R. H. MANSON.

AUTOMOBILE HORN.

APPLICATION FILED MAR. 2, 1912.

1,168,322. Patented Jan. 18, 1916.

Fig 1

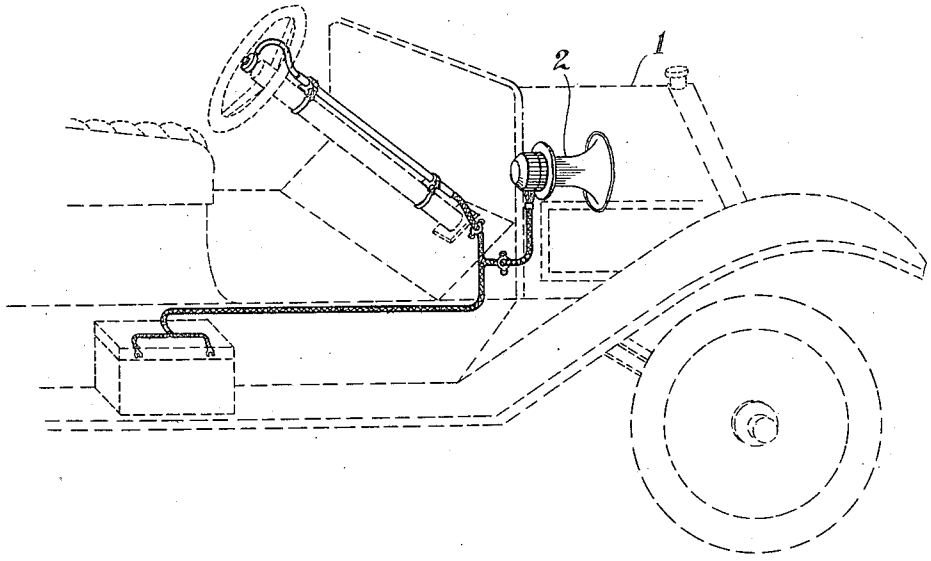


Fig 2

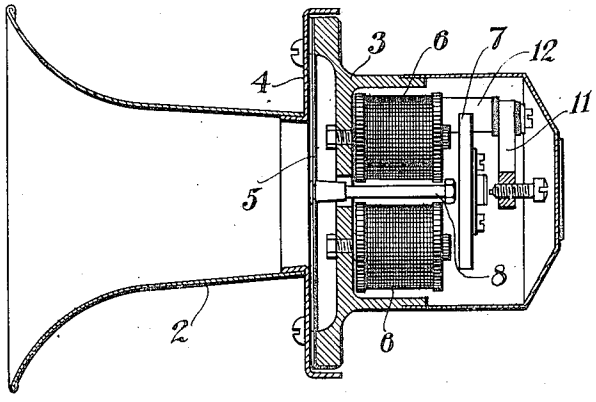
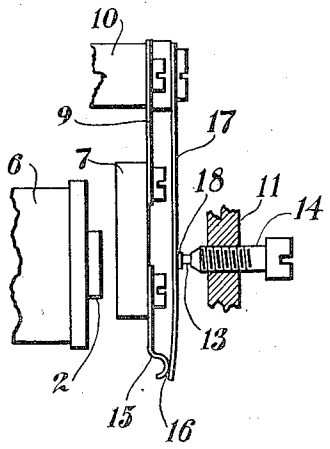


Fig 3



Witnesses

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UNITED STATES PATENT OFFICE.

RAY H. MANSON, OF ELYRIA, OHIO, ASSIGNOR, BY MESNE ASSIGNMENTS, TO THE GARFORD MANUFACTURING COMPANY, OF ELYRIA, OHIO, A CORPORATION OF OHIO.

AUTOMOBILE-HORN.

1,168,322. Specification of Letters Patent. Patented Jan. 18, 1916.

Original application filed April 24, 1911, Serial No. 622,858. Divided and this application filed March 2, 1912. Serial No. 681,212.

