J. DICK, Jr.

Combined Hand and Foot Power.

No. 214,028. Patented April 8, 1879.

Fig. 1.

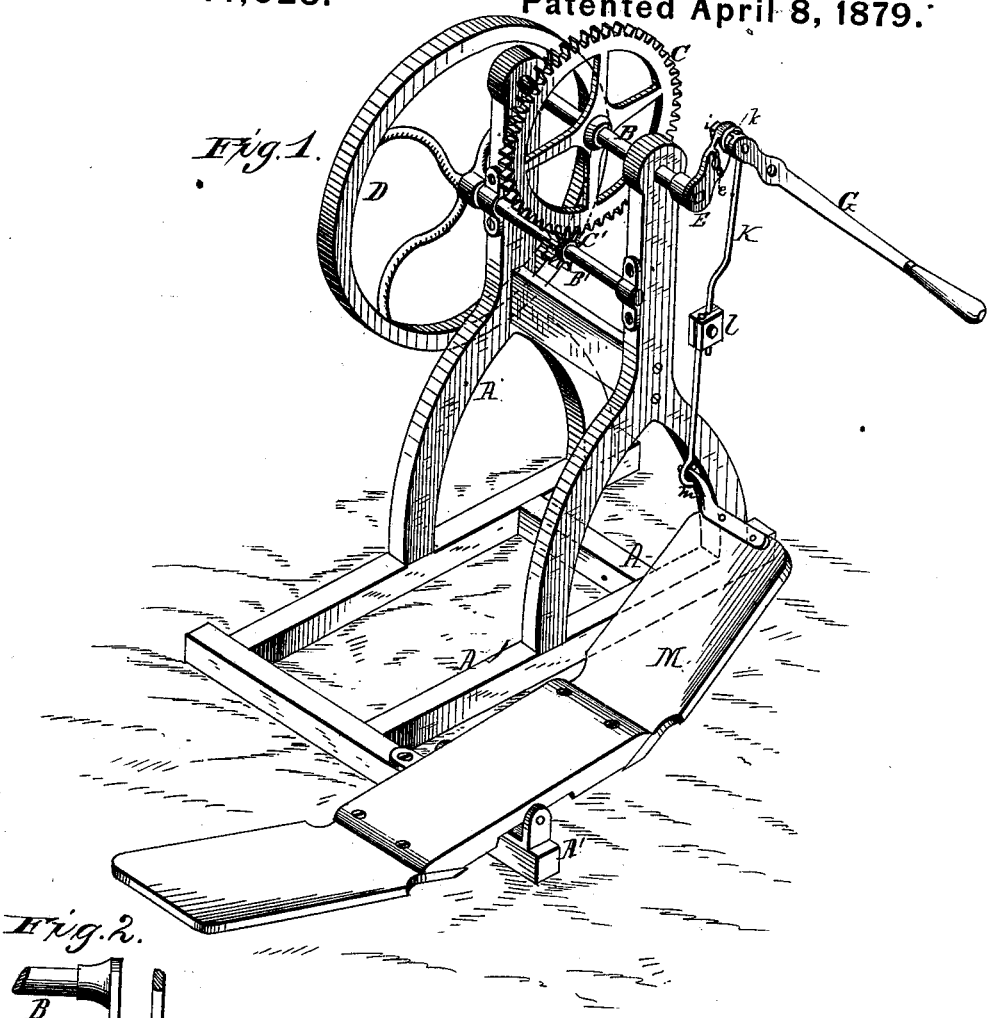


Fig. 2.

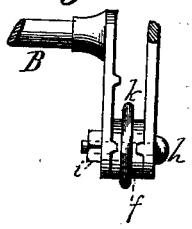
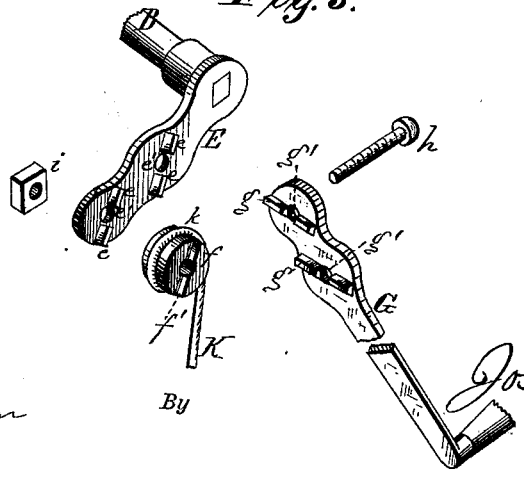


Fig. 3.



WITNESSES

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JOSEPH DICK, JR., OF CANTON, OHIO.

IMPROVEMENT IN COMBINED HAND AND FOOT POWER.

Specification forming part of Letters Patent No. **214,028**, dated April 8, 1879; application filed February 17, 1879.

