

(No Model.)

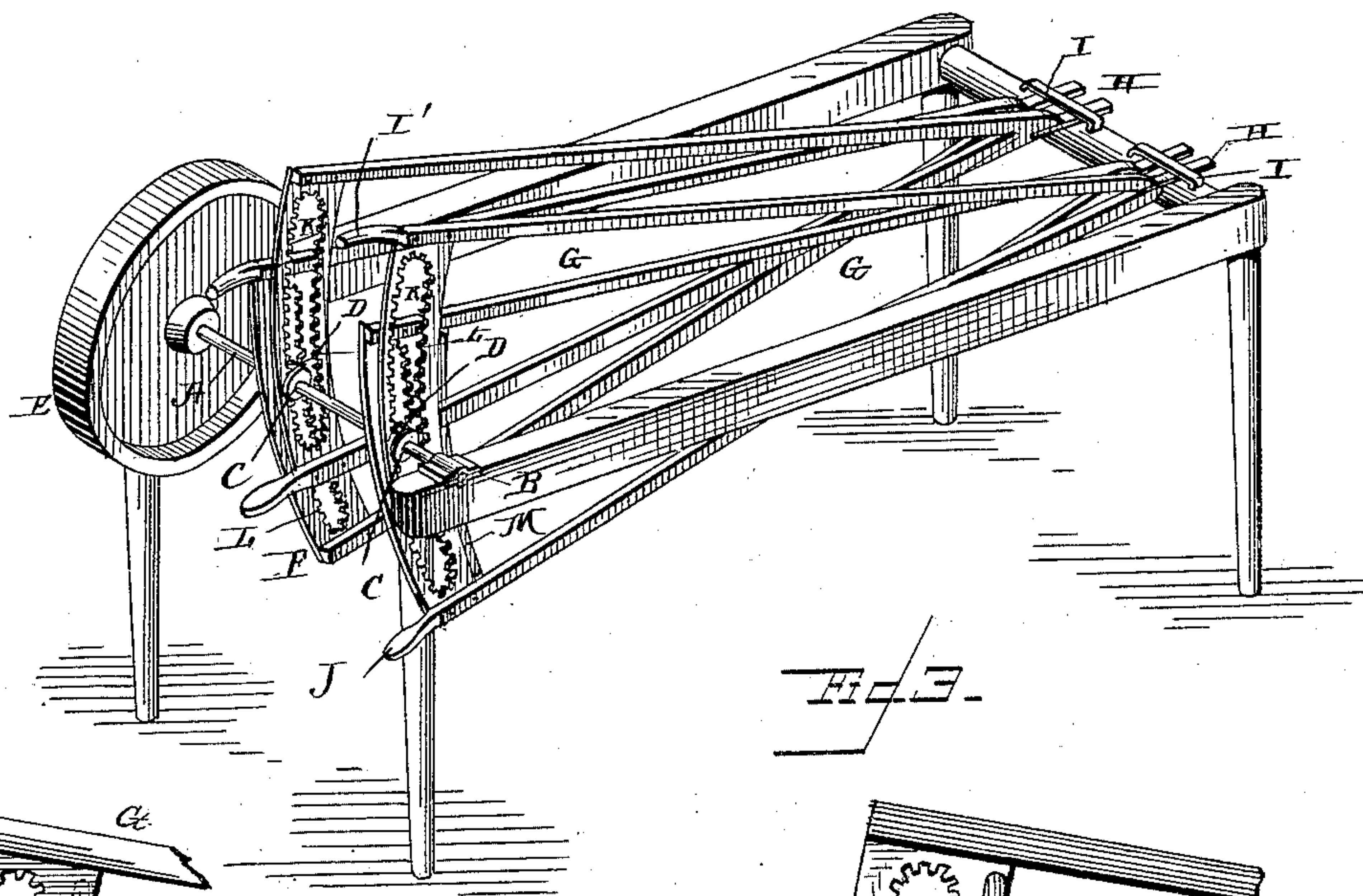
W. H. H. CAMPBELL.

COMBINED HAND AND FOOT POWER.

