Aug. 30, 1932. J. M. AUFIERO 1,874,078

HORN

Filed May 13, 1932

Fig. 1.

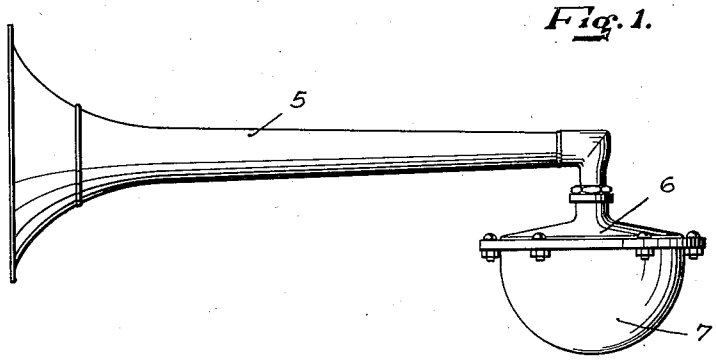


Fig. 2.

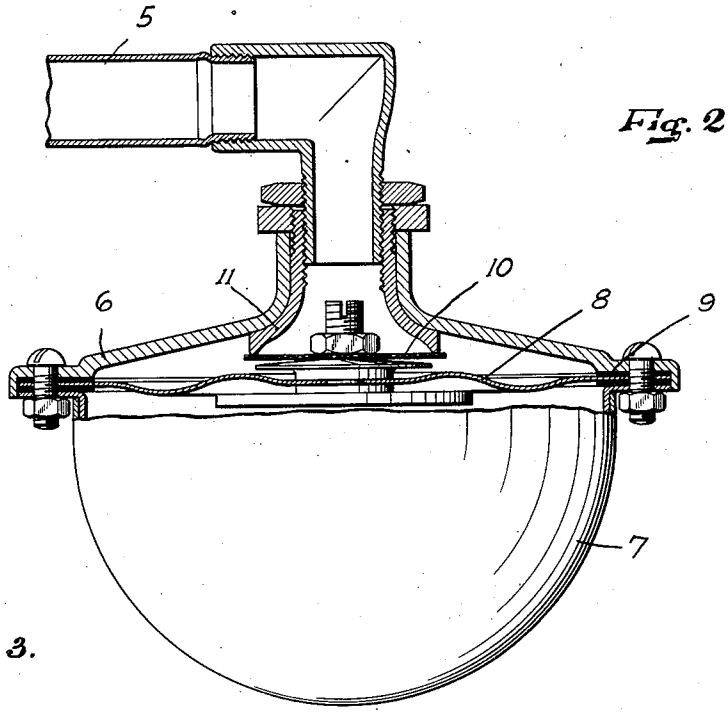
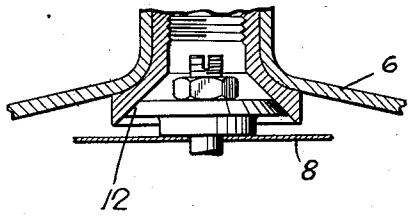


Fig. 3.



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UNITED STATES PATENT OFFICE

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HORN

Application filed May 13, 1932. Serial No. 611,053.

This invention relates to a warning signal and aims particularly to provide a horn which may be employed to advantage in connection with marine and road vehicles, signal stations, alarms, etc.

It is an object of the invention to furnish a device of this character which will embody relatively few and rugged parts, these parts being capable of manufacture largely by automatic machinery and being, moreover, capable of ready assembly to furnish a unitary article operating over long periods of time with freedom from mechanical and/or electrical difficulties.

A further object is that of providing an apparatus of this nature which will produce a sound not altogether unpleasant to the ear but which at the same time will have great carrying power and ability to penetrate other sounds.

A still further object of the invention is that of furnishing a warning signal in which the several parts may be adjusted with facility to produce just the tone desired, and which signal may be manufactured at relatively nominal cost.

With these and other objects in mind, reference is had to the attached sheet of drawing illustrating practical embodiments of the invention, and in which:

Fig. 1 is a side elevation of a horn;

Fig. 2 is an enlarged fragmentary sectional view, and

Fig. 3 shows a slightly different form of construction from that illustrated in Fig. 2.

In these figures the numeral 5 indicates a trumpet of any desired configuration and material, and which connects at its end to a casing which, as shown, may comprise a cap portion 6 and a body 7. Within the latter is housed a motor mechanism of any desired type. This motor mechanism might be in the nature of an electromagnet, hand driven apparatus, or for example, an electric motor. In any event the motor serves to vibrate at acoustical frequencies, a diaphragm 8. This diaphragm—for the sake of convenience—is preferably interposed between the flange portions of the casing, it being obvious that suitable cushioning rings 9 may be disposed to prevent chattering of the parts and/or an escape of air. Thus, it is obvious that a tone will be produced which will pass through the bore of the projector or trumpet and be propagated in the usual manner.

