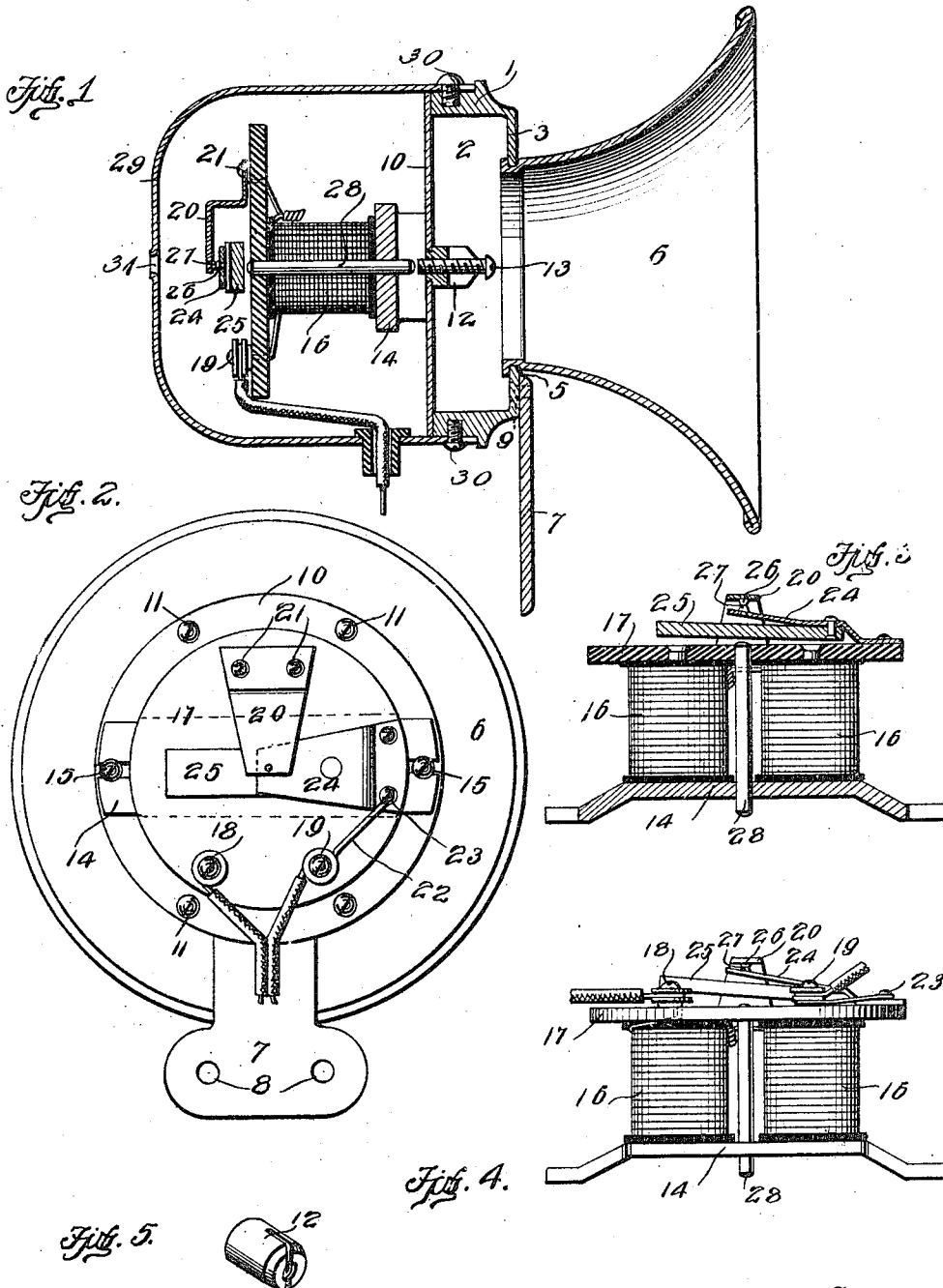


M. E. HEPBURN.
ELECTRIC HORN.
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ELECTRIC HORN.

1,045,706.

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To all whom it may concern:

Be it known that I, MARTIN E. HEPBURN, a citizen of the United States, residing at Elgin, in the county of Kane and State of Illinois, have invented certain new and useful Improvements in Electric Horns; and I do 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.