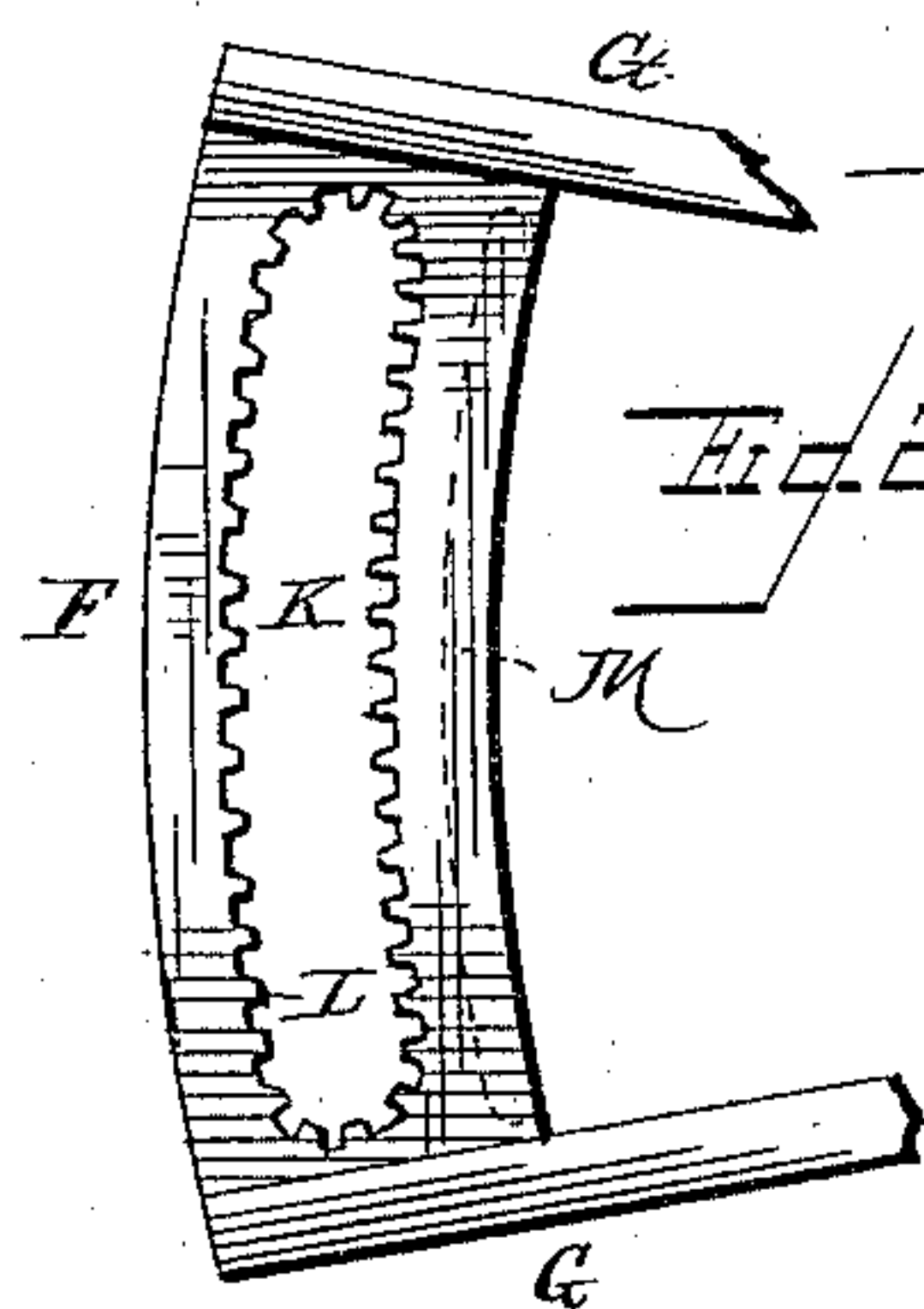
No. 318,353.

Patented May 19, 1885.

