

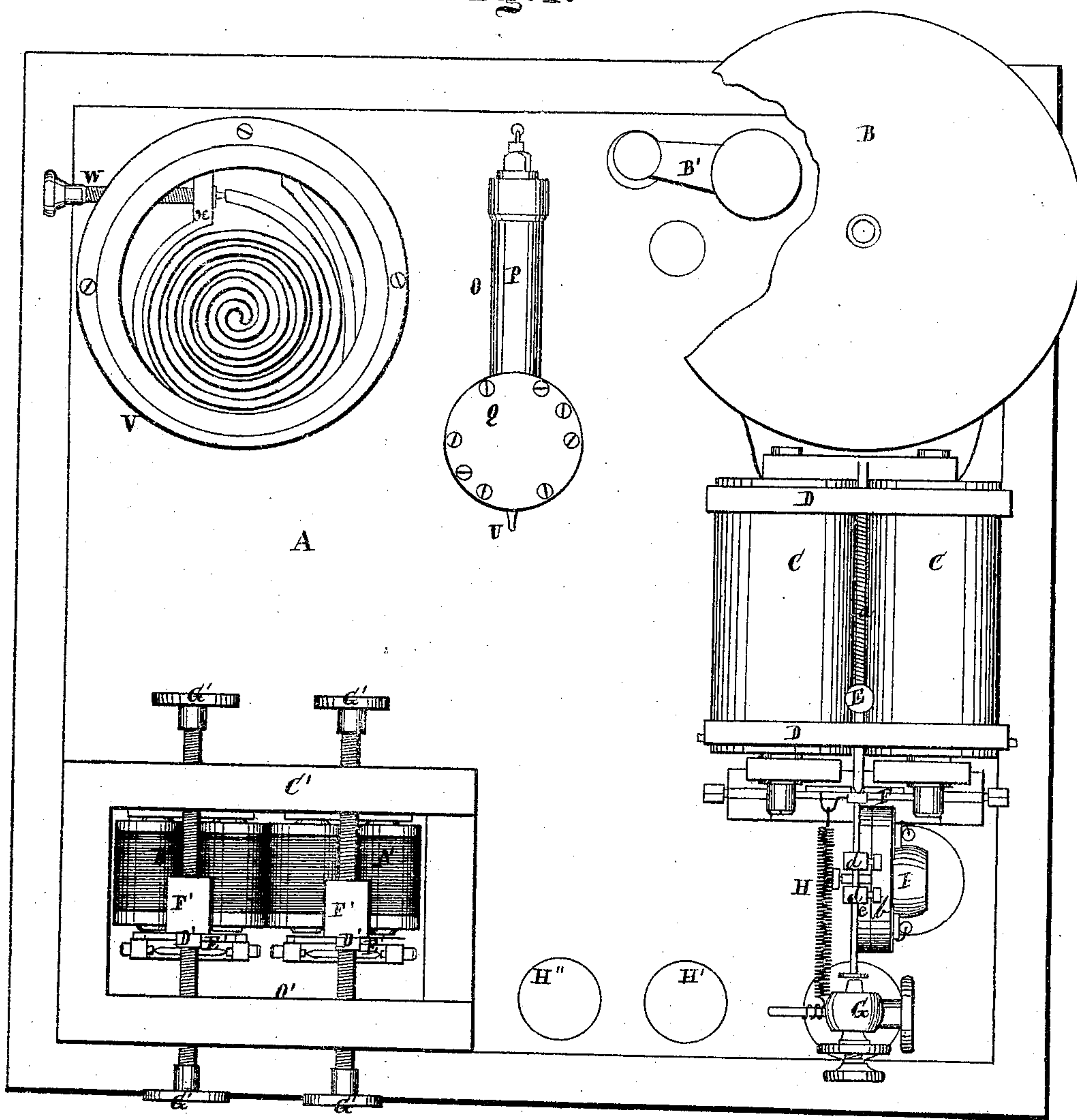
W. GILLETT.

Improvement in Electrical Temperature Signals.

No. 132,278.

Patented Oct. 15, 1872.

Fig. 1.



Witnesses

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Fig. 2.

