

(No Model.)

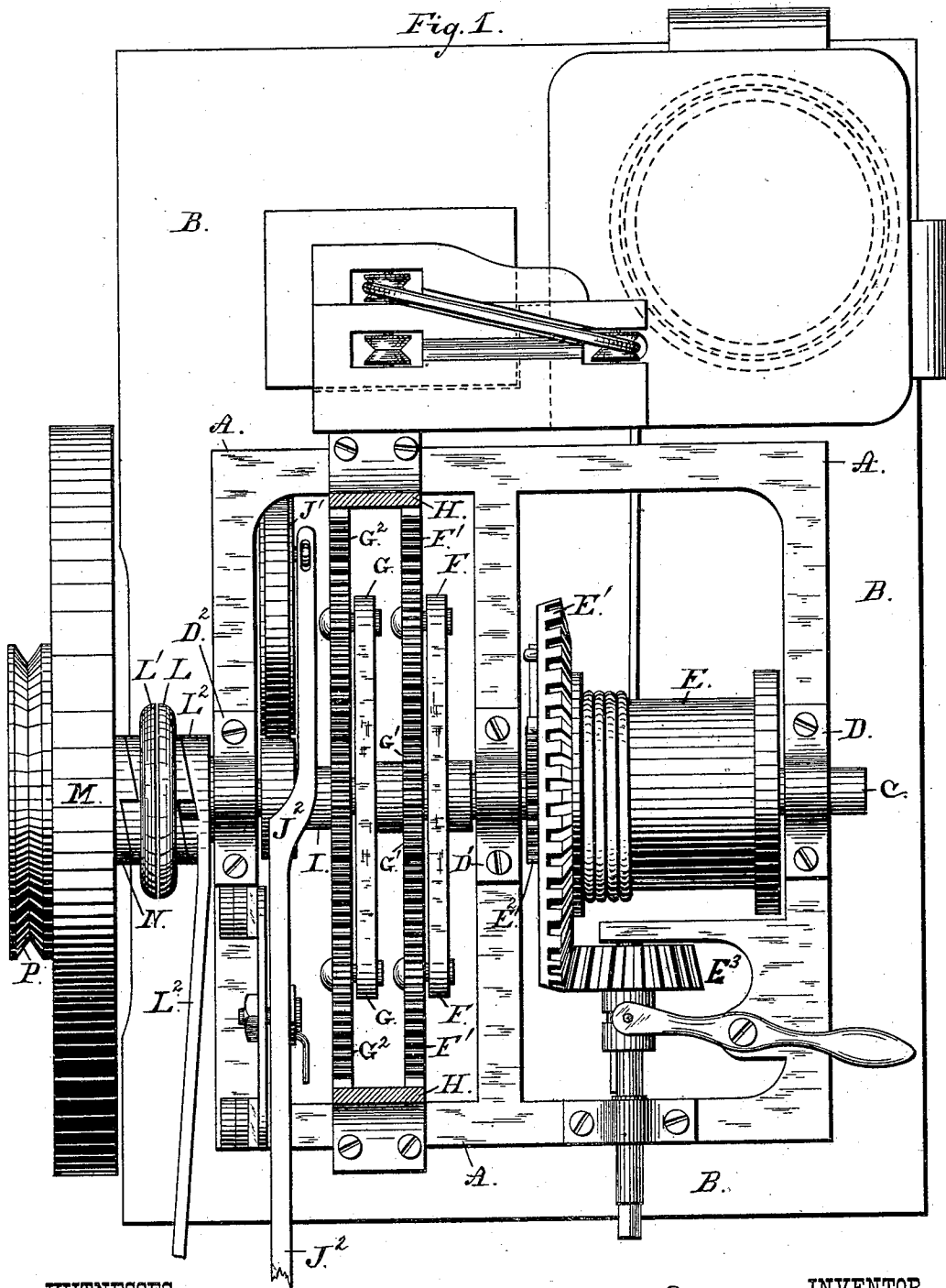
3 Sheets—Sheet 1.

W. F. MILLS.
MOTOR.

No. 246,902.

Patented Sept. 13, 1881.

Fig. 1.



WITNESSES

Albert L. Lord.
W. G. Donnelly.

