

Aug. 13, 1957

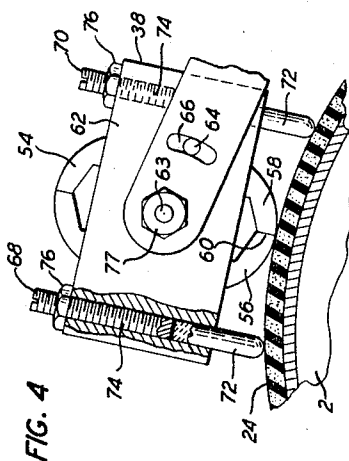
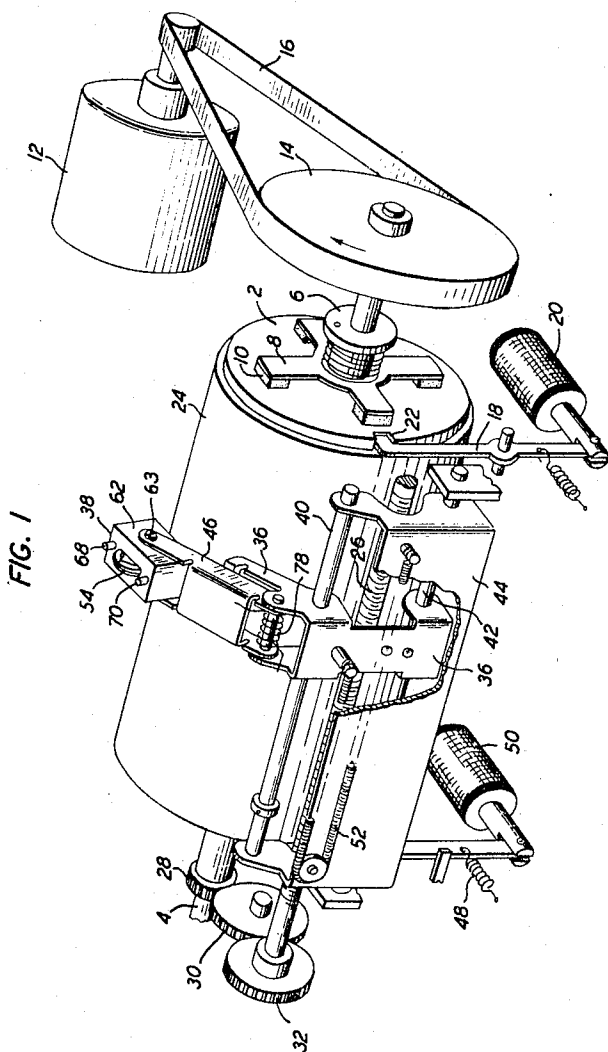
C. M. TARIS