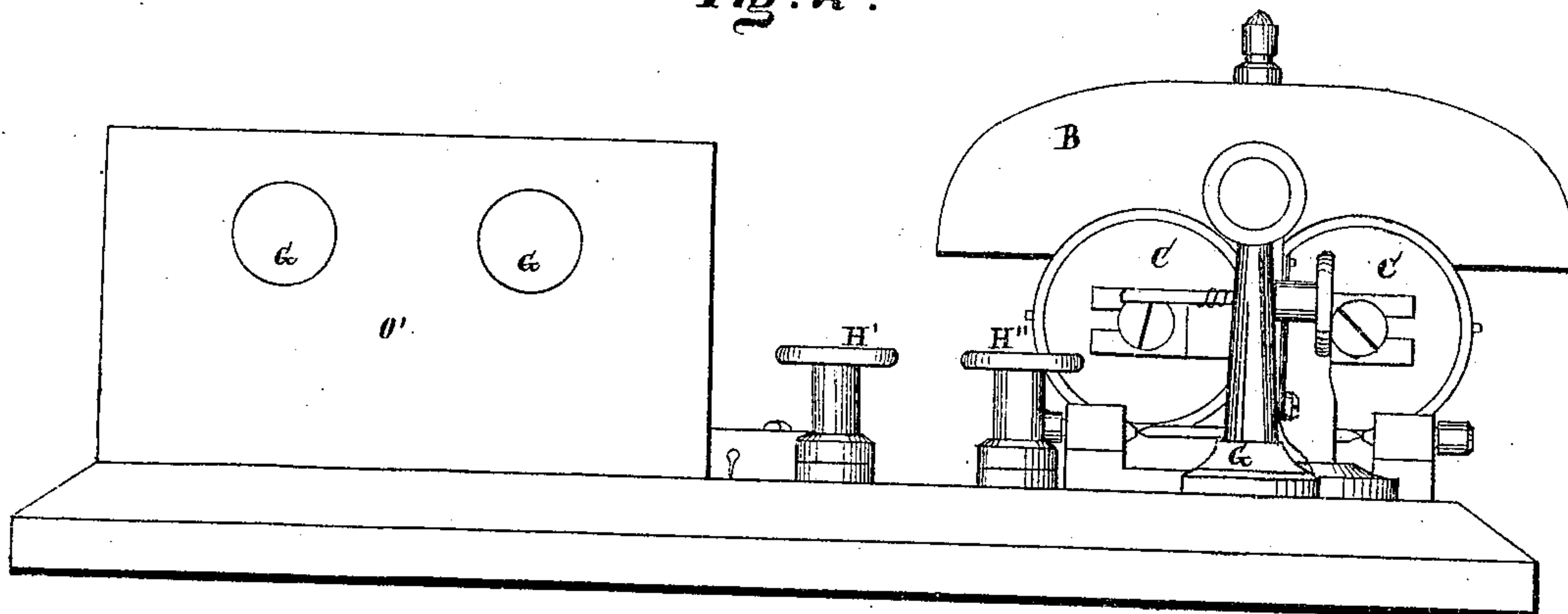
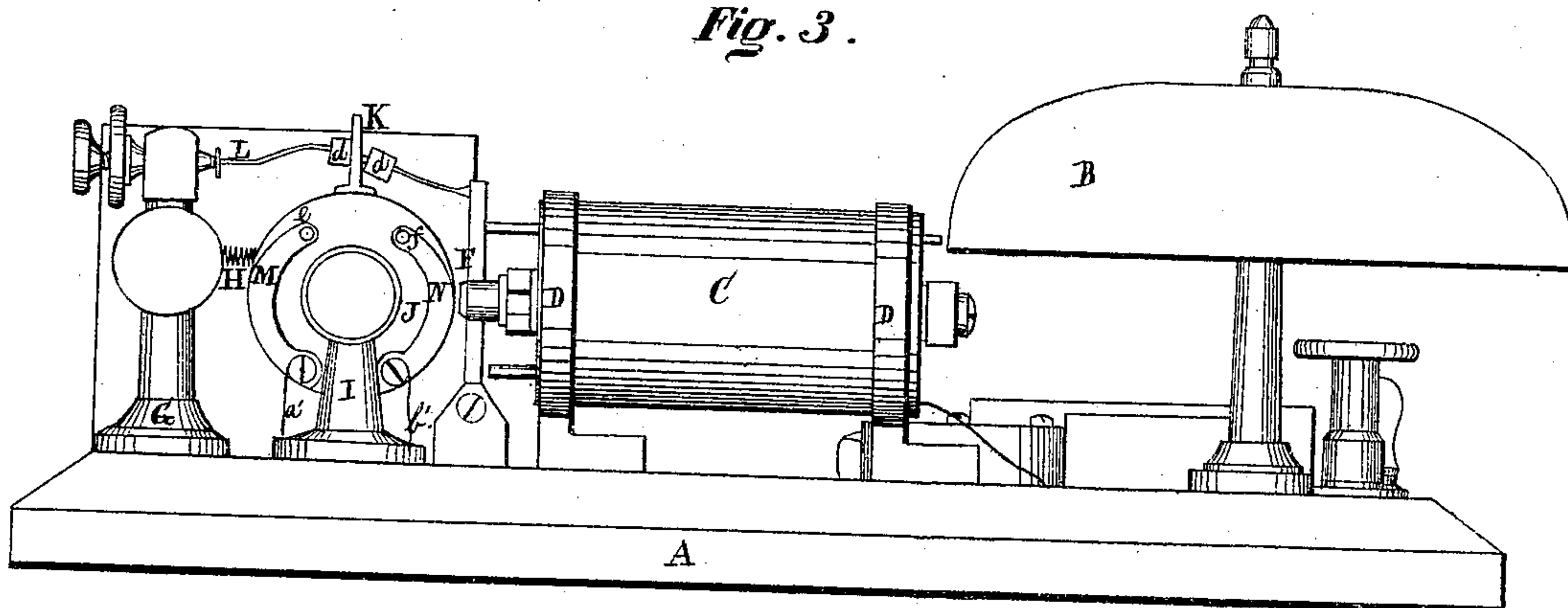