This invention relates to improvements in electric horns and is designed more especially for use on automobiles for producing a warning alarm.

The object of the invention is in the provision of a simple, practical and efficient device of the character referred to whereby the vibrations produced will be pronounced and positive when the diaphragm is vibrated by the electric impulse.

A further object of the invention is in the construction of the various parts thereof, whereby the same are compactly arranged and conveniently assembled in such a manner as to be adjusted relatively, thus producing an electric horn capable of withstanding the rough usage to which such devices are necessarily subjected, said operative parts of the device being further protected from the elements of the weather and also dust and dirt which are liable to enter the mouth of the horn.

With these and other objects in view, the invention consists of certain novel features of construction, and the combination and arrangement of parts as will be more fully described and claimed.

In the accompanying drawings: Figure 1 is a longitudinal section of the complete invention with the parts properly assembled and in operative position; Fig. 2 is a rear view of the same with the hood or cover removed therefrom showing the armature properly positioned in respect to its accompanying parts; Fig. 3 is a transverse section of the parts attached to the electro-magnet showing the supporting bar with the parts attached thereto; Fig. 4 is a side view of the electro-magnet and its accompanying parts; and Fig. 5 is a perspective view of the pinch sleeve.

In the illustrative embodiment of the invention, 1 represents the body portion of the horn which is preferably cast in the usual way and turned down in a suitable

lathe or other machine, to obtain the desired formation, and formed in said body portion is an annular chamber 2, providing a flat front wall 3, having formed therein a circular opening 5. The reduced end of the resonator 6 is securely fastened to the front wall 3 of the body portion 1, within the opening formed in said wall by turning the metal against the inner surface of the wall as clearly shown.

Secured to the outer surface of the front wall of the body portion 1 is a bracket 7, which projects a suitable distance therefrom and provided with bolt openings 8 by means of which the horn may be rigidly attached to the automobile or other object, said bracket being preferably attached to the horn by lugs 9 cast with the bracket and passing through holes formed for their reception in said wall of the body portion, the projecting ends of the lugs being turned over or riveted to form a rigid connection between the parts referred to. Removably secured to the outer enlarged annular edge of the body portion is a diaphragm 10 by means of screws 11 and secured to said diaphragm and centrally disposed thereon and projecting into the chamber 2, formed in the body portion 1 is a pinch sleeve 12 which is provided with interior screw threads within which sleeve a contacting screw 13 is attached to be turned for proper and accurate adjustment for the purpose hereinafter described.

Detachably secured to the parts previously assembled is an electro-magnet supporting bar 14 screws 15 being passed through the outer forked ends of said bar through the diaphragm and into the flange of the body portion whereby the said bar may be accurately adjusted upon the diaphragm.

The electro-magnets 16 are secured to the supporting bar 14 by any suitable and mechanical manner and are rigidly supported thereby and fixed to the opposite ends of said electro-magnets, is a circular insulating disk 17 composed of fiber or other non-conducting material to which disk the binding contact screws 18 and 19 are secured for attaching the wires leading from a battery or other suitable source of electrical energy.

The angular metallic arm 20 is secured to the insulated disk 17 by screws 21 which arm is in electrical connection with the electro-magnets 16 in the usual manner as

shown in Fig. 1. The opposite or return wire leading from the battery is held in electrical contact with a branch wire 22 by a binding screw 23 thus electrically connecting the parts referred to. Secured to the insulated disk 17 in a transverse position in respect to the angular arm 20, is a flat resilient plate 24 to which is secured a vibrating armature 25, the outer end of said resilient plate being bent forwardly and provided with a platinum point 26 which is adapted to intermittently contact with a similar point 27 carried by the outer end of said arm 20 when current is permitted to pass through the electro-magnet. Located between the electro-magnets thus positioned is a plunger rod or tapper 28 which is adapted to be reciprocated by the vibrations of the armature, the outer end of said rod passing through the insulated disk 17 and located adjacent to the inner surface of the armature and is adapted to be actuated thereby, the opposite or inner end of said rod being slidably located within an opening formed for its reception in the electro-magnet supporting bar 14, and projecting a sufficient distance therefrom to intermittently come in contact with the projecting end of the screw 13 of the diaphragm 10 when the armature is vibrated by the action of the current.

