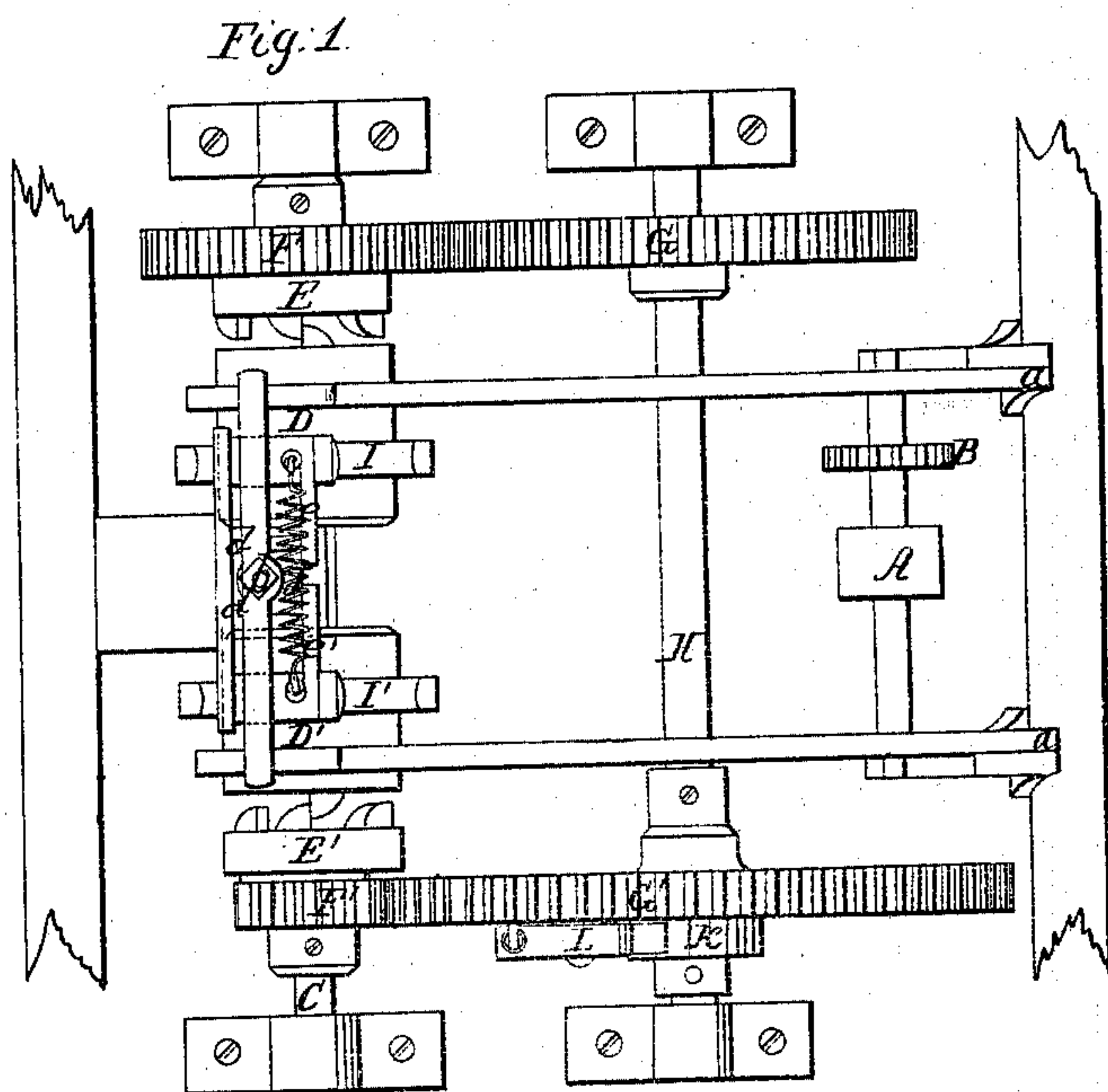
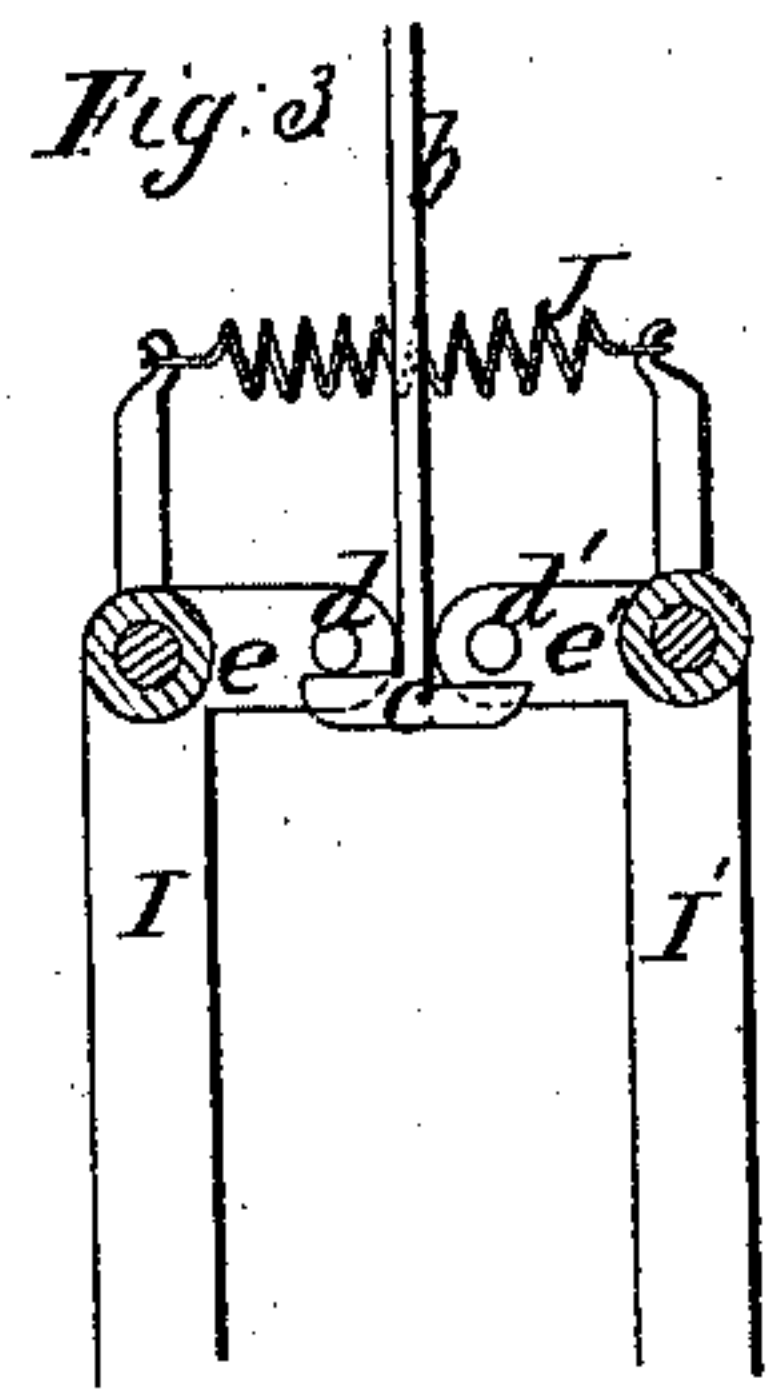