Fig. 3.



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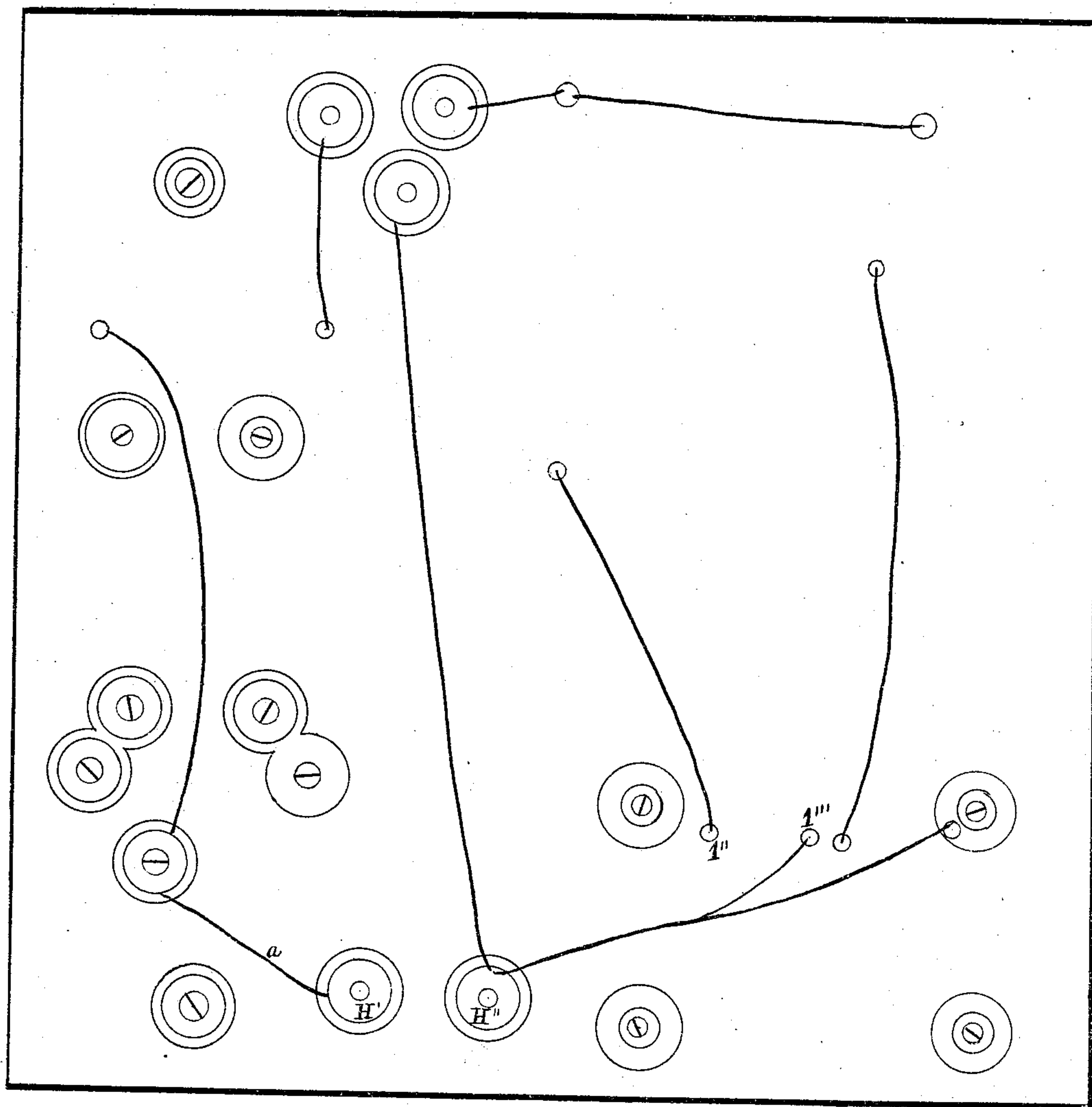
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Fig. 4.



