

H. BERGONZINI.
SIGNALING DEVICE.

APPLICATION FILED JAN. 19, 1910.

1,060,226.

Patented Apr. 29, 1913.

2 SHEETS-SHEET 1.

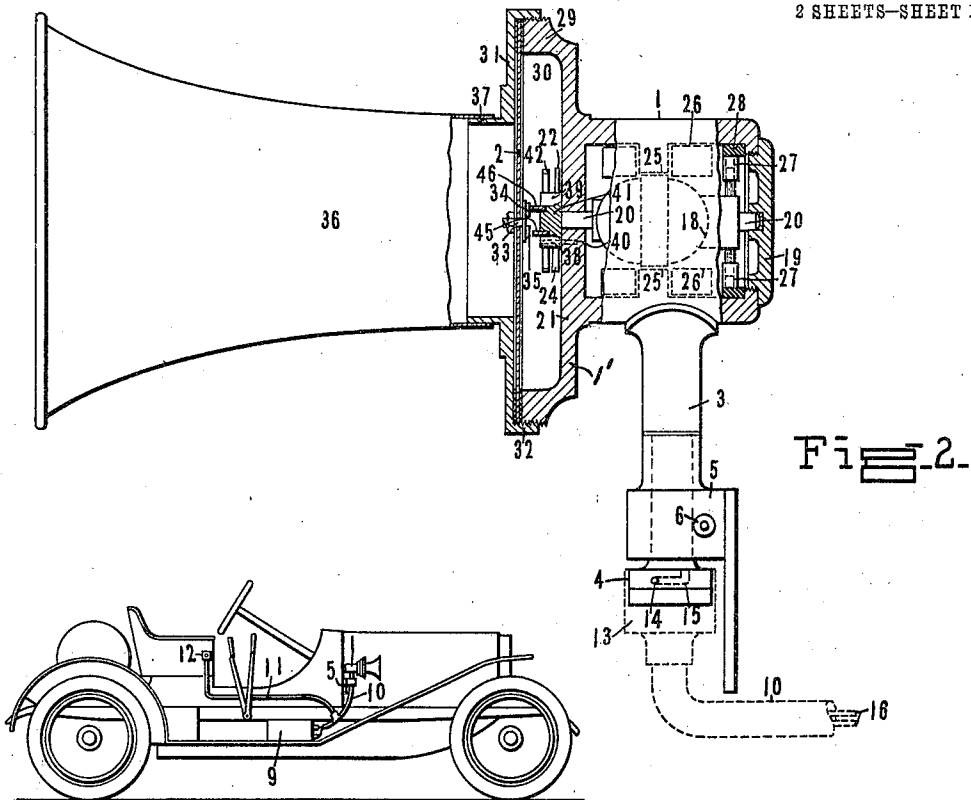


Fig. 1.

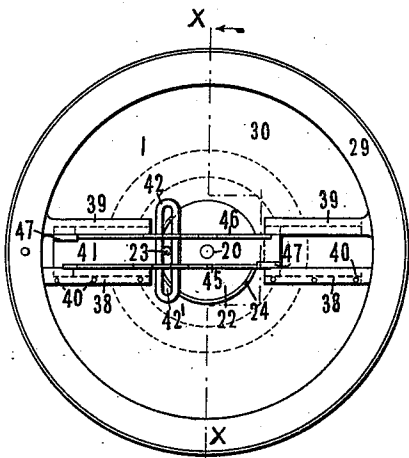


Fig. 3.

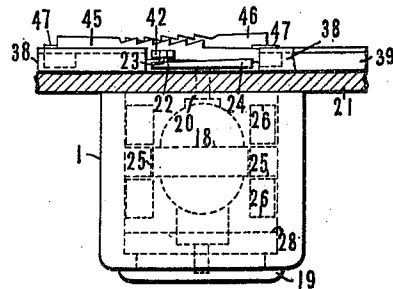


Fig. 4.

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2 SHEETS-SHEET 2.

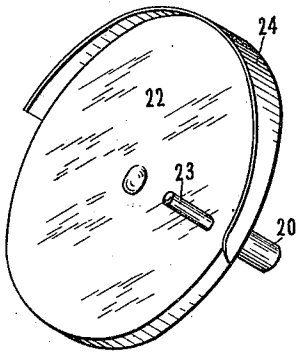


Fig. 5.

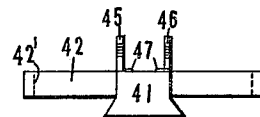


Fig. 10.

