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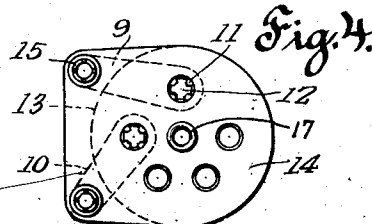
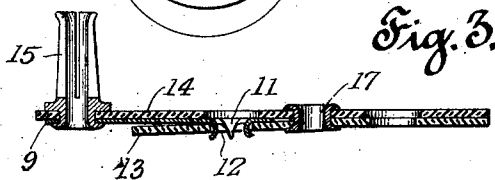
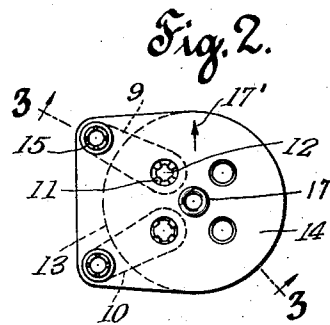
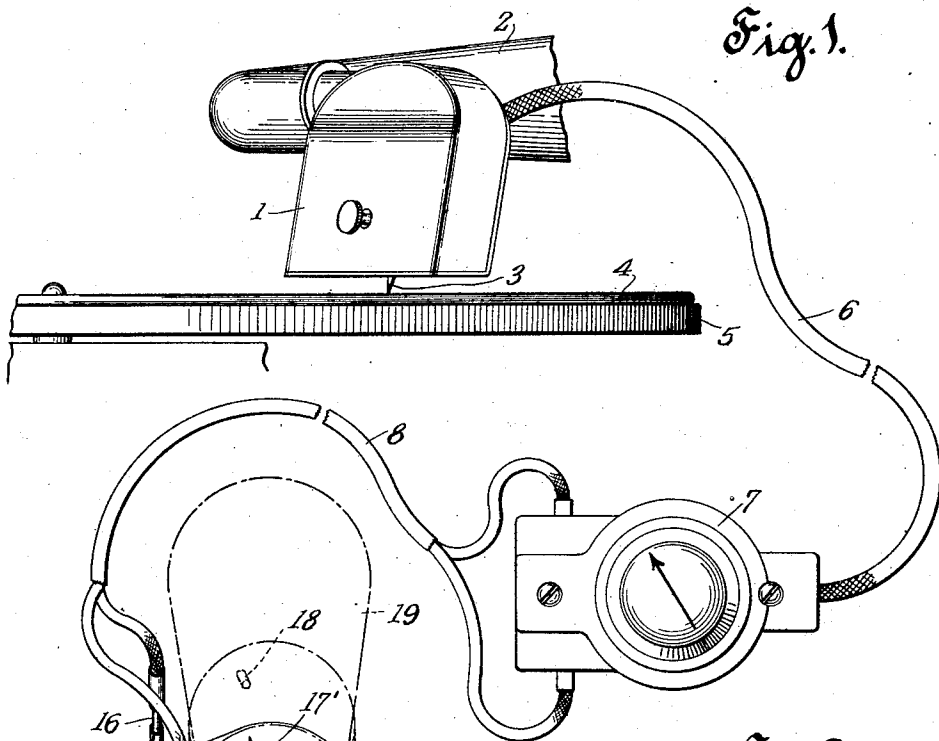
C. F. GOUDY

1,774,646

TUBE ADAPTER

Filed April 19, 1928

2 Sheets-Sheet 1



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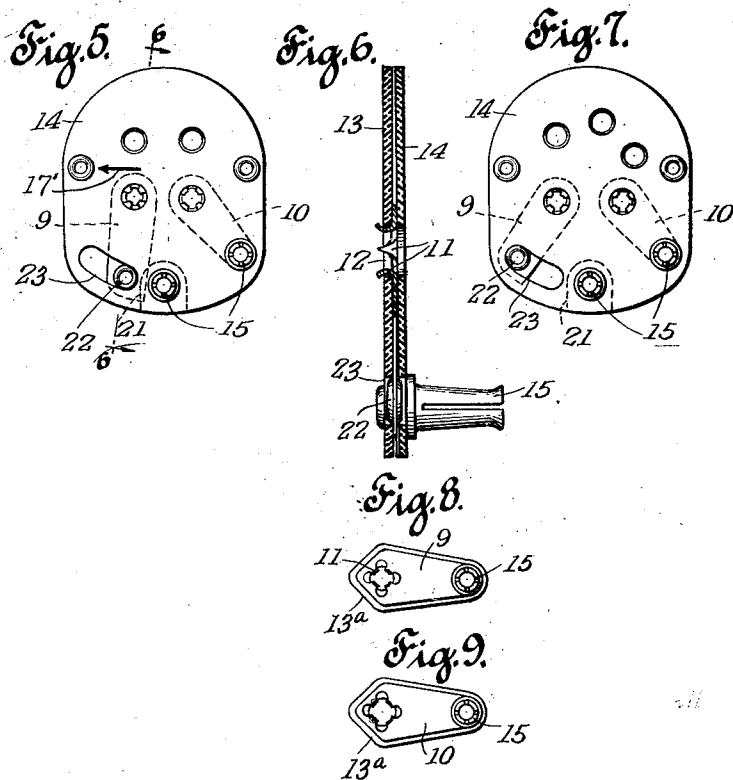
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TUBE ADAPTER

