(No Model.)

B. McCABE.

MOTOR.

No. 356,542. Patented Jan. 25, 1887.

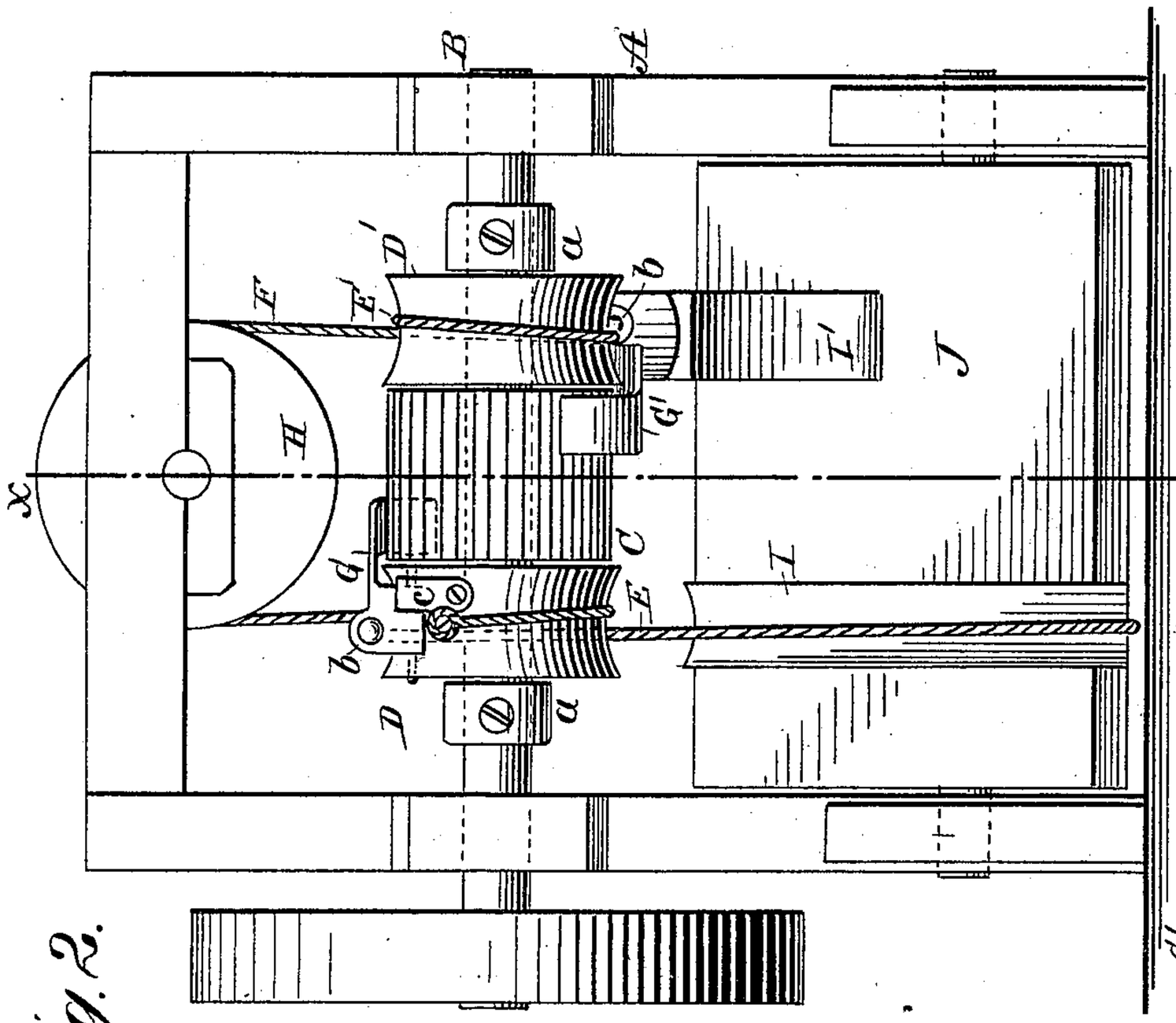

Fig. 2.

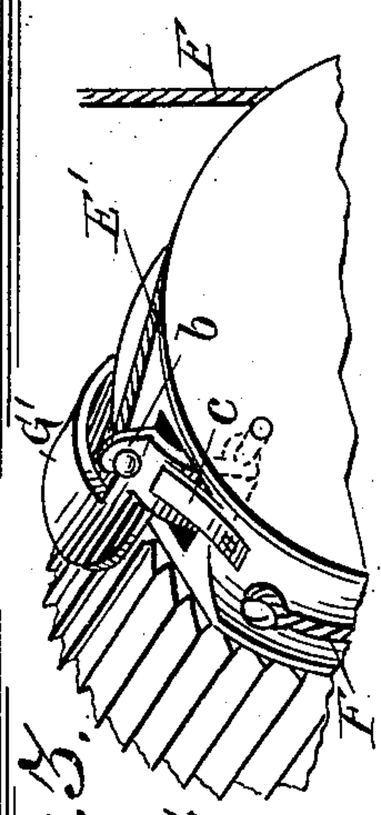

Fig. 3.