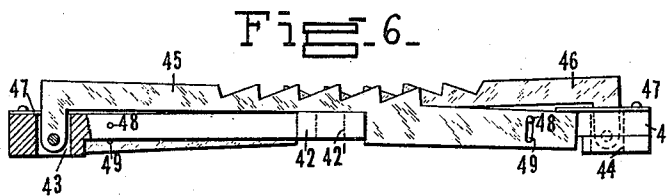


Fig. 6.

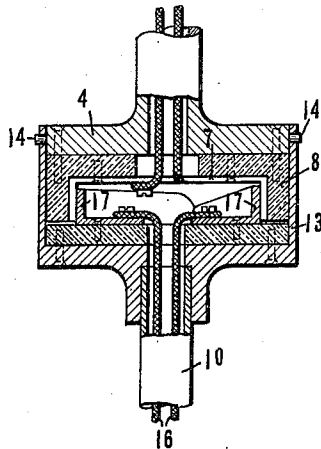


Fig. 7.

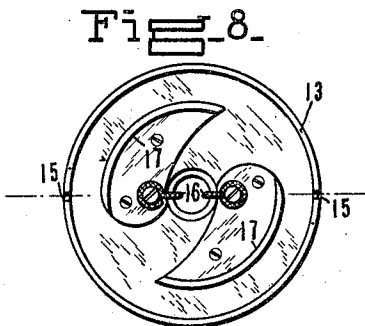


Fig. 8.

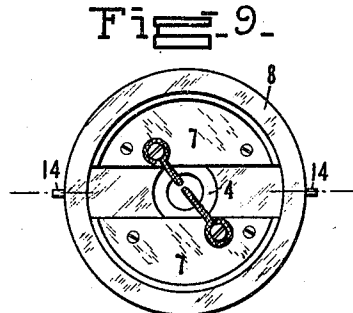


Fig. 9.

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UNITED STATES PATENT OFFICE.

HENRY BERGONZINI, OF NEW YORK, N. Y.

SIGNALING DEVICE.

1,060,226.

Specification of Letters Patent.

Patented Apr. 29, 1913.

Application filed January 19, 1910. Serial No. 538,815.

To all whom it may concern:

Be it known that I, HENRY BERGONZINI, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Signaling Devices, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to signaling devices and with regard to the more specific features thereof, to devices of this character adapted for use on automobiles, launches and the like.

One of the objects thereof is to provide a practical and self-contained signaling device of the above nature.

Another object is to provide such a device of simple and inexpensive construction, and highly efficient action.

Another object thereof is to provide a device of this character which may be easily attached to any suitable frame, readily adjusted in position and in which the electric connections may be quickly and positively made.

Other objects will be in part obvious and in part pointed out hereinafter.

The invention accordingly consists in the features of construction, combinations of elements and arrangement of parts which will be exemplified in the construction hereinafter set forth, and the scope of the application of which will be indicated in the following claims.

In the accompanying drawings, wherein is shown one of various possible embodiments of this invention,—Figure 1 is a diagrammatic side view of an automobile showing the signaling device attached thereto; Fig. 2 is a side elevation partly in section, of the signaling device, the section being taken on line $x-x$ of Fig. 3. Fig. 3 is a front view of the diaphragm casing with the cover and diaphragm removed; Fig. 4 is a plan view of the motor casing showing the means employed to vibrate the diaphragm, parts being in section; Fig. 5 is a perspective view of a crank disk and cam adapted to drive the vibrator; Fig. 6 is a detail view partly in section of the vibrator and associated parts; Fig. 7 is a sectional view of a socket adapted to complete the electric circuit through the motor; Figs. 8 and 9 are interior views of the two halves of the socket; Fig. 10 is an end view of the parts shown in Fig. 6.

Similar reference numerals refer to similar parts throughout the several views.

Now referring to the drawings, 1 indicates a casing adapted to inclose the motor and secured to this casing is a second casing 1' adapted to contain the means used to produce vibration of the diaphragm 2. While in the present form, the casings 1 and 1' are integral with one another, it is obvious that they may be made separate and secured together in any manner desired, without departing from the spirit of this invention. The casing 1 is provided with a tubular arm 3 which terminates in a socket member 4. Upon a reduced portion of the arm 3 a bracket 5 is adapted to swivel and to be tightened thereon by means of a thumbscrew 6. In Fig. 1 the casing is shown as secured to the frame of an automobile by means of said bracket. The leads from the motor are fastened to contact members 7 in the socket member 4, these contact members being supported upon and insulated from the socket member by means of a fiber bushing 8. Placed in any convenient position, as upon the running board of the automobile, is a battery 9. The circuit therefrom to the motor leads through a flexible conduit 10 having a branch 11 leading to a push-button 12 located in a convenient position for manipulation by the car runner. The flexible conduit terminates in a socket member 13 adapted to receive within an annular portion thereof, the socket member 4 of the casing. The two members are secured together by means of a bayonet joint comprising a pin 14 and an angular slot 15. The wires 16 from the battery are secured to two contact members 17 disposed within and insulated from the socket member 13 in such manner that when the socket members are locked together the contact members of the one part will engage the contact members of the other part and complete the electric circuit to the motor.