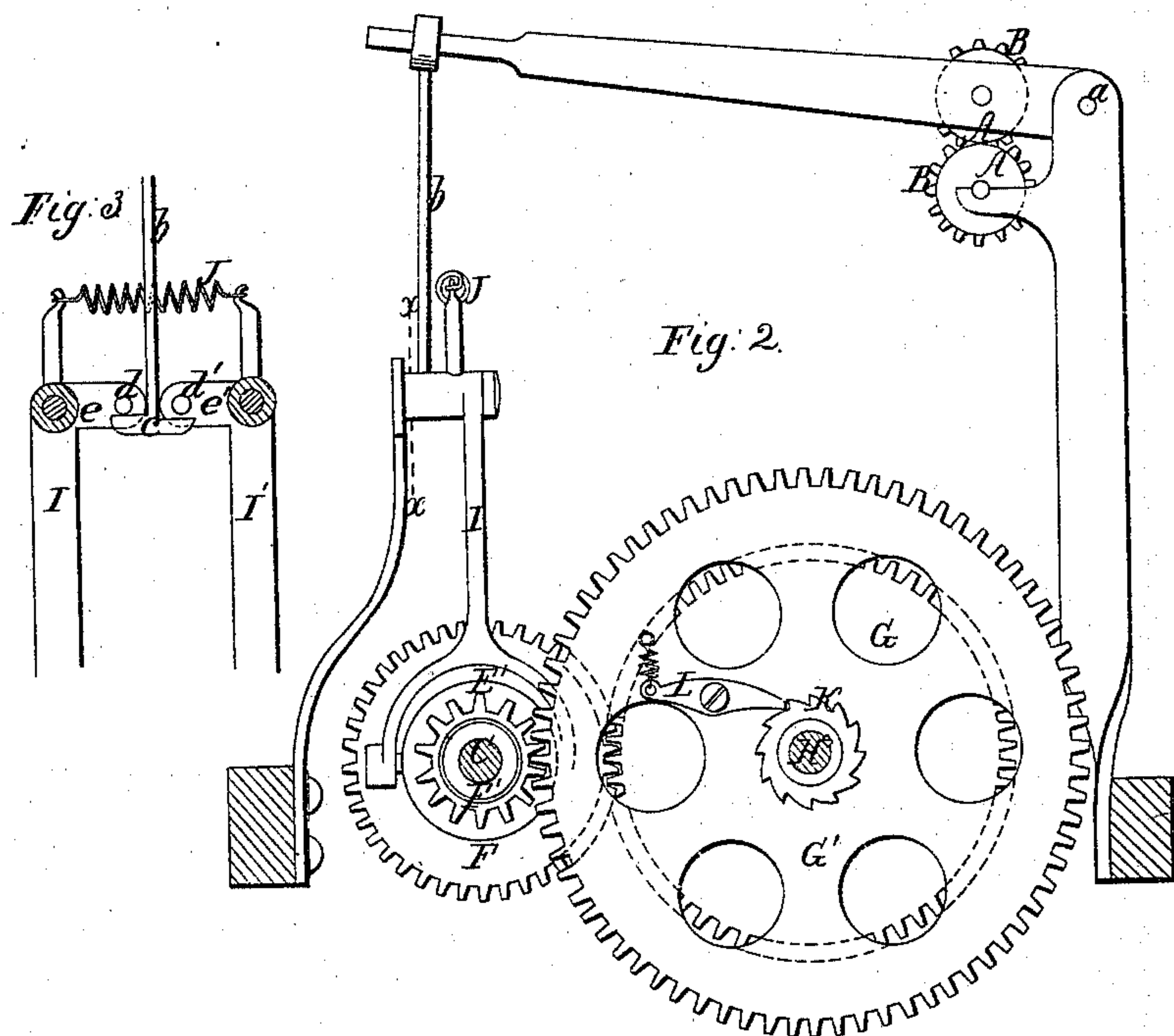


