

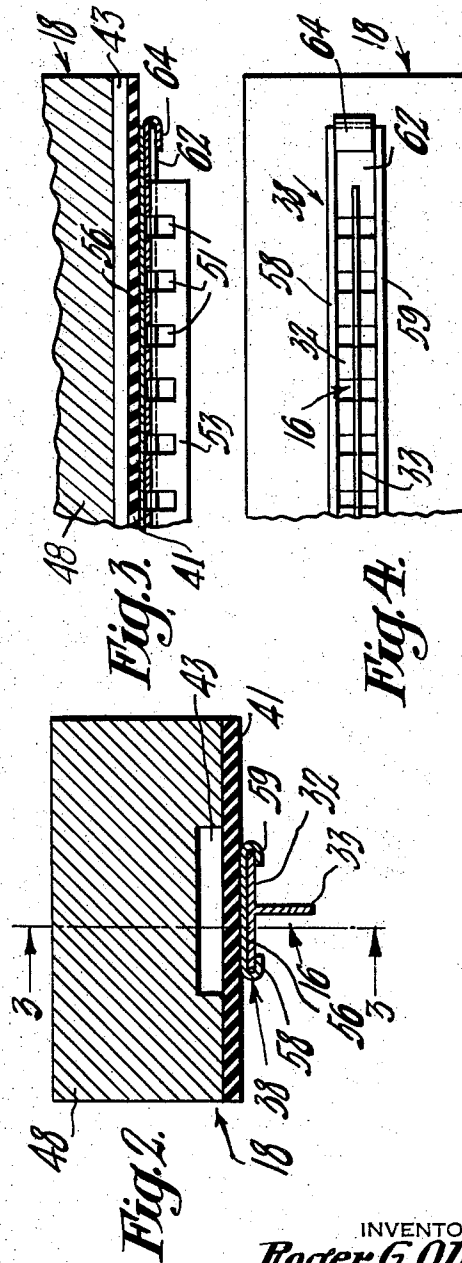
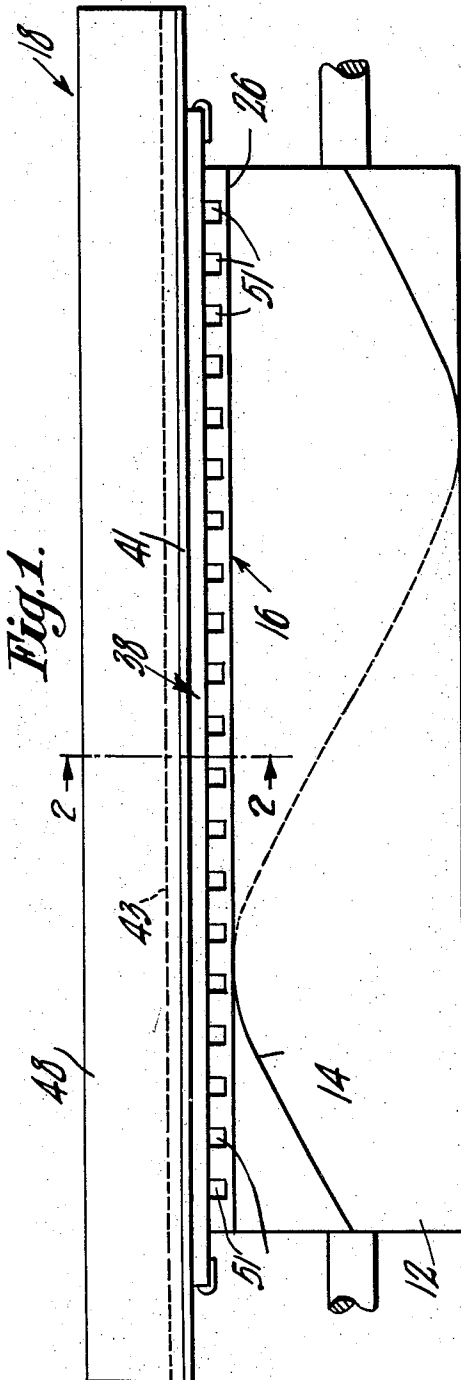
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FLEXIBLE PRINTER BAR FOR ELECTRICAL RECORDERS

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FLEXIBLE PRINTER BAR FOR ELECTRICAL RECORDERS

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This invention bears on electrical recording means, namely, but not exclusively, on the aspect of this subject as it concerns a printer bar for cooperation with one or more helical electrodes.

