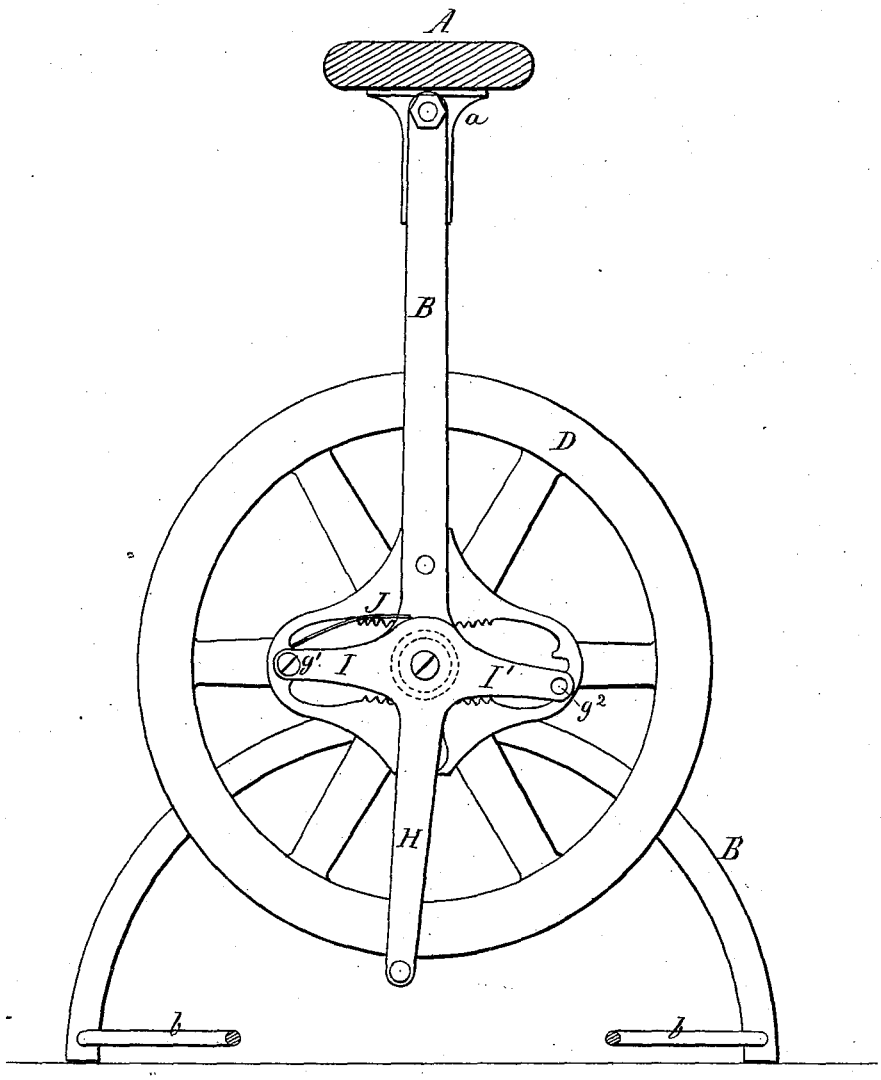
2 Sheets—Sheet 1.

G. W. ZEIGLER.

Treadle-Power Machine.

No. 228,432. Patented June 1, 1880.

Fig 1.



Witnesses:

J. F. Munson

J. F. Th. Lang.

Inventor:

George W. Zeigler.

by

Munn, Renwick & Lawrence

2 Sheets—Sheet 2.

G. W. ZEIGLER.

Treadle-Power Machine.

No. 228,432. Patented June 1, 1880.

Fig 2.

