(No Model.)

J. P. TIRRELL.

ELECTRIC BELL.

No. 377,916. Patented Feb. 14, 1888.

Fig. 1,

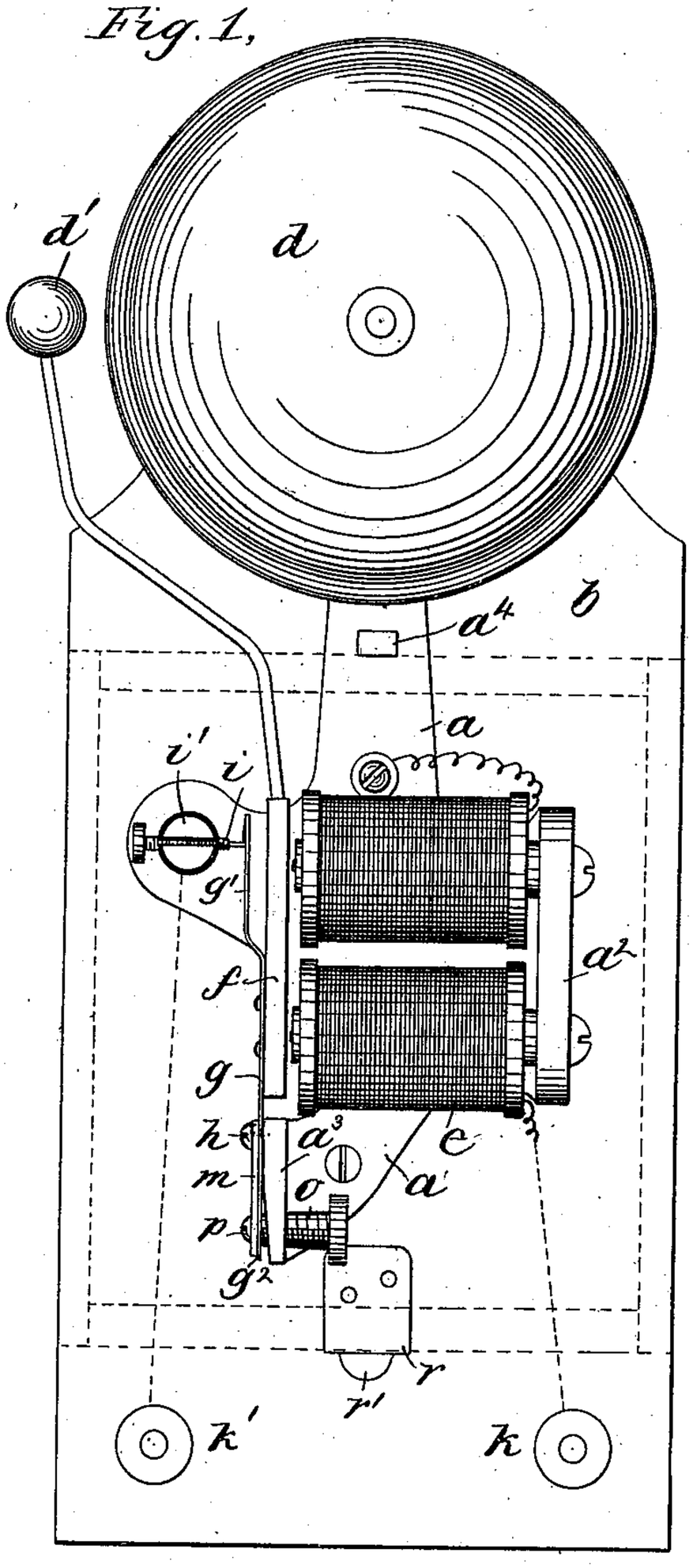


Fig. 2,

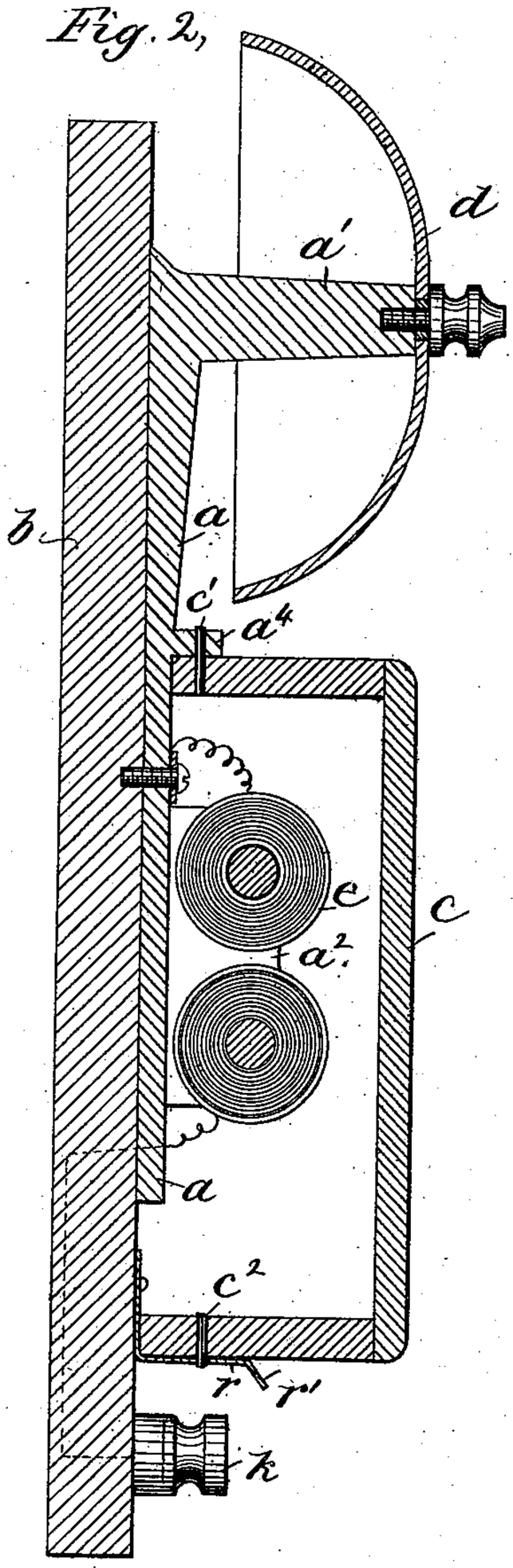
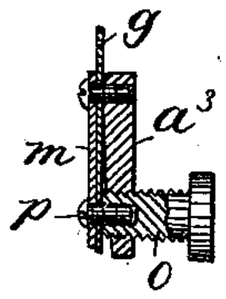


Fig. 3



Witnesses,
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Inventor,
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by Jos. P. Livermore.
Atty.

UNITED STATES PATENT OFFICE.

JACOB P. TIRRELL, OF SOMERVILLE, MASSACHUSETTS, ASSIGNOR TO THE ELECTRIC GAS LIGHTING COMPANY, OF PORTLAND, MAINE.

ELECTRIC BELL.

SPECIFICATION forming part of Letters Patent No. 377,916, dated February 14, 1888.

Application filed February 23, 1887. Serial No. 228,490. (No model.)

To all whom it may concern:

Be it known that I, JACOB P. TIRRELL, of Somerville, county of Middlesex, State of Massachusetts, have invented an Improvement in Electric Bells, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

My invention is embodied in an electric bell of the kind commonly known as a "vibrator," in which the bell-hammer is connected by an electro-magnet and armature which breaks the circuit in the forward movement of the armature toward the magnet.

The object of the invention is to facilitate the adjustment of the armature and its supporting and retracting spring with relation to the magnet, so that the bell will operate properly with strong or weak currents; and the invention consists in details of construction hereinafter pointed out.

Figure 1 is a front elevation of a bell embodying this invention with the box or inclosing case removed, but having its position indicated by dotted lines; Fig. 2, a central longitudinal section showing the means for fastening the inclosing-case on the base-board, and Fig. 3 a sectional detail of the armature-adjusting device.