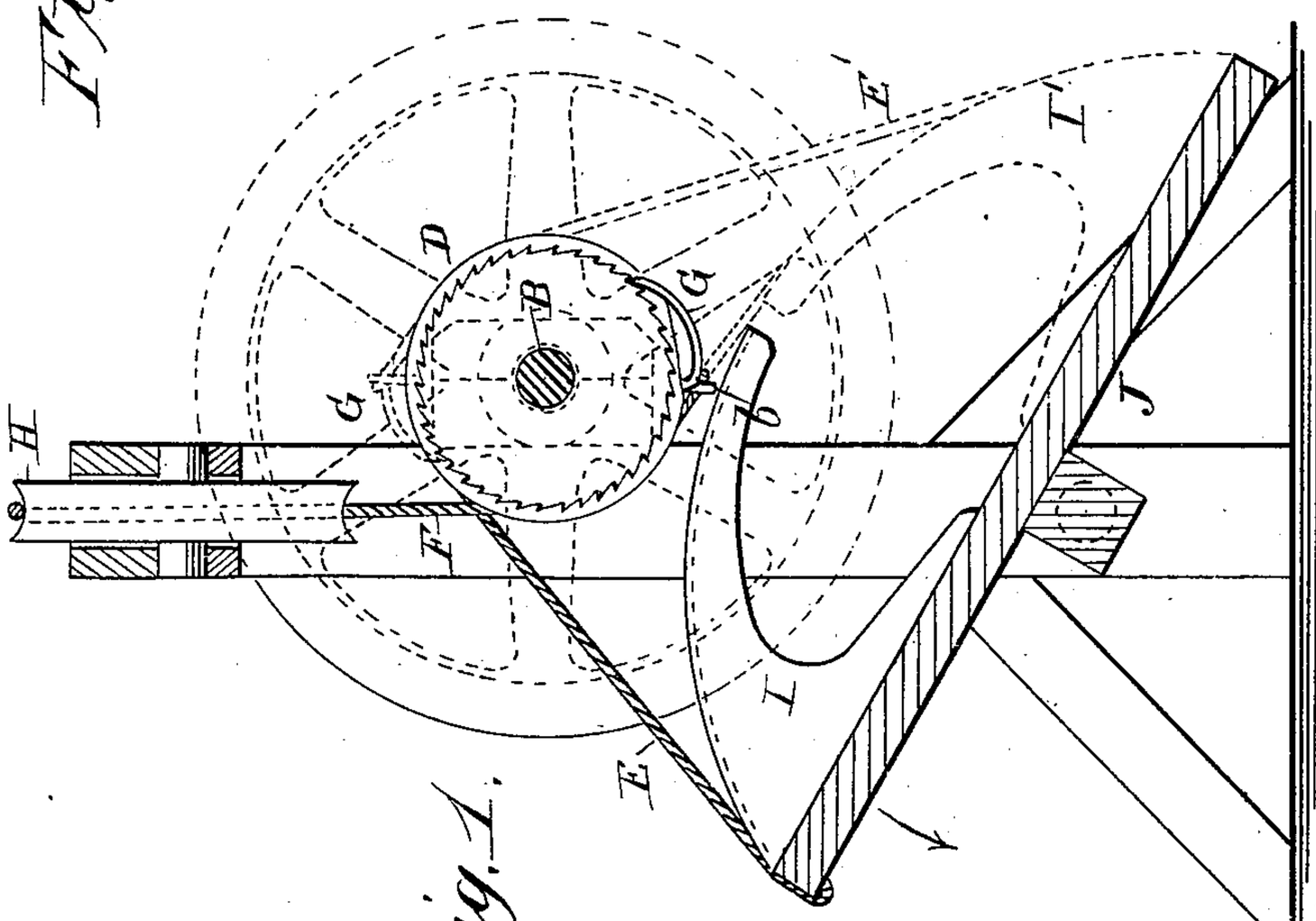

Fig. 1.

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BARTHOLOMEW McCABE, OF BUFFALO, NEW YORK.

MOTOR.

SPECIFICATION forming part of Letters Patent No. 356,542, dated January 25, 1887.

Application filed April 16, 1886. Serial No. 199,077. (No model.)

To all whom it may concern:

Be it known that I, BARTHOLOMEW McCABE, of Buffalo, in the county of Erie and State of New York, have invented a new and useful Improvement in Motors, of which the following is a specification, reference being had to the annexed drawings, forming a part thereof, in which—

Figure 1 is a vertical transverse section taken on line *x x* in Fig. 2. Fig. 2 is a front elevation. Fig. 3 is a detail perspective view of a portion of a ratchet-wheel and one of the pulleys and the pawl carried thereby.

