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Description

RIBBON TRANSDUCERS

This invention relates to ribbon transducers and is particularly concerned with the mounting of the ribbon itself, particularly in transducers for use in loudspeakers and microphones.

In order to achieve satisfactory operation of a ribbon transducer it is necessary that the ribbon itself should be centered so that its longitudinal axis lies correctly in relation to the other components. Various methods have been proposed heretofore for centering a ribbon. One method involves the use of shaped magnets for this purpose. In another alternative arrangement the ribbon is attached to stretcher elements at its sides and is held in tension by a spring mechanism. Such arrangements are complicated and not capable of easy adjustment.

In US-A-4317966 there is described a vibrating ribbon speaker where a ribbon extends between respective end suspension fixtures and a plurality of cross-suspension elements are arranged transversely of the longitudinal axis of the ribbon and to which the ribbon is secured.

It is an object of the present invention to provide a means for centering a ribbon of a ribbon transducer in a manner which is simple and capable of easy adjustment.

In accordance with the present invention this is achieved by providing a plurality of cross-suspension elements arranged transversely to the longitudinal axis of the ribbon and to which the ribbon is secured, characterised in that each of these cross-suspension elements is capable of displacement in the direction at right-angles to the longitudinal axis of the ribbon to produce consequential lateral movement of the ribbon.

Preferably, the cross-suspension elements comprise strips or bands of material affixed by adhesive for example to one face of the ribbon and secured at each end to support means. The support means can be adjusted to effect movement of the cross-suspension elements at right-angles to the longitudinal axis of the ribbon.

In order that the invention may be more fully understood, preferred embodiments of cross-suspension mounting for a ribbon of a ribbon transducer will now be described by way of example and with reference to the accompanying drawings, in which:

Fig. 1 is an isometric view of a first embodiment of mounting arrangement; and

Fig. 2 is a schematic diagram of a second mounting arrangement.

Referring to the drawings, there is shown in Fig. 1 a ribbon foil 10 which constitutes part of a ribbon transducer, for example for a loudspeaker. Beneath the underside of the ribbon foil 10 lies a cross-suspension element 12. This is in the form of a band or strip which is affixed, for example by adhesive, to the underside of the ribbon foil. The ends of the cross-suspension element 12 are secured in suspension pillars 14a and 14b positioned one on each side of the ribbon foil so that the element 12 lies at right-angles to the longitudinal axis of the foil. Each of the suspension pillars 14a, 14b is provided with a slot in the end thereof, so that the pillars can be rotated, for example with a screwdriver. The suspension pillars 14a, 14b are mounted on rear and front extrusion plates 16a and 16b respectively so that they can be rotated relative to the support plates and will hold their adjusted positions. The front and rear extrusion plates 16a, 16b also serve as support plates for magnets 18 which are held in place by backing plates 20.

In use, in order to centre the ribbon foil 10, it is simply necessary to displace the cross-suspension element 12 by rotation of the suspension pillars until the ribbon foil is accurately centered. A maximum displacement of plus or minus 1 millimetre is generally sufficient.

It will be appreciated that the ribbon foil 10 is provided with a plurality of cross-suspension elements 12 at intervals along its length so that the foil can be accurately centered throughout its length.

Alternative methods of mounting the cross-suspension elements 12 may be devised within the scope of the present invention. For example, as shown in Fig. 2, instead of providing a suspension pillar on each side of the ribbon foil, the cross-suspension element 12 could be mounted between the two limbs 22, 23 of a generally U-shaped support member 24, for example a plastics moulding. Adjustment means would then be provided for moving the cross-suspension element 12 relative to the U-shaped support 24. Alternatively, the U-shaped support 24 could be movable bodily, with the cross-suspension element 12, to effect the required adjustment. Various other alternative methods of mounting and support will be apparent to those skilled in the art.

Claims

1. A ribbon transducer comprising a ribbon (10) extending between respective end suspension means, and a plurality of cross-suspension elements (12) arranged transversely of the longitudinal axis of the ribbon and to which the ribbon is secured, characterised in that each of the cross-suspension elements (12) is capable of displacement in the direction at right-angles to the longitudinal axis of the ribbon (10) to produce consequential lateral movement of the ribbon.