The casing 1 is provided adjacent one end of the motor armature 18 with a cap 19 providing an end bearing for the armature shaft 20. The other end of the armature shaft has its bearing in the wall 21 of the casing 1', through which it extends, to have secured thereto a crank disk 22 provided with a crank pin 23, and carrying upon its outer surface a cam member 24, the object of which will be hereinafter described. Motor pole pieces 25 may be formed as part

of casing 1 and the field coils 26 placed thereon in the usual manner. The brush holders 27 are supported by a fiber insulating ring 28 and the brushes are forced against the commutator in any suitable manner. The casing 1' extends beyond the walls of the motor casing 1 and provides an annular flange 29 threaded upon its outer circumference and surrounding a space 30 within which the crank disk 22 rotates. A cap 31 is provided with a flange 32 interiorly threaded to engage with the threads on flange 29, which upon being screwed thereon serves to clamp therebetween the resilient diaphragm 2. Located in the center of the said diaphragm and secured to the inner side thereof, is a projecting member 33 providing two abutments 34 and 35. A horn or resonator 36 of any desired construction fits securely over a forward projection 37 of the cap 31. Extending inwardly from the inner circumference of the flange 29, are two lugs 38 which are formed to serve as one side of a guide, of which the other side comprises two similar members 39, secured to the casing 1' by means of screws 40. Between these guides a sliding member 41 is adapted to reciprocate, the motion thereof being in a plane substantially parallel to the plane of the diaphragm 2. At about the center of the said slide extends a transverse member 42 which is provided with a slot 42' as shown in Fig. 3, adapted to receive the crank pin 23. Upon opposite sides of the slide, adjacent the two ends thereof, slots 43 and 44 are provided. Toothed members 45 and 46 are pivoted to the slide within these slots, the said members extending longitudinally of the slide upon either side thereof in opposite directions.

It will be seen by reference to Fig. 6 that the teeth of the member 45 are disposed in an opposite direction to the teeth of the member 46, and that the teeth of each member slope away from the pivotal point thereof. Spring members 47 secured at the two ends of the slide press upon the top of the free ends of the said toothed members and normally hold them in a depressed position. Pins 48 secured to the slide and passing through slots 49 provided in the said toothed members, limit the oscillation of said members about their pivots. The cam member 24 upon the crank disk is so disposed as, in certain positions, to engage the lower edge of first one and then the other of the toothed members and raise them alternately against the tension of the springs 47.

Having thus described the structural features constituting the present embodiment of this invention, the operation thereof, which is largely obvious, follows: Upon the electric circuit being closed at the push-but-

ton, the motor armature begins to rotate, the crank disk 22 rotating therewith. This rotation is transmitted by the crank pin to the slide member 41 as a reciprocating motion within the guides. As the slide moves toward the left, as viewed in Figs. 3 and 6, the toothed member 45 is raised by the cam 24 so that the points of the teeth thereon come into contact with the abutment 35 upon the diaphragm. The contact of each tooth with the abutment produces vibration of the diaphragm, and upon reversal of the movement of the slide, the cam moves from beneath the toothed member 45 and into contact with the toothed member 46, permitting the former to drop and raising the latter into contact with the diaphragm abutment 34, whereupon the diaphragm is vibrated by the latter member and as the teeth of one member are spaced relatively to the teeth of the other member so as to produce the effect of a continuous, uniformly toothed surface, the vibration of the diaphragm is continuous and uniform. While any motor speed or number of teeth may be employed, the best results have been obtained by using a series motor adapted to run at about 3,500 revolutions per minute when taking current from a source, having a difference of potential of about eight volts. Ten teeth are provided, giving the number of diaphragm impulses as 35,000 per minute. At this rate of vibration the diaphragm gives forth tones adapted to effectively alarm those for whom the warning is intended. The diaphragm may be spaced nearer to or farther away from the toothed members by inserting suitable washers between the same and the casing. It will accordingly be seen that herein is provided an apparatus well adapted to attain, among others, all the objects and ends above pointed out in an exceedingly simple yet efficient manner. The motor, reciprocating mechanism and electric wiring, all being inclosed are well protected from the effects of bad weather conditions and because of the form of the vibrating mechanism a very compact construction is made possible of attainment. It should be noted that when the current is shut off, the motor will stop approximately upon the nearest dead center of the reciprocating device, thus, almost immediately stopping the sounding of the alarm.

