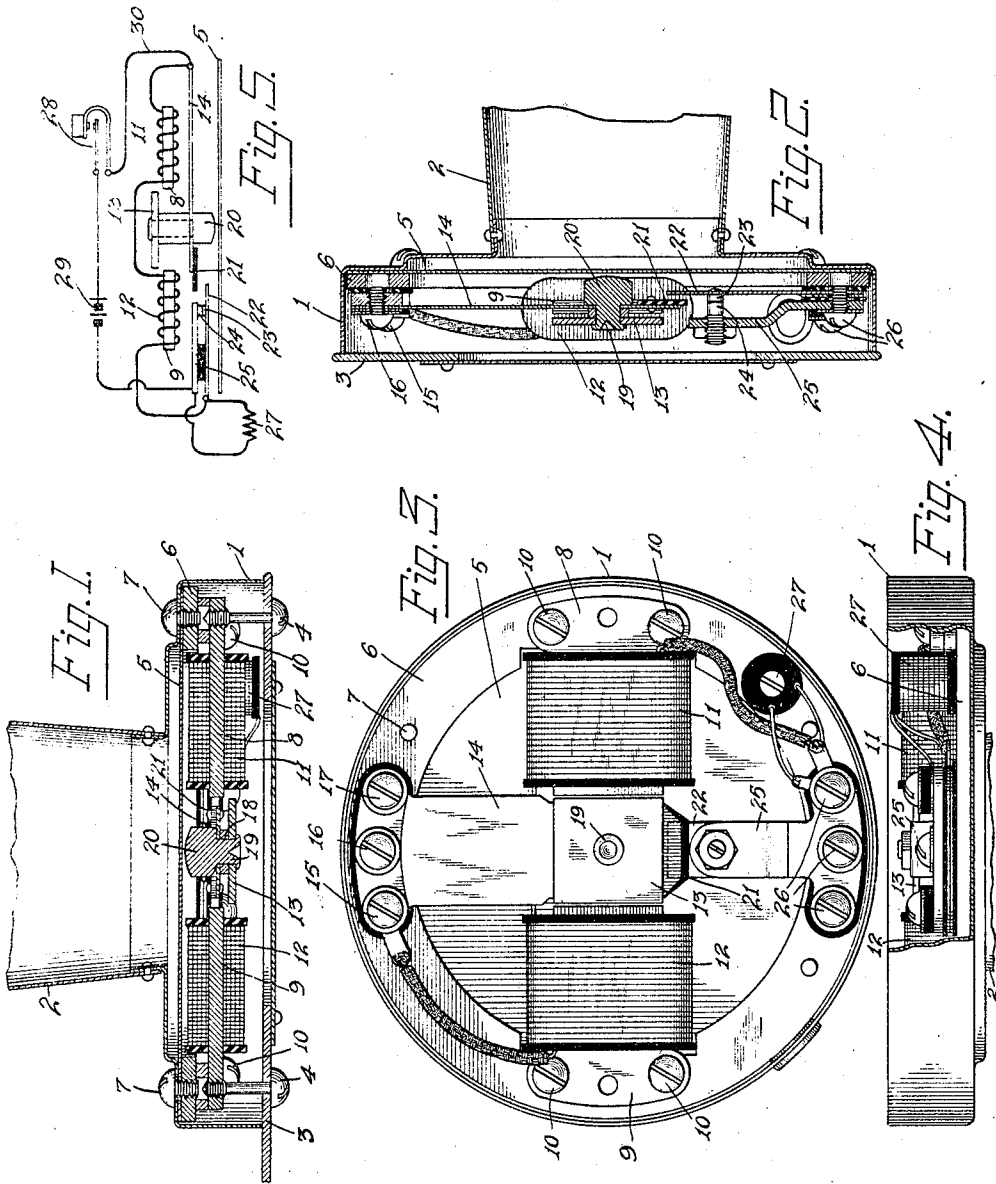


W. KAISLING.
SIGNALING HORN.
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1,250,589.

Patented Dec. 18, 1917



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UNITED STATES PATENT OFFICE.

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SIGNALING-HORN.

1,250,589.

Specification of Letters Patent.

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To all whom it may concern:

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

My invention relates to signaling horns, which are of particular utility for instance in connection with automobile, motor boat, and other uses.

My invention contemplates the provision of a new diaphragm actuating mechanism for devices of this kind, being designed to provide a very simple and effective vibrating mechanism for this purpose which can be readily accommodated within a small and confined space. Various features of utility are found in my device other than the above enumerated all as will appear from the detail description of one form of the device, which I will now set forth in connection with the accompanying drawing in which—

Figure 1 is a longitudinal sectional view of my improved device, only a portion of the resonator being shown;

Fig. 2 is a longitudinal sectional view along a plane at right angles to that along which Fig. 1 is taken;

Fig. 3 is a rear view of my device with the cover plate removed;

Fig. 4 is an end view of the device as shown in Fig. 3, part of the shell being broken away to reveal the interior of my device, and

Fig. 5 is a diagrammatic view illustrating the circuit arrangements.