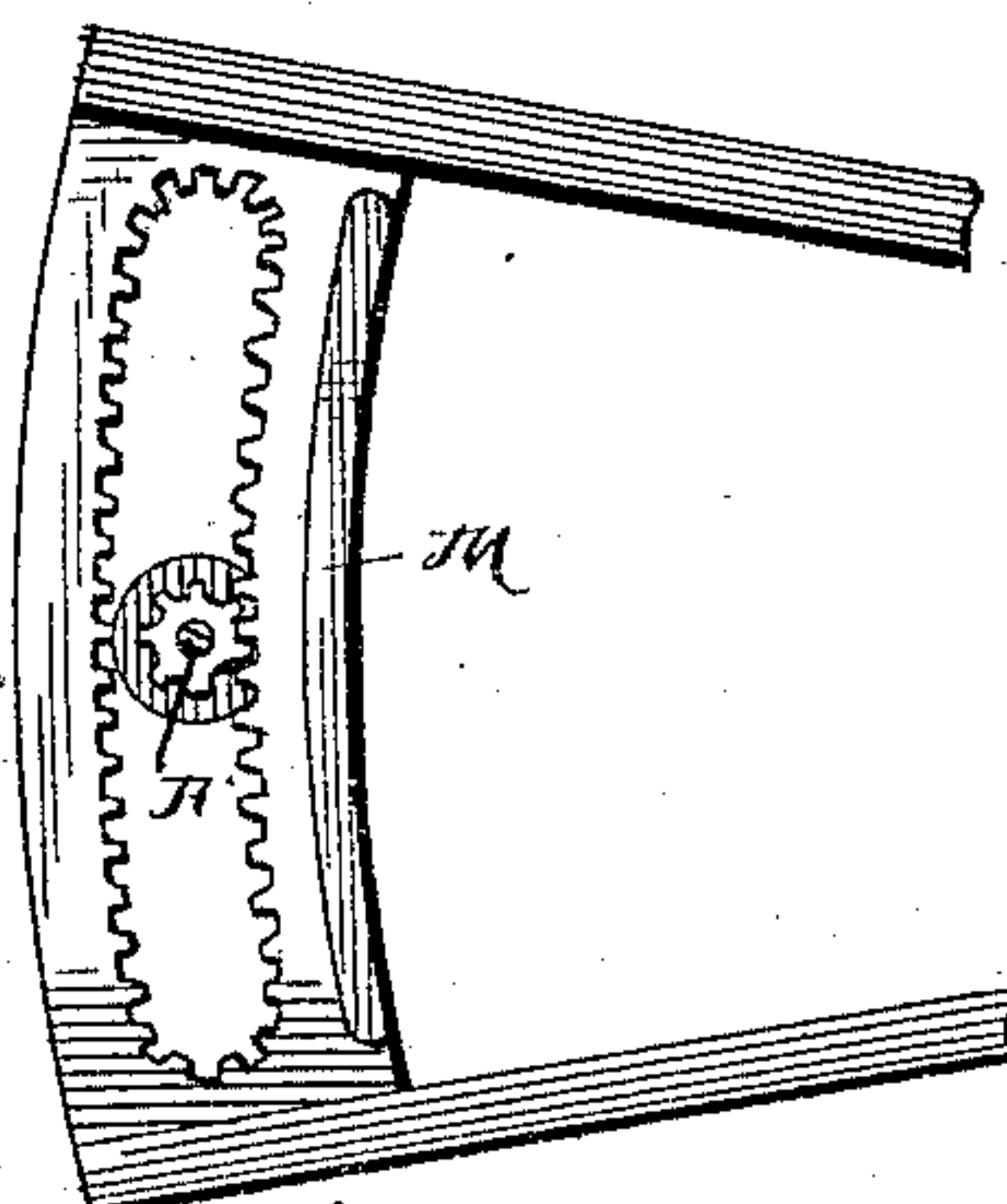
Fig 1.



