

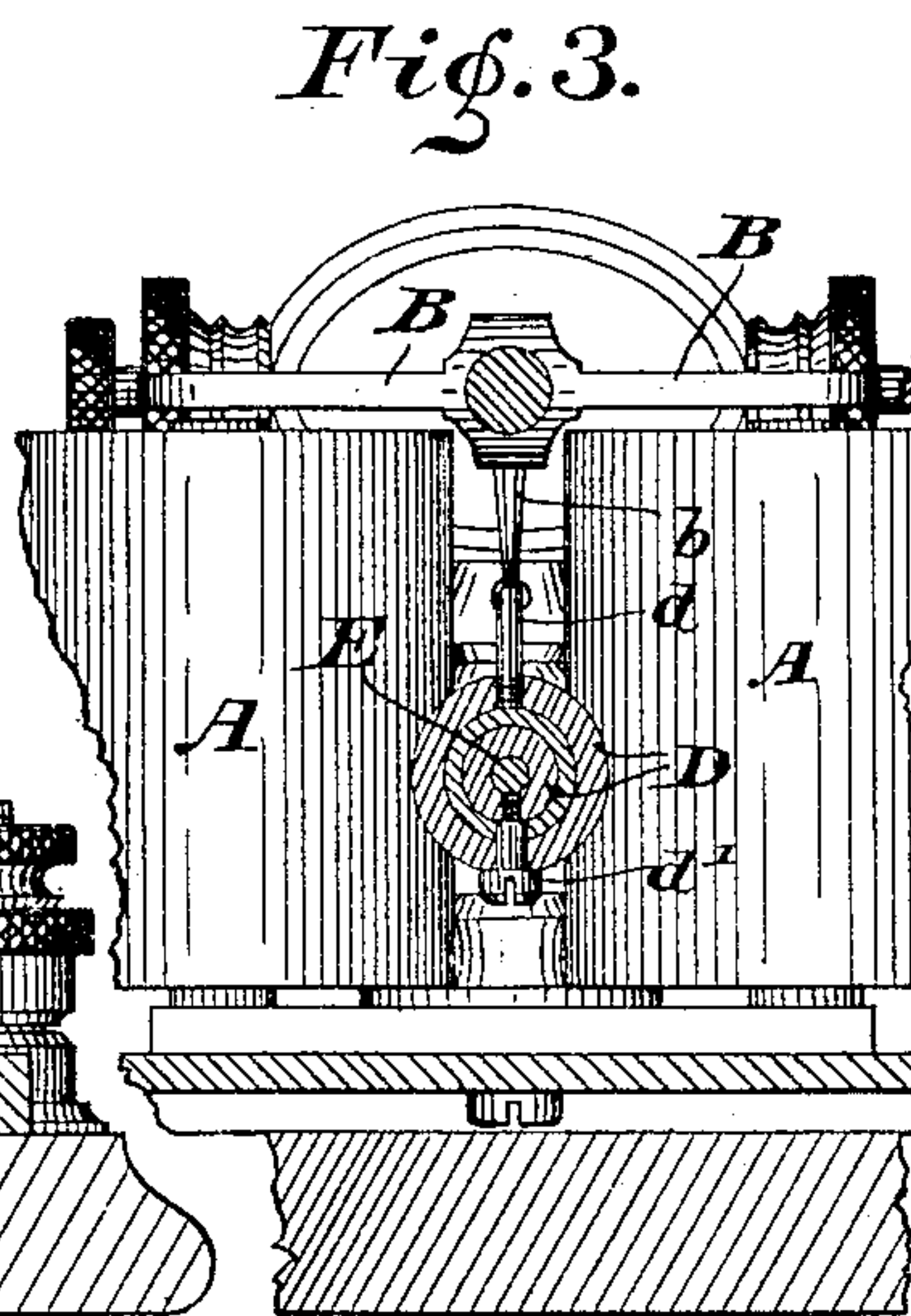