INVENTOR

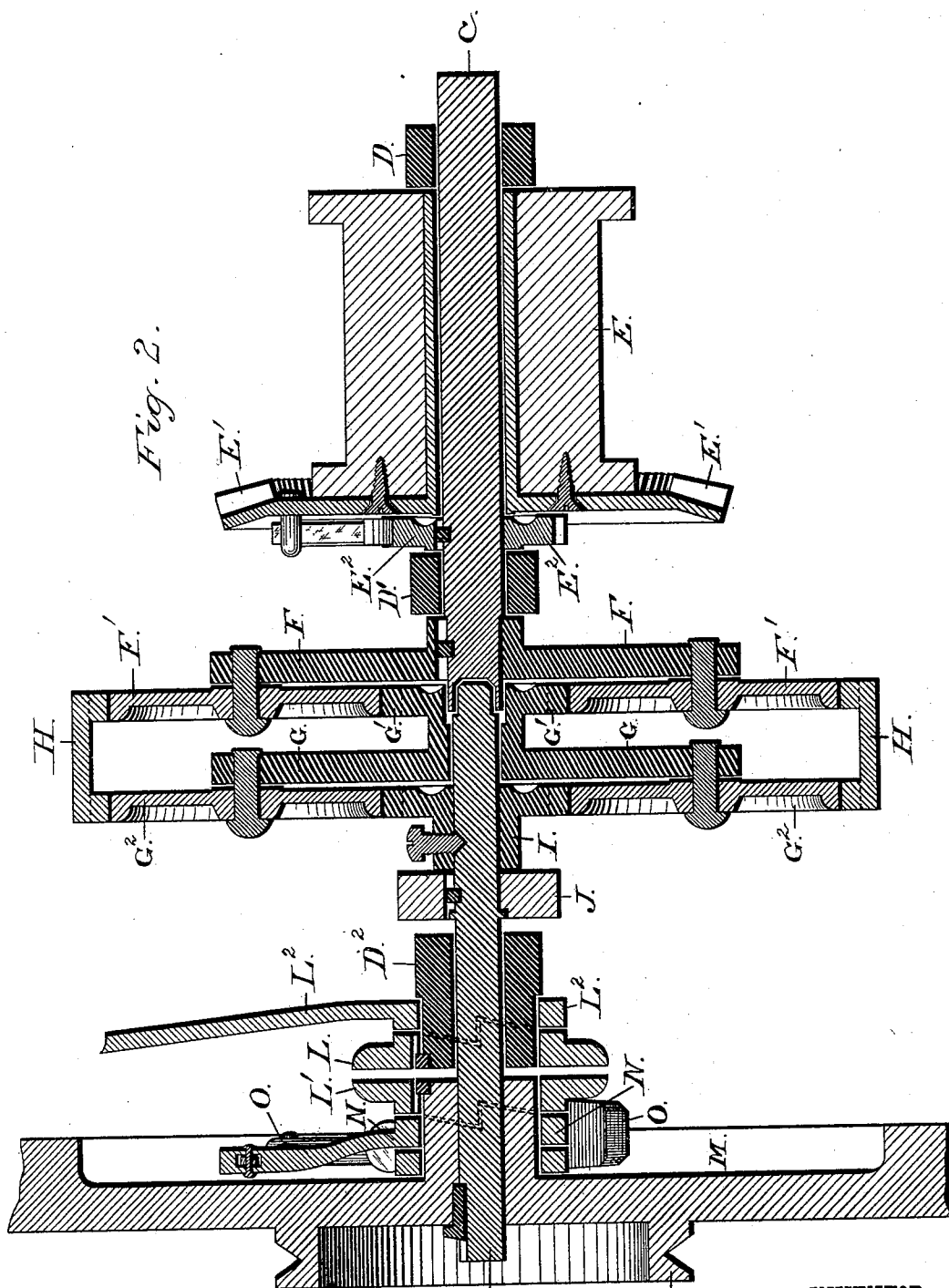
Willard F. Mills
By Leggett & Leggett

ATTORNEYS

W. F. MILLS.
MOTOR.

No. 246,902.

Patented Sept. 13, 1881.



WITNESSES

Albert L. Lord.
W. E. Donnelly

INVENTOR

Willard F. Mills.
By Leggett & Leggett

ATTORNEYS

(No Model.)

