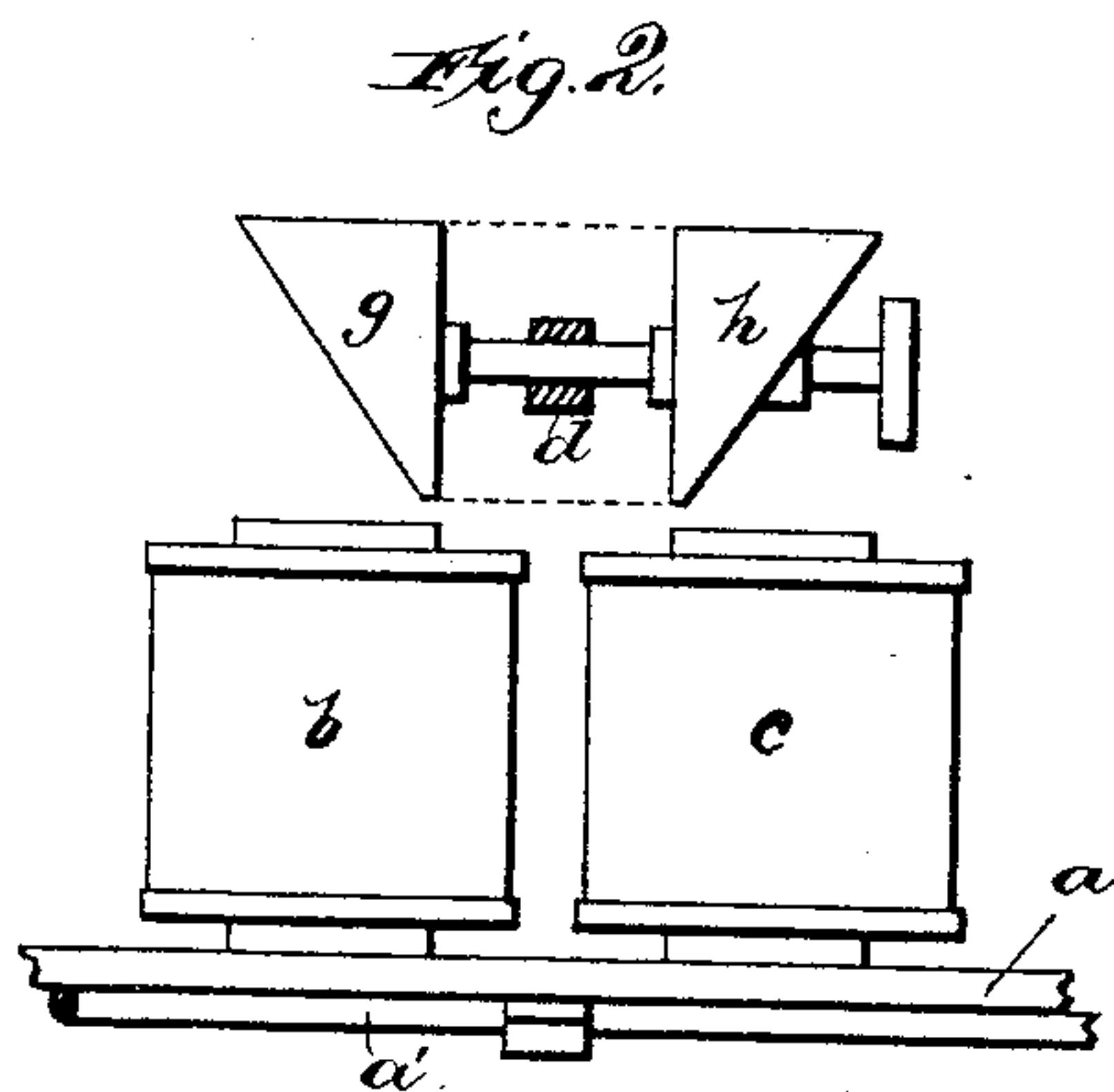
