W. W. DEAN.

ELECTRICAL SIGNALING DEVICE.

APPLICATION FILED MAY 25, 1912.

1,141,945. **Patented June 8, 1915.**

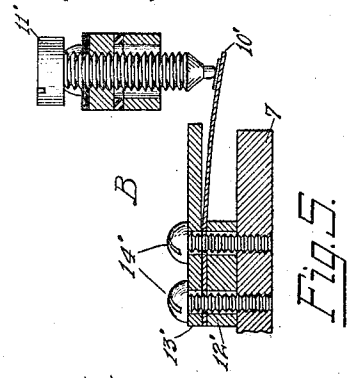


Fig. 5.

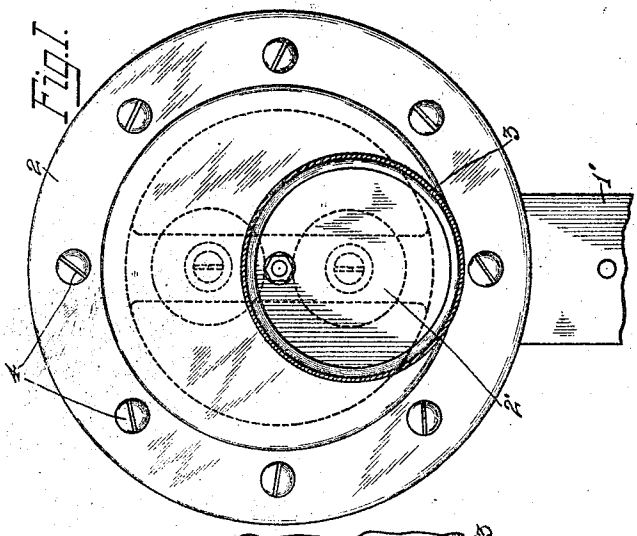


Fig. 1.

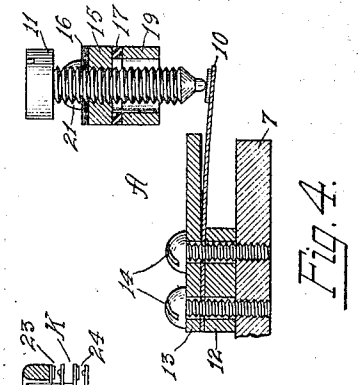


Fig. 4.

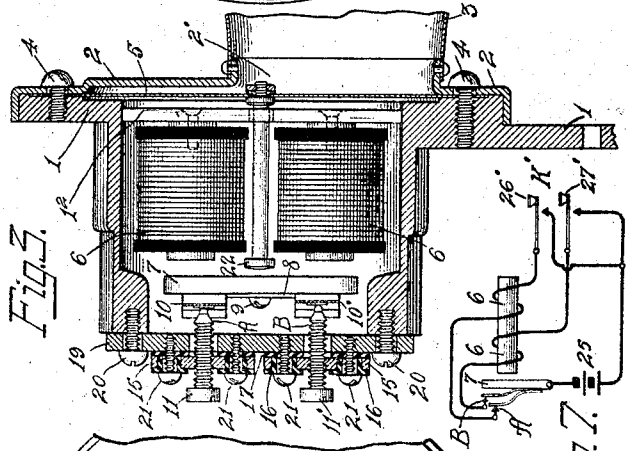


Fig. 3.

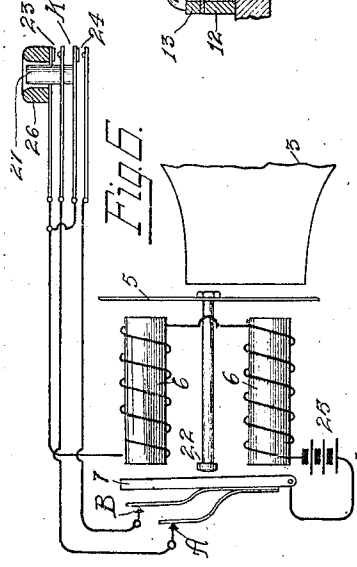


Fig. 6.

Fig. 7.

