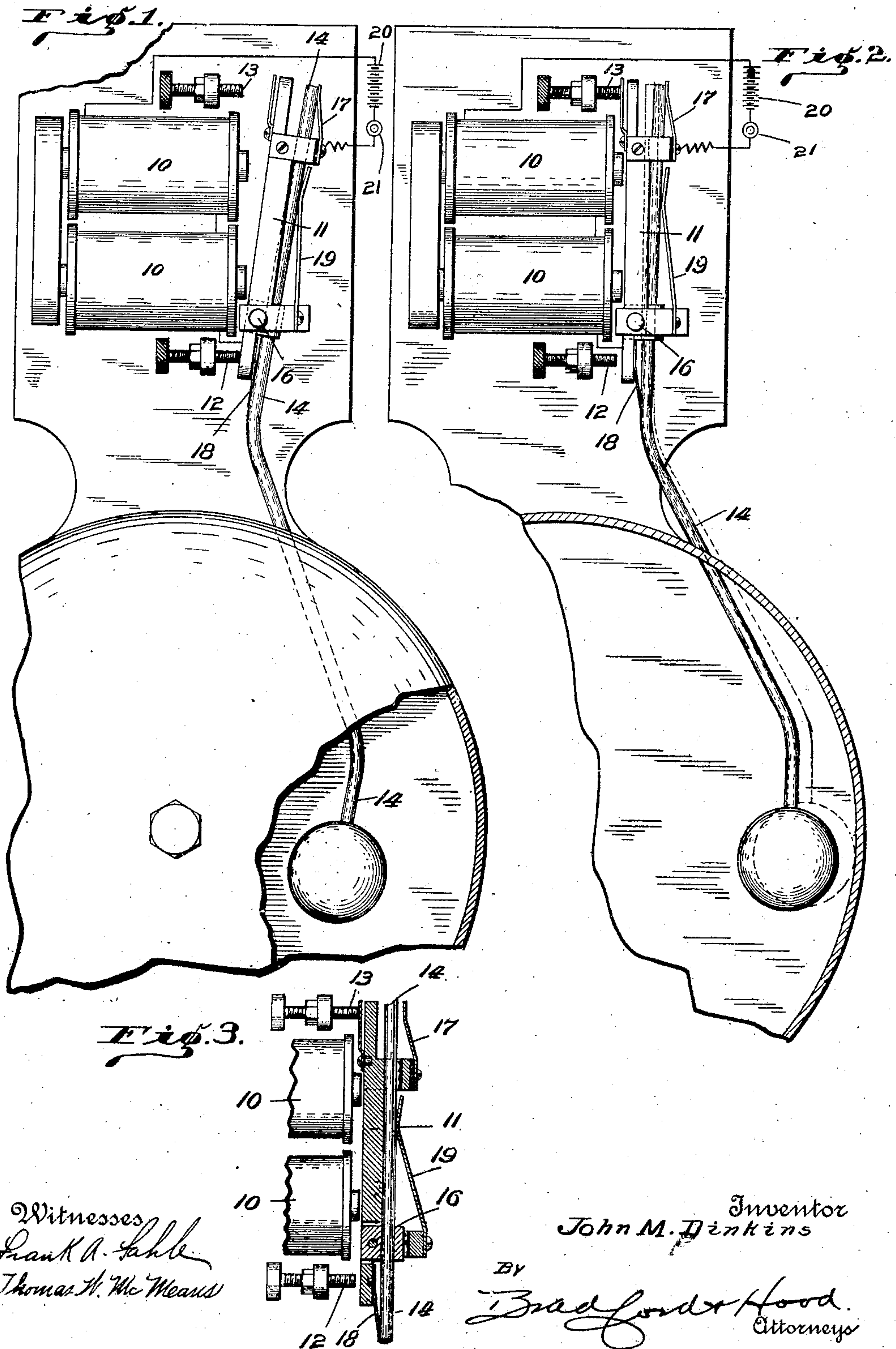


No. 881,114.

PATENTED MAR. 10, 1908.

J. M. DINKINS.  
ELECTRIC VIBRATOR.  
APPLICATION FILED JULY 21, 1906.





# UNITED STATES PATENT OFFICE.

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## ELECTRIC VIBRATOR.

No. 881,114.

Specification of Letters Patent.

Patented March 10, 1908.

Application filed July 21, 1906. Serial No. 327,225.

*To all whom it may concern:*

Be it known that I, JOHN M. DINKINS, a citizen of the United States, residing at Indianapolis, in the county of Marion and State of Indiana, have invented certain new and useful Improvements in Electric Vibrators, of which the following is a specification.

The object of my invention is to produce an improved form of electro-magnetic vibrator by means of which the energizing current may be maintained in the magnet until the end of the stroke of the armature.