2,802,905

ELECTROMAGNETIC TRANSDUCER MOUNTING

Filed July 30, 1953

2 Sheets-Sheet 1



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FIG. 2

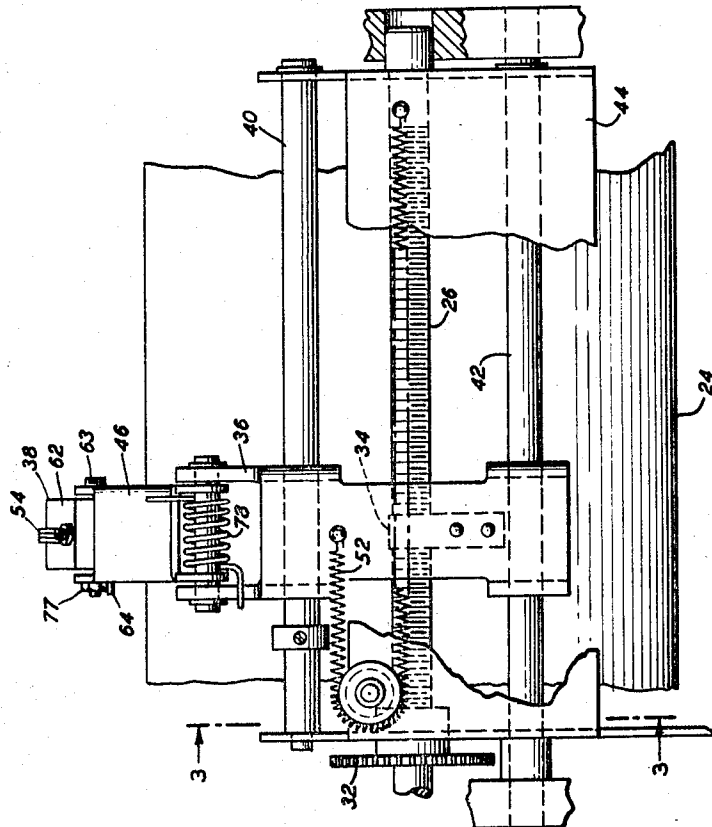
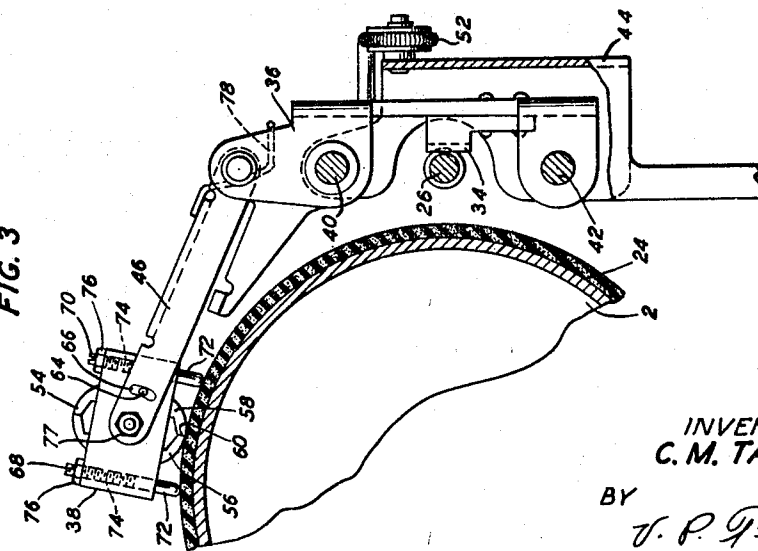


FIG. 3



INVENTOR
C. M. TARIS

BY

T. P. Priolo
ATTORNEY

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ELECTROMAGNETIC TRANSDUCER MOUNTING

Charles M. Taris, Cranford, N. J., assignor to Bell Telephone Laboratories, Incorporated, New York, N. Y., a corporation of New York

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3 Claims. (Cl. 179—100.2)

This invention relates to mountings for transducers and particularly to mountings for electromagnetic transducers.

It is an object of this invention to provide a mounting which will facilitate the control and adjustment of the pressure of the transducer on the record medium, the tangency of the transducer recording and reproducing element with respect to the record medium, and the gap between the transducer and the record medium if out-of-contact operation is desired.

A feature of the invention resides in supporting the transducer by means of two adjustable rod members which are disposed to ride on the surface of the record medium, one of said rod members preceding the recording-reproducing element in its travel around the record medium, the other following said element.

The nature of the invention and its distinguishing features and advantages will be best understood from the following detailed description and the accompanying drawings in which:

Fig. 1 is a view in perspective of a preferred embodiment of the invention;

Fig. 2 is a fragmentary view in front elevation of the transducer mounting and carriage mechanism shown in Fig. 1;

Fig. 3 is a sectional view taken on the line 3—3 of Fig. 2; and

Fig. 4 is a partially sectioned view of the transducer mounting shown in Figs. 1, 2 and 3.

Referring now to the accompanying drawings, 2 is a record drum which may be made of a material such as aluminum. It is assembled on a shaft 4 on bearings contained in the drum and is driven from the shaft by means of a constant torque clutch, the collar 6 of which is fixedly attached to the shaft 4 and the plate 8 of which comprises a compliant member 10 which is in constant frictional engagement with the drum. The shaft 4 may be driven by means of the motor 12, the pulley 14 and the belt 16. Rotation of the drum is prevented by means of a pawl 18 which when released by the solenoid 20, falls into a notch 22 in the drum.

On the peripheral face of drum 2 is mounted, under radial tension, a flexible, radially extensible magnetizable record band 24. The elastic record band 24 may comprise a homogeneous mixture of rubber and a finely divided ferromagnetic material. It may be molded in the form of a separable tube which can be stretched over the drum 2, or it may be molded directly on the drum.

The lead screw 26 is actuated by shaft 4 through gears 28, 30 and 32 and is engaged by the half nut 34, attached to the transducer carriage 36, to move the electromagnetic transducer 38 across the record member 24 during both recording and reproducing operations.