3 Sheets—Sheet 3.

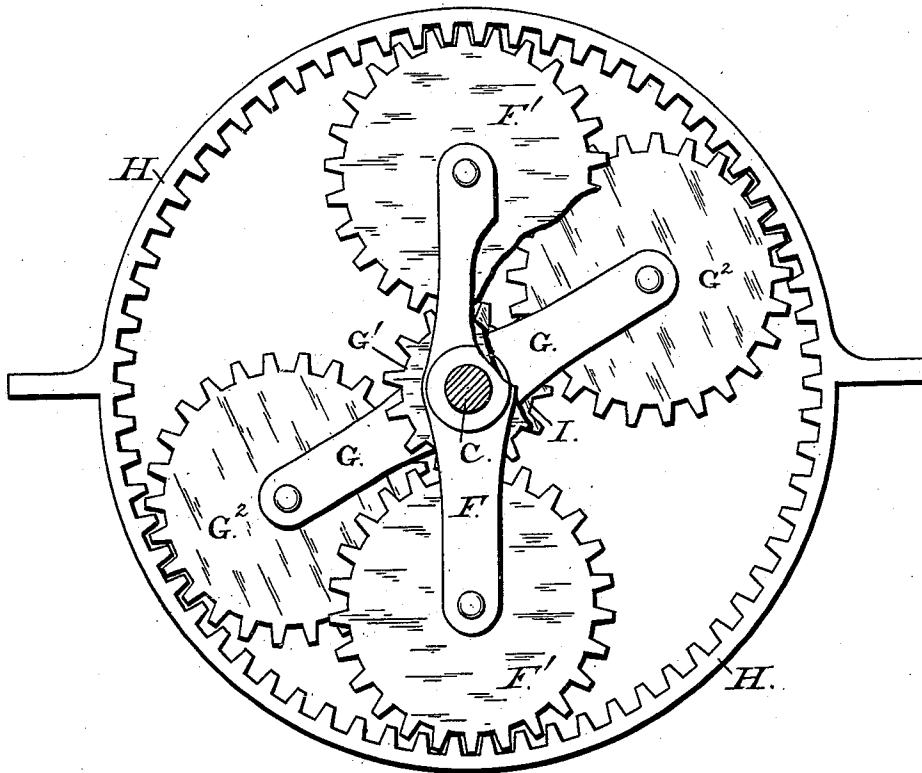
W. F. MILLS.

MOTOR.

No. 246,902.

Patented Sept. 13, 1881.

Fig. 3.



WITNESSES

Albert L. Lord
W. C. Connelly

Willard F. Mills INVENTOR

By Leggett & Leggett
ATTORNEYS

UNITED STATES PATENT OFFICE.

WILLARD F. MILLS, OF WELLINGTON, OHIO.

MOTOR.

SPECIFICATION forming part of Letters Patent No. 246,902, dated September 13, 1881.

Application filed March 28, 1881. (No model.)

To all whom it may concern:

Be it known that I, WILLARD F. MILLS, of Wellington, in the county of Lorain and State of Ohio, have invented certain new and useful Improvements in Weight or Spring Motors; 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 pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to motors for the purpose of driving light machinery, blowing organs, and like work; and it consists in so constructing the said motor that it is much more compact and runs with less friction than the motors now in use.

My invention consists in certain features of construction and combinations of parts, as will hereinafter be described, and pointed out in the claims.

In the drawings, Figure 1 is a plan view of my motor with part of the internal gear removed, showing the multiplying-gearing. Fig. 2 is a longitudinal vertical section of the main shaft and its gearing. Fig. 3 is a view, in elevation, of the internal gear and the multiplying-gearing, showing the relative arrangement of the same.

A is the frame of my motor, which is fastened in any suitable manner to the base B. Working in suitable bearings, $D D' D^2$, on said frame A is a main shaft composed of the parts C C'.

E is a drum, which revolves freely in one direction around part C of the main shaft, being prevented from revolving around said shaft in the other direction by means of the pawl and ratchet-wheel E^2 , said ratchet-wheel being keyed to said part C of the main shaft. One end of the drum E is provided with a bevel-gear, E' , this bevel-gear, when meshed with the small bevel-pinion E^3 , serving as a means whereby the said drum E may be wound up. The bevel-pinion E^3 is constructed in such a manner that it may be unshipped from the large gear E' , if desired.

