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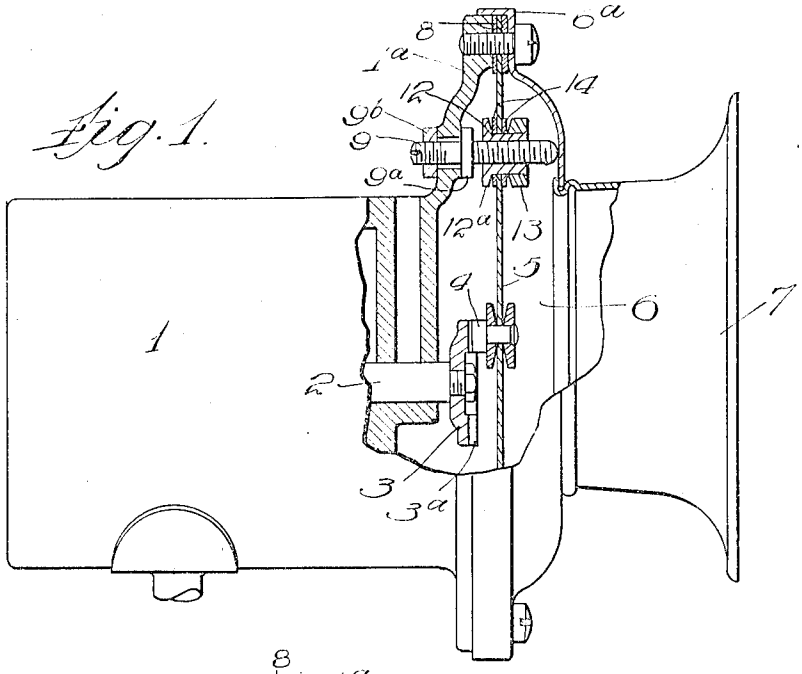
TUNING DEVICE FOR SIGNAL DIAPHRAGMS.

APPLICATION FILED JAN. 27, 1917.

1,298,428. Patented Mar. 25, 1919.

Fig. 1.



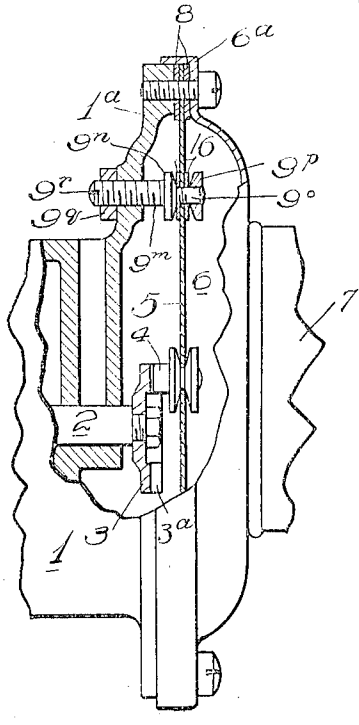


Fig. 2.

Witnesses:
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UNITED STATES PATENT OFFICE.

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TUNING DEVICE FOR SIGNAL-DIAPHRAGMS.

1,298,428. Specification of Letters Patent. Patented Mar. 25, 1919.

Application filed January 27, 1917. Serial No. 144,821.

To all whom it may concern:

Be it known that I, FREDERIK G. WHITTINGTON, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Tuning Devices for Signal-Diaphragms, of which the following is a specification, reference being had to the accompanying drawings, forming a part thereof.

This invention relates to that class of signal devices in which a diaphragm is rapidly vibrated by mechanical means to produce a sound and the purpose of this invention is to provide means for adjusting the diaphragm to vary the pitch of the sound produced so as to secure the desired tone. It consists of the features and elements described and shown in the drawings as indicated by the claims.

In the drawings:—

Figure 1 is a side elevation partly in section, showing a diaphragm signal device with tuning means applied to the diaphragm in accordance with this invention.

Fig. 2 is a detailed section showing a modified form of tuning device.

Referring first to Fig. 1, the drawing may be understood as showing a motor, 1, which may be either an electric motor or a manually operated driving train of any suitable construction, having a power shaft, 2, provided with a cam wheel, 3, having serrations, or corrugations, 3^a, in position to engage a wear piece, or button, 4, secured to the diaphragm, 5, approximately at its center. The rotation of the shaft, 2, causing the corrugations, 3^a, to successively engage the wear piece, or button, 4, produces a rapid vibration of the diaphragm, 5, resulting in a corresponding vibration of the air column in the chamber, 6, and horn, 7, which is recognized as the sound. The diaphragm, 5, as will be noted, is securely clamped at its periphery between the flange, 1^a, of the motor housing, and the flange, 6^a, of the chamber, 6, cushioning washers, 8, 8, being preferably inserted between the diaphragm and these flanges respectively.