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Fig. 5.

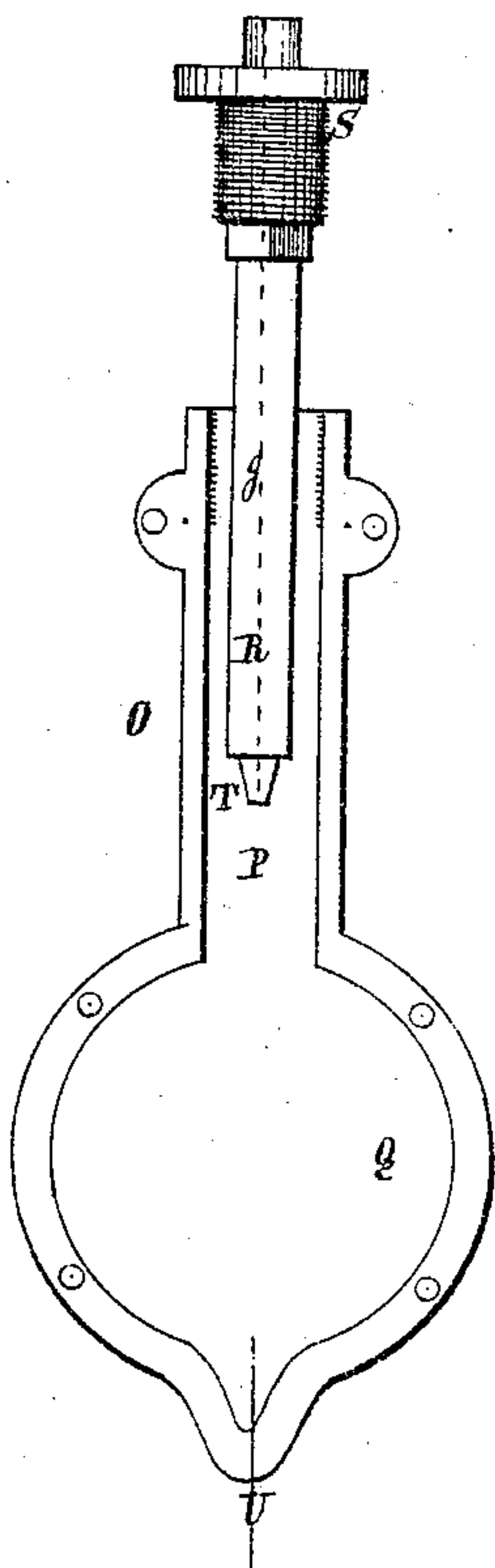
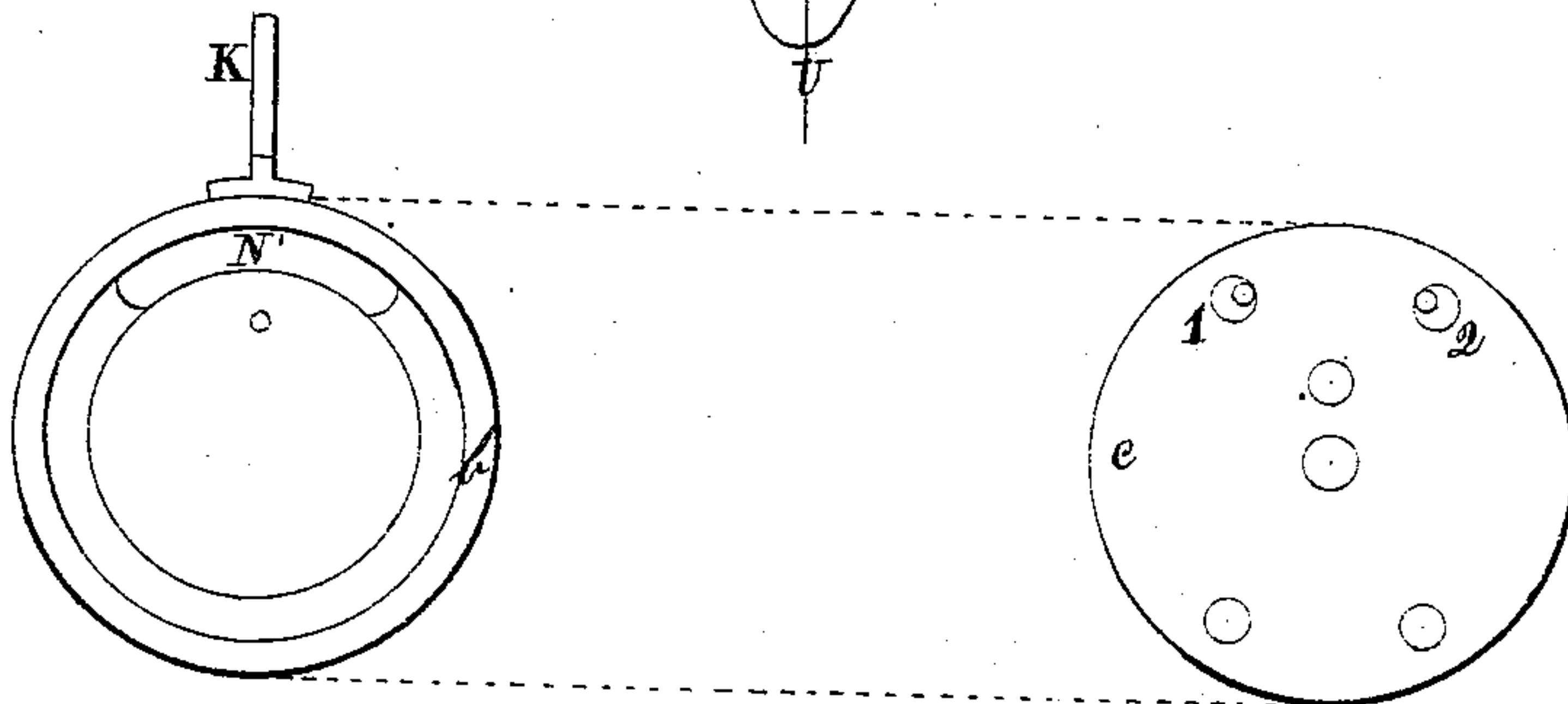


Fig. 6.



Witnesses

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UNITED STATES PATENT OFFICE.

WEBSTER GILLETT, OF YPSILANTI, MICHIGAN.

IMPROVEMENT IN ELECTRICAL TEMPERATURE-SIGNALS.

Specification forming part of Letters Patent No. 132,278, dated October 15, 1872.

To all whom it may concern :

Be it known that I, WEBSTER GILLETT, of Ypsilanti, in the county of Washtenaw and State of Michigan, have invented a certain new and Improved Electro-Pyrometric Announcing-Signal Apparatus, of which the following is a description:

Figure 1, Plate 1, shows a plan view of the apparatus. Figs. 2 and 3, Plate 2, are side views. Fig. 4, Plate 3, is a view of the back side, showing the course of the conducting-wires. Figs. 5 and 6, Plate 4, are detached sections, showing a mercurial meter and circuit-breaker.