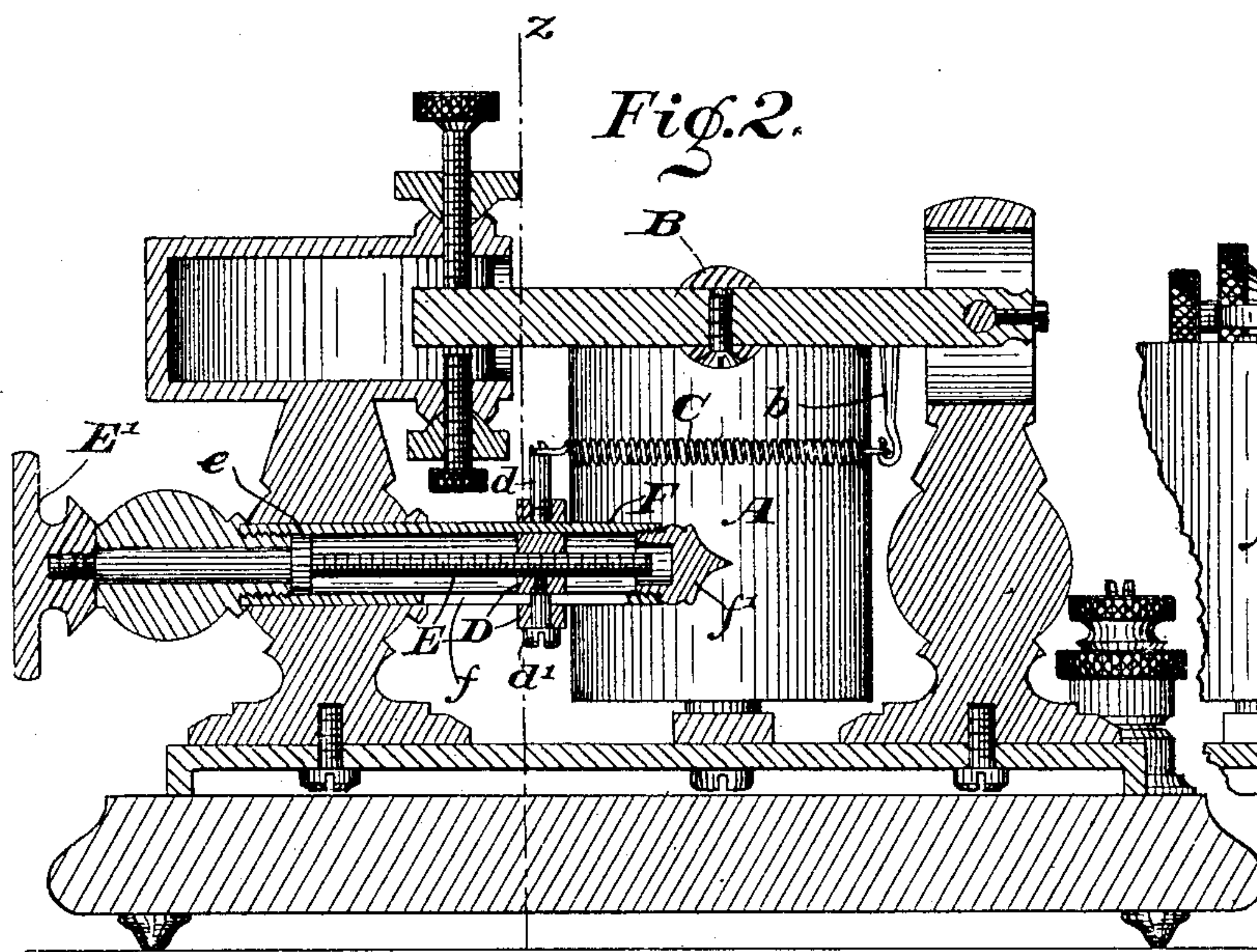
