

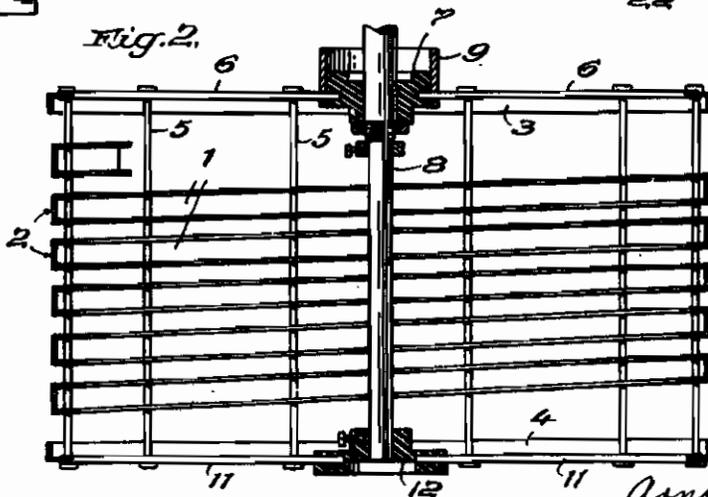
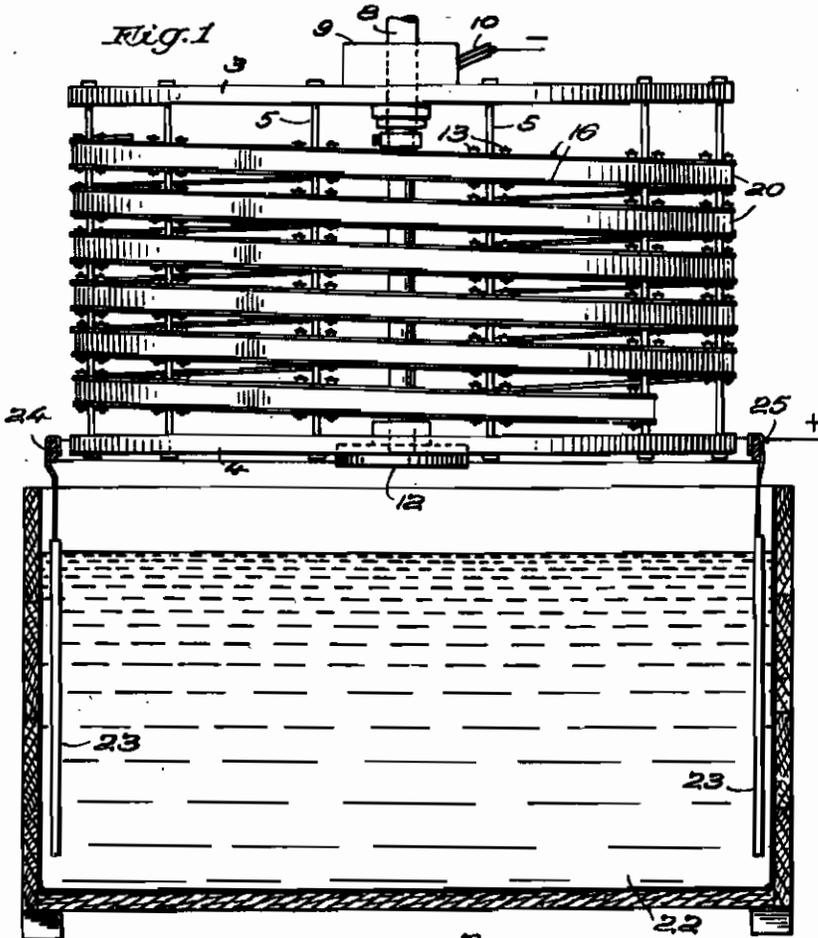
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A. WOITSCHEK  
METHOD OF AND DEVICE FOR PRODUCING MATRICES FROM  
MECHANICALLY RECORDED SOUND BANDS  
Filed May 26, 1941

Serial No.  
395,318

BY A. P. C.

2 Sheets-Sheet 1



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Fig. 3.

