

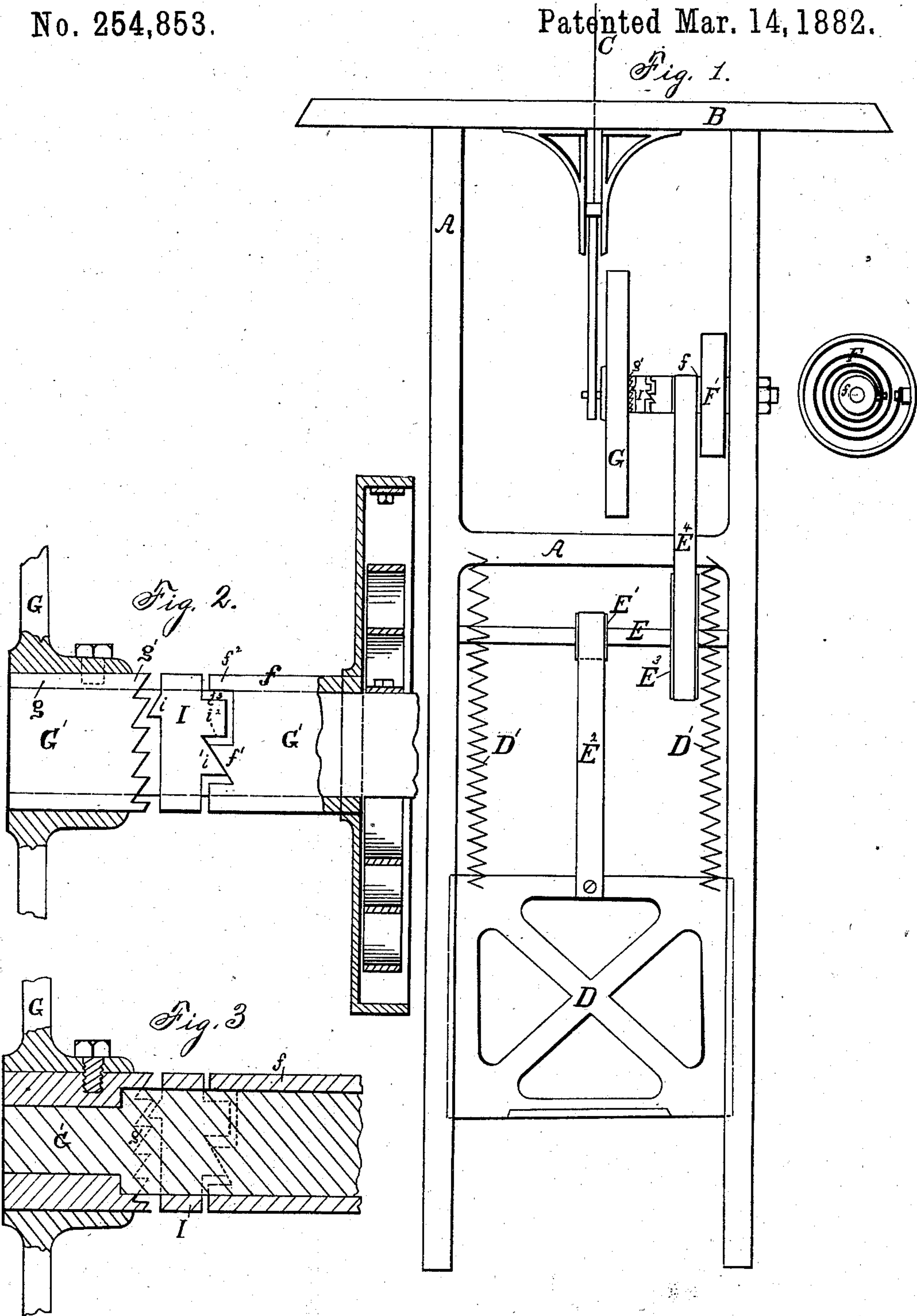
(No Model.)

J. A. WEBSTER.

FOOT POWER.

No. 254,853.

Patented Mar. 14, 1882.



WITNESSES

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# UNITED STATES PATENT OFFICE.

JOHN A. WEBSTER, OF DETROIT, MICHIGAN.

## FOOT-POWER.

SPECIFICATION forming part of Letters Patent No. 254,853, dated March 14, 1882.

Application filed January 12, 1882. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN A. WEBSTER, of Detroit, county of Wayne, State of Michigan, have invented a new and useful Improvement in Foot-Powers; and I declare the following to be a full, clear, and exact description of the same, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings, which form a part of this specification.

My invention consists in improved means for overcoming the usual difficulty experienced with foot-powers by reason of the machine stopping at or near the dead-point, as will be hereinafter described, and more particularly pointed out in the claims.

In the drawings, Figure 1 is a view in end elevation of a foot-power as applied to the operation of a jig-saw. Fig. 2 is a separate view of the special feature involving my invention. Fig. 3 is a longitudinal section of the same.