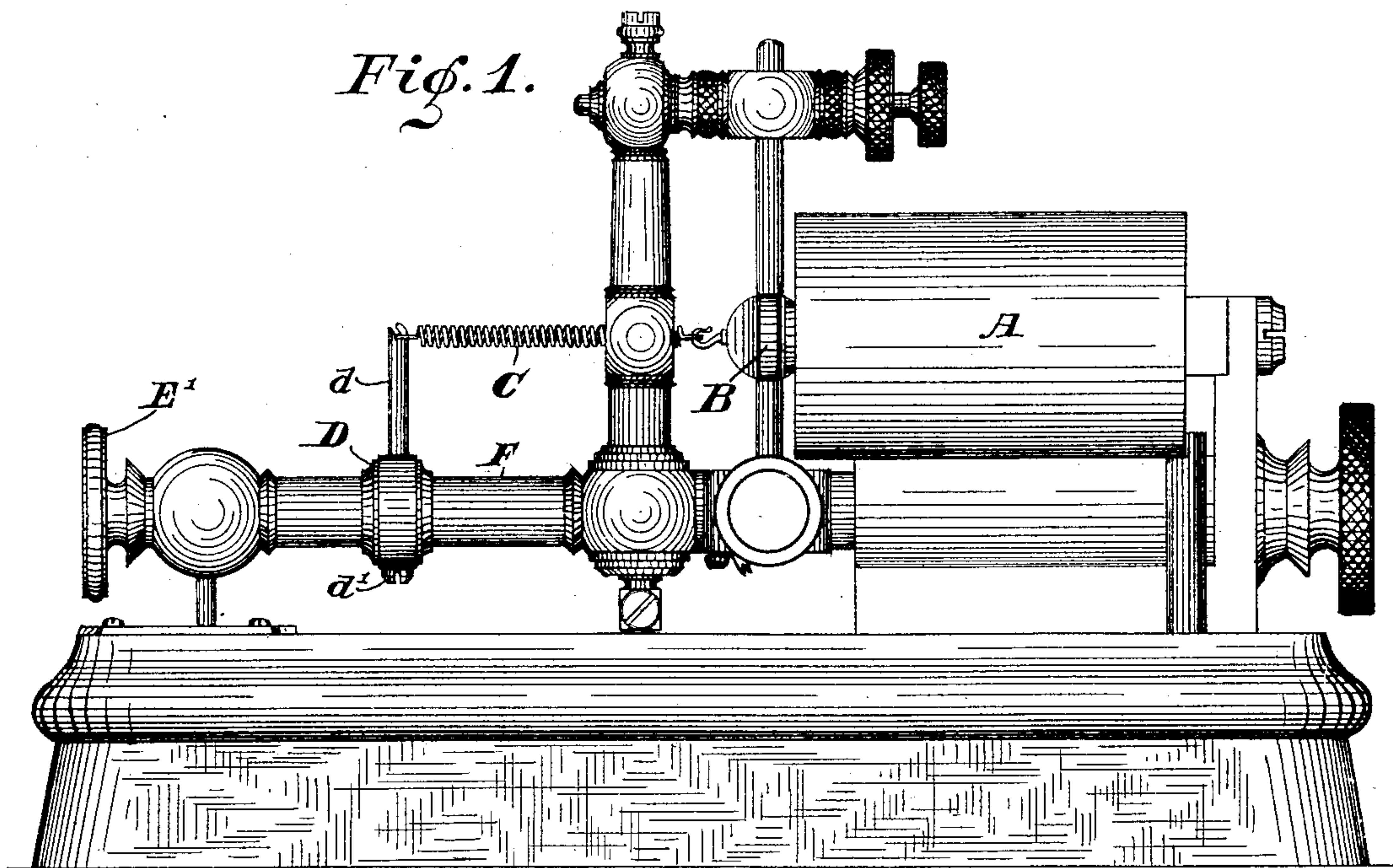
(No Model.)