By the formation of the body portion and the chamber formed therein all dirt or other accumulations may be easily removed from the horn in front of the diaphragm which provides an air space and greatly increases the sound produced by the vibration of said diaphragm when operated upon in a manner previously described.

It is further to be noted that in carrying out the invention there is only one spring employed which has reference to the resilient plate 24 to which the vibrating armature 25 is secured, and further by the construction of the supporting bar 14 and the means for securing the said bar, its accompanying parts can be accurately adjusted to cause the reciprocating plunger or tapper 28 to be adjusted directly over the contacting screw 13 carried by the diaphragm, the said supporting bar being arched whereby the same is out of contact with the vibrating portion of the said diaphragm.

Removably secured over the parts thus assembled is a dome shaped hood or cover, 29, which is secured in position by screws 30 which are passed through the lower edge of said cover and into the outer surface of the annular flanged portion of the body portion 1, the edge of said cover being in contact with the shoulder formed on said body portion. Formed in the hood or cover 29 is an opening 31 for snugly receiving a flanged collar of rubber or other insulating material through which collar the contact-

ing wires leading from the battery are passed.

From the foregoing description taken in connection with the accompanying drawings, the construction and operation of the invention will be readily understood without requiring a more extended explanation.

Various changes in the form, proportion and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of the invention as defined and claimed.

Having thus described my invention, what I claim as new is:—

1. An electric horn comprising a hollow body portion, a resonator secured to the front wall thereof and projecting therefrom and communicating with the interior of said body portion, a diaphragm removably secured to the latter whereby a chamber is formed between the diaphragm and front wall of said body portion, electro-magnets adjustably secured to the body portion and out of contact with the vibrating portion of the diaphragm, an insulating disk supported by the magnets, an arm mounted upon said disk, an armature resiliently secured to the disk and adapted to intermittently contact with the arm, means for supplying a current of electricity to vibrate the armature, a plunger or tapper guided and held in its proper position in respect to the armature, and a screw carried by the diaphragm against which the plunger contacts.
2. An electric horn comprising a hollow body portion having a front wall provided with an opening, a resonator projecting from the wall and leading from said opening, means attached to the said front wall of the body portion for securing the horn to an object, a diaphragm removably secured to the body portion whereby a chamber is formed between the diaphragm and front wall of the body portion, an arched supporting bar the opposite ends of which are forked, screws passed through said forked ends of the supporting bar and adjustably holding the latter in position, electro-magnets secured to said supporting bar, an insulating disk mounted upon the said electro-magnets, a rigid arm fastened to the outer face of the insulating disk and provided with a contact point, a resilient plate also secured to the outer face of the insulated disk and arranged in a transverse position with respect to the rigid arm and also provided with a contact point, a vibrating armature fastened to the resilient plate, a reciprocating plunger or tapper slidably located in openings formed in the supporting bar and insulating disk, the outer end of said plunger or tapper projecting a suitable distance beyond the insulating disk and adapted to contact with the

armature, a sleeve carried by the diaphragm and projecting into the chamber formed in the body portion, an adjusting contact screw carried by said sleeve with which the inner end of the plunger or tapper is adapted to contact, and suitable electrical connections leading from a suitable source of electric energy and connected to the rigid arm and resilient plate respectively whereby the armature is intermittently operated.

3. An electric horn comprising a hollow body portion, a resonator secured to the front wall thereof and projecting therefrom and communicating with the interior of said body portion, a diaphragm removably secured to the latter whereby a chamber is formed between the diaphragm and front wall of the body portion, a supporting bar secured to the body portion and adjustable in respect to the diaphragm and out of con-

tact with the vibrating portion thereof, electro-magnets carried by said bar, an insulating disk supported by the magnets, an arm mounted upon the disk, an armature resiliently secured to the disk and adapted to intermittently contact with the arm, means for supplying a current of electricity to vibrate the armature, a plunger or tapper slidably located in openings in the disk and bar whereby the same is guided and held in proper position in respect to the armature, and an adjustable screw carried by the diaphragm against which the plunger engages. In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

MARTIN E. HEPBURN.

Witnesses:

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