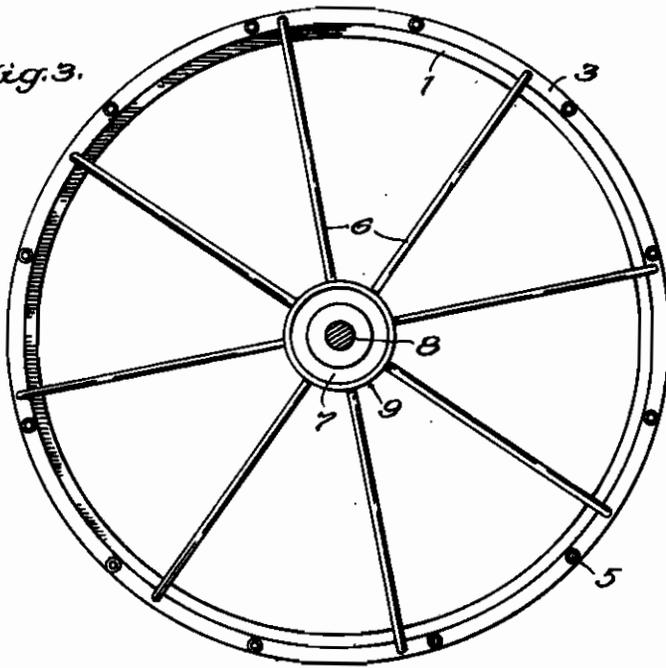


Fig. 4.

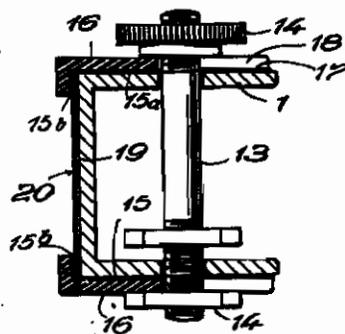
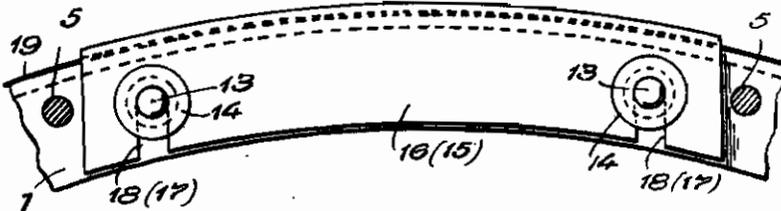


Fig. 5.



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# ALIEN PROPERTY CUSTODIAN

## METHOD OF AND DEVICE FOR PRODUCING MATRICES FROM MECHANICALLY RE- CORDED SOUND BANDS

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ed in the Alien Property Custodian

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The object of the invention is to provide, in place of the known method of producing mechanically recorded sound bands in a galvanic bath, a method of and a device for the production of perfect sound band matrices in the most simple manner and within the shortest possible time. It relates especially to the production of matrices from long and comparatively wide sound bands, in whose sound record layer are cut a number of sound grooves running parallel or nearly parallel to the edge of the band, though the invention may likewise be applied to short and narrow sound bands.

The original sound bands, after having been recorded in known manner, are provided with an electrically conductive coating, for example a graphite coating, and are then placed in a galvanic bath, in which a galvanic deposit of the desired thickness of the sound band matrix is produced on the surface of the band that has been rendered conductive. In this operation, not only the handling of the original sound band, which is provided with an extremely sensitive layer, for example a wax layer, but particularly the electric connection of the conductive surface of the band cause considerable difficulties. Since the conductive coating on the recorded side of the band has to be extremely thin, because otherwise the reproduction of the sound record by the matrix would be imperfect, care must be taken that the coating produced in the galvanic bath grows as quickly and uniformly as possible, and at the same time that the band-shaped matrix has in all parts the same thickness.

In order to achieve these objects, the invention provides a current connection at the conductive recorded surface of the original sound band on the entire length of this band, ensuring an uninterrupted contact along the edge of the conductive surface strip, preferably along both edges of this strip. For this purpose, the original sound band is clamped at its longitudinal edges on to a current carrying rail by means of conducting angular strips, the one leg of which rests on said rail, whereas the other leg lies on the edge of the conductive surface of the sound band. The free surfaces of said rail and of the conducting strip serving to clamp fast the sound band are provided with an insulating layer or cover, and then the band is brought into the galvanic bath.

