April 22, 1930. N. M. MICHAILOVSKY 1,755,552

DRIVING UNIT FOR SPEAKERS

Filed Aug. 23, 1928

Fig. 1.

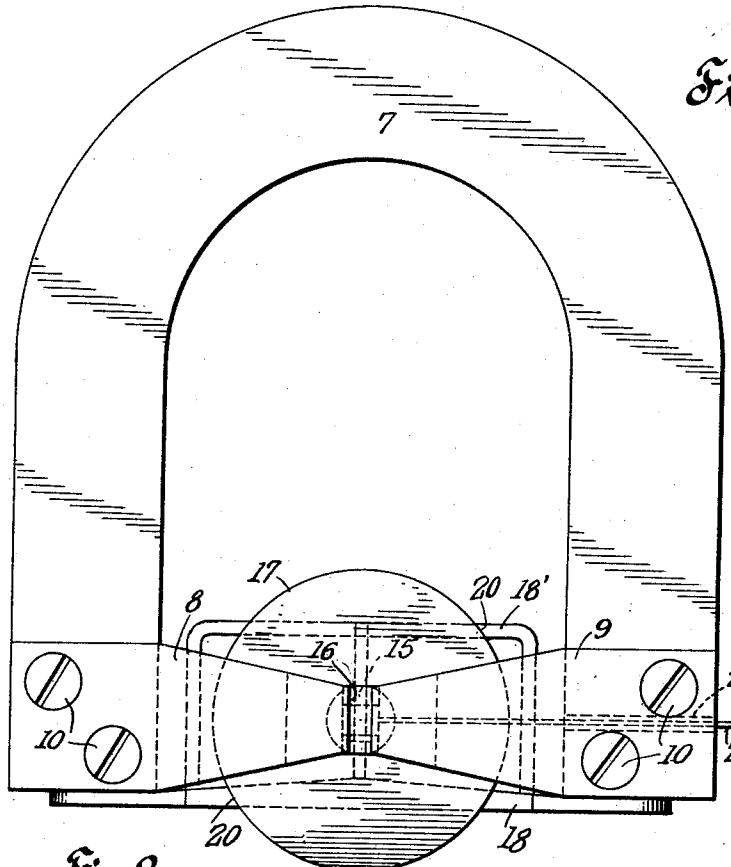


Fig. 4.

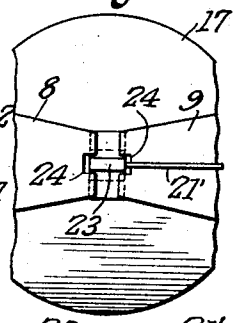
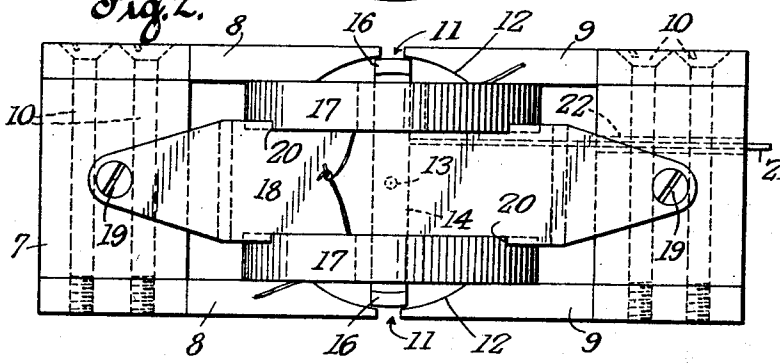


Fig. 2.



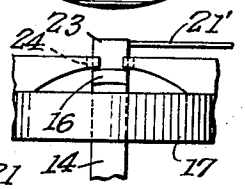
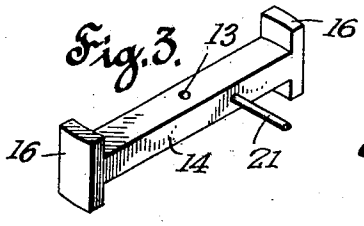


Fig. 5.

Fig. 3.



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UNITED STATES PATENT OFFICE

NICHOLAS M. MICHAILOVSKY, OF BRONX, NEW YORK, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, OF THIRTY-SEVEN AND ONE-HALF PER CENT TO PAUL NOEL RITTER, OF LONG ISLAND, NEW YORK, AND TWENTY-FIVE PER CENT TO HENRY W. BOETTGER, OF NEW YORK, N. Y.

DRIVING UNIT FOR SPEAKERS

Application filed August 23, 1928. Serial No. 301,526.

This invention relates to the motor or driving unit construction of loud speakers and the like and special objects of the invention are to provide a motor or unit of this character, which will be of simple, inexpensive rugged construction and which will be sensitive and at the same time powerful in its action.

The drawing accompanying and forming part of this invention illustrates some of the commercial forms the invention may take, but it should be understood that the actual structure may be modified as regards the present disclosure without departure from the true spirit and broad scope of the invention.