To all whom it may concern:

Be it known that I, RAY H. MANSON, a citizen of the United States, residing at Elyria, in the county of Lorain and State of Ohio, have invented certain new and useful Improvements in Automobile-Horns; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to electric signaling devices for conveyances, such as automobiles, boats, etc., and to improvements in such devices, my general object being to produce such a device as will meet the requirements of modern use upon such conveyances.

My invention is more particularly directed to the contacts employed upon electric automobile horns, and to provide such an arrangement of elements as will prevent the accidental operation of the horn, and at the same time provide a capable, efficient and quick acting device.

In automobile horns in use at present, ordinary electric switches are employed, and in such devices, the vibration of the conveyance will cause an actuation of the switch at an inopportune time, interfering with the proper operation of the signaling device. In order to produce a more efficient and effective signal, it is desirable that the vibration of the diaphragm should be regular and that the beats should not interfere with one another. With the ordinary switches employed, the vibration of the vehicle will cause the switch to open in the midst of one of the regular periods, thus interposing a lesser vibration which changes the character of the signal produced, and interferes with the regular operation of the signaling device. I aim to overcome this in the means shown, and in the form of my invention shown in the attached drawing, employ a normally bowed contact spring which normally engages a stationary contact, and which remains in contact with such stationary contact for a short movement of the contact spring.

In the operation of electric horns, the armature must necessarily be vibrated with considerable force to produce an effective signal, so that when an electric switch is operated by its armature, there is considerable pounding of one contact against another, so that these contacts will soon be injured unless means are provided to prevent it. I also aim to provide such means and in the form shown effect it by providing a cushion spring.

Other objects of my invention will appear from the particular description following, while the invention itself will be best understood by reference to such description when taken in connection with the accompanying illustration showing specific forms thereof, while the scope of the invention will be more particularly pointed out in the appended claims.

This application is a division of my application No. 622,858, filed April 24, 1911.

Figure 1 is a perspective view of a portion of a conveyance showing an electric horn mounted thereon, and illustrating the use of my invention. Fig. 2 is a section of an electric horn, embodying my invention. Fig. 3 is a detail illustrating the invention.

Referring now to the drawings and to the particular form of my invention embodied therein, at 1 I show a conveyance such as an automobile upon which is mounted a signaling device 2, which is here shown as an electric horn, preferably a vibrator horn. This horn consists of a frame piece 3 and a front piece 4 mounted thereon. A sound producing device, such as a vibratile sonorous diaphragm is shown at 5. At 6 I show means for actuating the sound producing device 5, and in the form of my invention illustrated, this actuating means consists of electro-magnets which are preferably mounted upon the frame piece 3. At 7 is illustrated an armature for said magnets, which is adapted when vibrated to strike an anvil 8, so associated with the diaphragm 5 that it transmits the blows of the armature 7 to the diaphragm, setting it into vibration. The armature 7 is connected by a leaf spring 9 to a post 10 upon the frame piece. At 11 a bridge is provided which is connected to the frame piece, preferably through a post 12. A contact 13 upon an adjustable screw 14 is supported by the bridge 11, and though adjustable, is normally stationary so that hereinafter it is referred to as a stationary contact. A supporting member 15 here shown separate from the armature, though

it may as well be an integral part thereof, is mounted upon the armature, being curved up as shown at 16 to furnish a support for one end of a contact spring 17 which carries a contact 18, companion to the contact 13 upon the bridge, these two contacts forming an electric switch adapted to control an electric circuit. The contact spring 17 is connected at its other end to a support which in turn is connected to the frame piece. The contact spring 17 is normally bowed, so that it tends to hold the contacts 18 and 13 firmly together and to force the armature closer to the pole piece 20 of the magnet 6. The spring 9 is strong enough to prevent its moving the armature from its normal position shown in Fig. 3. Should, however, the armature 9 be vibrated upon slight amplitudes by the jarring of the vehicle or from other causes, the spring 17 immediately bends outward toward the contact 13, so that the contacts 13 and 18 are still held together thus preventing a separation of these two contacts, and an inopportune actuation of the electric switch formed by them.

