(No Model.)

M. W. CLAY.

Device for Converting Motion.

No. 233,982. **Patented Nov. 2, 1880.**

Fig. 1.

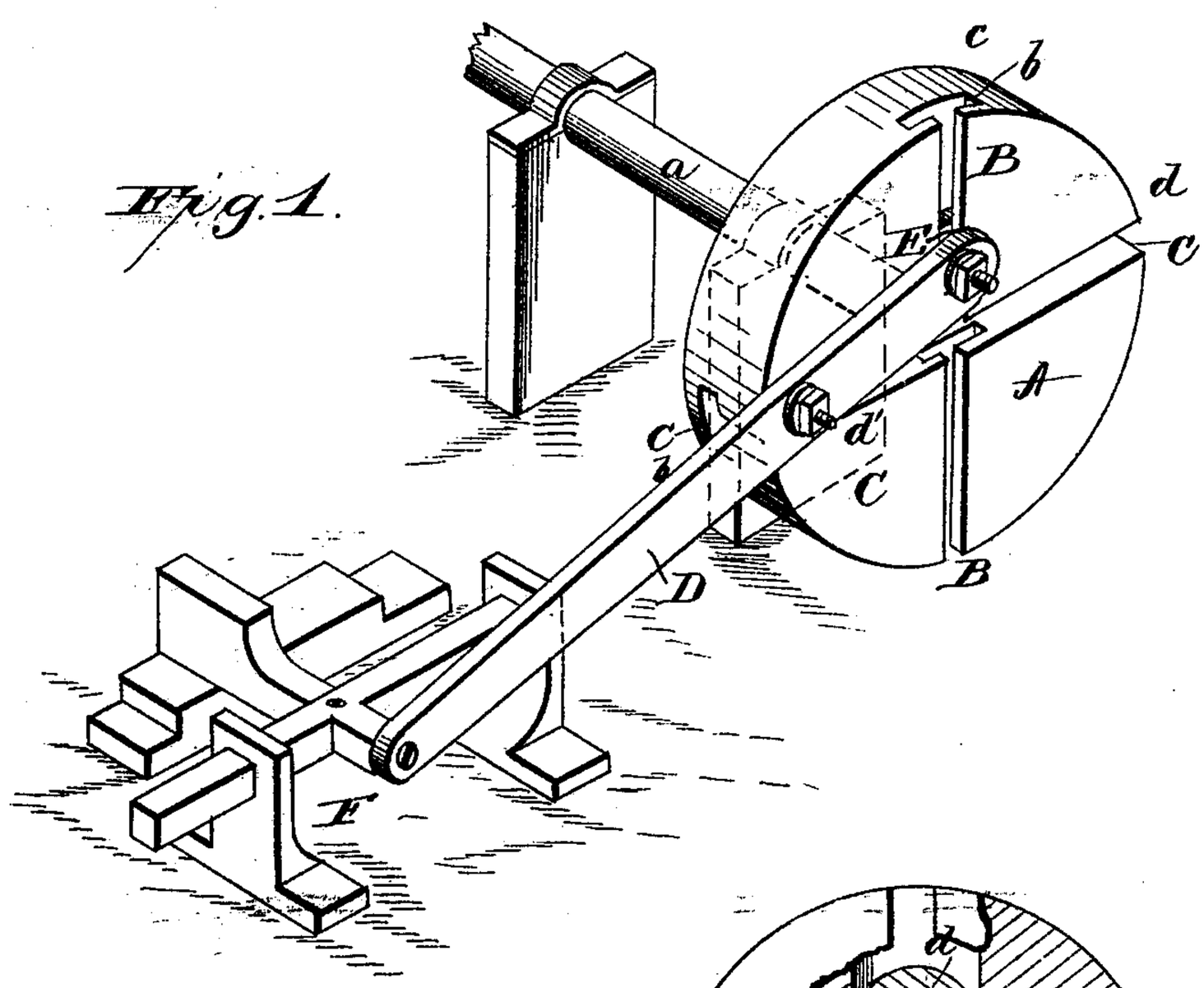


Fig. 2.