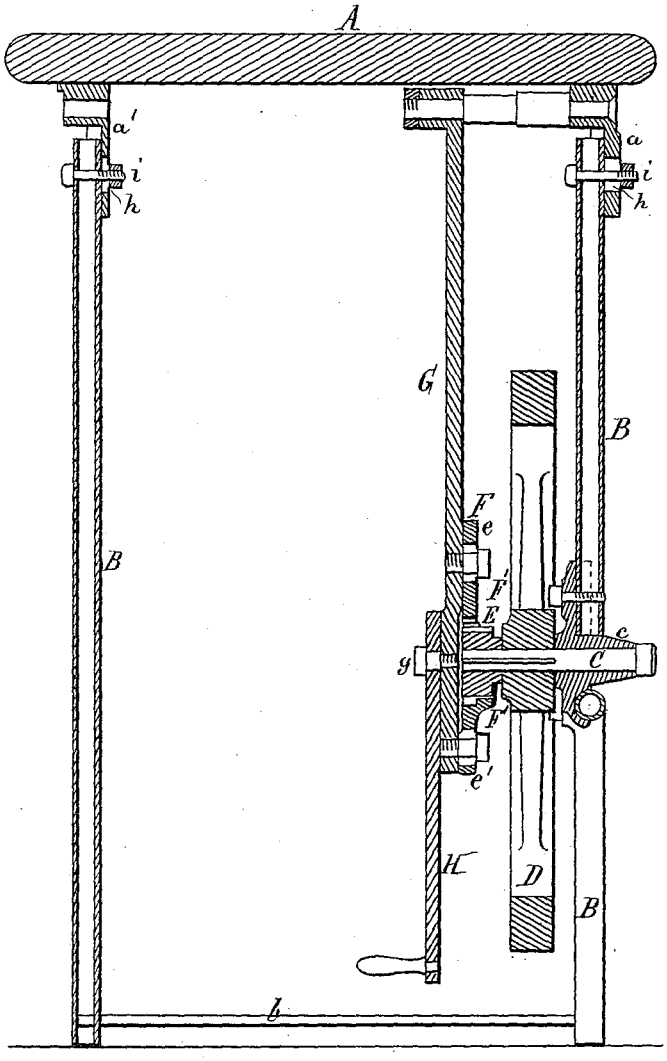


Fig 3.

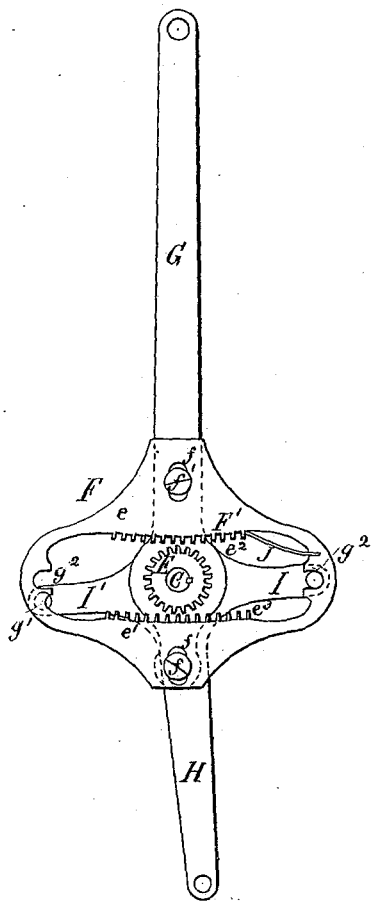
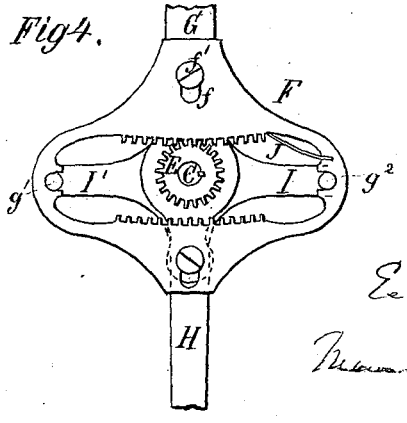


Fig 4.



Witnesses:
J. F. Munson
J. P. Th. Lang

Inventor:
George W. Zeigler
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UNITED STATES PATENT OFFICE.

GEORGE W. ZEIGLER, OF CLINTON, MICHIGAN.

TREADLE-POWER MACHINE.

SPECIFICATION forming part of Letters Patent No. 228,432, dated June 1, 1880.

Application filed February 11, 1880.

To all whom it may concern:

Be it known that I, GEORGE W. ZEIGLER, a citizen of the United States, residing at Clinton, in the county of Lenawee and State of Michigan, have invented a new and useful Treadle-Power Machine, of which the following is a specification.

My invention relates to improvements in treadle-power machines in which a rotary motion is obtained from a reciprocating movement; and the objects of my improvements are, first, to provide the treadle mechanism with a toothed segment, a pinion, and a spring, or equivalents of these devices, and also with a crank-arm on its pitman-rod, whereby the inconvenience and difficulty experienced in passing the dead-centers are avoided and a very easy treadle movement produced; second, to provide the treadle movement with means whereby the power-shaft can be moved always in the proper direction, whether the stroke of the treadle is short or long; and, third, to provide the pitman with two crank-arms, and to have the same combined with two crank-pin notches of the toothed segment, spring, and pinion, as hereinafter described, whereby the direction of rotation of the power-shaft can be readily changed. I attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a vertical central cross-section of the frame, showing the entire treadle-power mechanism in elevation. Fig. 2 is a vertical central longitudinal section of the machine. Fig. 3 is a detail elevation of the treadle mechanism, the fly-wheel being removed. Fig. 4 is a similar view to Fig. 3, but the wheel and segmental rack are shown as engaged, they being shown as disengaged in all the other figures.