In case the magnet 6 is energized and the armature attracted, the spring 17 will bow and the contacts be retained together during a short period of the vibration of the armature, but the vibration in this instance, being greater than the range of the bowed spring 17, the contacts will be separated and the switch operated. It will thus be seen that I provide means for preventing the operation of the switch 13—18 when the armature is vibrated upon such amplitudes as accidentally occur in the use of a device of this kind, and at the same time do not prevent the operation of the switch when it is desired to operate it. By this means I insure a regular operation of the device at all times, and under all circumstances, overcoming the previous objection which I have named in the preliminary part of this description. It will also be seen that the bowed spring 17 will act as a cushion member taking up the major part of the force of the blows with which the contacts come together when the armature is released by the magnet and returned by the strong leaf spring 9. Owing to the normal stress of the spring and its position, a particularly good contact will be made when these contacts come together, and the switch is closed. By providing such cushion means, I provide means for preventing the premature destruction of the contacts by the force of the blows imparted to them when they come together.

The incessant pounding and grinding upon the contacts which ordinarily results from the vibration of the armature caused by the shaking of the vehicle is also prevented by the combination of elements recited in the claims, since owing to the bowing of the spring 17 and the follow-up of the contact 18, the contacts will not be separated at all during these slight movements of the armature.

While I have shown this particular embodiment of my invention and these particular details, it will be obvious to those skilled in the art that numerous and extensive departures from the forms and details of the apparatus here shown may be made without departing from the spirit of the invention, this particular embodiment being shown solely for the purpose of clearly illustrating one of the forms of the invention.

I claim:

1. In an electric horn for use upon conveyances, a vibratory sonorous diaphragm, a resonator for said horn, electro-magnetic means for actuating said diaphragm, a vibratory armature for said means, a switch controlled by said armature and consisting of two contacts, one of said contacts being normally stationary, a support, a spring attached at one end to said support and resting at the other end against said armature and carrying the second contact in between its ends, said second contact failing to follow up said armature for small movements thereof.

2. In an electric horn for use upon conveyances, a vibratory sonorous member adapted to give a warning signal, an electromagnet controlling said member, an armature for said magnet, a pair of contacts forming a switch, one of said contacts being stationary, a support, a spring attached at one end to said support, and resting at the other against said armature, the central part of said spring being normally stressed away from said armature, the other contact being carried by said spring intermediate its ends, said spring expanding toward the other contact under the normal stress during the first part of the forward movement of said armature and thereby maintaining the switch closed and the contact carried by the spring following the movement of said armature during the latter part of its forward movement.

3. In an electric horn for use upon conveyances, a vibratory sonorous member, electro-magnetic means governing said member, a vibratory armature for said means, a switch controlled by said armature and consisting of two contacts, one of said contacts being normally stationary, a support, a spring attached at one end to said support and resting at the other end against said armature and carrying a second contact between its ends, said spring being normally stressed to bow its center away from said armature and toward said companion contact, the end of the spring resting against the armature being adapted to follow the

movement of the armature when said armature is attracted to the electro-magnetic means.

4. In an electric horn for use upon conveyances, a vibratory sonorous diaphragm, means for operating said diaphragm, a movable armature for said means, a switch controlled by said armature including two contacts, one of which is normally stationary, a support, a spring resting at one end against said armature and carrying a second contact in between its ends, said spring being normally stressed to bow its center away from the armature and toward the companion contact, the end of the spring resting against the armature adapted to follow the movement of the armature when said armature is moved to the operating means.

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

RAY H. MANSON.

Witnesses:
A. D. T. LIBBY,
F. O. RICHEY.