

(No Model.)

J. G. ARNOLD.

ANNUNCIATOR.

No. 256,190.

Patented Apr. 11, 1882.

Fig. 1.

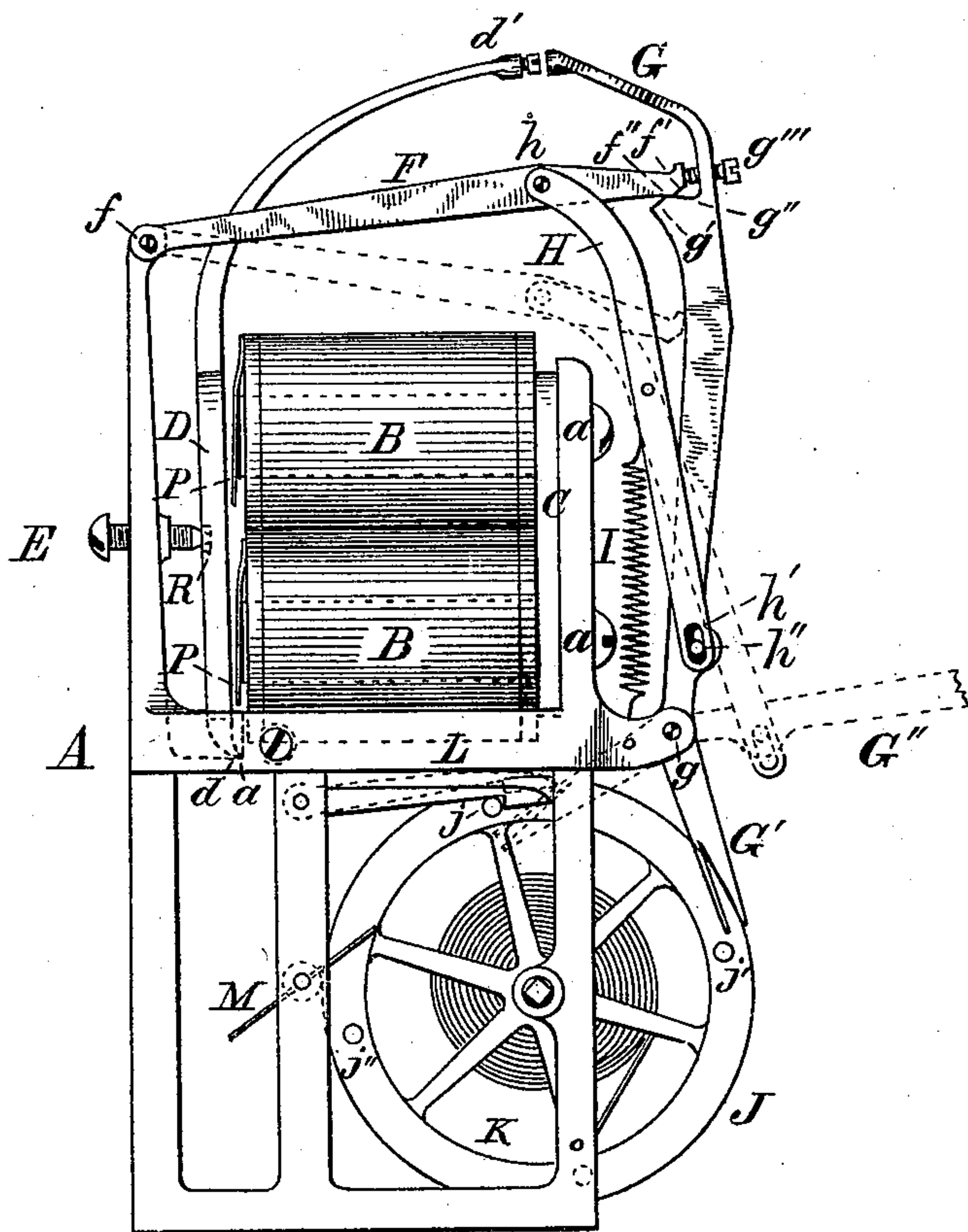
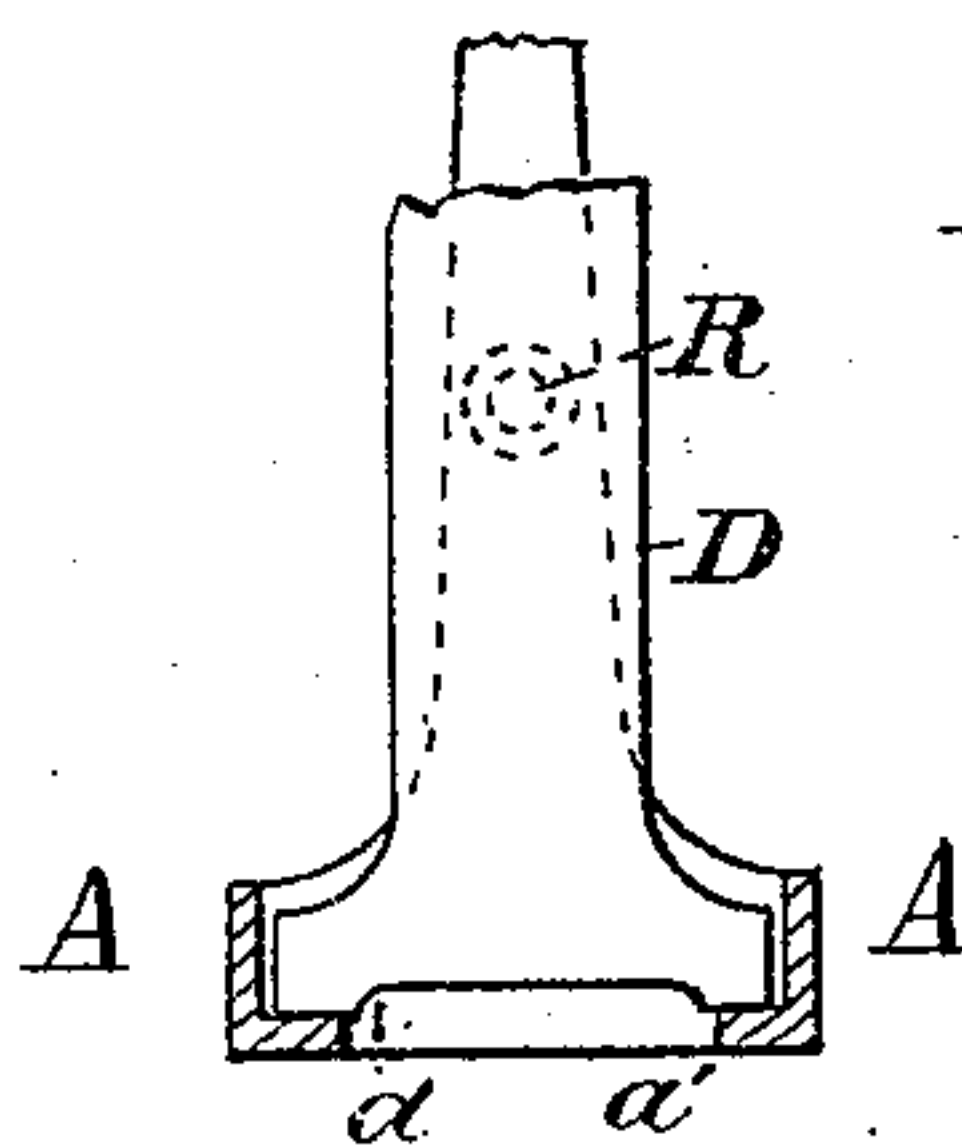