In order to save room and to be able to more easily handle the sound band, it is known to wind the sound band in a helical line upon a drum when it is emerged in the galvanic bath. As a

carrier for the sound band, the invention provides, instead of the drum, a helical current conducting rail with clamping devices for the sound band arranged along the edges of the rail. This helical rail is advantageously mounted to rotate and is connected by means of a slip ring to the current lead.

According to the invention, the clamping devices for the sound band comprise segmental sections of angularly bent metal strips which, on the one hand, bear by means of angular segments of insulating material against the current conducting rail and, on the other hand, against the conductive surface of the sound band.

A constructional example of the device for carrying out the method according to the invention is illustrated in the accompanying drawing, in which:

Fig. 1 is a view of the device;

Fig. 2 is a section on the line II—II of Fig. 1; and

Fig. 3 is a plan view.

Fig. 4 is a section through the current conducting rail of the device and through the clamping devices for the original sound band in an enlarged scale;

Fig. 5 is a top view of the current conducting rail with the clamping devices attached thereto, also in an enlarged scale.

The current conducting rail consisting, for example, of copper has, as will be seen from the drawing, a helical shape and forms at its outer circumference a smooth resting surface 2 for the original sound band of which a matrix is to be made. The current conducting rail is carried by a cage consisting of an upper ring 3, preferably of copper, a lower ring 4, and rods 5 running between these two rings. The rods 5 pass through the windings of the current conducting rail and serve to carry this rail and to ensure a uniform spacing of the individual windings of the rail; they are conductively connected to the rail 1 and the rings 3 and 4.

The ring 3 is connected by means of spokes 6, preferably consisting of copper, with a hub 7 of insulating material rigidly attached to a vertical shaft 8 rotatable about its axis, a slip ring 9 being provided at the circumference of the hub and being conductively connected to the spokes 6. The current conduction to the slip ring 9 is effected by the diagrammatically indicated brush 10.

The ring 4 has spokes 11 supported by a hub 12 of insulating material, which is carried by the shaft 8 at its lower end.

To the rail 1 are attached at the side at cer-

tain distances bolts 13 of insulating material serving to attach the clamping devices for the sound band of which a matrix is to be made. The bolts 13 carry nuts 14, also consisting of insulating material. The clamping devices for the sound band consist of segmental sections of angularly bent copper strips 15 and of angular segments 16 of insulating material. The copper strips 15 have longitudinal slots 17, and the segments 16 have longitudinal slots 18 in which, in the operating position of these clamping means, the bolts 13 are disposed.

The sound band, of which a matrix is to be made, for example, consists of a carrier layer 19 and a sound record layer 20 of wax, into which the sound grooves 21 are cut. After the recorded surface has been made conducting, for example by coating it with graphite or in some other way, the band is wound upon the outer surface 2 of the helical rail 1 so that the carrier layer rests on the rail. As this winding proceeds, first the copper strips 15 and then the insulating segments 16 are slipped with their slots 17 and 18 on to the bolts 13 of the rail 1, whereupon the nuts 14 are tightened. In this way, the leg 15a of the copper strip 15 is pressed against the lateral face of the rail 1, whereas the leg 15b projects over the edge of the original sound band and bears against the conductive surface of this band. As will be seen from the drawing, one copper strip 15 follows the other copper strip 15 so that the current connection at the conductive recorded surface of the original sound band is ensured

over the entire length of this band by uninterrupted contacts along the edge of the conductive surface strip, at both edges of this strip. Consequently, when the sound band is brought into the galvanic bath, the material forming the matrix, for example copper, very rapidly accumulates on the surface of the band of which the matrix is to be made.

When the sound band is completely attached to the current conducting rail, the remaining free surfaces of the rail and of the conducting strip serving to clamp the sound band on to the rail are provided with an insulating layer or cover. This may be done, for example, by applying an insulating varnish. The same refers to all other conducting surfaces of the ring 4, the rods 5, the spokes 11, and the shaft 8. Of course, all these parts may just as well be varnished before winding the sound band upon the rail.

The device described above, carrying the sound band, is emerged in the galvanic bath 22, into which the anodes 23 dip, in a manner known per se, said anodes being suspended on a conductive ring 24 connected at 25 to the source of current. While the matrix is being formed, the rail 1 is rotated by the shaft 8 with respect to the anodes 23.

When the matrix has been formed, the rail 1 is drawn out of the bath, the clamping devices 15, 18 are removed, and the matrix band formed is detached from the original sound band while the latter is still wound on the rail.

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