To all whom it may concern:

Be it known that I, JOSEPH DICK, Jr., of Canton, county of Stark, State of Ohio, have invented certain new and useful Improvements in Combined Hand and Foot Power, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a perspective view of a machine having my improvements applied. Fig. 2 is a plan view of the crank-arm, through which both the hand and foot power are applied. Fig. 3 is a perspective view, showing, in detail, the several parts forming the connection of the adjustable hand-crank and treadle-wrist with the crank-arm.

Similar letters of reference denote corresponding parts wherever used.

My invention relates to a novel combination of hand and foot power, whereby they are adapted to be simultaneously operated by one and the same person when required, and each is made to co-operate with and assist the action of the other, as hereinafter described.

It further relates to certain details of construction of parts for facilitating the adjustment of the hand-crank and treadle-wrist, as hereinafter fully explained.

In the accompanying drawings, A A′ represent a strong upright frame of any suitable construction adapting it to the purpose for which it is intended. In the upper part of this frame is mounted a horizontal shaft, B, which constitutes the main driving-shaft of the machine, and from which motion is communicated, through any suitable arrangement of gearing or band wheels, pulleys, and bands, to the machinery to be driven or operated.

For the purpose of giving increased velocity to the driving-gear or band-wheel, it is shown in the present instance provided with a large spur-wheel, C, which gears into and drives a pinion, C′, keyed to a shaft, B′, mounted in suitable bearings in the frame A, and to which a band or fly wheel, D, is secured, as shown.

The end of shaft B opposite the fly-wheel is squared to receive a crank-arm, E, the outer face of which, at points eccentric to the shaft, is provided with ribs *e*, radial to perforations *e′* in the arm E, said arm having two or more of said perforations at different distances from the shaft B for permitting the adjustment of the crank and treadle power, as will be explained.

f is a centrally-perforated cylindrical wrist, grooved on its opposite faces at *f′*, and G is a crank having two or more series of ribs, *g*, and perforations *g′*, similar to those on the arm E, and for a like purpose—viz., that of permitting the adjustment of the length of the crank or crank portion of the arm. The wrist *f* is placed at the desired point on the arm E, with its grooved face matching the ribs *e* at the required point, and the crank-arm G is placed over the wrist, adjusted to the desired length, and the parts are united by a through-bolt, *h*, and nut *i*, as shown, which serve, through the interposition of the ribbed and grooved faces described, to form a rigid connection between them. The wrist *f* has a peripheral groove formed in it midway of its length to receive an eye or loop, *k*, formed upon or rigidly secured to one end of a connecting-rod, K, the connection being such as to permit the wrist to rotate freely in the loop or eye *k*.

The rod K is divided midway of its length, and the two parts are held rigidly connected by a longitudinally-grooved clamp, *l*, made in two parts, and united for clamping the two parts of the rod by a through-bolt or thumb-screw, by loosening which the length of the rod can be adjusted, as desired. The lower end of rod K is connected with a wrist pin or hook, *m*, attached to the forward end of a treadle-lever, M, as shown. This foot treadle or lever is pivoted midway of its length in bearing-brackets attached to a lateral extension of the frame-timber A′ for causing the weight of the attendant to assist in steadying the frame, the arrangement being such that the operator, standing astride the fulcrum or pivot of the treadle, can throw his weight alternately upon the opposite ends of said treadle-lever.

The crank G is set at such an angle to the arm E that when action is exerted to draw the crank-arm E downward and backward by hand, the weight of the operator will be drawn or thrown upon the forward end of the treadle-lever M, and the power of said lever is exerted

simultaneously with that of the lever for giving the movement described to the arm, and when the power of the hand is exerted upon the crank G to push it upward and forward away from the attendant, the weight of the latter will necessarily be thrust back upon the rear arm of the treadle, thus causing the rod K to push the wrist *f* and arm E in the same direction in which the action of the hand is exerted to move it, thus causing the treadle and hand-crank to always co-operate with and mutually assist each other.

I am aware that it is not new to apply hand-cranks and treadles adapted to be used each independently of the other to one and the same machine, and I therefore do not claim the combination of such devices broadly and irrespective of their arrangement; but,

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

1. The combination, with the driving-crank or crank-shaft, of the hand-crank and the treadle or foot-lever adapted to be operated simultaneously by a single attendant, substantially as described.

2. The combination, with the driving-crank, of the adjustable wrist *f*, through which both the hand-crank and the treadle are connected with said shaft, substantially as and for the purpose set forth.

3. The combination, with the crank-arm E, of the adjustable wrist *f* and adjustable crank G, substantially as and for the purpose set forth.

JOSEPH DICK, JR.

Witnesses:
J. B. BROTHERS,
JNO. H. STEINECK.