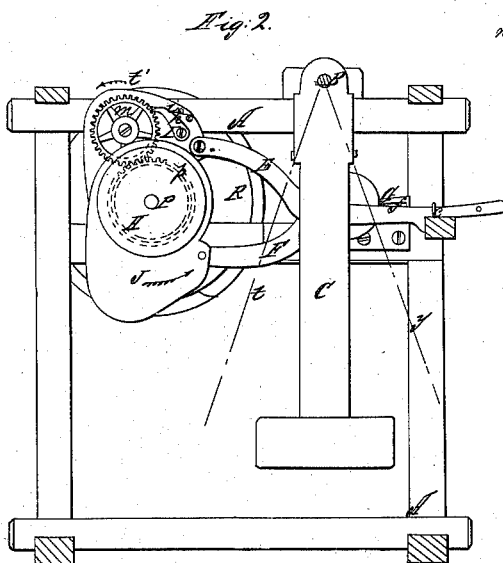
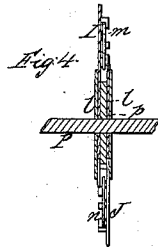
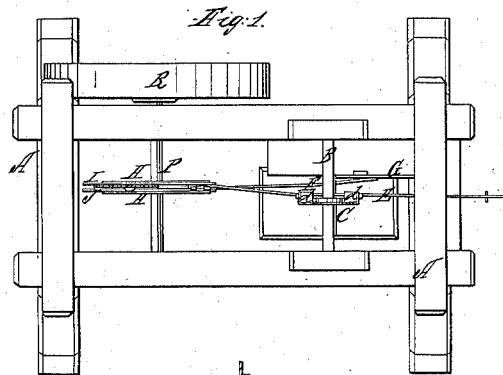


W. H. Hartman,

Motor.

N^o 47,717.

Patented May 16, 1865.



Witnesses:
W. H. Burridge
J. Palmer

Inventor:
W. H. Hartman

UNITED STATES PATENT OFFICE.

WM. H. HARTMAN, OF FOSTORIA, OHIO.

IMPROVEMENT IN MOTIVE POWER.

Specification forming part of Letters Patent No. 47,717, dated May 16, 1865.

To all whom it may concern:

Be it known that I, W. H. HARTMAN, of Fostoria, in the county of Seneca and State of Ohio, have invented a certain new and improved device for converting reciprocating into rotary motion; and I do hereby declare that the following is a full and complete description of the construction and operation of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a top view of the machine. Figs. 2 and 3 are views of the opposite sides of the operating parts of the machine. Figs. 4 and 5 are detached sections.

Like letters of reference refer to like parts in the several views.

My improvement relates to an arrangement of devices for the purpose of converting a reciprocating into rotary motion, as hereinafter described.

A represents the frame of the machine. In the upper part of the frame is hung a shaft, B, on which is suspended a weighted vibrating pendulum, C. On one side of the pendulum is secured a plate, *b*, from which projects a wrist, *a*. On each side of this plate are springs *d* to ease the action of the wrist and thereby prevent jarring and straining when the wrist is brought in contact with the arms, as hereinafter described.

E and F are curved arms, attached to the plates I and J and supported in the frame, and are notched or cut out, as represented in Figs. 3 and 5, so that the wrist *a* will catch into them as the pendulum vibrates. The arm E extends out at one end of the machine, rests on a cross-piece of the frame, and is kept in place by a guide, *c*. The arm F is hung at one end in a slotted guide, G, secured to the frame by means of a pivot, *g*, in the arm, resting and moving in the slot *g'*. Thus the ends of both arms are supported and kept in place in relation to the wrist *a* as they are operated by the motion of the pendulum. The other ends of these arms—one curving upward and the other downward—are jointed or hinged to plates I and J. On the inner faces of these plates are pivoted pinions *m* and *n*, (seen in Figs. 2 and 3 and also in Fig. 4,) that work in a pinion or gear-wheel, *p*, (indicated by the dotted lines in Fig. 2,) secured to the shaft P. Outside of the plates I and J are

disks H on the shaft P, to which are connected collars *l*, (shown in Fig. 4,) upon which the plates move. Through the disks H, collars *l*, and cog-wheel *p*, in the center, are screw-bolts keeping them all together in place, but not so as to prevent the plates I and J from moving on the collars. On the inner faces of the plates are pawls or dogs *h* and *k*, that catch into the cogs of the pinions, being kept in place by springs *i*.

The manner of operating these devices as described, producing a continued rotary motion by means of the vibrating pendulum, is as follows: As the pendulum is operated by hand or any other suitable means, and as it swings in the direction indicated by the red line *t*, the wrist *a*, describing the segment of a circle, comes against the catch *e* and moves the arm E along, which carries the plate I round on the collar in the direction of the arrow *t'*. The pinion *m*, as the plate is moved in this direction, turns round under the dog *h* and the shaft P is not moved, but when the pendulum swings back the dog *h* at once catches into the cogs of the pinion, rendering it rigid in its position, which, by working in the cog-wheel *p*, turns the shaft P. When the pendulum reaches a vertical center, it ceases to move either of the arms, and as it swings in the direction of the red line *y* the wrist *a*, entering the catch *f*, carries the arm F along, which moves the plate J in the same direction, the pinion *n* slipping round under the dog *k*, and as the pendulum swings back or descends the dog catches into the cogs of the pinion, which turns the shaft in the way before described in regard to the pinion *m*, and by means of these arms, operating as stated, each one alternately turning the shaft, a continued revolving motion is given to a fly-wheel, R, on the shaft.

It will be observed that when the pendulum is in a vertical position the arms are stationary, and as it vibrates in either direction, the wrist *a* passes out of the catch on one arm and enters the catch in the other, and as it swings upward it carries the plates round, so that when the weighted pendulum descends from either side the shaft is turned, producing a continued revolving motion.

The benefits and use of my machine are, viz: By setting the pendulum once in motion I obtain thereby sufficient speed and power and its

continuance for a sufficient length of time to enable a man to turn any small thing in a lathe, to saw laths, shingles, or thin boards, or any light work to which the motive power may be applied.

These are some of the uses, among others, to which my improvement is applicable.

The benefits resulting from my power are, viz: It saves the continued expenditure of labor attending the operating of any ordinary hand-lathe or hand-machine, which is often very fatiguing; also the constant attendance necessary in order to keep other hand-power in motion is hereby dispensed with.

The pendulum may be operated by any desirable means.

What I claim as my improvement, and desire to secure by Letters Patent, is—

1. The special arrangement of the arms E F and plates I J, in combination with the pinions *m n*, gear P, and disks H, when arranged and operating conjointly, as and for the purpose set forth.

2. In combination with the above, the plate *b*, pendulum C, springs *d*, in combination with the wrist *a* and arms E F, when operating conjointly, as and for the purpose set forth.

WM. H. HARTMAN.

Witnesses:

W. H. BURRIDGE,
J. HOLMES.