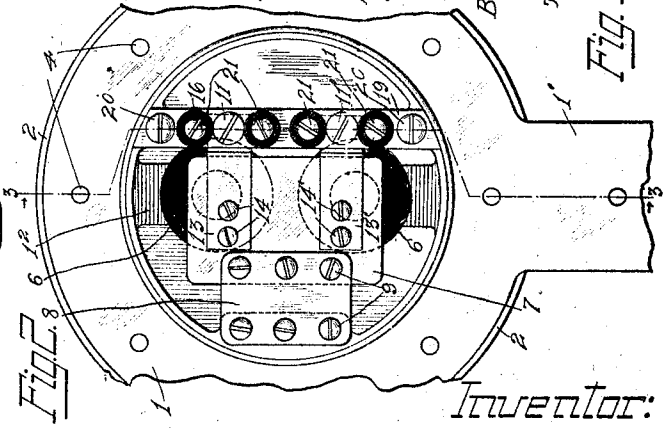


Fig. 2.

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ELECTRICAL SIGNALING DEVICE.

1,141,945. Specification of Letters Patent. Patented June 8, 1915.

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To all whom it may concern:

Be it known that I, WILLIAM W. DEAN, a citizen of the United States of America, residing in Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Electrical Signaling Devices, of which the following is a specification.

My invention relates to signaling devices of the character generally employed for automobiles, motor boats, etc., and sometimes referred to as electrical horns, an object of my invention being to provide a device of the character described adapted to produce sounds of different loudness by means of differently adjusted contacts included in the operating circuit.

Other features of my invention will be more particularly pointed out in the following specification.

For more complete understanding of my invention reference is to be had to the accompanying drawing in which all parts are shown at normal and like reference characters indicate like parts, and in which—

Figure 1 is a front elevation of a preferred embodiment of my invention but with the horn or bell portion excluded; Fig. 2 is a rear elevation of the device of Fig. 1; Fig. 3 is a cross section through the line 3—3 of Fig. 2; Fig. 4 is an enlarged view of one of the vibratory contacts showing one degree of adjustment; Fig. 5 is an enlarged view of another vibratory contact showing a different degree of adjustment; Fig. 6 is a circuit arrangement adapted for the device of Figs. 1 to 5, and Fig. 7 is a modified circuit arrangement.

Referring now more to the detail of construction, my preferred embodiment comprises a frame or casing 1 having an extending arm 1^1 for attaching the device in suitable manner, a face plate 2 having an eccentrically disposed bell opening 2^1, to which is suitably secured a bell member 3 shown only in part and which may be of any suitable design.

Face plate 2 is preferably secured to the casing 1 by means of clamping screws 4, and a diaphragm 5 is suitably clamped between casing 1 and face plate 2. Clamping screws 4 are so spaced that face plate 2 may be moved around to different positions so that the bell opening 2^1 may always be at its lowest point according to the manner in which the extension or bracket 1^1 is fastened. By this arrangement snow, or sleet, or water is expelled from the bell of the device so as not to retard its operation. Casing 1 also has a bridge plate 1^2 supporting an electromagnet comprising preferably a pair of spools 6, while an armature 7 is also supported by frame 1, preferably by a flexible connection 8 secured by screws 9 to said armature 7 and casing 1.

I have preferably embodied my invention in a device capable of producing two distinct tones and therefore I have shown two contact sets A and B, the set A (Fig. 4) comprising preferably a vibratory spring contact 10 and an adjustable contact screw 11, while set B also comprises a contact 10^1 and screw 11^1 similar to the parts of set A. Contact 10 is suitably secured to armature 7, preferably by means of a supporting block 12 and follower plate 13, which clamp spring 10 by means of a pair of screws 14, while contact 10^1 is similarly supported by armature 7, the corresponding parts having corresponding reference characters but with the suffix "prime" added thereto.

The contact screw 11 is insulatingly supported in operative relation to its coöperating contact 10, said screw 11 being threaded in a metallic member 15 insulatingly supported by means of washers 16, 17 to a cross bar 19 suitably fastened to casing 1 by means of screws 20. A pair of screws 21 extend through washers 16—17 and into said cross bar 19, a like arrangement being provided for adjustable screw 11^1. Any suitable locking means may be provided for screws 11, 11^1 to prevent their moving out of adjustment, although I have shown none.