2. A ribbon transducer according to claim 1, charac-

terised in that the cross-suspension elements (12) comprise strips or bands of material which traverse the ribbon and are fixed to the ribbon and are secured at each end to support means (14a, 14b; 22, 23).

3. A ribbon transducer according to claim 2, characterised in that the strips or bands are fixed to the ribbon by adhesive.

4. A ribbon transducer according to claim 2 or 3, characterised in that said support means (14a, 14b; 22, 23) can be adjusted to effect movement of the cross-suspension elements at right-angles to the longitudinal axis of the ribbon.

5. A ribbon transducer according to claim 2, 3 or 4, characterised in that the support means comprises adjustably rotatable posts (14a, 14b) positioned on each side of the ribbon.

6. A ribbon transducer according to claim 1, characterised in that each cross-suspension element is carried by a U-shaped support member (24) which bridges the ribbon.

Patentansprüche

1. Bändchenwandler, umfassend ein sich zwischen entsprechenden Endaufhängungseinrichtungen erstreckendes Band (10) und eine Anzahl von Queraufhängungselementen (12), die quer zur Längsachse des Bandes angeordnet sind und an denen das Band befestigt ist, dadurch **gekennzeichnet,** daß jedes der Queraufhängungselemente (12) zu einer Versetzung in der Richtung in rechten Winkeln zur Längsachse des Bandes (10) in der Lage ist, um eine sich daraus ergebende Seitenbewegung des Bandes zu erzeugen.

2. Bändchenwandler nach Anspruch 1, dadurch **gekennzeichnet,** daß die Queraufhängungselemente (12) Materialstreifen oder -bänder umfassen, die das Band kreuzen und am Band angebracht sind und an jedem Ende an einer Halterungseinrichtung (14a, 14b; 22, 23) befestigt sind.

3. Bändchenwandler nach Anspruch 2, dadurch **gekennzeichnet,**daß die Streifen oder Bänder mittels Klebstoff am Band befestigt sind.

4. Bändchenwandler nach Anspruch 2 oder 3, dadurch **gekennzeichnet,** daß die Halterungseinrichtung (14a, 14b; 22, 23) eingestellt werden kann, um eine Bewegung der Queraufhängungselemente in rechten Winkeln zur Längsachse des Bandes zu bewirken.

5. Bändchenwandler nach Anspruch 2, 3 oder 4, dadurch **gekennzeichnet,** daß die Halterungseinrichtung einstellbar drehbare Stangenelemente (14a, 14b) umfaßt, die auf jeder Seite des Bandes angeordnet sind.

6. Bändchenwandler nach Anspruch 1, dadurch **gekennzeichnet,** daß jedes Queraufhängungselement von einem U-förmigen Halterungselement (24) getragen ist, das das Band überbrückt.

Revendications

1. Transducteur à ruban comportant un ruban (10) s'étendant entre des moyens de suspension d'extrémité respectifs et plusieurs éléments (12) de suspension en travers agencés transversalement à l'axe longitudinal du ruban et auxquels le ruban est fixé, caractérisé en ce que chacun des éléments (12) de suspension en travers est capable de se déplacer dans la direction à angle droit avec l'axe longitudinal du ruban (10) pour produire un mouvement latéral consécutif du ruban.

2. Transducteur à ruban selon la revendication 1, caractérisé en ce que les éléments (12) de suspension en travers comprennent des lames ou bandes de matière qui traversent le ruban, qui sont fixées au ruban et qui sont assujetties par chaque extrémité à des moyens de support (14a, 14b ; 22, 23).

3. Transducteur à ruban selon la revendication 2, caractérisé en ce que les lames ou bandes sont fixées au ruban par un adhésif.

4. Transducteur à ruban selon la revendication 2 ou 3, caractérisé en ce que lesdits moyens de support (14a, 14b ; 22, 23) peuvent être réglés pour effectuer un mouvement des éléments de suspension en travers à angle droit avec l'axe longitudinal du ruban.

5. Transducteur à ruban selon la revendication 2, 3 ou 4, caractérisé en ce que les moyens de support comprennent des colonnettes (14a, 14b) pouvant être tournées de façon réglable, positionnées de chaque côté du ruban.