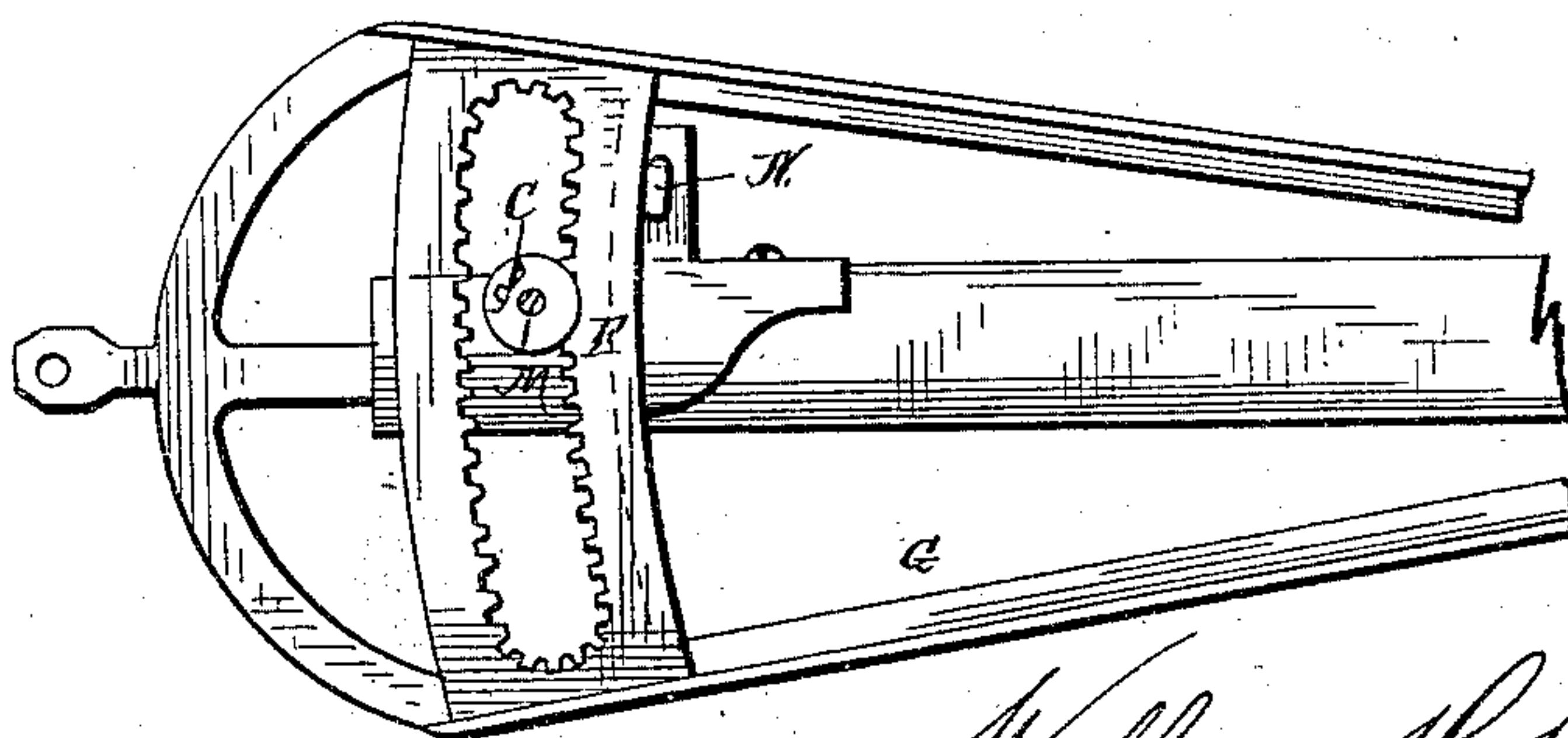
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WITNESSES

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UNITED STATES PATENT OFFICE.

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COMBINED HAND AND FOOT POWER.

SPECIFICATION forming part of Letters Patent No. 318,353, dated May 19, 1885.

Application filed April 16, 1885. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. H. CAMPBELL, a citizen of the United States, and a resident of Wichita, in the county of Sedgwick and State of Kansas, have invented certain new and useful Improvements in Combined Hand and Foot Power for Operating Machinery; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification, and in which—

Figure 1 is a perspective view of my improved hand and foot power. Fig. 2 is a side view of one of the gears. Fig. 3 is a similar view of one gear plate or bar and of its pinion, and Fig. 4 is a side view of a modification using only one elliptical rack.