Securely fastened near one end of the part C of the main shaft—viz., at the end where it joins the part C'—are two arms, F F, each being provided at its outer end with a gear-wheel, $F' F'$, which mesh with the internal gear,

H, and also with the pinion G' , attached to and forming part of the arms G G, and operate to revolve said arms by means of said pinion. The arms G G revolve freely around the part C' of the main shaft, and are provided at their outer ends with gear-wheels $G^2 G^2$, which, in turn, also mesh with the internal gear, H, and a pinion, I, which is secured to the part C' of the main shaft and serves as a means whereby said part C' is revolved through the agency of the said gear-wheels $G^2 G^2$.

J is a friction-pulley, which engages with the friction-pulley J' , which, in turn, operates the rocking lever J^2 by means of a suitable pitman-connection, the fulcrum of the said rocking lever J^2 being made adjustable, so as to adjust it for a longer or shorter sweep at its outer end.

I provide the part C' of the main shaft with a friction-brake, which is composed of two disks, L L', each disk being provided at its outer face with two or more inclines, as shown more clearly in Fig. 1 of the drawings. The disk L is keyed to a projection on the bearing D^2 in such a manner that it cannot revolve around it, but is free to slide back and forth. This disk L is operated by the lever L^2 , one end of which revolves loosely around the projection on the bearing D^2 , and, being provided with inclines which correspond to and engage with the inclines on the outer face of disk L, operate to force the inner face of the disk L against the inner face of the disk L'. The disk L' is keyed or fastened in any suitable manner to the hub of the large fly-wheel M, said fly-wheel being in turn fastened to the part C' of the main shaft. This disk L' is operated by means of an annular collar, N, which is provided with inclines on one of its faces to correspond and engage with the inclines on the outer face of the disk L', and operating to force this disk L' against the disk L. The annular collar N is operated by means of a suitable governor, O, which may be fastened in any suitable manner to the fly-wheel M and operate to keep the motor at a regular speed by means of the disks L L' and annular collar N.

The fly-wheel M may be provided with a driving-pulley, P, as shown, if desired, which driving-pulley serves as a means to communicate motion to any machinery that is intended to be run by the motor.

The operation of my device is as follows:

The drum E being wound up, it imparts motion to the part C of the main shaft by means of the pawl and ratchet-wheel E². This part C in turn imparts motion to the arms F F', which, as they revolve, cause the gear-wheels F' F' to rotate, the teeth of the same engaging with the teeth on the internal gear, H. The teeth of the gears F' F' also mesh with and turn the pinion G', attached to the arms G G, and cause the said arms to turn much faster than the arms F F'. The gear-wheels G² G² on the ends of the arms G G, also meshing with the internal gear, H, are caused to rotate in the same direction as the gear-wheels F' F', both on the arms G G and also on their own axis, but at a much greater speed. The gear-wheels G² G² also mesh with the pinion I on the part C' of the main shaft and cause the said pinion and the part C' of the shaft to travel at a still greater rate of speed than the said gear-wheels, making at least thirty or forty revolutions to every one revolution of the drum E.

It is obvious that the gear-wheels and pinions may be changed without departing from my invention.

The brake is operated either by hand by means of the lever L², or automatically by means of a governor, O, on the fly-wheel M.

The motor may be driven by any suitable driving-power, such as a weight, coil, or spiral spring, or by any two of them, the same being attached in any suitable manner to the drum E.

I may provide the driving-power with a register which may be connected therewith in such a manner that the amount of motion which said driving-power has gone through will be registered.

What I claim is—

1. In a motor, the combination, with the two-part main shaft C C', fly-wheel M, secured to part C', and drum E, loosely mounted on part C, and devices for locking the drum to the shaft when the drum is revolved in one direction, of the arms F F', gears F' F', large internal gear, H, gears G² G², arms G G, gear G', and gear I, the latter secured to shaft-section C', substantially as set forth.

2. In a motor, the combination, with the two-part shaft provided with drum and fly-wheel and multiplying-gearing for transmitting motion from one shaft to the other, of the friction-pulleys J J' and pitman J², substantially as set forth.

3. In a motor, the combination, with the two-part shaft C C', the arms F F', gears F' F', and large internal gear, H, of the arms G G, having a gear, G', rigidly connected therewith, and gears G² G², substantially as set forth.

4. In a motor, a friction-brake, said friction-brake being composed of two disks, L L', having inclines on their outer face and adapted to be operated by means of a lever, L², or automatically by means of a governor, O, substantially as shown and described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WILLARD F. MILLS.

Witnesses:

S. P. HASTINGS,
E. W. ADAMS.