The operative parts are mounted on a cast-iron frame-piece, *a*, shown in this instance as itself fastened by screws to a wooden base, *b*, adapted to receive a wooden inclosing box or case, *c*, for the operative parts of the bell, although the said base *a* might be fastened directly to the wall of the building and the inclosing-case dispensed with, if desired. The base *a* is provided near one end with an upright or projection, a', to which the bell *d* is fastened in the usual manner, and at one side with an upright or projection, a^2, to which the cores of the magnet *e* are fastened, the said upright a^2 constituting the back-strap or completing magnetic circuit of the said cores, and the base *a* has a third projection, a^3, that supports the armature *f* of the magnet, which armature is attached to a flat spring, *g*, fastened to the projection a^3 by a screw, *h*. The armature *f* is provided with the bell-hammer d', and the spring *g* is extended beyond its point of attachment with the armature, as shown at g', and co-operates with the back contact-piece, *i*, supported in an upright or post, i', insulated from the base-piece *a*.

The bell *b* is provided with the usual binding-posts *k* k', the former connected, as shown, with one terminal of the magnet *e* and the latter with the upright i', while the other terminal of the magnet *e* is connected with the base-piece *a*, and thus with the spring *g*, so that the circuit is complete when the spring *g* touches the contact *i*, but is interrupted when the said spring is drawn away from the said contact by the attraction of the said magnet, which moves by the armature *f* and causes the hammer d' to strike the bell in the usual manner.

It is necessary to adjust the effect of the spring *g* with relation to the attractive force of the magnet *e* in order to make the bell operate properly with currents of different strength, and this has generally been done in bells of this class by putting washers between the said spring and the upright that supports it; but this is an inconvenient and unsatisfactory method of adjustment; and one feature of this invention consists in the devices, now to be described, by which the adjustment may be readily made with great facility and accuracy. For this purpose the upright a^3 is extended beyond the point of attachment at *h* of the spring *g*, and is inclined away from the normal or medium position of said spring, as shown, thus forming a projecting seat or bearing for the spring opposite its fastening-screw *h*, so that the said spring and connected armature *f* may be moved toward or from the magnet without straining the spring by merely changing the angle at which it engages its seat on the upright a^3, the said seat and screw *h* practically constituting a pivot for this purpose. In order to readily set and secure the spring at the desired angle, the said spring is itself extended, as shown at g^2, beyond the point of attachment at *h*, and is preferably provided with a stiffening-plate, *m*, also engaged by the screw *h*, as shown, the said projecting end, g^2, of the spring and plate *m* being engaged by an adjusting-screw, *o*, working in a threaded socket in the lower part of the projection a^3.

The spring *g* and plate *m* are held up in contact with the adjusting-screw *o* by a retaining-screw, *p*, entering a threaded socket in said adjusting-screw *o*, and it will be seen that by turning up the said screw *p* tightly the screw *o* will be prevented from turning readily in its socket, so that the said screw *p* has practically the effect of a lock-nut. It is not essential for this part of the invention that the same spring, *g*, that supports the armature should also constitute the back contact for said armature, although this is a convenient and inexpensive construction. It will be seen that by this method of adjusting, the spring *g* is not strained, but merely has its position with relation to the magnet changed, so that the armature may be normally held at a greater distance from the magnet when strong currents are to be used than when weak currents are.

The cover *c*, that incloses the bell, is provided with dowel-pins *c' c²*, the former of which engages a lug, a^4, on the piece *a*, and the latter of which engages an opening in the spring fastening-plate *r*, attached to the piece *b* and turned outward slightly at its free end, as shown at *r'*, to form a finger-piece that can be readily engaged by the operator, who can thus readily remove or replace the inclosing-case by one hand, one finger easily operating the spring-catch *r*, while the box is held in the hand and withdrawn as soon as the said spring-catch is unfastened. I do not claim this means for fastening the inclosing-box on the case, as it is not my invention.

I claim—

The combination of the electro-magnet and its armature and supporting-spring for said armature with an upright having a projecting seat to which said spring is attached, said spring being extended beyond said seat, an adjusting-screw working in said upright and engaging the projecting end of said spring, and a retaining-screw working in said adjusting-screw, by which said spring is held firmly against the end of said adjusting-screw, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JACOB P. TIRRELL.

Witnesses:
JOS. P. LIVERMORE,
ANNIE J. LOCKE.