# C. Herrschaft. Spinning Mule.

N<sup>o</sup> 68,741.

Patented Sep. 10, 1867.



Witnesses

*J. M. Reed*  
G. W. Reed

Inventor

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# United States Patent Office.

CHRISTOPHER HERRSCHAFT, OF BROOKLYN, NEW YORK.

*Letters Patent No. 68,741, dated September 10, 1867.*

## IMPROVEMENT IN FEED-REGULATOR FOR SPINNING MACHINES.

*The Schedule referred to in these Letters Patent and making part of the same.*

### TO ALL WHOM IT MAY CONCERN:

Be it known that I, CHRISTOPHER HERRSCHAFT, of Brooklyn, in the county of Kings, and State of New York, have invented a certain new and useful Improvement on Regulators to Jennies for Spinning Rope-Yarns, or other apparatus controlling the feed to the drawing-rolls of spinning frames, of which the following is a full, clear, and exact description, reference being had to the accompanying drawing, forming part of this specification, and in which—

Figure 1 represents a plan of a regulating apparatus constructed according to my improvement.

Figure 2, a sectional elevation of the same; and

Figure 3 a sectional elevation of certain details used to carry out my invention, detached and taken as indicated by the line *x x* in fig. 2.

Like letters indicate like parts throughout the several figures.

The nature of my invention consists in a combination, with suitable clutch mechanism under control of the drawing-rolls, of wheels of different diameters arranged on a primary and secondary shaft, the one of which is hung loose on its shaft, and geared therewith by a pawl and ratchet to vary the velocity given to the gill-bars, without stoppage or lost motion in making the changes to suit variations in thickness of the sliver; and said invention also consists in a novel combination of fast and loose wheels, as described, with clutch levers so operated by the drawing-rolls as that only the fast motion may be put in gear, or both fast and slow motions thrown out simultaneously by the opening and closing of the drawing-rolls.

