March 12, 1968 M. J. ALLPORT 3,373,258

ELECTROMAGNETIC HORNS

Filed Feb. 15, 1967

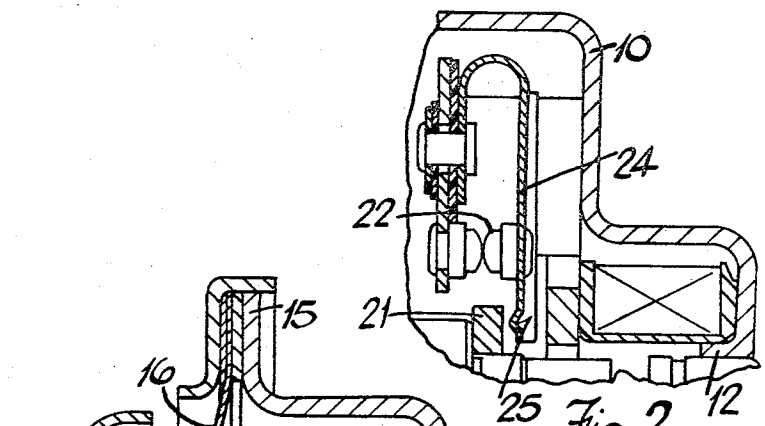


Fig. 2.

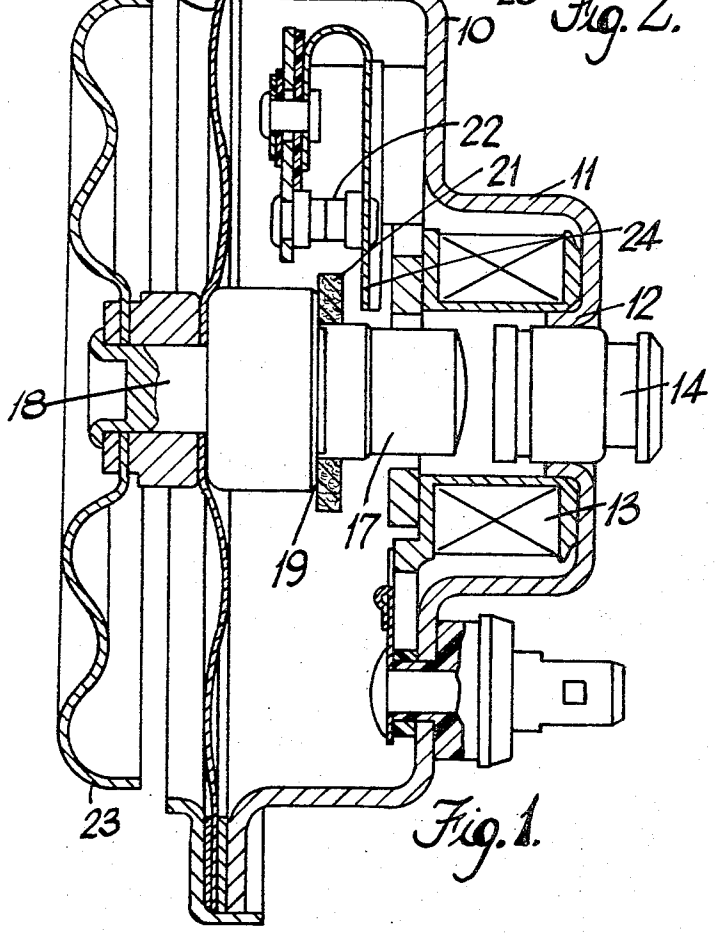


Fig. 1.

United States Patent Office 3,373,258 Patented Mar. 12, 1968

3,373,258

ELECTROMAGNETIC HORNS

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Filed Feb. 15, 1967, Ser. No. 616,297
Claims priority, application Great Britain, Mar. 1, 1966, 8,841/66
2 Claims. (Cl. 200—166)

ABSTRACT OF THE DISCLOSURE

An electromagnetic horn having means for compensating for wear of the fixed and movable contacts thereof.