Heretofore in foot-powers they have generally been constructed upon the crank principle, the driving-pitman being connected directly with the wrist of the crank. It is apparent, however, that in case the machine should come to a standstill, with the pitman and the crank both resting in line with each other, or nearly so, or, as it is generally called, upon the "dead-point," the machine could only with the greatest effort be started, or might require a partial rotation of the wheels by hand. By my invention, however, the machine may be started forward by the foot-pressure instantly from any point at which it may have rested, and the leverage exerted by the foot in starting it will always be the same.

To this end A represents the frame of a foot-power, coupled in this instance with a jig-saw, though of course it is equally applicable for any other mechanism to be driven by foot-power.

B is the table; C, the saw.

D is the foot-treadle. I prefer to make it, as shown, so as to slide vertically along suitable guides, adapted to be brought down by the foot and retracted by suitable springs, D'. Instead, however, of employing this sliding treadle, the ordinary lever-treadle may be employed.

E is a counter-shaft provided with a pulley

or drum, E', to which one end of the belt E<sup>2</sup> is fastened.

E<sup>3</sup> is another pulley, to which one end of the belt E<sup>4</sup> is fastened, while the other end is fastened to the hub *f* of the spring F. The spring-case F' may be immovable and the spring be contracted by revolving the hub, as shown, or vice versa.

G is the fly-wheel, to which the saw or other tool is suitably connected, and by which it is driven. This fly-wheel is loosely hung upon a shaft, G', and its hub *g* is notched or ratcheted at *g*'.

I is a separate collar or clutch-ring provided with one or more ratchets, *i*, adapted to engage the ratchets *g*'. On its opposite end are one or more inclined faces, *i*', adapted to engage a corresponding inclined face, *f*', on the hub *f*. It is also provided with abrupt shoulders *i*<sup>2</sup> and *i*<sup>3</sup>, which engage with a corresponding shoulder, *f*<sup>2</sup>, on the hub *f*. The hub *f*, the ring I, and the fly-wheel G are all loosely journaled on the shaft G'.

The operation of the device will now be understood. When the apparatus is at rest the spring F has by its own retraction wound the belt E<sup>4</sup> upon the hub *f*, also the belt E<sup>2</sup> upon the drum E', and the treadle is at its uppermost point. The operator now with his foot presses down upon the treadle. This causes the belts to unwind and give motion to the hub *f*. As this hub revolves, its inclined faces *f*' impinging against the corresponding inclined faces, *i*', of the ring I forces the ring longitudinally from the hub and engages its ratchets *i* with the corresponding ratchets, *g*', on the hub *g* of the fly-wheel, and so gives motion to the saw or other tool. As soon as the ring I has been shifted sufficiently far to secure a firm engagement with the fly-wheel the shoulders *i*<sup>2</sup> and *f*<sup>2</sup> come into contact with each other, so that any tendency to a greater longitudinal movement of the ring is thereby checked. This prevents the fly-wheel from being forced longitudinally on the axis to such an extent as to make it bind upon the journal. When the treadle has been pressed down the foot is lifted, the spring F at once retracts, and again winds up the belts. As the spring retracts the motion of the hub *f* is thereby reversed. This at once loosens its



engagement with the ring I, and the ratchets  $g'$  force the ring back out of engagement and ride freely past the ratchets  $i$ . By pressing upon the treadle this operation is again repeated, and it makes no difference whether the operator works with a greater or less vertical travel of his foot, for a downward movement of the treadle from any point in its travel will instantly engage the driving parts and communicate motion to the fly-wheel, and that in turn to the tool, so that at any point at which the tool might come to rest this mechanism affords a means to start it from that point and with as great a leverage as could be exerted upon it from any other point at which it might have come to a rest.

What I claim is—

1. In a foot-power, the combination, with a shaft, of a reciprocating hub arranged to work upon said shaft and provided with clutch-teeth at one end, a drive-wheel fixed upon said shaft and having a hub provided with clutch-teeth projecting toward the clutch-teeth of the reciprocating hub, but inclined in an opposite direction therefrom, and an intermediate shifting clutch-ring, arranged to be driven toward the drive-wheel and engaged therewith by the reciprocating hub when the latter moves in one direction and to be thrown out of engagement

with said drive-wheel when said hub moves in the opposite direction, said ring at the same time reciprocating with said reciprocating hub, substantially as described. 30

2. In a foot-power, the combination, with a drive-wheel having a ratcheted hub,  $g'$ , an engaging clutch, I, and driving-hub  $f$ , of a spring, F, the construction being such that the spring acts to reverse the motion of the hub after it has been rotated forward by the belt, substantially as described. 35 40

3. The combination, with the drive-wheel, the clutch I, and hub  $f$ , of the spring F, the belts  $E^2$  and  $E^4$ , and a treadle, substantially as described.

4. The combination of a drive-wheel provided with ratchets  $g'$ , a clutch-ring provided with ratchets  $i$ , inclined faces  $i'$ , and shoulders  $i^2$  and  $i^3$ , and in connection therewith a reciprocating driving-hub,  $f$ , provided with inclined faces  $f'$  and shoulders  $f^2$ , substantially as described. 45 50

In testimony whereof I sign this specification in the presence of two witnesses.

JOHN A. WEBSTER.

Witnesses:

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