Similar letters refer to similar parts throughout the several views.

The table or plate A, uprights B B, bearing-support B′, hangers *a a′*, and tie-rods *b* constitute a suitable frame for the machine. The uprights B B, as well as the arched bearing-support B′, are shown made of metal, which is tubular; but as I contemplate applying for another patent for a frame made of such metal no specific claim is made in this application therefor.

In the bearing *c* of the support B′ turns a power-shaft, C, carrying a fly-wheel, D, around which a belt is to be placed for transmitting the power of the treadle movement.

The shaft C might be extended in length and be provided with pulleys or gear-wheels for transmitting power to small machines. The machine as represented is designed for a sewing-machine or watch-maker's lathe.

On the inner end of the shaft C a pinion-wheel, E, is fastened, and above and below this pinion a segmental toothed rack, F′, is applied, the two rack-bars being placed apart a distance greater than the diameter of the pinion, and formed on or applied to a slotted segmental plate, F, which is attached to a rod, G, pivoted upon the hanger *a*, as shown.

The surfaces *e e′* of the plate F, upon which the rack-teeth e^2 e^3 are formed or applied, are made plain beyond the racks at each end to an extent as great or a little greater than the diameter of the pinion-wheel E, in order that the pinion may alternately change its engagement with the respective lines of teeth without moving the plate F while making the change from one rack to the other at either end of the plate.

The plate F must descend and rise in order to effect the change of the pinion from one rack to another, and to accomplish this the plate is slotted at *f*, and through the slots *f* the pins *f′*, which connect the plate to the pivoted or swinging rod G, are passed loosely, so that the plate, while guided by these pins is free to move up and down independently of the rod.

To produce the up and down movements of the plate F the pitman H of the treadle is provided with a crank-arm, I, and is pivoted at the angle formed between it and the said arm to the swinging rod G, and by the outer end of the arm to one end of the plate F, as indicated by the letters *g g′*.

Another arm, I′, may be formed on the pitman, and a crank-pivot notch, g^2, be provided at the other end of the plate, and by this means the direction of movement of the shaft C may be changed as occasion requires.

For balancing the plate F and keeping it out of gear with the pinion while the treadle is in its normal position, a spring, J, is ap-

plied to the plate and swinging rod G, said spring having one of its ends fastened to the plate and the other to the rod, as shown. In the event that the racks should not stand in just the proper position for working with the pinion, provision is made for adjusting the rod G up and down the extent necessary. This provision is shown at *h* and *i*, and consists of a slot, *h*, in the hanger *a* and a set-screw, *i*, passed through the slot and into the upright B.

The operation is as follows: The treadle being vibrated, the pitman swings back and forth, and in its back movement it causes the rack-plate to be moved upward through the crank-arm I. This causes the lower rack-teeth to engage with the pinion E and rotate it with the shaft C. On the return movement of the pitman its arm I causes the plate F to move downward, and by this means the upper rack engages with the pinion E and continues its rotation in the direction it was started. When the treadle is at rest the spring J moves the plate F upward midway between the two racks, ready for a new movement.

If it is desired to reverse the rotation of the pinion and shaft C, the operator releases the arm I and pivots the arm I′ to the opposite end of the plate. This done, the treadle, operated as before, will produce the desired movement of the pinion and shaft. The change in the position of the pivot of the respective arms I I′ is provided for by making open half-notches g^2 in the plate F, for retaining the ends of the pivot g', said notches allowing the pivot to slide upon the rack-plate while the pitman is moving back and forward.

In the drawings the rack-teeth c^2 are shown as being on different vertical planes; but this is not necessary, it being practicable to have said lines of teeth on the same vertical plane.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The rack-plate fitted to slide up and down upon the pendent swinging bar, and connected by one or the other of its ends to an arm of the pitman-rod of the treadle-connection, in combination with a pinion of a revolving power-shaft, substantially as described.

2. The combination of the pitman rod or bar provided with two arms, the rack-plate provided with two crank-pin notches, one at each end, the pendent swinging bar, and the pinion of the revolving shaft, substantially as described.

3. The combination of the rack-plate fitted to slide up and down, the pendent swinging bar, the pitman with one or more crank-arms, the pinion of the power-shaft, and the spring attached by one end to the rack-plate and by the other end to the pendent bar, substantially as described.

GEORGE W. ZEIGLER.

Witnesses:
J. P. THEODORE LANG,
H. A. HALL.