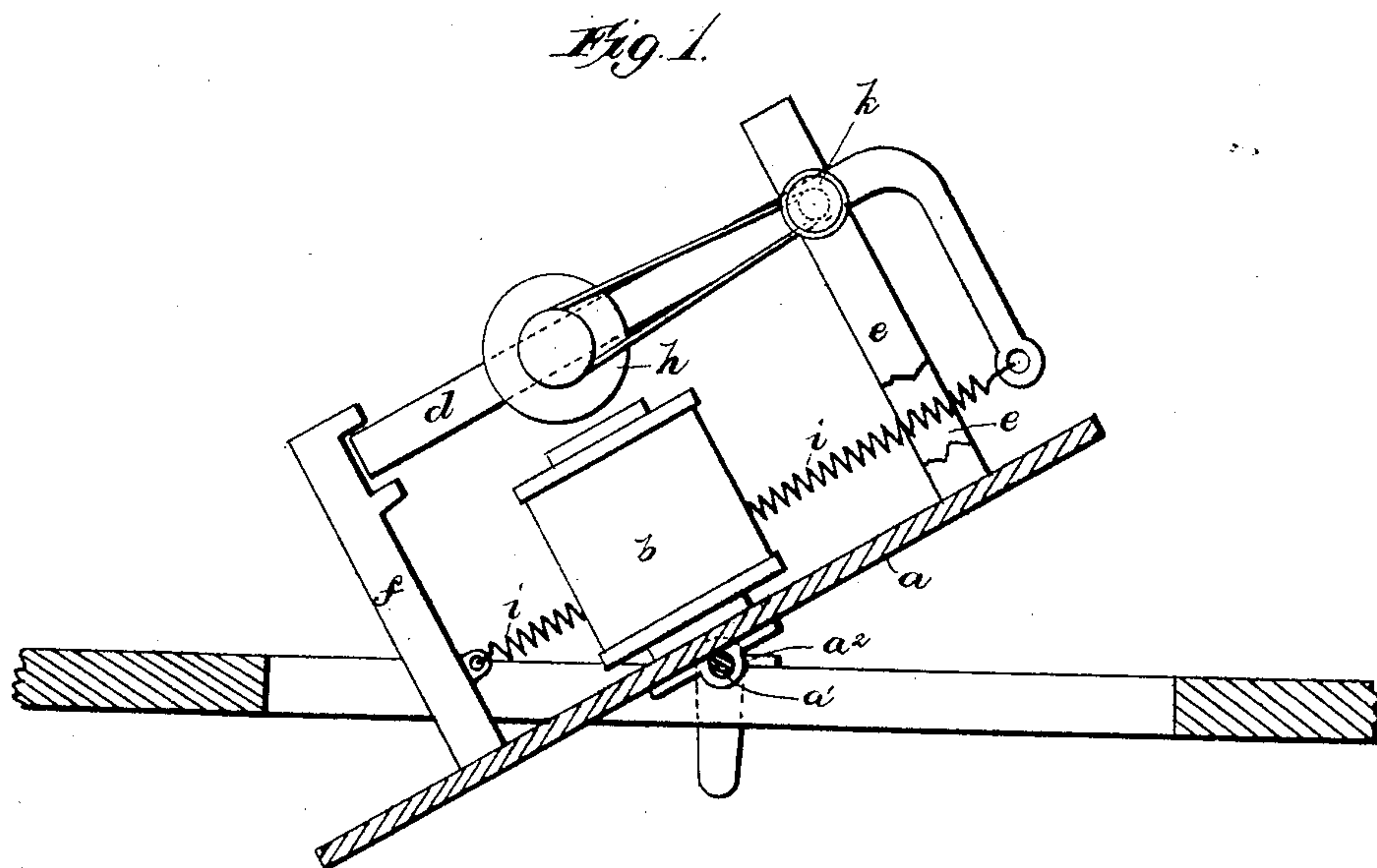


