

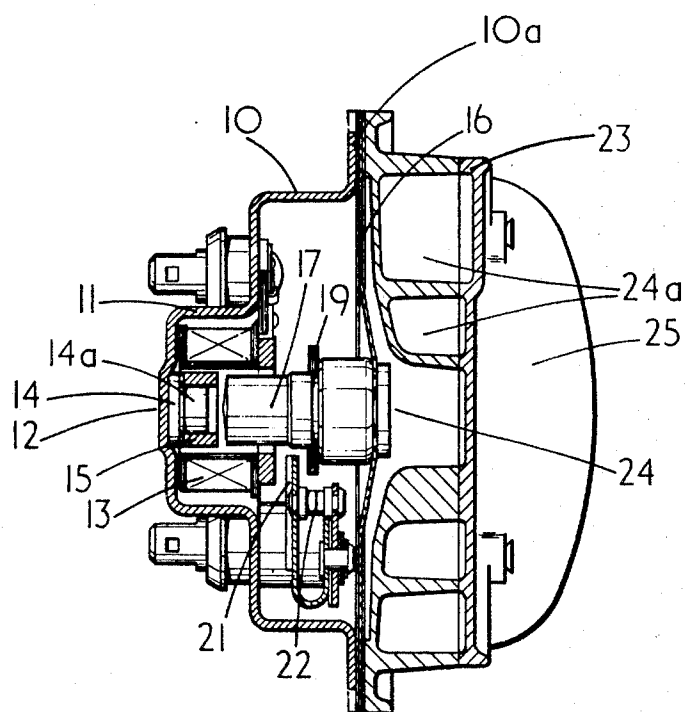
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M. J. ALLPORT

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ELECTROMAGNETIC HORNS

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ELECTROMAGNETIC HORNS

Maurice James Allport, Stourbridge, England, assignor
to Joseph Lucas (Industries) Limited, Birmingham,
England

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1 Claim

ABSTRACT OF THE DISCLOSURE

An electromagnetic horn having a two part pole piece, first part of which is secured to the casing of the horn and the second part of which is mounted as an interference fit on the first part and is movable relatively to the first part to tune the horn.

This invention relates to electromagnetic horns of the kind comprising a casing, an electromagnet supported within the casing, a reciprocable armature operated by the electromagnet and having a diaphragm secured thereto, and a pole piece associated with the electromagnet.

According to the invention in an electromagnetic horn of the kind specified, said pole piece includes a first part fixed to the casing, and a second part mounted as an interference fit on the first part and movable relative thereto to tune the horn.

The invention further resides in a method of manufacturing an electromagnetic horn of the kind specified including the steps of assembling the horn with the pole piece comprising a first part permanently secured to the casing, and a second part, which is an interference fit with the first part, and then subjecting the horn to an operating current sufficiently in excess of its intended operating current to cause the armature to move said second part to its intended position.

The accompanying part sectional view of an electromagnetic horn illustrates one example of the invention.

Referring to the drawing there is provided a cylindrical casing 10 which at one end is formed with a neck 11 of reduced cross section, the neck 11 being closed at one end 12. Located within the neck 11 is an electromagnet 13, the pole piece 14 of which is welded or otherwise permanently secured to the closed end 12 of the neck 11 and includes at its inner end a shank 14a on which is carried as an interference fit a sleeve 15. The sleeve 15 projects within the neck 11 beyond the end of the shank 14a.

The other end of the casing 10 is formed with an outwardly extending peripheral flange 10a to which is secured a diaphragm 16 closing the casing. Rigidly secured to the diaphragm 16 is the armature 17 of the electromagnet 13, the armature extending axially within the casing 10 to a position spaced from the pole piece 14.

A cover 23 is also secured to the flange 10a and encloses the diaphragm 16 forming therewith a chamber 24. The chamber 24 communicates with the atmosphere through a spiral passage 24a formed in the cover 23. The passage 24a is flared at its outer end 25 in the manner of a trumpet.

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In use, when the electromagnet is energised, the armature 17 is drawn towards the pole piece 14 against the resilience of the diaphragm 16. As the armature moves towards the pole piece 14, a fibre washer 19 engages a lever 21, thereby opening a pair of contacts 22 in the casing, and breaking the circuit to the electromagnet to allow the armature to return to its original position under the action of the diaphragm 16. The contacts 22 then close and the cycle is repeated so that the diaphragm is reciprocated to produce a sound.

The sleeve 15 is positioned relative to the pole piece 14 so that during normal operation of the horn, a predetermined air gap exists between the armature 17 and the sleeve 15 when the armature is in its extreme position. The length of this air gap is important, and in order to adjust the position of the sleeve 15, during manufacture of the horn, to determine the air gap, the pole piece 14 is secured to the closed end 12 of the neck 11, the arrangement being such that the sleeve 15 is close to the armature 17.

The electromagnet 13 is then energised at a voltage which is larger than the normal operating voltage of the horn by a predetermined amount so that a current, larger than the normal operating current of the horn, flows in the electromagnet 13. The amount by which the current is larger than the normal operating current is so chosen that the armature 17 is caused to strike the sleeve 15 and in so doing move it relatively to the shank 14a to the desired position. Thus when the horn is energised at its normal operating voltage so that the normal operating current flows in the electromagnet 13 the required air gap between the armature 17 and the sleeve 15 exists in the extreme position of the armature.

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

1. In a method of manufacturing an electromagnetic horn, the steps of setting the position of the pole piece in a horn of the kind comprising a casing, a reciprocable armature operated by the electromagnet and having a diaphragm secured thereto, and a pole piece associated with the electromagnet, said pole piece comprising a first part permanently secured to the casing and a second part which has an interference fit with the first part, comprising positioning the second part of said pole piece for general mounted relation with reference to said pole piece first part and subjecting the horn to a current sufficiently in excess of its intended operating current to cause the armature to move said second part to its intended adjusted set position.

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THOMAS B. HABECKER, Primary Examiner

M. SLOBASKY, Assistant Examiner

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