The transducer carriage 36 is supported on and guided by the rods 40 and 42 which are disposed on the bail 44. The transducer 38 is attached to the carriage 36 by means of the support arm 46 and is moved toward the record band 24 by means of the spring 48 when the

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bail 44 is released by the solenoid 50. When this occurs the half nut 34 engages the lead screw 26 and the transducer is advanced along the record band. When the solenoid 50 is energized the bail is moved away from the record band, the half nut is withdrawn from the lead screw, the transducer is lifted from the record band, and the transducer carriage is returned to its initial position by means of the spring 52.

The transducer 38 is a unitary structure comprising a core of magnetic material 54 formed to provide converging pole tips 56 and 58 and a recording-reproducing gap 60, recording-reproducing coils (not shown) wound on the core and a mounting block member 62, preferably of non-magnetic material, within which the core and coil members are fixedly disposed and secured. The mounting block member 62 is pivotally connected to the support arm 46 by means of the pin 63, and allowed to pivot freely within the range controlled by the stop pin 64 and the slot 66.

The tangential relationship between the transducer core at gap 60 and the peripheral surface of the record band is controlled by means of rod member 70 which precedes gap 60 in its relative travel around the record band and rod member 68 which follows gap 60 in its travel. In the preferred embodiment of the invention each of these rod members comprises a rounded-off portion 72, which extends beyond the mounting member, rides on the record band and is made of a material such as sapphire, and a screw portion 74 which is bonded to the rounded-off portion and is secured to the mounting member 62 by means of a lock nut 76. The rod members 68 and 70 may be disposed in the mounting member 62 in such manner as to be parallel, and normal to the pivot pin 63. By turning one or both of these rod members in the mounting block, tangency of the transducer gap with respect to the record band, and the desired spacing between the pole tips and the record band can be established simultaneously. After the desired conditions have been established, by means of rod members 68 and 70, lock nut 77 may be used to regulate the freedom of movement between mounting block member 62 and support arm 46. The pressure exerted by the adjustable rod members on the peripheral surface of the record band is controlled by means of the spring member 78.

It is to be understood that the above-described arrangements are illustrative of the application of the principles of the invention. Other arrangements may be devised by those skilled in the art without departing from the spirit and scope of the invention.

What is claimed is:

1. In a sound recording and reproducing system a revoluble record member, a transducer unit disposed adjacent and adapted to ride on the surface of said record member, said unit comprising a mounting member, a recording-reproducing element fixedly disposed in said mounting member, and means disposed in said mounting member for establishing a tangential relationship between said recording-reproducing element and the surface of said record member, said means including a first rod member disposed in such manner as to extend an adjustable distance beyond said mounting member, ride on the surface of said record member and precede said recording-reproducing element in its travel on said record member, and a second rod member disposed in such manner as to extend an adjustable distance beyond said mounting member, ride on the surface of said record member and follow said recording-reproducing element in its travel on said record member each of said rod members comprising a rounded-off portion which rides on the record member and a threaded portion which engages an internally threaded portion of said mounting

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member in such manner as to be longitudinally displaceable by rotation.

2. In a magnetic recording and reproducing system a record member having a magnetizable surface, an electromagnetic transducer unit disposed adjacent and adapted to ride on the surface of said record member, said unit comprising a mounting member, a magnetic recording-reproducing core member fixedly disposed in said mounting member, and means disposed in said mounting member for establishing a tangential relationship between said core member and the surface of said record member, said means including a first rod member disposed in such manner as to extend an adjustable distance beyond said mounting member, ride on the surface of said record member and precede said core member in its travel on said record member, and a second rod member disposed in such manner as to extend an adjustable distance beyond said mounting member, ride on the surface of said record member and follow said core member in its travel on said record member each of said rod members comprising a rounded-off portion which rides on the record member and a threaded portion which engages an internally threaded portion of said mounting member in such manner as to be longitudinally displaceable by rotation.

3. In a magnetic recording and reproducing system,

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a record member having a magnetizable surface, a magnetic recording-reproducing unit disposed adjacent and adapted to ride on the surface of said record member, said unit comprising a frame, a magnetic head mounted on said frame, said head including a core having converging pole tips and a recording-reproducing gap therebetween, and means secured to said frame for simultaneously establishing a tangential relationship between said recording-reproducing gap and the surface of said record member, and a predetermined spacing between said pole tips and said record member, said means including an adjustable advance ball disposed in such manner as to precede said pole tips, and a follower member substantially identical with said advance ball disposed in such manner as to follow said pole tips said advance ball and follower member each comprising a threaded portion which engages an internally threaded portion of said frame in such manner as to be longitudinally displaceable by rotation.

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