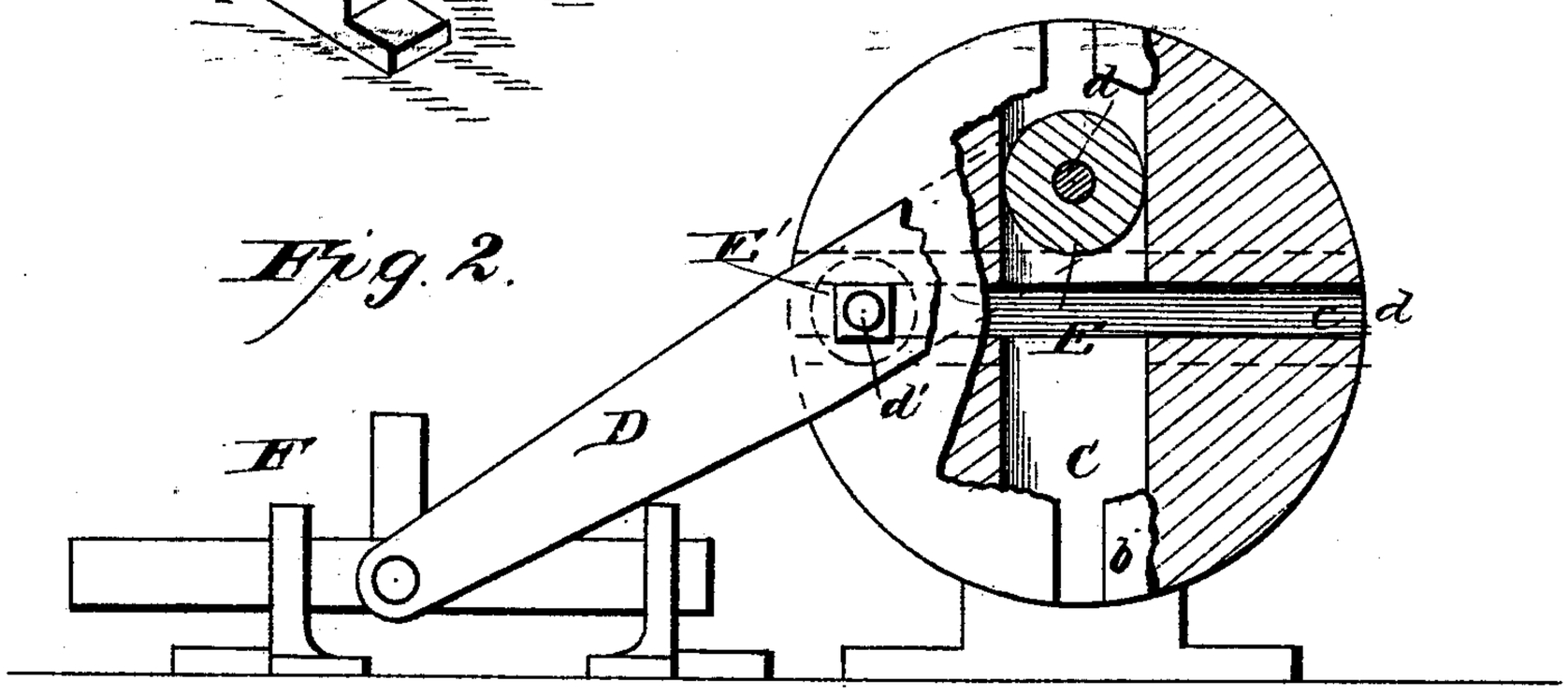
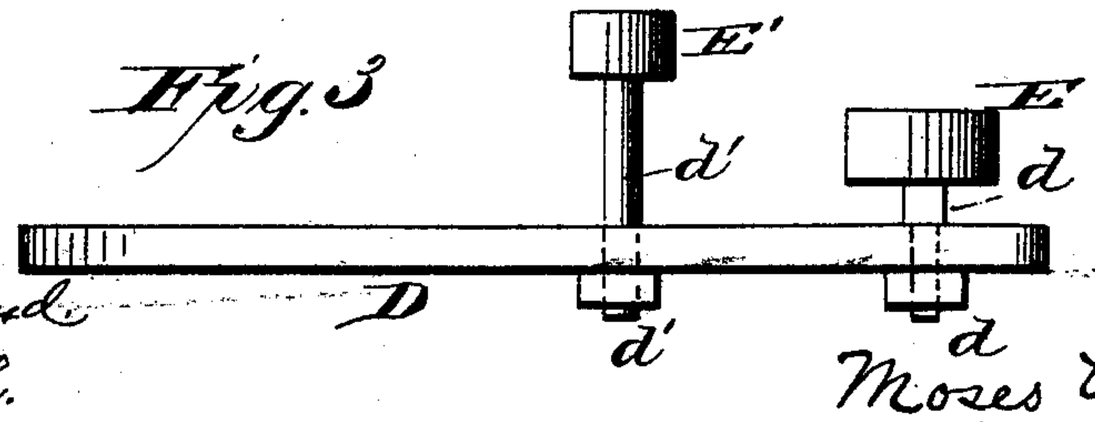


Fig. 3



Witnesses:

F. L. Ouvaud.

Robert Lynch.

Inventor:

Moses W. Clay.

by L. Deane. Atty

UNITED STATES PATENT OFFICE.

MOSES W. CLAY, OF FOXBURG, ASSIGNOR OF ONE-HALF OF HIS RIGHT TO S. B. MERCER, OF LOYALHANNA TOWNSHIP, PENNSYLVANIA.

DEVICE FOR CONVERTING MOTION.

SPECIFICATION forming part of Letters Patent No. 233,982, dated November 2, 1880.

Application filed March 5, 1880. (No model.)

To all whom it may concern:

Be it known that I, MOSES W. CLAY, a citizen of the United States, residing at Foxburg, in the county of Clarion and State of Pennsylvania, have invented certain new and useful Improvements in Devices for Converting Motion; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

Figure 1 is a view, in perspective, showing the present invention. Fig. 2 is a side elevation of the wheel. Fig. 3 is a detail of the crank and its attachments.