In a chemical or similar recorder, a drum is present having one or more helical electrodes. If more than one helix is used, or if the printer bar touches a single helix at more than one point, it will then be obvious that a plurality of printing couples are present. If both the printer bar and the helix are rigidly mounted, it is impractical to maintain their arrangement with such precision that the paper squeeze is constant. The bar of this invention is particularly useful in carrying out recordings in accordance with methods, the chemistry of which is set forth in the Proceedings of the I. R. E. for October, 1948, vol. 36, No. 10, pp. 1224 to 1235.

A flexible printer bar of novel construction is provided which is flexible radially of the helix and stiffness laterally of the printer bar is provided by the combination of a novel holder with the bar. The printer bar of the invention is of relatively great depth so that a large evaporating surface is provided for evaporating moisture picked up from the moistened recording medium. In a high speed recorder, the recording medium carries more liquid on its surface than in slow speed operation so as to utilize the run between the moistened means and the printing point for liquid penetration. This moisture may be evaporated by a preheater prior to printing, but in the printing process heat is generated in the medium which vaporizes much of the moisture still remaining in it. This vapor condenses on the relatively cool printer bar and may collect in drops which will stain the medium. The greater evaporating surface prevents accumulation of drops. Flexibility radially of the recording drum is provided in accordance with the invention by a relatively great number of saw-cuts milled from the base of the printer bar. This compensates for the increase in stiffness caused by the relatively greater depth of the bar. The slots or saw-cuts promote free circulation of air which assists in evaporating excess moisture on the bar. Lateral stiffness which is impaired by the slots or saw-cuts is increased by inserting the printer bar in the previously mentioned holder. While the connection of the printer bar to the holder is firm, it permits expansion of the bar. Also, in accordance with the invention, the bar is detachable from the holder.

The principal object is to provide a combined printer bar and holder of novel construction.

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A further object of the invention is to provide a novel printer bar which is generally T-shaped in cross-section and is notched to impart flexibility.

Still another object of the invention is to provide a novel holder for a printer bar in which the printer bar is removably secured.

Other objects will be seen by reading this specification which refers to the drawing in which:

Figure 1 is a view in front elevation of the printer bar of this invention in conjunction with a recording or helix carrying drum;

Figure 2 is a view in cross-section on line 2—2 of Fig. 1;

Figure 3 is a fragmentary longitudinal sectional view taken on line 3—3 of Fig. 2; and

Figure 4 is a fragmentary bottom plan view.

Referring for the present to Fig. 1 of the drawing, there is shown, by way of example, a part of a recorder which is suitable for marking in accordance with facsimile signals. This recorder may be of the character shown in U. S. Patent No. 2,215,806 granted to Charles J. Young on September 24, 1940.

The recorder comprises a recording drum 12, provided with a helical electrode 14 mounted on its periphery which cooperates with a second electrode in the form of printer bar 16. The drum 12 may have additional helices (not shown). This printer bar member is carried by the novel holder of the present invention indicated generally by the reference character 18.

The record sheet or paper web 26 which is threaded between the printer bar 16 and the electrode 14 is drawn through the recording zone by suitable means (not shown). The drum and paper feed means may be driven in a coordinated manner by suitable means (not shown). Patent No. 2,215,806 referred to above shows such means as well as paper drive means. Synchronizing and phasing signals may be generated and transmitted as described in U. S. Patent No. 2,326,740 granted to Maurice Artzt on August 17, 1943, when desirable or necessary.

The printer bar 16 of the invention is or may be in effect a composite structure comprising a resilient strip 32 to which is secured a metallic strip 33. The latter is of relatively great depth as shown in the drawing. The strip 32 is preferably of metal. The strip 33 is or may be joined to the strip 32 by a series of spaced spot welds, or the T section may be formed from one piece. The strip 32 provides a base or flange and the projecting strip 33 is located substantially centrally on this base. The free edge of the strip

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33 provides a thin electrode edge for cooperation with the helix. Reference character 38 indicates the channel-shaped holder for the printer bar. The holder 38 is cemented or otherwise secured to a yielding membrane 41 which spans a slot or recess 43 in a supporting member 48. The supporting member 48 is shown as an elongated block and it may be secured at its end in any suitable manner, not shown, to stationary parts, such as end flanges of the recorder in which it is used.

As indicated in Fig. 3 of the drawing, the entire printer bar 16, including the strip 32 and the top of the strip 33, is provided with slots or saw-cuts 51. These slots or saw-cuts extend downwardly so that the part of the strip remaining as at 53 is relatively narrow.

