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SOUND TRANSLATING APPARATUS

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Fig. 1

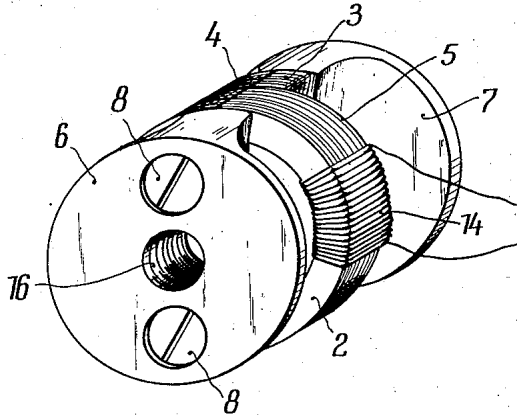
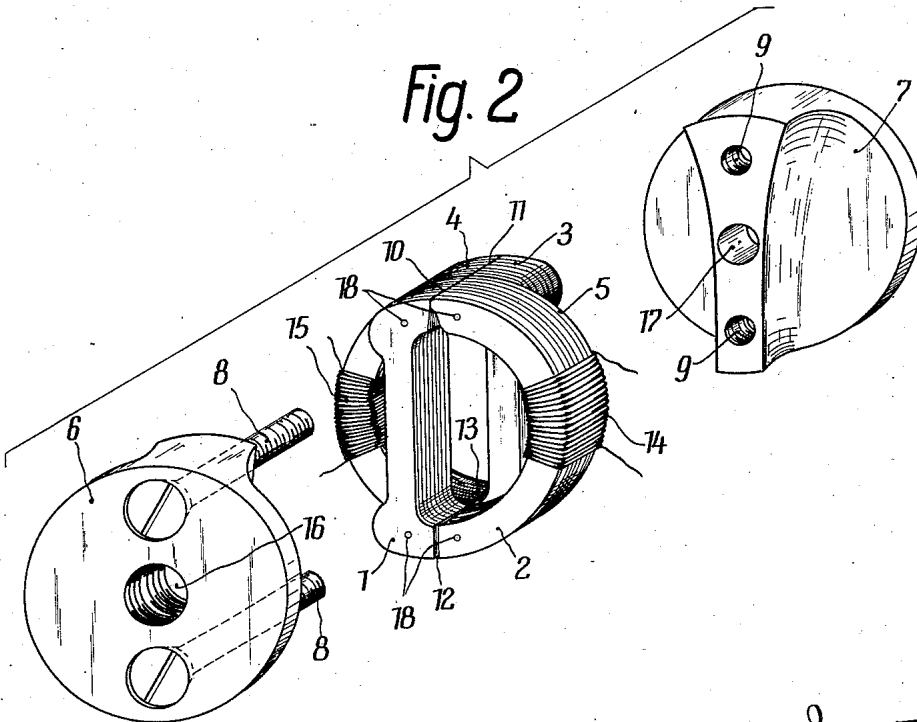


Fig. 2



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SOUND TRANSLATING APPARATUS

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7 Claims. (Cl. 179—100.2)

This invention relates to sound translating apparatus and particularly to electromagnetic devices for recording sound on or reproducing sound from magnetic bands.

The method of longitudinally magnetizing the record carrier by superimposing a polarizing field upon the alternating field due to the signal current limits the amplitude of the sound record to about one-half the straight line portion of the magnetizing curve. This results in a relatively high ratio of noise level to average signal level and, to obtain a higher signal or recording level, it has been proposed to act on different parts of the record carrier with two equal strength fields displaced in phase 180° relative to each other, thus producing two separate sound tracks. In the reproduction, the components from the separate sound tracks are combined in proper phase to form a single alternating current that is fed to the reproducing amplifier. The electromagnetic recorder and reproducer heads for use in the double sound track systems have been complicated and bulky, and it has been exceedingly difficult to obtain a proper mechanical adjustment of the components of either the recorder or the reproducer head to bring the slots of the magnetic cores into line. Lack of alinement of the slots of the recorder head results in faulty reproduction when the older types of reproducer heads are used and, in the case of a reproducer head having separate electromagnets for each sound track, distortion is present when the slots of the reproducer head are not out of alinement to the same extent as the slots of the recorder head.