It has been customary in devices of this sort to provide for tuning the signal by adjusting the wear piece, 4, along its axis within its mounting on the diapraghm, 5, or by adjusting the motor, 1, or at least the cam wheel, 3, along its axis, so as to vary the amount of overlap of the cam corrugations or teeth, 3^a, with respect to the wear button, 4. The effect of such adjustment is to increase or diminish the resistance offered by the button, 4, to rotation of the motor shaft, 2, thus altering the frequency of the impulses transmitted to the diaphragm, 5, since, with a given driving force for the motor, any variation in the resistance, or work imposed upon the motor, will vary its speed.

Any of the methods of adjustment just described is somewhat less convenient than might be desired, especially the arrangement in which the wear button, 4, itself is adjusted upon the diaphragm, 5, and particularly when a rather long horn is furnished, because either the screw and lock nut, provided for such adjustment can only be reached through the long horn by means of special tools, or else the entire front chamber, 6, must be removed to render them accessible, and this amounts to disassembling the whole signal. Then the adjustment cannot be made while the motor, 1, is running and, thus, to secure a particular tone, it is necessary to make a series of trials. By the present invention the adjusting means are rendered readily accessible with ordinary tools and may be manipulated while the signal is being sounded, so as to vary the tone throughout its entire range, thus permitting a quick determination of the proper adjustment.

In the form shown in Fig. 1 an adjusting screw, 9, is fitted with a flanged collar, 12, interiorly threaded to engage a portion of the screw, 9, and exteriorly threaded to receive a clamping nut, 13, between which and the flange, 12^a, of the collar, 12, the diaphragm, 5, is clamped with suitable cushioning washers, 14, interposed. The screw, 9, is journaled in an aperture of the flange, 1^a, in the motor housing, and is secured against longitudinal movement by its own flange, 9^a, and a clamping nut, 9^b. It will be evident that rotation of the screw, 9, will cause longitudinal travel of its threaded collar, or nut, 12, carrying with it that portion of the diaphragm, 5, which is engaged between the flange of the collar, 12, and the nut, 13. When the desired adjustment is reached, the adjusting screw, 9, may be secured against further rotation by the clamping nut, 9^b.

Fig. 2 shows a modification, consisting in that the adjusting screw, 9^m, is carried in a threaded mounting in the flange, 1^a, but positively engages the diaphragm, 5, in both directions, being provided with a head, 9^n, which is drilled and threaded to receive a clamp-screw, 9^o, carrying under its head a washer, 9^p, and thus securing the adjusting screw, 9^m, to the diaphragm, 5, with cushioning washers, 16, however, interposed as in the other form. The protruding end of the screw is slotted at, 9^r, and a lock-nut, 9^q, serves to retain the parts in adjusted position.

It will be seen that all of the forms above described can be manipulated without disturbing the mounting of the diaphragm, or without the use of special tools, and while the diaphragm is being vibrated by rotation of the cam wheel, 3, so that, as soon as the desired tone is secured, the adjusting screw can be locked in position and the adjustment is completed. It will be evident that this type of adjustment not only operates to vary the possible speed of the motor shaft, 2, but also alters the nature of the diaphragm as a sound-producing element, in that it restricts its vibration at a point other than its confined periphery.

I claim:

1. In a signal device, in combination with a diaphragm, a mounting member to which it is peripherally secured, and means for vibrating said diaphragm, said diaphragm being apertured at a point between said vibrating means and its peripheral securement, means extending through said aperture and clamped against both sides of the diaphragm together with an adjusting screw extending from said means into rotative engagement with the mounting member, for variably stressing the diaphragm.

2. In the combination set out in claim 1, the means which is clamped in the diaphragm aperture being in the nature of a nut threaded to engage the adjusting screw, and said screw being stopped against endwise movement in the mounting member.

In testimony whereof, I have hereunto set my hand at Chicago, Illinois, this 18 day of January, 1917.

FREDERIK G. WHITTINGTON.