Fig. 2.



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To all whom it may concern:

Be it known that I, JAMES G. ARNOLD, of the city and county of Worcester, State of Massachusetts, have invented certain new and useful Improvements in Annunciators or Drops for Electric Purposes, of which the following is a specification.

The objects of my invention are to make use of very small currents of electricity as well as stronger ones, and to make the drop self-setting after an interval of time to be predetermined and regulated. I accomplish these ends by means of a free armature, tilting or pivoted, in combination with a friction-held drop, operated by a spring or its equivalent after the attracted armature has overcome the friction hold, and make it automatic and self-setting by a combination with a clock-work mechanism and devices for controlling its operation, as hereinafter more particularly described.

In the various annunciators heretofore made the armature has to be attracted with sufficient force to overcome the hold of the catch before the armature moves, while by my invention the armature is free to move, and being nearly balanced, it can move by a very small current, making a slight attraction, and acquires a motion and position nearer the magnet, and consequently greater force when it acts to overcome the friction hold, thus using its acquired momentum in addition to the actual attractive power in releasing the drop.

In the accompanying drawings, Figure 1 shows a side view of a machine embodying my invention, Fig. 2 showing the support for the armature.

A is the frame supporting two coils, B B, whose cores are held firmly by the screws *a a* to the piece C and form the electro-magnet, in the usual way.