The holder 38, stated above as being cemented to the membrane 41, is channel-shaped as shown in Fig. 2 of the drawing and comprises a flat elongated part 56 against which the strip 32 rests. This part also provides the flat surface which is bonded by cement to the membrane 41. Flanges 58 and 59 provide grooves at each side into which the edges of the strip 32 fit when the printer bar 16 is slid into the holder 38.

As shown in Fig. 3, the strip 33 is slightly shorter than the strip 32 so that the strip 32 has a slight overhang as indicated at 62. The part 56 of the holder 38 is longer than the flanges 58 and 59 which provides a tongue portion 64 which can be bent down to seat securely against the underside of the overhang 62. When a printer bar 16 is to be renewed, one of the tongues 64 may be bent upwardly so that the bar 16 may be slid out of the channel provided between the flanges 58 and 59 and a new bar may be slid into place.

It will be seen that the combination of the printer bar and novel printer bar holder of this invention provides an arrangement which solves the problem of evaporation of excess liquid and also simplifies removal and renewal of the printer bar. Since only the holder 38 is cemented to the membrane 41, it is possible to remove a worn bar and slide in a new bar in a matter of minutes. A further advantage of the bar of this invention resides in the fact that it can expand in the guide channel, when heated, without causing buckling.

What is claimed is:

1. In combination in facsimile apparatus, a rotary drum having a helical member supported thereon, an elongated printer bar arranged to be positioned in cooperative relationship to the drum and helical member so as continuously to bring the bar and the helix to bear upon each other, a recessed support element for said printer bar, resilient means spanning the recess in the support element, said printer bar being of "T" shape and comprising a flat flange and a strip, the free edge of said strip providing a printing electrode, means for securing said flange to said resilient means, and spaced slots extending from the edge of said flange and continuing a substantial distance into said strip, the drum and the printer bar being adapted to receive a record receiving strip between them.

2. In combination in facsimile apparatus, a rotary drum having a helical member supported thereon, an elongated printer bar arranged to be positioned in cooperative relationship to the drum and helical member so as continuously to bring the bar and the helix to bear upon each other, a recessed support element for said

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printer bar, resilient means spanning the recess in the support element, said printer bar being of "T" shape and comprising a flat flange and a strip, the free edge of said strip providing a printing electrode, a holder secured to said resilient means, said flange being seated in said holder, and spaced slots in said flange and said strip, said slots being in register whereby to extend continuously from the edge of said flange to a relatively short distance from the edge of said strip.

3. A printer bar for a facsimile recorder comprising a base in the form of a flange, and a strip projecting from said flange and being substantially centrally located on said flange, the free edge of said strip providing a printing electrode, spaced slots in said flange and strip, said slots extending continuously from the edge of said flange to within a relatively short distance from the edge of said strip, whereby said strip has a relatively shallow continuous portion adjacent said edge which provides the printing electrode, said continuous portion being flexible transversely of its length in its plane.

4. A printer bar for a facsimile recorder comprising a base in the form of a flange, and a strip integral with and projecting from said flange and being substantially centrally located on said flange, the free edge of said strip providing a printing electrode, spaced slots in said flange and strip, said slots extending continuously from the edge of said flange to within a relatively short distance from the edge of said strip whereby said strip has a relatively shallow continuous portion adjacent said edge which provides the printing electrode, said continuous portion being flexible transversely of its length in its plane.

5. A printer bar and printer bar support for a facsimile recorder comprising an elongated printer bar having a projecting recording edge, a support for said bar comprising an elongated member having an elongated recess therein, a thin flexible strip secured to said elongated member to cover said recess, a holder for said printer bar comprising a channel-shaped member having intumed sides slidably to receive said printer bar, said printer bar being removably secured to said holder in alignment with and substantially centered with respect to said recess, and said holder being narrower than said recess.

6. A printer bar and printer bar holder for a facsimile recorder, said printer bar comprising a flange and a flexible strip extending from said flange, said holder comprising a flexible, unitary channel-shaped member having a flat portion and intumed sides fitting beneath the flange of said printer bar, said flat portion and said intumed sides providing a channel for slidably receiving said printer bar, said flange of said printer bar extending beyond said strip at at least one end of said printer bar, and said flat portion of said holder having a projecting portion turned inwardly over the projecting portion at the end of said printer bar flange.

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