This invention is designed as an improvement on means for converting rotary into reciprocating motion; and the object of the invention is to simplify, as well as to cheapen, the construction of the means and to produce a positive movement in a more effective manner than by the means now employed.

Heretofore a rotating disk with two slots crossing at its center at right angles to each other and a reciprocating pitman furnished with cam-plates operating in conjunction with wipers arranged within the rotating disk have been employed. This construction of a device for converting motion is objectionable for several reasons, among which may be stated the peculiar construction of the rotating disk, the employment of the wipers or strikers and the cams attached to the pitman. Also, the employment of these wipers or strikers and the cams has a tendency to retard the free working of the pitman in the slots. Also, these devices cause a jerking, a jarring, and uneven motion of the pitman.

Therefore my improvements consist in the construction of the wheel provided with T-shaped grooves crossing each other at right angles, but in different planes, in combination with the pitman provided at its rear end with the bolts *d d'*, of different lengths, the said bolt being provided with anti-friction rollers E E', adapted to work in the grooves of the wheel. Also, the novelty consists in the construction and arrangement of the parts constituting the converting-motion device, as will be hereinafter more fully set forth, and pointed out in the claims.

In the accompanying drawings, A denotes the driving-wheel of any ordinary mechanical motion, and has its motion from belt on shaft *a*, or in any other and convenient way. Into the body of this wheel are sunk two grooves, B and C. These extend from side to side across the center of the wheel and at right angles to each other. The former one, B, passes but a small distance down into the wheel, and has at its lower end the rectangular enlargement *b*. The other groove, C, passes into the body of the wheel a considerable distance, and near the back of the wheel enlarges horizontally or at right angles into *c*.

The pitman or crank arm D is connected with the wheel A by means of pins or bolts *d d'* and wheels or rollers E E'. The first bolt, *d*, passing through the pitman near one end, and so attached thereto as to have rotary motion, if desired, is secured at its opposite end to the wheel or rolls E, which are of a suitable thickness and diameter to be fitted into the enlargement *b*, where, as the wheel A is revolved, it will also revolve and easily play back and forth, the bolt *d* taking its path in the narrow throat of groove *c*, which leads into these enlargements *b*. The bolt *d'* is, in like manner as bolt *d*, secured to the pitman, and is placed at a distance nearly equal to half the diameter of wheel A from bolt *d*, and is, in like manner, attached at its inner end to the roller or wheel E', which revolves and moves in the groove C *c* like as bolt D and wheel E move in the groove B *b*. The other end of pitman D is attached to any horizontally-moving shaft, F, or to a crank or any device or mechanism to operate the same.

It will be perceived that wheel E is much heavier than the wheel E'. This is calculated to cause the outer ends of the pitman to fall automatically down the slot B *b* when this comes into or near a vertical position. This automatic action insures the obviation of a dead-center and such position of the wheel A

that it can be moved at any time irrespective of the point or place where the several parts rest when the wheel A is stopped.

From the foregoing the operation of my invention will be readily understood.

A wheel and its connections thus made and operated will produce an increase of speed without any increase of power; also, a steady and uniform motion in its line of draft or connection, and obviate all tendency to harm from the lateral or other movements of the pitman or crank. The peculiar construction of the parts will also insure the greatest ease in their movements, and will, in the largest degree, tend to obviate all lodgment on a dead-center. The device will be found very strong and effective.

It will be observed, by reference to the drawings, especially Fig. 1, that the grooves in the wheel, which is unusually thick for a wheel or disk for this purpose, are arranged in different planes—that is say, the groove that receives the larger and weighted roller, E, is near the outer face of the wheel or disk, while the groove that receives the smaller roller, E′, is some distance back nearer the opposite face of the disk or wheel. By this arrangement of the grooves at right angles to each other I am enabled to properly balance the wheel or disk upon the shaft, thereby obviating jerking and pulling action upon the wheel. Also, by this arrangement of the grooves the pitman is nicely balanced, which secures to it an even and positive movement. Also, by this arrangement of the bolts and their rollers, (see Fig. 3,) in conjunction with the wheel or disk, a bracing action is maintained.

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

1. The combination of the wheel or disk A, provided with the T-shaped grooves arranged at right angles to each other, but in different planes, and the pitman D, provided at its rear end with the bolts *d d′*, and their anti-friction rollers E E′, of different diameters, substantially as shown, and for the purposes set forth.

2. The means hereinbefore described for converting rotary into reciprocating motion, consisting of the wheel or disk A, provided with the T-shaped grooves crossing each other at right angles but in different planes, pitman D, provided with the bolts *d d′*, of different lengths, to engage with the grooves in the wheel, and the anti-friction rollers E E′, as described.

In testimony whereof I affix my signature in presence of two witnesses.

MOSES W. CLAY.

Witnesses:

ROBERT L. LYNCH,

G. W. BALLOCH.