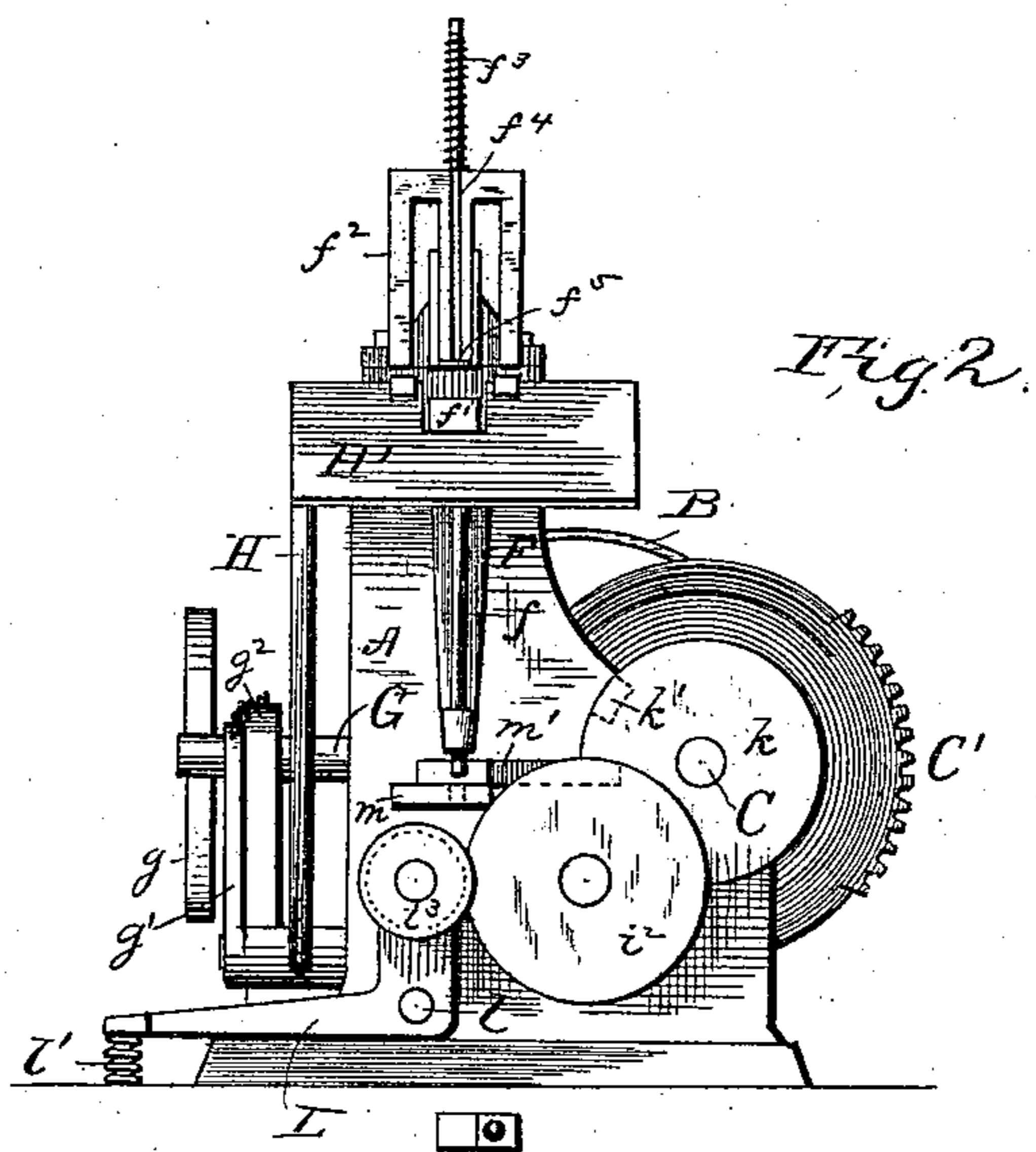