Referring to the accompanying drawing, A represents the drawing-rolls, geared together by pinions B, driven by any suitable mechanism, and serving to pass the sliver from the gill-bars through or over the regulator to the flyer. The one of these rolls A has its shaft hung in levers or arms hinged as at *a*, and carrying at their outer ends a rod, *b*, connected with a lower cross-bar, *c*. C is the running or driving-shaft of the regulator, carrying, so as to rotate with it, clutches D D', that, when thrown into action, gear with loose sliding clutches E E', having secured to them a wheel and pinion F F', which gear, the one (wheel F) with a spur-wheel, G, fast to a secondary shaft, H, and the other (pinion F') with a spur-wheel, G', loose on said shaft, but geared therewith under certain circumstances, as hereinafter explained, by means of a ratchet-wheel, K, fast to the shaft H and spring-dog or pawl L, connected with the wheel G'. This secondary shaft H serves by pulley and belt, or otherwise, to give motion to the gill-bars which feed the material to the drawing-rolls. When the wheel F is the driver to the spur-wheel G, a comparatively rapid motion is given to the secondary shaft H, and of a consequence to the gill-bars, producing a fast feed of the sliver through the drawing-rolls to the flyer, which action is given on the sliver being thinner than it should be to pass to the flyer. On the other hand, when the pinion F' is the driver of the shaft H through the wheel G', which action occurs when the sliver is of the proper thickness, then the motion to the gill-bars and feed through the drawing-rolls A is slower. By these means an equality of feed is established to the flyer, which regulating action is effected by the rise or fall, according to the thickness of the passing sliver, of the drawing-roll or rolls, say the roll connected with the levers that carry the rod *b* and cross-bar *c*; said cross-bar acting upon pins *d d'*, of arms *e e'*, branching from clutch levers I I', that have a tendency, by means of a connecting spring, J, to throw the sliding clutches E E' into gear with the clutches D D' of the wheel and pinion F F'. In ordinary action, that is, when the sliver passing through the drawing-rolls is of the proper thickness, the rolls are separated only to the necessary extent to cause the cross-bar *c*, which acts primarily on the bar *e* of the clutch lever I, to throw out of gear the sliding clutch D with the clutch E of the wheel F. Under these circumstances, and there being no lift on the pin *d*, the lever I' keeps in gear the sliding clutch D' with the clutch E' of the pinion F', that accordingly becomes the driver through the wheel G' of the feed-driving secondary shaft H. Should the sliver, however, passing through the drawing-rolls, be thinner or finer than is proper, then lift being taken off the pin *d*, the spring J causes the clutch D to gear with the clutch E of the wheel F, which through the wheel G becomes the driver of the secondary shaft H, by causing it to run faster than the pinion F', and wheel G' serves to operate it; the wheel G' slipping on its shaft by reason of its connection therewith through the pawl L and ratchet-wheel K, said wheel, however, keeping in driving-gear through the pinion F', clutch E', and sliding clutch D', with the running or driving-shaft C, so that on a proper thickness of sliver again passing through the drawing-rolls, the speed of the gill-



bars and feed is slackened by lift on the arm *e* throwing the clutch *E* out of gear, and without stoppage or any lost motion the pinion *F'* made the driver of the secondary or gill-bar operating shaft at a slower velocity. This avoidance of any temporary stoppage or lost motion is highly important, and is secured by the gear of the pinion *F'* with the shaft, both when said pinion acts as the driver and when the wheel *F* is such, the gear of the wheel *G'* with the shaft *H* by pawl and ratchet accomplishing this, irrespective of any special or precise clutch gear, which may be as represented, and connected with the drawing-rolls as described, or otherwise, these latter means being capable of great variation. On the sliver passing through the drawing-rolls being too thick or coarse for the flyer, or anything unusual occurring to unduly open said rolls, then the bar *c* is caused to lift both upon the primary pin *d* and secondary pin *d'*, so as to throw both clutches *D D'* out of gear, which stops the motion of the secondary shaft *H*, and, as a consequence, of the gill-bars and feed to the drawing-rolls, and which gives an opportunity to remove the obstacle or rectify the feed

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

1. The combination with a clutch or other mechanism, controlled by the drawing-rolls, and serving to throw in or out of gear with the driving-shaft *C*, wheels or pinions *F F'* of the secondary or gill-bar operating shaft *H* having gear *G G'*, the one of which is connected with its shaft by pawl and ratchet *L K*, for operation in connection with the gear of the driving-shaft *C*, to give a fast or slow motion to the gill-bars, substantially as specified.

2. The combination of the fast wheel *G* and loose wheel *G'*, with its pawl and ratchet *L K*, loose wheel and pinion *F F'*, with their clutches *E E'*, *D D'*, and clutch arms or levers *I I'*, so arranged and operated by mechanism connected with the drawing-rolls as that the one lever may be acted upon in advance of the other, or both simultaneously, essentially as herein set forth.

CHRISTOPHER HERRSCHAFT.

Witnesses:

J. W. COOMBS,

G. W. REED.