J. F. GILLILAND.

MEANS FOR ADJUSTING ARMATURE SPRINGS.

No. 315,017.

Patented Apr. 7, 1885.



WITNESSES.

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MEANS FOR ADJUSTING ARMATURE-SPRINGS.

SPECIFICATION forming part of Letters Patent No. 315,017, dated April 7, 1885.

Application filed June 6, 1884. (No model.)

To all whom it may concern:

Be it known that I, JAMES F. GILLILAND, of the city of Indianapolis, county of Marion, and State of Indiana, have invented certain new and useful Improvements in Means of Varying the Tension of the Armature-Springs of Electro-Magnets, of which the following is a specification.

My said invention relates to the means of adjusting the spring which acts reversely to the magnetic force upon the armatures of electro-magnets; and the preferable construction consists in a hollow rod carrying a nut, partly within and partly without said rod, to which one end of said spring is attached, while the other is attached to the armature, or to an arm projecting therefrom, the nut being operated by a screw extending within the hollow rod into said nut, and provided with an appropriate thumb-wheel upon the outer end.

Referring to the accompanying drawings, which are made a part hereof, and on which similar letters of reference indicate similar parts, Figure 1 is a side elevation of a telegraphic relay embodying my said invention, showing the arrangement when the hollow rod carrying the nut is at right angles with the armature; Fig. 2, a central vertical section of a telegraphic sounder, showing the arrangement when said rod is parallel with the armature, and Fig. 3 a transverse vertical sectional view, looking to the right from the dotted line $z z$ in Fig. 2.

In said drawings, the portions marked A represent the magnets; B, the armature; C, the armature-spring; D, the nut; E, the screw for operating said nut, and F the hollow rod on and in which said nut is mounted.

The magnets, armature, and spring may be of any suitable construction, and are arranged in such relation to the other parts as may be desired. The spring is connected at one end to the nut D, or a suitable projection thereon, and at the other end either directly to the armature, as in Fig. 1, or to an arm, b , on said armature, as in Figs. 2 and 3, and is adapted to hold said armature away from the poles of the magnets, except when attracted thereto by the magneto-electric force.

The nut D is secured to the hollow rod F, as shown most plainly in Fig. 2, its inner and outer portions being connected by a screw, d' , which extends through the outer portion, the slot in said hollow rod, and into the inner portion. The whole is thus adapted to be moved back and forth by the screw E, which passes through the inner portion. This nut, instead of being formed of two portions, might consist only of the inner portion, in which case the slot would be in the side of the hollow rod most convenient to the armature, and the projection d , to which the spring C is connected, extend out directly from said inner portion.

The screw is mounted in a suitable bearing in the frame-work of the instrument, and is provided with a collar or shoulder at each end of said bearing to prevent longitudinal movement. Its screw-threaded portion extends through the hollow rod and the nut D, and is adapted to move said nut back and forth as it is turned, and thus increase or diminish the tension of the spring. The thumb-wheel E' serves as the means of turning the screw, and as one of the shoulders for the bearing, in the construction shown, and a collar, e , as the other shoulder, a ball-shaped portion on the frame-work serving as the body of said bearing.

The hollow rod F is mounted in the frame-work, and carries the screw and nut. A slot, f , permits the screw d' to connect the two portions of the nut, and said nut so connected to pass back and forth thereon. It is preferably secured at one end to the frame portion carrying the screw, and an ornamental knob or cap, f' , may be secured to the other.

Having thus fully described my said invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination, with the armature-spring of an electro-magnet, of an adjusting device consisting of a rod, a nut adapted to slide thereon, and a screw adapted to operate said nut, said nut being connected to said spring, substantially as set forth.

2. The combination of the armature-spring, the hollow rod, the nut mounted and adapted to slide thereon, the screw within said rod and

adapted to operate said nut, and an arm or projection on said nut to which said spring is connected, substantially as set forth.

3. The combination of the armature-spring,
5 the hollow rod having a slot in one side, the
nut D, consisting of two parts, one within and
the other without said rod, connected by a
screw or pin passing through said slot, a screw
mounted in the frame-work of the instrument
10 and passing within said rod into the inner por-

tion of said nut, and a connection between the
outer portion of said nut and said spring, sub-
stantially as set forth.

In witness whereof I have hereunto set my
hand and seal, at Indianapolis, Indiana, this 15
3d day of June, A. D. 1884.

JAMES F. GILLILAND. [L. S.]

In presence of—

C. BRADFORD,

CHAS. L. THURBER.