My improved device contemplates a suitable shell 1 provided with a resonator 2. A back plate 3, held in place by the screws 4, serves to close the shell 1 to form the compartment for the operating mechanism. A diaphragm 5 is clamped to the front wall of the shell 1 between said shell and a ring 6 of magnetic material, screws 7 being provided for this purpose. Two flat cores 8 and 9 are fastened to opposing portions of the periphery of the ring 6 by means of screws 10, these cores extending radially inwardly. These flat cores are provided with flat energizing coils 11 and 12 respectively. Between the opposing faces of the inwardly projecting cores an armature 13 is mounted upon a spring 14, which spring is prefer-

ably insulatingly mounted upon the ring 6 by means of the screws 15, 16 and 17. A washer 18 is mounted between the armature 13 and the spring 14 and these three parts are held together by an overturned rivet 19 forming part preferably of a striker 20. The parts are normal when occupying the position shown in Fig. 1, and whenever the coils 11 and 12 are energized the armature 13 is drawn into line with the cores, thereby causing the striker 20 to strike the diaphragm 5. The spring 14 also carries an insulating finger 21 preferably riveted thereto, which is designed when the armature is attracted to engage the spring 22, thereby causing said spring to move its contact 23 away from the permanently mounted contact 24. This contact 24 is mounted upon an arm 25 insulatingly secured upon the ring 6 through the agency of the screws 26. The contacts 23 and 24 are serially included in circuit with the coils 11 and 12 and serve to interrupt the circuit there-through in accordance with the movements of the armature. A resistance coil 27 is insulatingly mounted upon the ring 6 and its inclusion in the circuit will be obvious from the explanation of the circuit, this resistance serving to obviate injurious effects due to sparking at the contacts 23 and 24.

Referring more particularly to Fig. 5, I show a button 28 which is adapted to close circuit from a battery 29 to operate the device, the circuit extending when this button is closed from the battery 29 to the button 28, conductor 30, coils 11 and 12, spring 22, arm 25, back to the battery. Under these conditions the resistance 27 which bridges the contact elements 22 and 25 is short circuited. When the coils are energized the armature 13 is attracted to impel the striker 20 against the diaphragm 5, whereupon the insulating element 21 breaks the circuit between the contact elements 22 and 25, thus including the resistance 27 in circuit. This resistance is then enough to permit return of the armature 13 under the influence of the spring 14 to return the parts to the position of Fig. 1 and Fig. 5. A vibratory action of the armature 13 thus takes place as will be readily apparent.

From the illustration it will be seen that the device is exceedingly compact and it will be seen that the armature 13 has a movement transversely of the axial line of

the core. It will also be apparent that being spring mounted, the armature may respond in tune with the vibrations of said spring. It will be seen that as the coils 11 and 12 are energized a strong magnetic field is created across the pole pieces forming the tips of the cores, whereby the armature is efficiently and effectively actuated. The spring 14 is not relied on to form part of the magnetic circuit.

Having thus described one form which my invention may take, by which the broad nature of the invention will be readily apparent, what I claim as new and desire to secure by Letters Patent is:

1. In an electric horn, the combination with a diaphragm, of an electromagnet for operating said diaphragm including a magnetic ring, a pair of inwardly projecting pole pieces having opposing faces secured to said ring, a stationary contact and a relatively movable contact spring forming a unitary structure secured to said ring at substantially right angles to said pole pieces, and a vibratory spring secured to said ring and carrying an armature lying in a plane parallel to the plane of said pole pieces, said armature being slightly less in length than the distance between said pole pieces whereby when said electromagnet is energized said armature is moved to a position between said pole pieces to magnetically connect said pole pieces by the shortest path.

2. An electrical signaling device of the character described including a diaphragm, an electromagnet for operating said diaphragm including a magnetic mounting member provided with a plurality of inwardly projecting pole pieces having opposing faces, an inwardly projecting contact carrying arm secured to said mounting plate, a relatively movable contact spring lying beneath said contact arm also secured to said plate, and a vibratory member secured

to said plate and mounted diametrically opposite the said contacts, an armature secured to said vibratory member, said armature being slightly less in width than the distance between said pole pieces and impinging said movable contact spring whereby when said electromagnet is energized said armature moves to a position between said pole pieces to magnetically connect said pole pieces by the shortest path and to move said spring contact out of engagement with the contact carried by said arm.

3. An electrical signaling device including a diaphragm, an electromagnet for actuating said diaphragm including a metallic ring, a pair of diametrically opposed inwardly extending pole pieces attached to said metallic ring, said pole pieces lying in a plane parallel to the plane of said metallic ring, an inwardly projecting contact-carrying arm secured to said metallic ring, a relatively movable contact spring lying beneath said contact arm, a vibratory member secured to said ring and mounted diametrically opposite the said contacts, an armature connected to said member and provided with a hammer for striking said diaphragm, said armature being mounted in operative relation to the extended ends of said pole pieces and is slightly less in length than the distance between said pole pieces, whereby when said electromagnet is energized said armature is pulled down between said pole pieces to magnetically connect them by the shortest path and to move said movable contact spring out of engagement with said contact arm.

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

WILLIAM KAISLING.

Witnesses:

GEORGE E. MUELLER,
M. R. ROCKFORD.