D is the armature, having its lower end formed with an edge at one side, *d*, so that the body of armature D shall very slightly over-balance its upper end with screw *d'* and rest against the adjusting-screw E in frame A, the lower end of the armature D resting on ledges *a a* on the inside of frame A, as shown in Fig. 2, the screw E having a cavity, R, made in D for its end to enter and hold the armature from removal. This, it will be seen, leaves the armature free to tilt or move by tipping on its

lower edge, *d*. The exposed ends of the cores of the magnet are covered by thin plates P P, attached on one side to the bobbins or coils in such a manner as to form delicate springs, and serving the double purpose of preventing actual contact of the armature with the magnet, and also by their spring-power to start the armature away from the cores when the magnet ceases to act, thus assisting to reset the armature, which after being started sets itself by falling back against the end of the screw E at the bottom of cavity R.

The drop or index G is pivoted at *g*, so as to fall to the position shown in broken lines at G'', and has an incline at *g'*, acting with a corresponding one, *f'*, on the lever F, and near that a surface, *g''*, against which a surface, *f''*, of lever F rests and holds the drop G up, these surfaces *f''* and *g''* being about in line with the motion at that point of drop G on its pivot *g*, or slightly inclined, so that *g''*, in moving on *f''*, shall raise the lever F a little, thus giving the lever F a little more holding-power.

H is a connection, pivoted at *h* to the lever F, and having a slot, *h'*, over the pin *h''* in the drop G, and has a spring, I, tending to pull it to position shown in broken lines.

The lever F is pivoted at *f* to a standard of frame A. The lower end, G', of the drop G is extended below its pivot, and is provided with a spring-surface for the pins *j j'*, &c., in the wheel J to act upon. J is a wheel, having a spring with ratchet and catch for winding, and a fly, M, driven in the common form, and a catch, L, holding by pin *j* until released by lever G', when the drop falls, the fly M operating in the usual manner to retard the motion of the wheel J in the usual way.

In operation, when cores of the coils B B are magnetized in the usual way by a current through the coils, the armature D is attracted, and, being free, requires but little to move it. Its screw *d'* soon begins to act on the head of drop G, forcing the surface *g''* from under *f''*, allowing the incline *f'* to act on *g'* with the force of spring I, pressing drop G until connection H bears on pin *h''*, when that receives the power of the spring, throwing the parts into position shown in broken lines, and the end G', lifting catch L from pin *j*, allows wheel J to start. In a short time (more or less in pro-

portion of the power of the spring to the resistance of fly M) the pin *j* presses against lever *G'*, raising drop *G*; the connection *H* raising lever *F* until incline *g'* meets *f'*, which then raises lever *F*, allowing surface *g''* to pass under *f''*, thus resetting the drop. In the meantime, the magnet having ceased to hold the armature *D*, the springs *P P* start it away, and it resets itself, as before described, and the wheel *J*, turning sufficiently, brings the pin *j''* under and against the catch *L*, ready for another action, as before, the spring form of *G'* allowing all necessary variation of adjustment by screw *g'''*, and allowing sufficient action from the pins, the amount of motion from *d'* necessary to bring the inclines into action being regulated by the screw *g'''*, and the strength or force of hold by the pitch of the surfaces *g''* and *f''* relative to the motion of *g''*.

The shoulder or surface *g''* is not absolutely necessary. If the pivots *h*, *h''*, and *g* are arranged so as to be brought into line when the drop is set, it will operate without said shoulder; but I prefer it arranged as shown as a better construction.

It is evident that the drop *G*, with its holding mechanism, may be used with a pivoted armature and with or without the raising mechanism.

I claim—

1. The combination of the armature *D*, the

supporting-ledges *a a*, and the cavity *R*, or its equivalent, securing the end of the screw *E*, substantially as and for the purposes set forth.

2. The combination of the drop *G*, having a pin, *h''*, the connection *H*, lever *F*, or its equivalent, and the spring *I*, substantially as set forth.

3. The combination of the drop *G*, having pin *h''* and incline *g'*, the slotted connection *H*, spring *I*, and the lever *F*, having incline *f'*, operating with *g'*, substantially as and for the purpose above described.

4. The combination of the drop *G*, having pin *h''*, incline *g'*, and holding-surface *g''*, slotted connection *H*, spring *I*, and lever *F*, having incline *f'* and holding-surface *f''*, substantially as and for the purposes set forth.

5. The combination of an electric annunciator with an automatic resetting mechanism, consisting of the spring-wheel and fly and escape-catch, and means for releasing said catch, as and for the purposes described.

6. The combination, with the poles of an electro-magnet and the armature *D*, of the spring-plates *P P* between said armature and each pole of the magnet, substantially as and for the purposes above set forth.

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Witnesses:

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