By referring to Figs. 4—5 it will be noted that contact 10 of set A normally lies closer to its follower strips 13 than the contact 10^1 to its follower strip in contact set B. It will be apparent with this arrangement that with contact set A included in the vibratory circuit, armature 7 will vibrate at a faster rate than when contact set B is included in similar circuit.

In the embodiment of my invention, I preferably provide a device in which the armature in vibrating strikes a hammer blow which acts upon the armature through a stud 22 provided for this purpose and suitably attached to diaphragm 5. Thus each time armature 7 is attracted, it strikes the

stud 22 thereby acting upon diaphragm 5 and producing a distinct sound.

In Fig. 6 I have illustrated a circuit arrangement adapted for use with my invention, the said Fig. 6 being diagrammatic and includes an operating key K comprising two sets of contacts 23—24 controlling the contact sets A and B respectively. A battery 25 is included in circuit with the windings of the spools 6 in such a manner that when contacts 23 are closed by the push button 26 a circuit is closed through contacts A whereby a certain sound is produced. Upon the operator further depressing button 26, the button 27 will be engaged by the finger thereby closing contacts 24 and including contacts B in the vibratory operating circuit of the device, whereby a different tone is produced.

Although in Fig. 6 I have illustrated a key K of a particular type, it is to be understood that keys of other characters may be used and I also contemplate employing a key such as the key K′ of Fig. 7 in which the circuits through contacts A and B may be closed independently to produce distinctive tones.

Fig. 7 which illustrates a modified circuit arrangement for the operation of my device, is shown diagrammatically, and the electromagnet is shown as a single spool having two windings each included in a circuit with keys 26^1 and 27^1, said keys being adapted to be closed independently to select either circuit, or it is apparent that the operator by pressing both buttons at the same time closes a circuit simultaneously through the two windings of the electromagnet.

In operating my invention, upon closing a circuit through contacts A the armature 7 is attracted until the follower plate 13 engages contact spring 10 and interrupts the contact between it and the contact screw 11, whereby the circuit being interrupted the armature retracts until contacts 10, 11 are again closed causing the armature to be attracted again, this vibration continuing as long as the circuit is closed. The stud 22 will be so adjusted with relation to armature 7 that it will be struck by the armature when it is vibrated, thereby acting upon the diaphragm 5 and producing a certain volume of sound, but when a circuit is closed through contact B it will be apparent that due to the difference in adjustment between contacts A and B, armature 7 is vibrated through a greater amplitude to strike a harder blow upon stud 22, increasing the volume of sound produced by this action upon diaphragm 5.

As is well known, in using a device of the character described there are times when a moderately loud tone will be sufficient while at other times a comparatively loud tone is desirable, and from the foregoing it will be apparent that by providing vibrating contacts of different adjustment, various sounds may be produced by the device to suit the exigency in which it is used.

While I have shown preferred embodiments of my invention it is apparent that many changes and modifications thereof may be made and therefore I do not desire to be limited to the exact structures as illustrated and described, but aim to cover all such changes and modifications as come within the spirit and scope of the appended claims.

Having described my invention what I claim as new and desire to secure by Letters Patent is:

1. A signaling device comprising a suitably supported diaphragm, an electromagnet and armature, an anvil rod rigidly supported by the diaphragm and operatively related to the armature, a pair of flexible contact springs carried by the armature, an adjustable contact for each contact spring providing different periods of contact between the spring and contact screw when the armature vibrates, and circuit connections whereby either contact and electromagnet are included in circuit to produce different frequencies of vibration of the armature and diaphragm.

2. A signaling device comprising a suitably supported diaphragm, an electromagnet and armature operatively related to the diaphragm, a pair of flexible contact springs carried by the armature, a stationary contact for each contact spring, stops for said contact springs providing different periods of contact between the spring and stationary contact when the armature vibrates, and circuit connections including said electromagnet and contacts to produce different frequencies of vibration of the armature and diaphragm.

Signed by me at Chicago, county of Cook and State of Illinois, in the presence of two witnesses.

WILLIAM W. DEAN.

Witnesses:
G. E. MUELLER,
B. O'BRIEN.