An object of this invention is to provide electromagnetic devices of simple design for use as recorder or reproducer heads in magnetic sound translating systems. An object is to provide an electromagnetic head of the type stated which includes two cores of identical design that are reversely arranged and firmly connected to each other with their air gaps in exact alinement. An object is to provide an electromagnetic head including two cores that are each formed of two non-identical parts, the unlike parts of the two cores being rigidly secured to each other so that, upon reversely joining the two assemblies, the air gaps of the two cores are exactly alined. A further object is to provide an electromagnetic head of the type stated in which the cores are of approximately D-shape, with one approximately straight and one curved part.

These and other objects and advantages of the invention will be apparent from the following

specification when taken with the accompanying drawing in which:

Fig. 1 is a perspective view of an electromagnetic head embodying the invention; and

Fig. 2 is an exploded perspective view of the same.

As shown in the drawing, the two cores of a recorder or reproducer head are of approximately semi-circular or D-shape and their component parts 1, 2 and 3, 4 are reversely arranged. A screening plate 5 of non-magnetic material is located between the cores to separate the magnetic fields from each other, and this assembly is mounted between heavy clamping plates 6, 7 and held in fixed position by screws 8 that extend through the plate 6 and are threaded into bores 9 of the plate 7. The upper ends of the parts of the cores are spaced to provide narrow air gaps 10, 11 respectively, across which the record carrier travels, and, as shown, the lower ends may be spaced to leave air gaps 12, 13, respectively.

The windings 14, 15 may be placed on one part of each core, for example the curved parts 2 and 4, respectively, or may include sections on each core part. The D-shape and reversed arrangement of the cores provide ample space for the windings without unduly enlarging the complete sound translating head assembly.

The assembled head may be mounted in the sound recording and reproducing apparatus in any desired manner. It is convenient to provide central bores 16, 17 in the clamping plates 6, 7, respectively, for receiving mounting bolts or screws.

The great advantage of the described construction is in the mechanical design that permits the simultaneous machining or grinding of parts of the cores. The straight section 1 of the outer core (as seen in Fig. 1) and the curved section 4 of the inner core are firmly united by cementing, welding or riveting, and the other set of unlike core sections 2, 3 is similarly united. As shown in Fig. 1, rivets 18 extend through each set of core sections to form a rigid assembly that can be worked as a unit. The upper end of one unit assembly terminates in polar surfaces at one side of the air gaps 10, 11; and the upper end of the other unit assembly provides the opposed polar surfaces. These polar surfaces may be ground with high accuracy and, upon assembling the two units, the gaps 10 and 11 will be in exact alinement to form, in effect, a common air gap extending transversely of the core assembly. Similarly, the lower ends of the united pairs of core parts may be accurately machined for exact

mating or, as shown, to provide a second air gap that is common to the cores.

The invention is not limited to the exact construction herein shown and described as the relative shape and size of the parts may be varied without departing from the spirit of my invention as set forth in the following claims.

I claim:

1. A sound translating head for use with a magnetic record carrier of the double sound track type, said head comprising a pair of magnetic cores each including two parts terminating in polar surfaces that are spaced from each other to provide an air gap across which the record carrier is to travel, a winding on each core, and means securing the cores to each other with their air gaps in alinement; said securing means comprising means rigidly connecting in pairs the parts of the two cores at each side of the air gap, and means securing the pairs of core parts in fixed relation to each other.

2. A sound translating head for use with a magnetic record carrier of the double sound track type, said head comprising a pair of cores of approximately semicircular shape and each including two parts terminating in polar surfaces that are spaced from each other to provide an air gap across which the record carrier is to travel, a winding on at least one part of each

core, means rigidly securing a part of one core to a part of the other core with the polar surfaces of the parts in alinement, means rigidly securing the other pair of core parts to each other with their polar surfaces in alinement, and means mounting the pairs of core parts in fixed position with respect to each other.

3. A sound translating head as claimed in claim 2, wherein the parts of each core are approximately straight and curved, respectively.

4. A sound translating head as claimed in claim 2, wherein the parts of each core are approximately straight and curved, respectively, and correspondingly shaped parts of the two cores are reversely arranged with respect to the alined air gaps of the cores.

5. A sound translating head as claimed in claim 2, wherein the united pairs of pole parts are spaced apart at their ends opposite to said polar surfaces to provide a second air gap in each core.

6. A sound translating head as claimed in claim 2, in combination with a screening plate of non-magnetic material between said cores.

7. A sound translating head as claimed in claim 2, wherein said mounting means comprises clamping plates at opposite sides of said cores that fit the shape of the cores.

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