Like letters of reference refer to like parts in the several views.

The nature of this invention relates to a device, or an arrangement of devices, which I designate an electro-pyrometric annunciating-signal apparatus; and the object thereof is to indicate an undue excess of heat in grain-bins, buildings, journal-boxes, malt-rooms, &c. It is also applicable to any place where excessive heat is likely to be generated, or to masses of substances which may be stored in buildings. It can also be applied to chemical works and processes, and to vessels carrying goods liable to become heated.

Of the above-specified apparatus the following is a full and complete description:

In the drawing, Plate 1, A represents a board to which the several devices constituting the apparatus are attached, and which are as follows, viz.: B is a signal bell or gong. C C is a pair of electro-magnets of the ordinary kind, between which is a striking-bar, *a*, so fitted as to slide in the yokes D holding the magnet. On said bar is a coiled spring and an adjusting screw and collar, E, for regulating the throw of the bar, and for its recoil from the bell after striking. F, Fig. 3, Plate 2, is the armature-lever with armature attached, and which is mounted and arranged in its relation to the magnets in the usual manner. G, Fig. 3, is an adjusting-post. Said post is connected to the armature by a spring, H, Fig. 1. I, Fig. 3, is a post, to which is secured a circuit-breaker, J, and which consists of a pair of insulating-disks, *b* and *c*, Fig. 1, Plate 1. The disk *b* is fixed to the posts, whereas the disk *c* is placed in contact with the disk *b* by being

fitted to a central screw, on which it oscillates, for opening and closing the circuit, and which is operated for that purpose by a yoke, K, Fig. 3, Plate 2, projecting therefrom, and through which passes the circuit-breaker adjusting-lever L, having thereon, one on each side of the yoke, an adjusting collar and screw, *d*, Fig. 1. *e* and *f*, Fig. 3, Plate 2, are platinum points, one of which, *e*, is secured, in the ends of the strip M, whereas *f* is secured in the end of the strip N. Said points project through the disk *b* to the inside of the two sections of the circuit-breaker, holes being provided for their admission, and shown in Fig. 6, Plate 4. The holes are indicated by Figs. 1 and 2. The platinum points referred to by their connection form a continuation of the circuit, respectively, as hereinafter described. A description of the circuit-breaker and its operations will presently be given. O, Fig. 1, Plate 1, is a mercurial column. Said column consists of an iron tube, P, having an enlargement or bulb, Q, at its lower end, and in which is placed a certain quantity of mercury. In said iron tube is fitted a rubber tube, R, Fig. 5, Plate 4, it being secured therein by a nut and collar, S, into which the rubber tube is inserted, the nut being screwed into the tube sufficiently far to bring a platinum point, T, in the lower end of the tube in close proximity to the mercury, but not in contact therewith. Said platinum point terminates the end of a wire passing through the entire length of the rubber tube, and is indicated by the dotted line *g*. At the lower end of the enlargement or bulb of the iron tube is a platinum point, U, and which penetrates the bulb and extends into the mercury. The expansion of the mercury by heat makes a metallic connection between the platinum-point T of the rubber tube, and the point U of the enlargement of the iron tube, the purpose of which will presently be shown. V, Plate 1, is a volute, consisting of a scroll of expansive metal securely fastened to a metallic base. W is an adjusting-screw, insulated from the post X, in which it is secured. Said post is also securely attached to the metallic base holding the scroll. The screw is furnished with a platinum point and wire attachment, and the point is brought in close proximity to the outer end of the scroll,

but not in contact therewith. The inner end of the scroll is alike provided with a wire attachment. An expansion of the scroll by heat will make a connection between the point of the screw and the end of the scroll, as the expansion of the mercury above described made a connection between the platinum points T and the point U at the end of the bulb. The annunciator referred to consists of two pair of magnets, A' B', Fig. 1, inclosed in a box or case, C'. D' are the armature-levers; and E', the armatures, all of which are constructed, mounted, and arranged in relation to the magnets in the ordinary way. To the upper end of each armature-lever is attached a plate, F', on which is or may be inscribed the location of the place of the material where the heat is or may become in excess. G' are adjusting-screws whereby is regulated the throw of the armatures. Said magnets with their respective armatures are inclosed in the box by a glass cover, through which they can be seen; so also is the volute, above described, covered by a glass set in a metallic case, whereby it is inclosed.