As many changes could be made in the above construction and many apparently widely different embodiments of this invention could be made without departing from the scope thereof, it is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense. It is also to be understood that the language used in the following claims is intended to cover all of the

generic and specific features of the invention herein described and all statements of the scope of the invention, which, as a matter of language, might be said to fall there-
 5 between.

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

1. In an alarm or signaling apparatus, in
 10 combination, a horn or resonator, a diaphragm provided with a projection, a member adapted to move in a plane substantially parallel to the plane of said diaphragm, means pivoted to said member adapted to
 15 engage said diaphragm projection to produce vibration thereof and means for actuating said member.

2. In an alarm or signaling apparatus, in combination, a horn or resonator, a diaphragm provided with a projection, a member adapted to move in a plane substantially parallel to the plane of said diaphragm, means pivoted to said member provided with teeth adapted by engagement with said
 25 projection to forcibly displace said diaphragm to cause vibration thereof and means for actuating said member.

3. In an alarm or signaling apparatus, in combination, a resonator, a diaphragm, a
 30 projection on said diaphragm, a slide, toothed means movably secured to said slide, means adapted to drive said slide, and means adapted to force said toothed means into engagement with said projection.

4. In an alarm or signaling apparatus, in combination, a resonator, a diaphragm, a projection on said diaphragm, a slide, a pair of toothed members oppositely pivoted to said slide, means adapted to reciprocate said
 40 slide, and means adapted to alternately force said members into engagement with said projection.

5. In an alarm or signaling apparatus, in combination, a resonator, a diaphragm, a
 45 projection on said diaphragm, a slide, a pair of toothed members pivoted to said slide, the teeth of one member being oppositely disposed with reference to the teeth of the other, means adapted to reciprocate said
 50 slide, and means adapted to alternately engage said members during opposite strokes of said slide to bring said teeth into engagement with said projection.

6. In an alarm or signaling apparatus, in
 55 combination, a resonator, a diaphragm, a projection on said diaphragm, a slide, a pair of toothed members pivoted to said slide, the teeth of one member being oppositely

disposed with reference to the teeth of the other, means adapted to reciprocate said
 60 slide, and a cam adapted to alternately engage said members during opposite strokes of said slide to bring said teeth into engagement with said projection.

7. In an alarm or signaling apparatus, in
 65 combination, a resonator, a diaphragm, a projection on said diaphragm, a slide, a pair of toothed members pivoted to said slide, the teeth of one member being oppositely disposed with reference to the teeth of the
 70 other, means adapted to reciprocate said slide, a cam adapted to alternately engage said members during opposite strokes of said slide to bring said teeth into engagement with said projection, and resilient
 75 means adapted to hold said members out of engagement with said projection when not under the influence of said cam.

8. In an alarm or signaling apparatus, in combination, a resonator, a diaphragm, a
 80 projection on said diaphragm, a slide formed with a transversely disposed slotted member, toothed means movably secured to said slide adapted to engage said projection, a rotative shaft, and an eccentrically dis-
 85 posed pin secured thereto adapted to co-act with said slotted member to reciprocate said slide.

9. In an alarm or signaling apparatus, in combination, a resonator, a diaphragm, a
 90 projection on said diaphragm, a slide formed with a transversely disposed slotted member, toothed means movably secured to said slide, a rotative shaft, an eccentrically disposed pin secured thereto adapted to co-
 95 act with said slotted member to reciprocate said slide, and a cam associated with said shaft adapted to force said toothed means into engagement with said projection.

10. In an alarm or signaling apparatus, 100
 in combination with a horn or resonator, a fixed diaphragm provided with a projection, a toothed oscillating member, having reverse movement in opposite lateral directions and engaging the projection of the
 105 diaphragm only during movement of said member in one direction to produce a sound, and means for continuously oscillating said member.

In testimony whereof I affix my signature, 110
 in the presence of two witnesses.

HENRY BERGONZINI.

Witnesses:

EVERETT J. PECK,
 C. KIDBILL.