Fig. 1 in the drawing is a front or face view and Fig. 2 is an end or bottom view of the unit, the driving rod being indicated as broken, for lack of space; Fig. 3 is a detached perspective view of the armature; Figs. 4 and 5 are broken detail views illustrating a modified form of armature and pole construction.

The magnet which may be either of permanent or the electromagnetic type, is indicated as having a U-shaped yoke 7 having rectangular shaped end portions, to the opposite sides of which pole pieces 8—8 and 9—9 are secured by through screws 10. The pole pieces of the opposing sets are shown as tapered toward each other and as separated at the ends by the magnetic gaps 11.

At their inner faces the pole pieces are shown as curved on arcs 12 struck from a center 13, which corresponds to the actual center between the two gaps.

The armature is shown as consisting of a relatively light bar 14 of magnetic material of rectangular cross-section pivoted midlength at the center 13 on pin 15 and having side wings 16 at the ends of the same curved to the shape of the inside pole faces and operating with close clearance inside said faces. These arcuate end portions of the armature may be as wide or slightly wider than the magnetic gaps and are shown as extending the full length of such gaps, so as to reduce the magnetic reluctance across the gaps.

The armature is magnetized in the illustration by coils 17 about the ends of the armature and shown as supported in said positions against the inner faces of the pole pieces by an intermediate non-magnetic bridge 18 secured by screws 19 to the ends of the magnet yoke and having seats or recesses 20 in its opposite sides receiving the coils. This is a desirable construction for manufacturing purposes as the parts are secured together in their proper relation by the simple act of assemblage. This same bridge piece may also carry the pin or mounting 15 for the armature, as indicated, so that all parts of the unit may be properly co-related by simply arranging them in order and fastening the pole pieces and bridge securing screws.

A suitable impulse transmitting connection may be provided, such as the rod 21 shown engaged with the armature at a point between the pivotal support at one end of the same and as extending from such point straight out through a passage 22 in the adjacent side of the yoke.

If desired, the transmission connection may be brought out from the end of the armature, outside the magnet structure as shown at 21′ in Figs. 4 and 5, where, for the purpose, the armature is shown as having a narrow rib 23 extended beyond the arcuate polar portion of the same, to which the rod is connected and which operates freely in notches 24 formed in the opposing edges of the pole pieces. This rib by its movement in the notches contributes to the magnetic interaction between the armature and pole pieces, strengthening the action to that extent.

By the pivotal or rotational movement of the armature and the corresponding shaping of the armature and pole pieces, constant clearance is maintained and by making the curved armature wings as long and as wide as the gaps and opposed to the thinned tip ends of the curved pole pieces, where the flux is strongest a powerful starting action is obtained, which continues throughout the range of movement, rendering the unit sensitive to the smaller impulses and relatively powerful in its operation.

The bridge 18 is shown as having a trussed or arched portion 18′ extending up between

the pole pieces and providing a bearing or support for the upper end of the armature supporting pin or member 15. This helps to keep the armature operating truly between the pole pieces with a minimum clearance. The magnet structure may be of the single pole as well as of the bi-polar type illustrated.

What is claimed is:

1. A driving unit for speakers or the like, comprising a magnet having pole pieces fixed over opposite faces of the same and separated to provide magnetic gaps at the opposite sides of the magnet, the inside faces of said pole pieces being curved substantially as arcs having a center between the magnetic gaps, an armature mounted for rotational movement about a corresponding center on an axis substantially parallel with and extending in the general direction of length of the magnet, said armature extending transversely across from one face toward the opposite face of the magnet and having polar portions shaped similarly to and opposed to the curved inside faces of the pole pieces, a transmission connection extending from said armature and magnetizing means for the armature.

2. A construction as in claim 1, in which the magnetizing means consists of two coils supported about the opposite end portions of the armature and in which said coils are supported by a bridge member against the inside faces of the pole pieces.

3. A driving unit for speakers or the like, comprising a magnet yoke, pole pieces extending toward each other from the ends of the magnet yoke to provide magnetic gaps at opposite faces of the yoke, an armature extending transversely from one magnet face toward the opposite magnet face, said armature being supported intermediate its ends between the pole pieces for rocking motion in the direction of extent across the magnetic gaps, magnetizing coils surrounding the opposite end portions of the armature and a power transmission connection extending from the armature.

4. A driving unit for speakers or the like, comprising a magnet yoke, pole pieces extending toward each other from the ends of the magnet yoke to provide magnetic gaps at opposite faces of the yoke, an armature supported intermediate its ends between the pole pieces for rocking motion in the direction of extent across the magnetic gaps, magnetizing coils surrounding the opposite end portions of the armature, a power transmission connection extending from the armature between the point of support on the armature and one of its ends toward one side of the yoke, said yoke having a passage in said side for said transmission connection.

In testimony whereof I affix my signature.

NICHOLAS M. MICHAILOVSKY.