The several devices, above specified and described, are put in connection with each other and with the battery by conducting-wires, as follows: First, from the foot of the binding-post H', Plate 2, a wire runs to the circuit-breaker, forming a connection with the spring strip M at a', Fig. 3, which connection is completed by the platinum point e with the platinum strip N', Plate 4, Fig. 6, which figure is a detached sectional view of the interior of the circuit-breaker, shown in Fig. 1, Plate 1, consisting of the parts or disks c b. Connection is formed from the point e to the point f by the platinum strip N'; thence by the strip N, Fig. 3, Plate 2, through the electro-magnets C C, by the wire b' to foot of binding-post of the switch B', Fig. 1, Plate 1; thence through switch to the insulated connection by the mercurial column. From the lower extremity of the mercurial column U, Plate 1, the connection passes through a wire into a pair of annunciator-magnets, A', Fig. 1, Plate 1, at the point 1'', Fig. 4, passing out at 1''', thence to binding-post H'', Fig. 2, which forms connection with binding-post H' of opposite polarity.

The practical operation of the above-described devices is as follows: Let it be supposed that a mass of grain is stored in some one particular part of the building. In close relation to or in contact with said grain is placed a mercurial column, above described, having attached thereto the wire connections, in the manner as specified, whereas the gong and magnet-annunciators may be put up in the office, or other place as may be desired. Now, in the event the grain shall become heated, the mercurial column will expand, thereby forming a connection of the mercury with the platinum point T of the wire g, thus closing the circuit, the result of which will be to operate the armature F, impelling it against

the striking-bar G, which, in turn, strikes the gong, indicating thereby the fact that an excess of heat is existing at the place where the mercurial column is located. As the armature-lever is impelled forward toward the striking-bar, the oscillating section b of the circuit-breaker is also drawn forward or oscillated, thereby breaking the connection of the circuit. The armature-lever is then drawn back by means of the spring H, thereby closing the circuit on the back stroke of the armature, but which is again open by the forward stroke of the armature and the striking-bar, and so on repeatedly the gong is sounded by the striking-bar by the opening and closing of the circuit, and which will continue to thus operate so long as the excess of heat in the grain shall continue to expand the mercurial column into closing the connection of the circuit, but which is broken just so soon as the grain shall become cooled down, thereby causing a contraction of the mercury and a breaking of its connection with the platinum point.

Having thus made known the fact that an excess of heat exists, the particular place is next to be learned, as there may be several places or bins of grain. In order to learn this, recourse is had to the annunciator, which, as before said, is in the circuit. Therefore, as a consequence, it will be operated at the same time that the mercurial column is expanded into connection with the platinum point T, thereby closing the circuit, as before said, for sounding the gong. Thus, as the armature, operating the striking-bar, vibrates by the opening and closing of the circuit, so also at the same time the armature of the annunciator will vibrate, there being one annunciator to one mercurial column, and there may be as many mercurial columns as there are bins of grain or other places where it may be placed—that is to say, any number of mercurial columns may be used at as many different places, and one annunciator to each one, and which column and annunciator act conjointly in the circuit independent of the other columns and annunciators, however many there may be. The column of mercury in each case closes the circuit and works the gong and annunciator. The place at which the excess of heat is being generated will be shown on the plates F' F' either by number or letter, corresponding to the number or letter of the bin or other places where the mercurial column or columns may be located.

Instead of the mercurial column being used, the volute above described may be substituted, which will produce the same results so far as closing the circuit is concerned.

The purpose of the adjusting collars and screws d is to regulate the oscillator of the section b of the circuit-breaker when the stroke of the armature-lever F may be lengthened or shortened.

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

1. The circuit-breaker J, consisting of the stationary disk *c*, oscillating disk *b*, spring-strips M N, platinum points *e f*, and platinum strips N', as arranged in relation to and in combination with the armature F and electromagnets C C, in the manner as and for the purpose set forth.

2. The armature-adjusting lever L, collars

d, and yoke K, in combination with the section *b* of the circuit-breaker J, in the manner as and for the purpose set forth.

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Witnesses:

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