6. Transducteur à ruban selon la revendication 1, caractérisé en ce que chaque élément de suspension en travers est porté par un élément (24) de support de forme en U qui s'étend d'un côté à l'autre du ruban.

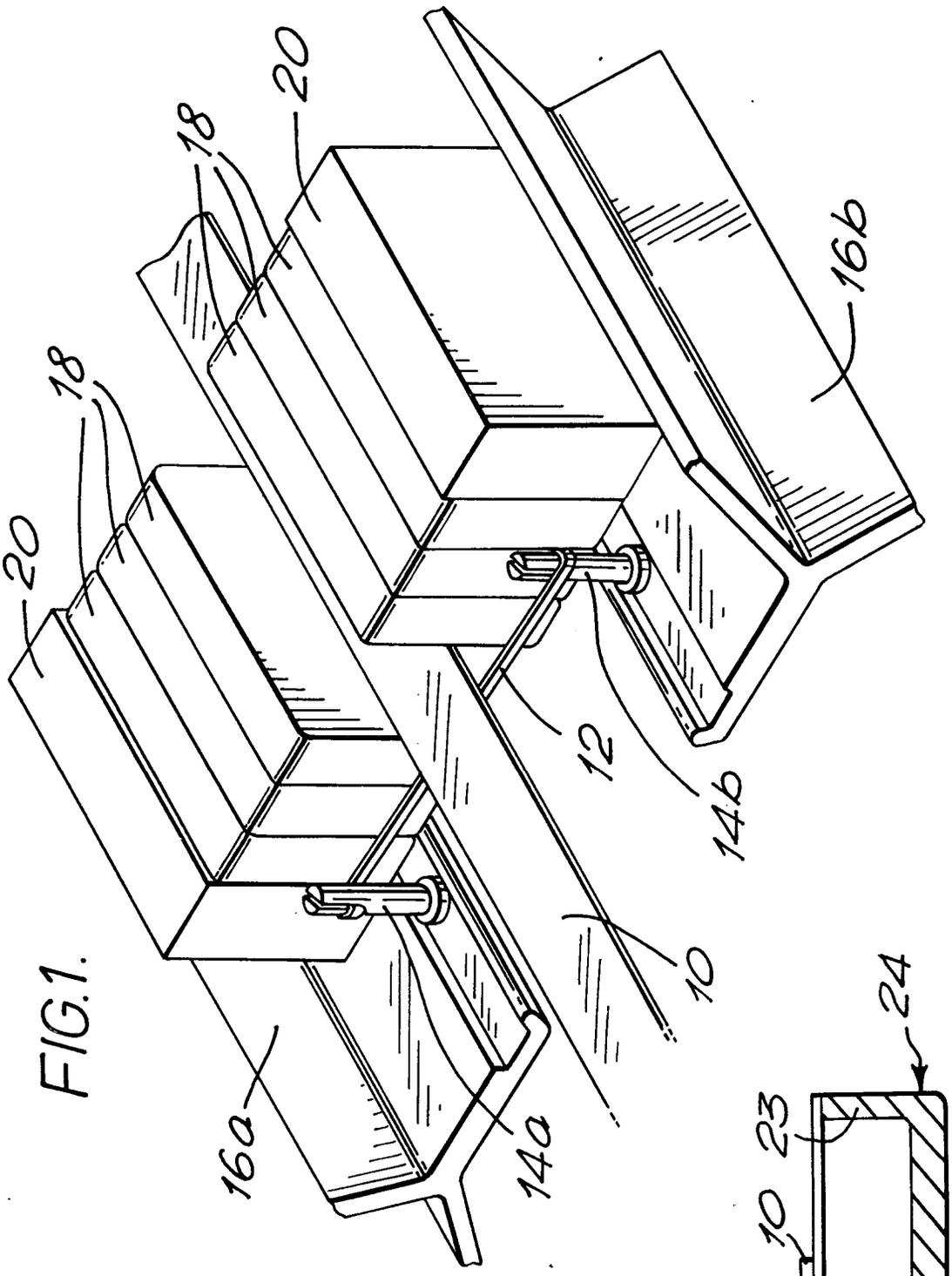


FIG.1.

FIG.2.