In addition to the foregoing, it will be noted that the diaphragm carries a disk 10 which, as shown in Fig. 2, cooperates with the edge of a member providing a seat. This member may be suitably coupled with or form an integral part of the housing portion 6, and it is thus apparent that as the diaphragm 8 vibrates, the disk 10 will periodically engage the edge of member 11 and thus act as a valve tending to prevent the escape of fluid. In this manner the diaphragm is caused to act somewhat as a compresser for air and it will be found, as a result, that a tone is produced which has pronounced musical qualities, instead of being in the nature of a raucous noise.

As shown in Fig. 3, it will be apparent that a disk 12 might seat within the tapering mouth of the member 11, so that as the parts wear, the disk will automatically adjust itself to the changing relationship of the parts.

In most instances it is preferable that the disks 10 or 12 be formed of fibrous material in order to avoid clashing and at the same time to assure a seal of maximum efficiency. It is, of course, apparent that in any instance the disk is mounted adjustably so that the parts may be properly correlated to produce the desired effect. In this connection it will also be appreciated that, as shown, the member 11 in Figs. 1 and 3 is adjustable with reference to the cap portion of the housing. As a consequence the parts may be properly correlated with facility and the effective capacity of the compression chamber may be varied as necessary.

Thus, among others, the several objects of the invention as specifically aforenoted, are achieved. Obviously, numerous changes and rearrangements of the parts might be resorted to without departing from the spirit of the invention as defined by the claims.

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

1. A horn including a housing, a vibratory

diaphragm mounted in said housing, a motor mechanism connected to said diaphragm to flex the same, said housing being formed with an outlet opening beyond said diaphragm and a valve mechanism controlling the flow of fluid through said outlet opening.

2. A horn including a housing, a vibratory diaphragm mounted in said housing, a motor mechanism connected to said diaphragm to flex the same at acoustical frequencies, said housing being formed with an outlet opening beyond said diaphragm and a valve mechanism controlling the flow of fluid through said outlet opening.

3. A horn including a housing, a vibratory diaphragm mounted in said housing, a motor mechanism connected to said diaphragm to flex the same at acoustical frequencies, said housing being formed with an outlet opening beyond said diaphragm, means providing a valve seat, a valve member cooperating with said seat, one of said elements being associated with said outlet opening and the second of the same being connected to said diaphragm.

4. A horn including a housing, a vibratory diaphragm mounted in said housing, a motor mechanism connected to said diaphragm to flex the same at acoustical frequencies, said housing being formed with an outlet opening beyond said diaphragm, means providing a valve seat adjacent said outlet opening and a valve connected to said diaphragm and cooperating with said seat.

5. A horn including a housing, a vibratory diaphragm mounted in said housing, a motor mechanism connected to said diaphragm to flex the same at acoustical frequencies, said housing being formed with an outlet opening beyond said diaphragm, means providing a valve seat adjacent said outlet opening and a valve connected to said diaphragm and cooperating with said seat, said valve and seat being normally spaced a distance less than the normal tendency of movement on the part of said diaphragm.

6. A horn including a housing, a vibratory diaphragm mounted in said housing, a motor mechanism connected to said diaphragm to flex the same at acoustical frequencies, said housing being formed with an outlet opening beyond said diaphragm, means providing a valve seat, a valve member cooperating with said seat, one of said elements being associated with said outlet opening and the second of the same being connected to said diaphragm, and one of said elements including a body of fibrous material.

7. A horn including a housing formed with an outlet opening, a member mounted within said opening and presenting an outwardly tapering bore, a valve extending into and contactable with said bore and means for vibrating said valve.

8. A horn including a housing formed with an outlet opening, a member mounted within said opening and presenting an outwardly tapering bore and a valve extending into and contactable with said bore, a diaphragm mounting said valve and means for vibrating said diaphragm.

9. A horn including a housing formed with an opening, a disk providing a valve body to cooperate with said opening, a diaphragm mounting said disk and a motor for flexing said diaphragm at acoustical frequencies.

10. A horn including a housing formed with an opening, a disk providing a valve body to cooperate with said opening, means for vibrating said disk at acoustical frequencies and into engagement with the surfaces adjacent said opening and means for shifting said housing with reference to said body to vary the position of the opening relatively thereto.

11. A horn including a housing formed with an outlet opening, a member mounted within said opening and presenting an outwardly tapering bore, a valve extending into and contactable with said bore, means for vibrating said valve and means for adjusting said valve relatively to said vibrating means.

12. A horn including a housing formed with an outlet opening, a member mounted within said opening and presenting an outwardly tapering bore, a valve extending into and contactable with said bore, means for vibrating said valve and means for shifting said member with regard to said housing whereby to vary the position of said bore with respect to said valve.

In testimony whereof I affix my signature.

JOHN M. AUFIERO.