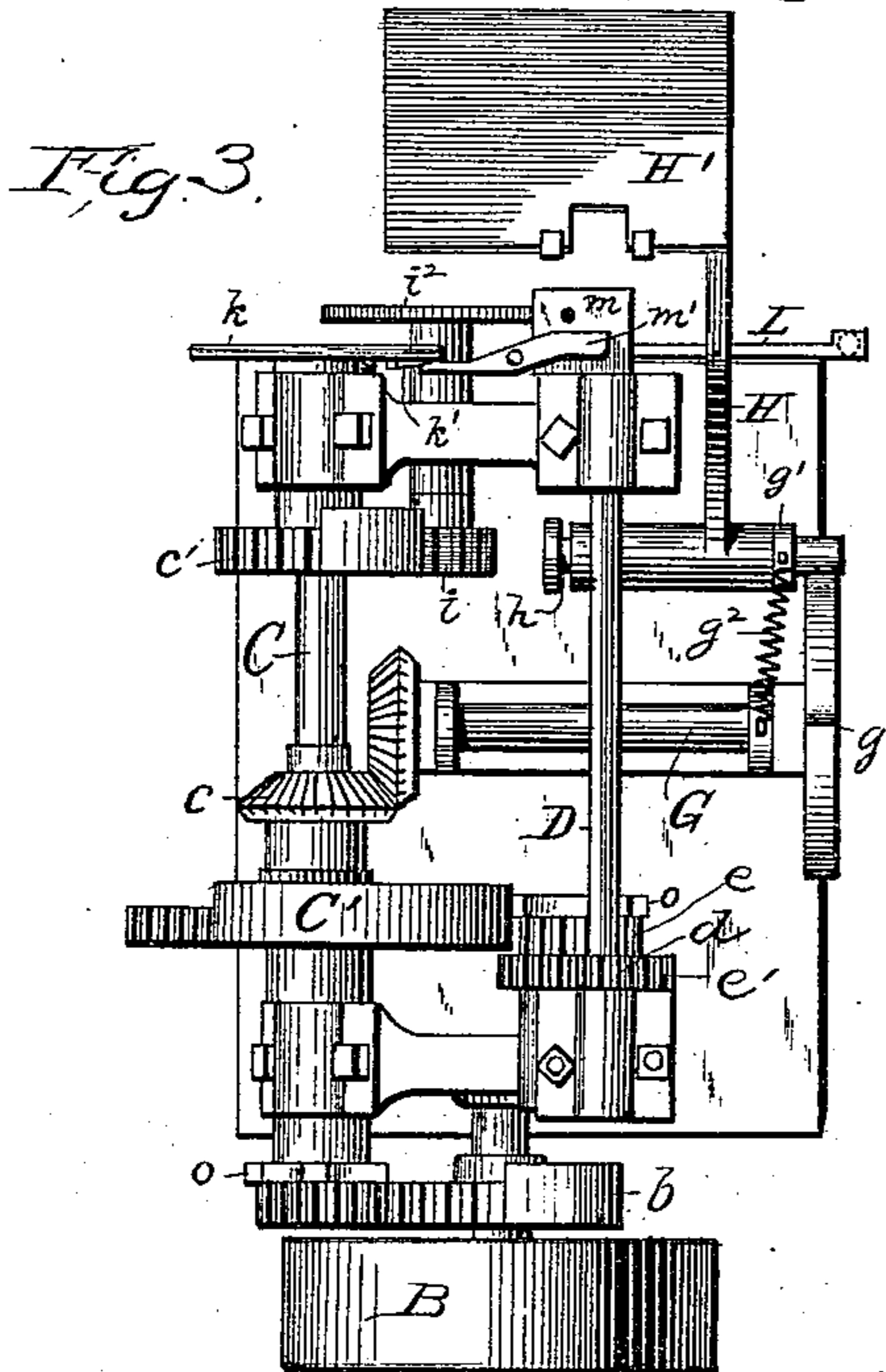