(No Model.)

T. COCHRAN.
TELEGRAPHIC RELAY.

No. 272,210.

Patented Feb. 13, 1883.



Witnesses.

Robert Everett.

J. A. Rutherford.

Inventor.
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UNITED STATES PATENT OFFICE.

THOMAS COCHRAN, OF BROOKLYN, NEW YORK.

TELEGRAPHIC RELAY.

SPECIFICATION forming part of Letters Patent No. 272,210, dated February 13, 1883.

Application filed September 6, 1880. (No model.)

To all whom it may concern:

Be it known that I, THOMAS COCHRAN, a citizen of the United States, residing at Brooklyn, in the county of Kings and State of New York, have invented new and useful Improvements in Telegraphic Relays, of which the following is a specification.

This invention relates to improvements in telegraphic relays, and has for its object to secure perfect action of the instrument and to provide novel means for adjusting the retractile force of the armature.

The present invention consists essentially in the combination of an armature and an electro-magnet with a pivoted or tilting platform or base-plate.

Other features of the invention will be hereinafter described in detail, and pointed out in the claims.

In the accompanying drawings, Figure 1 represents a side view of an electrical apparatus embodying my invention, and Fig. 2 a sectional view taken on the line $x x$ of Fig. 1.

In the example shown in the drawings the platform or base-plate is pivoted to a suitable support through the medium of a rod, a' , and eye a^2 , the latter secured to the platform or base-plate and turning on the rod. The platform or base-plate carries the attached magnets b and c , and also devices for supporting a pivoted armature, which devices consist of standards $e e$, between which is pivoted an arm, d , the motion of which is limited by arranging one of its ends in a notch provided in a standard, f . The arm d carries the armature, which is attracted by the magnets when they are vitalized by the passage through them of the electric current. In the present instance the armature is made in the form of a cylinder, as at $g h$, with oblique ends or bases, so that the length of the cylinder is unequal, increasing at each end from its least length to its greatest length, and the cylinder is arranged to be turned about its axis by means of a finger-button, k , and a pulley and belt, as shown. The mass or side of the armature presented to the magnets is thus made unequal, according to the portion of the circumference turned toward the magnets, so that when the current passing through the magnet

is weak and the attractive force of said magnet is consequently small the armature may be turned to present its greatest mass to the action of said magnets, thus compensating for the weakness of the current. If the attracting force of the magnet is powerful, the armature is set so that its least mass is presented to the magnets. When the current through the magnets is broken the armature is retracted to free it from contact with the magnets, and this may be effected through the medium of a spring, i ; but if the action of the spring is not sufficient to raise the armature from contact with the magnet the instrument is placed in an inclined position, whereby the spring is not compelled to overcome the entire weight of the armature, while by turning the pivoted or tilting platform to a vertical position or turning the instrument upside down the weight of the armature itself will serve to retract it from contact with the magnets when the electric current ceases to pass through the latter.

By means of the pivoted or tilting platform the retraction of the armature from the magnets may be effected by the weight of the armature itself acting to retract or draw the armature from the magnets—as, for instance, when the platform stands in a vertical position, or when the instrument is turned upside down, as before stated, and when the platform stands in a vertical position it will be obvious that the retractile force of the armature can be varied by changing the angle of the platform, thereby increasing or diminishing the tendency of the armature to retract itself from the magnets.

Ordinarily the retractile force of the armature is adjusted by a spring the tension of which is changed through the medium of a set-screw, which I dispense with, as the adjustment of the armature can be effected by the pivoted or tilting platform, and the power of the spring is never changed. By centrally pivoting the platform a large range of adjustment is rendered possible.

Having thus described my invention and efficient means for carrying it into effect, what I claim is—

1. In combination with a suitable support, a relay-instrument hinged or pivoted thereon,

whereby the instrument may be adjusted to any desired angle with relation to said support, substantially as and for the purpose specified.

- 5 2. The combination of an electro-magnet, an adjustable armature, and a spring with a tilting platform, substantially as described.

In testimony whereof I have hereunto set my hand and seal in the presence of two subscribing witnesses.

THOMAS COCHRAN. [L. S.]

Witnesses:

J. VAN SANTVOORD,
E. F. KASTENHÜBER.