The device has been primarily designed for the actuation of the hammers of gongs used at railway crossings, but, of course, is not limited to such use. The power necessary for operation of the vibrator is very considerably less than that required for the operation of the ordinary electro-magnetic vibrator.

The accompanying drawings illustrate my invention as applied to a bell or gong:

Figure 1 is a front elevation with the parts in normal position; Fig. 2 a similar view showing the parts in full lines in the position assumed immediately prior to the break in the energizing circuit, and showing in dotted lines the positions of the parts when the energizing circuit has been broken; Fig. 3 is a sectional detail showing the positions of the parts immediately after the energizing circuit has been broken.

In the drawings, 10 indicates an electro-magnet of one or more coils. Mounted adjacent the magnet is a vibrating armature 11, the amplitude of movement of which may be controlled by means of a pair of adjustable stops 12 and 13. Mounted upon the armature 11 is hammer arm 14, said hammer arm having a limited movement relative to the armature in the direction of movement thereof, and for this purpose I find it convenient to pivot the hammer arm upon the same pivot 16 which forms the pivotal support of the armature. Secured to armature 11, but insulated therefrom, is a terminal 17 which is adapted to contact with one end of the hammer arm 14 when said hammer arm is in its normal position.

In order to insure the withdrawal of the armature from the magnet to normal position without immediate return of the hammer arm into contact with the terminal 17, I provide a spring finger 18 which is attached to the armature 11 beyond its pivot and en-

gages the hammer arm 14. In order to assist in the smooth vibration of the parts I provide a spring finger 19 carried by the main frame and engaging one arm of the hammer 14. The energizing circuit is established from the battery 20 to the coils of magnet 10, thence to the hammer lever 14 on one side, and on the other side, from the battery through the circuit-making member 21 to the terminal 17.

The operation is as follows: When the circuit-making member 21 is operated the circuit will be closed through the coils of magnets 10 and the armature 11 will be drawn toward the magnet, the hammer arm 14 moving therewith and the engagement between it and the terminal 17 continued until the armature comes into engagement with stop 13. Thereupon the momentum of the hammer arm will carry it onward into engagement with the gong and this additional movement of the hammer arm relative to the armature separates it from the terminal 17, thus breaking the energizing circuit of the magnet. It thus will be seen, that the energizing current remains in the coils of the magnet until after the armature has completed its full stroke.

In the form shown in the drawings, the parts are returned to normal position by the weight of the hammer, and as the hammer starts on its return, it acts against spring 18 to withdraw the armature from the magnet, thus maintaining the separation between the hammer arm and the terminal 17 until the armature comes into engagement with stop 12, whereupon spring 18, which is comparatively light, is compressed by the further movement of the hammer arm until engagement is again made between the hammer arm and the terminal 17, whereupon the operation is repeated. The speed of vibration may be regulated by an adjustment of the stop 12.

I claim as my invention:

1. In an electro magnetic vibrator, the combination, with an electro magnet, of a movable armature arranged in the field of said magnet, a hammer arm mounted upon said armature and movable relative thereto, and an energizing circuit for said magnet comprising a pair of separable members controlled by the movement of the hammer arm relative to the armature.

2. In an electro-magnetic vibrator, the combination, with an electro magnet, of a



pivotally supported armature arranged in the field of said magnet, a hammer arm pivotally mounted on said armature and movable relative thereto, and an energizing circuit for the electro magnet comprising a pair of separable terminals controlled by the relative movement of the hammer arm on the armature.

3. In an electro magnetic vibrator, the combination, with an electro magnet, of a pivoted armature arranged in the field of said magnet, means for limiting the swing of said armature in both directions, a hammer arm pivotally mounted on said armature and movable relative thereto, and an energizing circuit for the electro magnet comprising a pair of separable terminals controlled by the relative movement of the hammer arm on the armature.

4. In an electro magnetic vibrator, the combination, with an electro magnet, of a pivoted armature arranged in the field of said magnet, a hammer arm pivotally associated with the armature and movable relative thereto, spring fingers forming a connection between the armature and hammer arm per-

mitting relative movement between the hammer arm and armature, and an energizing circuit for said electro magnet controlled by the relative movement of the hammer arm and armature.

5. In an electro magnetic vibrator, the combination, with an electro magnet, of a pivoted armature arranged in the field of said magnet, a hammer arm pivotally associated with the armature and movable relative thereto, spring fingers forming a connection between the armature and hammer arm permitting relative movement between the hammer arm and armature, an energizing circuit for said electro magnet controlled by the relative movement of the hammer arm and armature, and means for limiting the swing of the armature in both directions.

In witness whereof, I have hereunto set my hand and seal at Indianapolis, Indiana, this 9th day of July, A. D. one thousand nine hundred and six.

JOHN M. DINKINS. [L. S.]

Witnesses:

ARTHUR M. HOOD,  
THOMAS W. McMEANS.