This invention relates to electromagnetic horns of the kind comprising a casing, an electromagnet supported within the casing, an armature reciprocable by the electromagnet and having a diaphragm connected thereto, a fixed contact, a movable contact carried by a lever which is urged to a position in which the movable contact engages the fixed contact, and a washer carried by the armature which can engage the free end of said lever to move the movable contact out of engagement with the fixed contact to break the circuit to the electromagnet.

A known form of horn of this kind is shown in FIGURE 1 of the accompanying drawings, and the present invention will be more easily understood after considering the construction of this known form of electromagnetic horn.

Referring to FIGURE 1, 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 but formed with a central plunged hole so as to define an axially extending integral sleeve **12**. Located within the neck **11**, is an electromagnet **13**, the pole piece **14** of which is in screw threaded engagement with the sleeve **12**.

The other end of the casing **10** is formed with an outwardly extending peripheral flange **15** 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**. The armature **17** is formed with an extension **18**, which passes through the diaphragm, and to which is secured a tone plate **23**.

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 **21** engages a lever **24**, 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 daphragm **16**. The contacts **22** then close and cycle is repeated so that the diaphragm is reciprocated to produce a sound.

The pole piece **14** is adjusted relative to the sleeve **12** to a position such that the armature **17** strikes the pole piece **14** as the contacts **22** are opened, so that the tone plate **23** produces a note which blends with the note from the diaphragm to produce the sound of the horn. After adjustment, the pole piece is fixed in position, for example by welding.

It is desirable in such horn constructions that the contact **22** should have a large contact area and as shown

in FIGURE 1 the contacts **22** have in the past been provided with flat mating surfaces. However a problem is encountered with such constructions in that it is difficult to mount the contacts **22** in such a manner that the mating faces are accurately parallel. This problem is overcome by providing the contacts with domed faces which in use wear to provide the required flat, parallel, mating surfaces. It is found, however, that as the contacts wear, the free end of the lever **24** moves to the left, as compared with FIGURE 1, when the contacts **22** are closed. Consequently the period of time during which the contacts are closed decreases, resulting a corresponding change in the notes emitted by the horn. The object of the present invention is to overcome this difficulty.

According to the invention a horn of the kind specified includes means movable with the free end of the lever and acting on the washer to cause the washer to wear so as to compensate for wear of the contacts.

In the accompanying drawings FIGURE 1 is a sectional view of the known form of electromagnetic horn described above and FIGURE 2 is a fragmentary sectional view of an electromagnetic horn similar to that shown in FIGURE 1 but which embodies one example of the present invention.

Referring to the drawings it will be seen that the construction of the horn in FIGURE 2 is very similar to that shown in FIGURE 1, components common to both constructions being designated by the same reference numerals. However, the contacts **22** in FIGURE 2 are domed and the lever **24** is provided with an integral projection **25** which extends towards the fibre washer **21**. The arrangement is such that in use the projection **25** wears a corresponding depression in the washer **21** at a rate substantially equal to the rate at which the contacts **22** wear, thereby ensuring that the period of time in the cycle of operation during which the contacts **22** remain closed, is maintained substantially constant, and consequently that the notes emitted by the horn are substantially constant.

What is claimed is:

1. In an electromagnetic horn comprising a casing, an electromagnet supported within the casing, an armature reciprocable by the electromagnet, a diaphragm connected to said armature, a fixed contact supported by the casing, a lever supported by the casing and carrying intermediate its ends a movable contact, said lever having a free end adjacent said movable contact and said end being urged to a position in which said movable contact engages the fixed contact, and a washer carried by said armature, movement of said armature upon energisation of said electromagnet moving said washer into engagement with the free end of said lever to move said movable contact out of engagement with said fixed contact and so break the circuit to the electromagnet, the improvement residing in providing said free end of the lever with a part which said washer engages, said part causing the washer to wear so as to compensate for wear of said contacts.

2. An electromagnetic horn as claimed in claim **1** in which said part is an integral projection formed on said lever.

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