2 Sheets—Sheet 1.

J. A. HOUSE.

MECHANICAL MOVEMENT.

No. 188,464. Patented March 20, 1877.

Fig 1

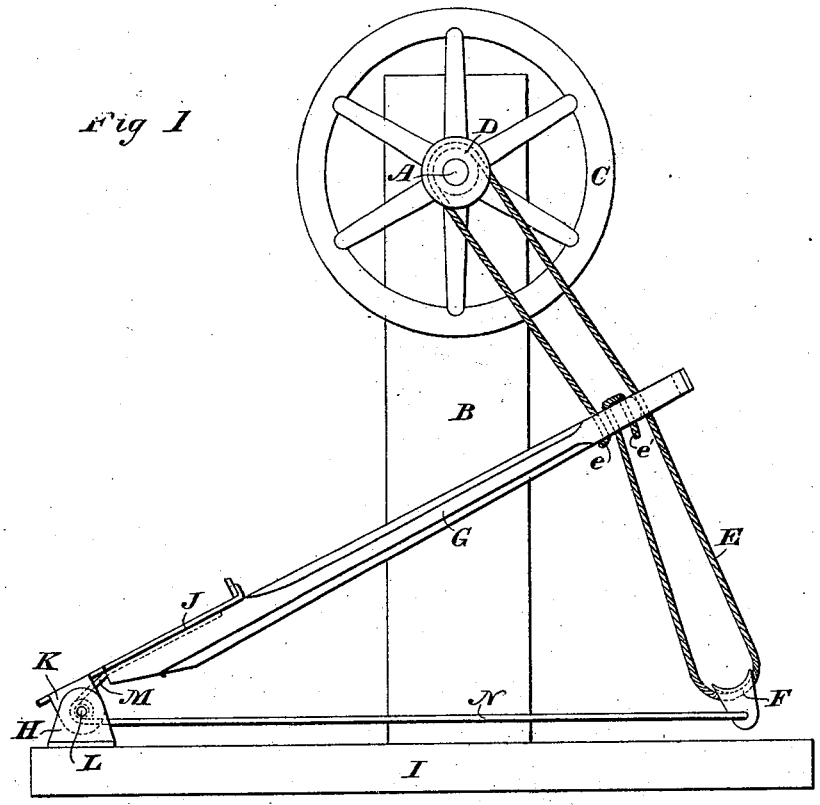
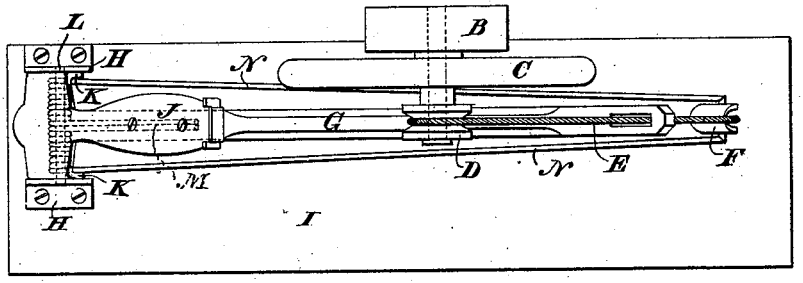


Fig 2.



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2 Sheets—Sheet 2.

J. A. HOUSE.

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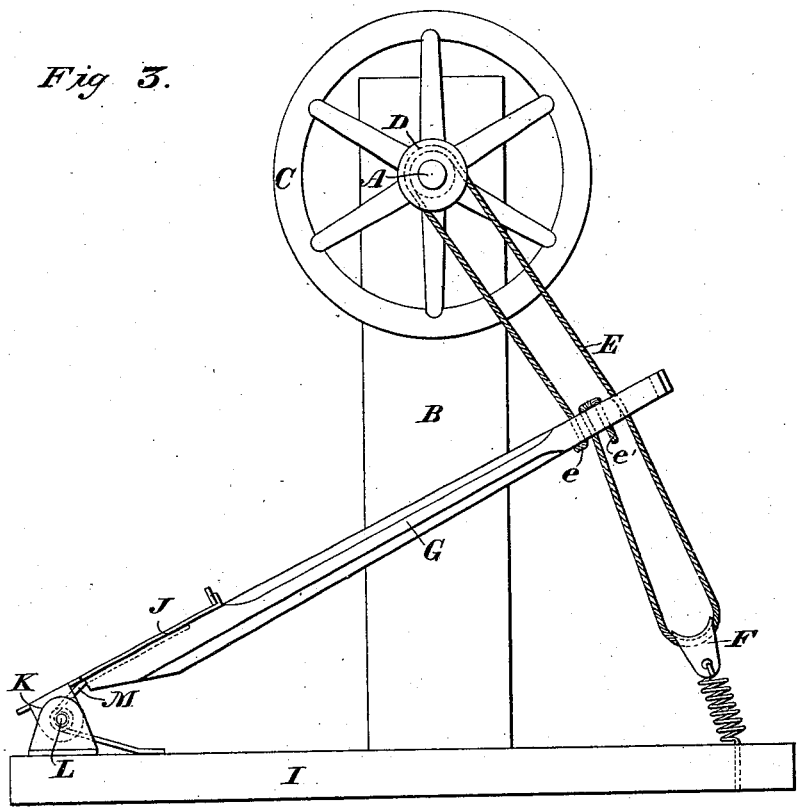
Fig 3.