Similar letters of reference indicate corresponding parts in all the figures.

My invention has relation to hand and foot powers, and it consists in the improved construction and combination of parts of the same, as hereinafter more fully described and claimed.

In the accompanying drawings, the letter A indicates a shaft journaled in bearings B B, and the said shaft is provided with pairs of pinions, C, each pair separated by a flange, D, and with a fly-wheel, E.

F indicates two pairs of segmentally-slotted bars or plates, secured at their ends to the ends of rods or bars G, connected at their other ends, and provided at their connected ends with a flat bar, H, sliding in a bail or loop, I, or other suitable sliding bearing, one pair of flat bars sliding in one bail. The ends of the upper radial bar of one plate and of the lower radial bar of the other plate of each pair of slotted plates are extended beyond the end of the said plate to form a handle, I', or foot-treadle J, by means of which each pair of radial bars and their segmentally-slotted plates may be reciprocated. The segmental slots K of the plates F are of a width greater than the diameter of the pinions, and the inner edges of the said slots are cogged, as shown at L, forming an oblong or elliptical rack. The

elliptical racks of the several plates mesh with the pinions, and by reciprocating each plate the elliptical or oblong rack will follow the pinion with which it meshes and revolve it, the sliding flat bars at the connected ends of the radial bars, allowing the said bars and their plates a play transverse to the pinion-shaft, allowing the racks to follow the contour of the pinions at the ends of the cogged slots.

For the purpose of further guiding the racks in their reciprocating and sliding motion the facing-sides of the slotted plates are provided with segmental blocks or strips M, which slide with their edges against each other, and the rounded ends of which will guide the plates in their motion at the ends of the slots, so as to insure a perfect uninterrupted revolving motion of the shaft while the slotted plates are reciprocated by means of their respective handles and treadles. The handles and treadles of each pair of plates are so arranged that the handle and treadle of one pair will be in diametrically-opposite positions, and move in opposite directions, so as to allow the right hand and the left foot to rise at the same time, and the left hand and right foot, and vice versa, which is the most convenient manner of operating the said handles and treadles, the operator being thus allowed to press down upon the treadles with his full weight, and to raise himself by throwing his weight upon the arm at the side, where he has to raise his foot, forcing that handle down, and consequently allowing that treadle to rise with his foot. Where only one slotted plate is used, the segmental block or strip upon the side of the plate bears with its edges and rounded ends against a lug, N, secured suitably to the supporting-frame at the side of the plate.

If desired, the slots in the plates may be straight instead of segmental, and may be raised and forced down by suitable rope-and-pulley connections, draft in alternating opposite directions upon the ropes reciprocating the plates and causing them to revolve the pinions and shaft in the same manner as with the segmentally-slotted plates.

It follows that modifications of different descriptions may be made in this device without

departing from the spirit of my invention, and I reserve to myself all rights to such modifications which may suggest themselves during use of the device.

5 Having thus described my invention, I claim and desire to secure by Letters Patent of the United States—

1. The combination of a pinion, a plate having a segmental cogged slot of a width greater
10 than the diameter of the pinion, and having a segmental block or strip upon one side, rounded at its ends, and a block bearing with its sides and ends against the sides and ends of the segmental strip upon the plate guiding
15 the same, to reciprocate segmentally and radially, as and for the purpose shown and set forth.

2. In a hand and foot power, the combination of a shaft having pairs of pinions, and
20 provided with a fly-wheel, pairs of plates hav-

ing segmental cogged slots of a width greater than the diameter of the pinions secured upon the ends of radial bars having their ends united and provided with flat bars sliding in bails, and having a handle at the upper end of one
25 plate of each pair, and a treadle at the lower end of a plate of each pair, and segmental blocks or guide-strips secured upon the facing-sides of each pair of plates, and bearing with their edges and rounded ends against
30 each other, guiding the plates in a segmental and radial reciprocating motion, as and for the purpose shown and set forth.

In testimony that I claim the foregoing as my own I have hereunto affixed my signature
35 in presence of two witnesses.

WILLIAM HARVEY HARRISON CAMPBELL.

Witnesses:

GEO. W. ADAMS,

LON C. HAUS.