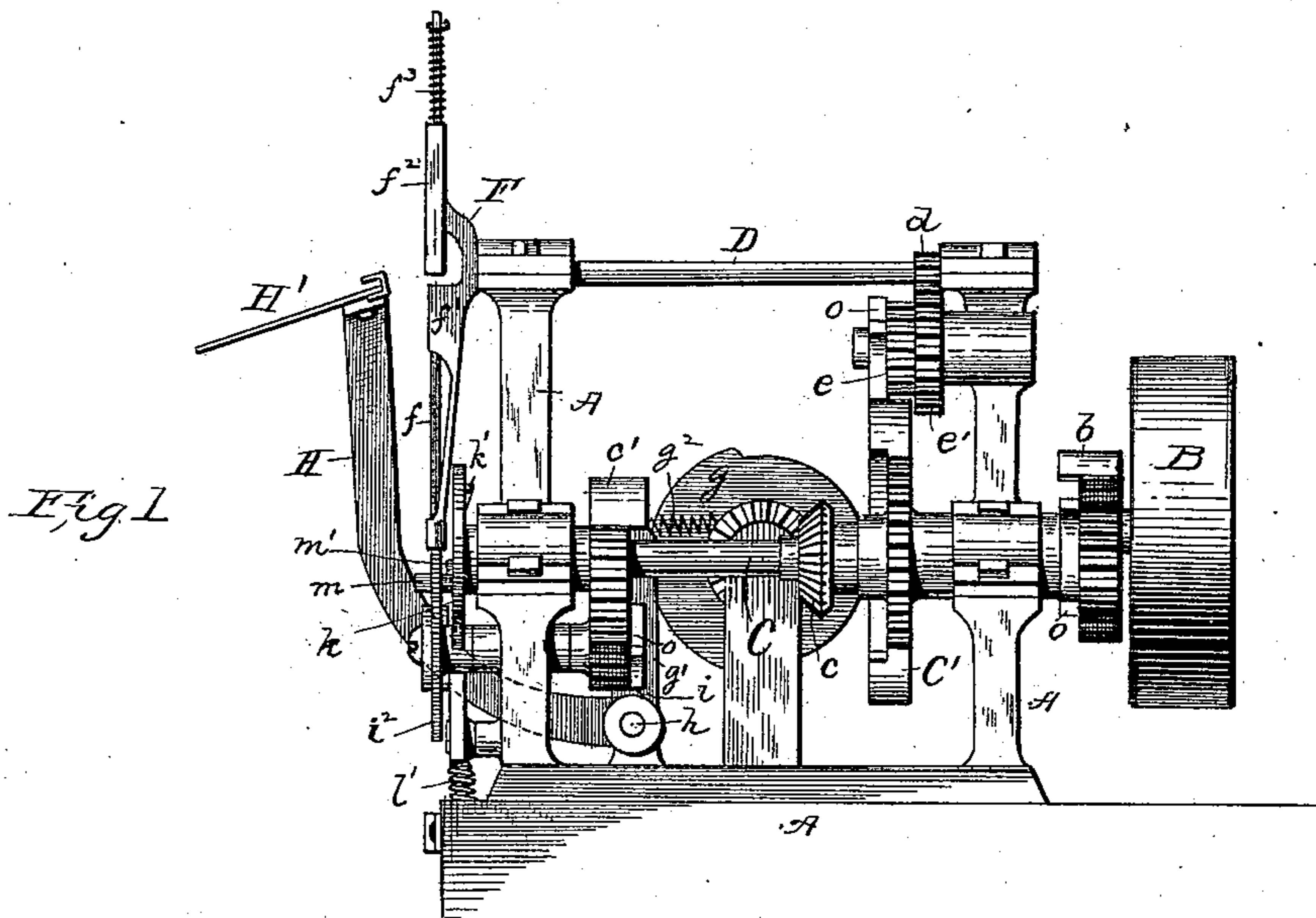