Similar letters of reference indicate corresponding parts in the different figures of the drawings.

The object of my invention is to provide simple and efficient mechanism for converting reciprocating motion into rotary motion, my improvement being designed for application to the class of machines driven by treadles and to steam-engines where it is required to convert the reciprocating motion of the piston into rotary motion.

My invention consists in a shaft provided with a ratchet-wheel and two loose pulleys placed on opposite sides of the ratchet-wheel, and carrying pawls adapted to engage the ratchet-wheel, journaled at right angles to the shaft, and cords or cables connected with reciprocating mechanism extending around the loose pulleys in opposite directions, and attached to the pawls, to draw the pawls into engagement with the ratchet-wheel when the cords are pulled; also, in a cord wound partly around each loose pulley and extending over the sheave journaled at right angles with the pulleys, all as hereinafter more fully described.

In the frame A is journaled a shaft, B, at or near the center of which is secured a ratchet-wheel, C. On opposite sides of the ratchet-wheel and on the shaft B are loosely placed pulleys D D′, having shallow grooves in their peripheries for guiding the cords E E′ F, employed in operating the motor. The pulleys D D′ are held in their places adjoining the ratchet-wheel C by collars *a*, secured to the shaft B. In the pulleys D D′ are pivoted pawls G G′, which are oppositely arranged with respect to each other, but which are both adapted to engage the teeth of the ratchet-wheel C. The pawls G G′ are provided with ears *b* for receiving the ends of the cords E E′, the cords being wrapped around the pulleys D D′ in the direction of the free ends of the pawls G G′. Each pulley is provided with a stop, *c*, for limiting the movement of the pawl. The cord F, which extends over a sheave, H, journaled at right angles to the shaft B, is wrapped in the same direction around each pulley D D′, and is secured to the pulleys near the pawls G G′.

By drawing on either of the cords E E′ the pawl connected therewith is drawn forward into engagement with the ratchet-wheel C, and the continued drawing of the cord carries forward the pulley, around which it is wrapped, and by virtue of the engagement of the pawl with the ratchet-wheel C also carries the shaft B in the same direction. In the present case the cords E are attached to sectors I I′, secured to the upper surface of the treadle J, pivoted in the frame A at opposite edges thereof, the sectors being oppositely arranged with respect to each other. The cord E passes over the sector I and is secured to the under surface of the treadle J, and the cord E′ passes over the sector I′ and is secured to the under surface of the treadle.

By moving the treadle in the direction indicated by the arrow the cord E is drawn, the pawl G is brought into engagement with the ratchet-wheel C, and the pulley D is made to turn, carrying with it the ratchet-wheel C and shaft B, at the same time winding the cord F, withdrawing it from the pulley D′, thus turning the pulley in a reverse direction, carrying the pawl G′ backward on the ratchet-wheel, at the same time winding the cord E′ around the pulley D′, preparatory to the forward movement of that pulley. When the treadle J is moved in the opposite direction, the cord E′ is drawn, first bringing the pawl G′ into engagement with the ratchet-wheel C, at the same time winding the cord F on the pulley D′, thus causing the pulley D to turn in the opposite direction, carrying the pawl G back over the ratchet-wheel for a new engagement with the ratchet-teeth. In this manner a continuous rotary motion is imparted to the shaft B by the reciprocating motion of the cords E E′. The cords E E′ may be of any size or of any material. In large machinery they may consist of wire ropes or chains or leather belts.

My improvement is applicable to sewing-

machines, foot-lathes, or other machinery driven by treadles. It also may be adapted to converting the reciprocating motion of an engine-piston into the required rotary motion.

In lieu of the pawls and ratchets, I may employ any equivalent clutch mechanism.

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

1. The combination, with the shaft B and ratchet wheel C, carried thereby, of the pulleys D D′, placed loosely on the shaft, pawls G G′, pivoted in the pulleys, adapted to engage the ratchet-wheel C and provided with ears *b*, the cords E E′, connected with the ears *b*, the sheave H, journaled at right angles to the shaft B, and the cord F, extending around the pulleys D D′ and over the sheave H, substantially as herein shown and described.

2. The combination of the shaft B, provided with the ratchet-wheel C, pulleys D D′, pawls G G′, carried thereby and provided with ears *b*, the cords E E′, connected with the ears *b*, the sheave H, journaled at right angles to the shaft B, the cord F, connected with the pulleys D D′ and extending over the sheave H, and the treadle J, provided with the sectors I I′ and connected with the cords E E′, substantially as herein shown and described.

BARTHOLOMEW McCABE.

Witnesses:
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