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UNITED STATES PATENT OFFICE.

JAMES A. HOUSE, OF BRIDGEPORT, CONNECTICUT.

IMPROVEMENT IN MECHANICAL MOVEMENTS.

Specification forming part of Letters Patent No. **188,464**, dated March 20, 1877; application filed March 1, 1877.

To all whom it may concern:

Be it known that I, JAMES ALFORD HOUSE, of Bridgeport, in the county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in Mechanical Movements, of which the following is a specification:

My invention mainly relates to a mechanical movement of the class commonly known as "foot-powers" or "treadle-motions"; and the object of my improvements is to provide a cheap, simple, and efficient apparatus for driving light machinery at a high rate of speed.

My improvements consist in the combination of a shaft or wheel to be driven, having a pulley connected therewith, a driving-belt passing around said pulley, a shoe or second pulley, around which the belt likewise passes, and a rocking arm or treadle vibrating between the driven pulley and shoe, to which both ends of said belt are secured, whereby the pulley is revolved by a succession of impulses imparted by the belt, as will hereinafter more fully be explained.

My improvements further consist in the combination of a shaft or wheel to be revolved, the pulley thereon, the belt, a tension shoe or support around which the belt passes, and the rocking arm or treadle, to which the ends of the belt are secured.

My improvements also consist in certain novel constructions and combinations of parts hereinafter specifically designated.

In the accompanying drawings, Figure 1 is a view in elevation; Fig. 2, a plan or top view; and Fig. 3 is a view in elevation, showing a modification of my invention.

A shaft, A, supported in a suitable upright or frame, B, has mounted loosely upon it a fly-wheel, C, and grooved pulley D. The shaft might be rotated by securing it in suitable bearings and fixing the wheel and pulley upon it instead of mounting them loosely. The fly-wheel may serve as a band-wheel to connect with the machinery to be driven, or a crank and pitman or suitable gearing may be employed for this purpose.

A belt or cord, E, either flat or round, but preferably round, passes around the pulley D, and also around a shoe or support, F. Both ends of the belt are secured to a treadle, G, or to a swinging arm rocked or vibrated in any suitable manner.

The belt, after being secured at its end *e* to the treadle, is carried over the driven pulley D, the groove of which is, of course, adapted to the form of the strap, thence down through a slot in the outer end of the treadle, around the shoe F, and then up to the treadle near its end, where the end *e'* of the belt is secured.

The treadle is pivoted to supports H H', which may either be secured to, or rest upon, the floor, or be fastened to a base, I, for the machine, as shown. The foot-rest plate J is provided with lugs K K', as shown, as a simple manner of securing the treadle to the supports, the treadle being suitably attached to the plate.

The pivot-rod L, by which the treadle is jointed, has a wire coiled around it to form a spring, for a purpose presently to be explained. The ends M of the wire are secured to the treadle beneath the foot-plate, while the remaining portion of the wire not consumed in forming the coil upon the pivot is formed into a tension frame or lever, N, to the outer end of which the shoe F is pivoted. It will thus be seen that from a single piece of wire I make the yielding support for the shoe or roller F, and the spring by which the treadle is thrown up after being depressed.

Instead of employing a lever to carry the shoe, which keeps the belt sufficiently taut for practical purposes, it is obvious that the shoe may be yieldingly attached to the base I, or to the floor of the room in which the machine is located by a spring, as shown in Fig. 3, and a spring bearing at one end upon the base or floor and at the opposite end against the treadle be employed.

In operation, as the treadle or rocking arm is forced down, the pulley is rotated by the strain upon the belt as it is drawn down by its end *e*. Upon the return movement of the treadle the rapid motion imparted to it when released from pressure by the operator has a tendency to slacken the belt between its end *e* and the driven pulley, as well as to relieve the strain upon the belt produced by the tension-shoe. The rotary motion of the pulley and wheel is thus but slightly retarded during the inoperative stroke of the treadle.

If it is desired to stop the machine suddenly, all that is necessary to be done is to press the end of the rocking lever or treadle down upon the shoe and retain it there a moment.

Obviously, my improvements may be modified to some extent without departing from the spirit of my invention. For instance, a roller might be substituted for the pivoted shoe; the slot in the end of the vibrating lever or treadle to act as a guide for the belt, which is thereby prevented from lateral displacement, might be provided with a roller, or both might be dispensed with.

I claim as my invention—

1. The combination, substantially as hereinbefore set forth, of a driven pulley, a driving-belt passing around said pulley, a shoe or second pulley, around which said belt passes, and an arm or treadle vibrating between the driven pulley and shoe, to which both ends of said belt are secured.

2. The combination, substantially as hereinbefore set forth, of a shaft or wheel to be revolved, a pulley thereon, a driving-belt passing around said pulley, a tension shoe or support around which the belt also passes, a treadle to which the ends of the belt are secured, and a spring for elevating the treadle.

3. The combination of the belt, the treadle to which both ends of the belt are secured, the shoe around which and the driven pulley the belt passes, and the tension-arm on which the shoe is mounted, substantially as set forth.

4. The combination of the treadle, the wire-tension arm or frame, and the spring formed of one piece of wire with said frame, substantially as and for the purpose specified.

In testimony whereof I have hereunto subscribed my name.

JAMES ALFORD HOUSE.

Witnesses:
CHAS. H. DIMOND,
FREDK. L. HEARSON.