(No Model.)

D. & C. A. SQUIER.  
TAG WIRING MACHINE.

No. 370,425.

Patented Sept. 27, 1887.



Witnesses  
*Wm. Rossmann*  
*W. E. Butler*

Inventors  
*Daniel Squier* and  
*Charles A. Squier*  
By their Attorney  
*V. D. Stockbridge*

# UNITED STATES PATENT OFFICE.

DANIEL SQUIER AND CHARLES A. SQUIER, OF BATTLE CREEK, MICHIGAN.

## TAG-WIRING MACHINE.

SPECIFICATION forming part of Letters Patent No. 370,425, dated September 27, 1887.

Application filed September 10, 1886. Serial No. 213,240. (No model.)

*To all whom it may concern:*

Be it known that we, DANIEL SQUIER and CHARLES A. SQUIER, citizens of the United States, residing at Battle Creek, in the county of Calhoun and State of Michigan, have invented certain new and useful Improvements in Tag-Wiring Machines; and we 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 appertains to make and use the same.

Our invention relates to machines for wiring tags. It is designed especially to be used in the manufacture of the tag described in Letters Patent No. 323,461, granted to Charles A. Squier August 5, 1885, although it may be used for inserting wire in any tag using a wire attachment.

The invention is embraced in a machine comprising a twisting-head operated by suitably-timed gearing, a wire-feeding device, a wire-cutter, and means for conveying the tag to and from the path of the wire.

In the drawings, Figure 1 represents a side elevation of the machine; Fig. 2, an end elevation, and Fig. 3 a plan with the twister-head removed.

A is the frame of the machine, consisting of a metallic casting having a base and two up-rights.

B is the driving-pulley, mounted on a stud projecting from the side of the frame. It has connected with it a segmental or broken gear, *b*—that is, half its circumference is smooth and the other half is provided with gear-teeth. This gear meshes with a pinion of one-half its size on the shaft C, and causes said shaft to make intermittent complete revolutions. The shaft C has bearings in the frame, as shown. Between the bearings are mounted on the shaft the segmental gear C', the bevel-wheel *c*, and the segmental pinion *c'*. The wheel C' is provided with teeth on one-quarter of its periphery, which gear with a pinion, *e*, hung on a stud in the upper part of the frame. The gear C' causes intermittent complete revolutions of the pinion. Secured to the same shaft with this pinion is another larger pinion, *e'*, which revolves the pinion *d* on counter-shaft D twice during each of its revolutions.

The shaft D is suitably mounted in the frame,

and has rigidly fixed to it the twister-head F. The lower extension of this head has a foot which nearly rests upon the plate *m* directly over the hole in said plate. The foot is vertically perforated and leads through a tube, *f*, to the block *f'*, the perforation extending through the block. The upper extension is provided with ways, and carries a rod, which together support the forked piece *f''*. This piece is adapted to slide up and down on the rod and ways, and is pressed downward by the spring *f'''*. The face of the piece *f''* is grooved vertically, as shown at *f''*, the lower end of the groove being bridged over or provided with an eye, *f''*. The upper face of block *f'* is flat, to serve as an anvil, against which the piece *f''* may jam the loop in the wire, as hereinafter described.

The beveled wheel *c* drives a similar wheel on the shaft G, which is mounted in bolsters secured to the base of the main frame at right angles to the main shaft C. The shaft G carries a cam-disk, *g*, which operates against a roller on the arm *g'*. This arm is connected with a sleeve on a stud, *h*, fixed near the base of the machine. There is also a spring, *g''*, arranged at the upper end of the arm to keep it in contact with the cam-disk. The sleeve also carries a curved arm, H, having fixed to its upper end a tag-holder consisting of the inclined table H', on which is formed a seat or socket for the tag while being wired. The revolution of the cam-disk *g* causes the table to approach and recede from the path of the feeding wire and the jaws of the twister-head.

The segmental gear *c'* drives a pinion, *i*, hung on the inner end of a short shaft which passes through the frame, and carries a disk, *i''*, the periphery of which is finely milled or serrated for biting and feeding the wire, as will hereinafter appear.

The shaft C has mounted upon its forward end disk *k*, provided with a cam, *k'*, which operates the knife, as hereinafter described.

The disk *i''* fits into a groove in the periphery of the friction-wheel *i'''*, which is hung on one arm of a bell-crank lever, L, pivoted at *l*. The other arm of the lever is pressed upward by a spring, *l'*, and forces the friction-pulley against the large disk with a yielding pressure. The milled disk and the grooved wheel, with

their connections, form the wire-feeding mechanism. Just above the grooved wheel is located a horizontal plate, *m*, having a perforated hardened die inserted therein, through which the wire passes. An automatic cutter, consisting of lever *m'*, is pivoted to the upper side of the plate, having a hardened edge, and extends behind the disk *k* and close to it, so that during the revolution of the disk *k* the cam will come in contact with the lever and cause it to swing across the hole in the plate and shear the wire. The segmental gearing in each case is provided with laterally-projecting ledges to fit plates *o o*, making a stop motion to insure a perfectly-timed mesh of the adjacent wheels.

The operation of the machine is as follows: A tag previously punched to receive the wire is placed in the seat upon the table *H'*. The rotation of the cam-wheel *g* causes the table to approach the wire-twister and wedge in between the blocks *f'* and *f<sup>2</sup>*, causing the block *f<sup>2</sup>* to ascend against the tension of spring *f<sup>3</sup>*. The tag is presented, so that the hole is directly in line with the hole in *f'* and the eye *f<sup>5</sup>*. Then the rotation of the milled wheel *i<sup>2</sup>* forces the wire through the die in plate *m*, the tube *f*, block *f'*, the hole in tag, the eye in foot of piece *f<sup>2</sup>*, and up into groove *f<sup>4</sup>* the required distance, when the rotation of disk *k* causes the cam *k'* to move the lever *m'* and shear the wire. Next the cam-wheel *g* causes the table to withdraw the tag, the block *f<sup>2</sup>*, yielding to the tension of spring *f<sup>3</sup>*, presses the parts of the loop together, while the twister-head is revolved twice and imparts a double twist to the wire. The tag is then removed by hand and another inserted, when the same operation is repeated.

Having described our invention, we claim—

1. In a tag-wiring machine, the combination of an intermittently-vibrating tag-holder, a disk or roller, gearing for imparting intermittent motion to said disk or roller from the main driving-shaft, a spring-pressed wheel or roller for clamping or biting the wire, and a wire-twister, as set forth.

2. The combination of a tag-holder, an intermittent wire-feeding mechanism, substantially as described, guide for directing the wire, spring-pressed frame *f<sup>2</sup>* for pressing and holding the parts of the loop together, an automatic cutter for severing the wire, and a twister-head for twisting the wire, as specified.

3. The combination of an automatic movable table provided with a tag-socket for taking the tag to and from the range of the feeding-wire, an intermittent wire-feeding mechanism, substantially as shown, and a twister-head, as set forth.

4. The combination of an automatic vibrating table, intermittent wire-feeding mechanism, substantially as described, an automatic cutter, and a wire-twisting device, as specified.

5. The combination of a vibrating table provided with a tag-socket, intermittent wire-feeding mechanism, substantially as described, an automatic cutter for severing the wire, means, substantially as described, for guiding the wire through the tag to the twister-head, and an intermittent wire-twister, as set forth.

In testimony whereof we affix our signatures in presence of two witnesses.

DANIEL SQUIER.

CHARLES A. SQUIER.

Witnesses:

FRANK W. CLAPP,

FRANK G. REYNOLDS.