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UNITED STATES PATENT OFFICE

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TUBE ADAPTER

Application filed April 19, 1928. Serial No. 271,153.

This invention relates to the electric operation of phonographs, and more particularly to apparatus by which the ordinary phonograph may be converted to electrical operation and used in conjunction with a radio receiving set.

Special objects of the invention are to facilitate the connection of the so-called electrical "pick-up" which is used at the phonograph with the desired stage of the radio receiving set, and to accomplish this connection without disturbing the tubes or other parts of the receiving set.

Heretofore, in using the radio set in conjunction with a phonograph, the practice has been to remove the detector tube or first audio tube of the set, and to substitute a pronged member connected with the phonograph pick-up. The substitution of this pronged member in place of the detector or audio tube necessarily rendered the radio apparatus inoperative as a receiving set, and the power of the removed tube was lost to the phonographic reproduction.

Important novel features of the present invention are the utilization of all or as many of the tubes in the receiving set as desired, the possibility of using the phonograph and receiving set conjointly or instantly changing back to radio reception, and the adaptation of the receiving set to phonographic reproduction without the requirement of any special plugs, prong-carrying members, or other accessories.

Various other novel features of the invention will appear as the specification proceeds.

The drawings accompanying and forming part of the specification illustrate a number of different practical forms the invention may take, but it is to be understood that other changes and modifications may be made without departure from the true spirit and broad scope of the invention.

Fig. 1 is a broken side elevation and partial perspective view illustrating the manner in which the connection from the pick-up of the receiving set is accomplished in this invention by direct contact with the prongs of the tube; Fig. 2 is a plan view of the special tube connector; Fig. 3 is an enlarged cross-

sectional view of the connector as taken along the plane of 3—3 Fig. 2; Fig. 4 is a plan view of the connector somewhat like Fig. 2 intended for a five prong tube as distinguished from a four prong tube; Fig. 5 is a plan view of a form of the connector having a switch incorporated therein for cutting the phonographic reproducer into and out of operation without affecting the function of the tube in the receiving set; Fig. 6 is an enlarged sectional view illustrating the switch structure as on substantially the plane of 6—6, Fig. 5; Fig. 7 is a plan view showing the switch connector construction for a five prong tube and illustrating the switch member in a different position; Figs. 8 and 9 are plan views of a form of the connector made in two separate parts, one for engagement with a small sized prong, and the other for engagement with a large sized prong of a radio tube.

Fig. 1 illustrates the general arrangement of the apparatus, the special re-producer or so-called "pick-up" unit being indicated at 1, carried by the phonograph tone arm 2, and provided with a needle 3 engaging the record 4 on the turn-table 5. The pick-up is shown as of the construction disclosed in Patents 1,681,897 and 1,701,000, and is illustrated connected by conductor cord 6 with a volume control 7, which latter is shown connected by a further length of cord 8 with the special connector.

This special connecting device is constructed so as to make contact directly with the prongs of one of the tubes in the radio receiving set, without displacing the tube and without preventing its use in the normal way in the set.

In the forms of the invention illustrated contact is established with a filament and grid prong of the tube by metallic strips or lugs 9, 10, perforated at their inner ends to engage over the particular prongs mentioned, and provided at their outer ends with sockets, or other suitable terminals for the ends of the conductor cord.

The contact strips 9, 10 are shown as pierced at their inner ends, and as having points or barbs 11 at such openings struck downwardly and curled under through cor-

responding openings 12 in a layer of insulating material 13. These points definitely position the strip on the sheet of insulation and act as spring fingers frictionally gripping the prongs of the tube, and the insulation is a mechanical, as well as an electrical protection for the contact material. As shown particularly in Fig. 3 these points are disposed in diametrically opposite relation so as to exert pressure against opposite sides of the tube prongs, thereby providing ample contact area with the prongs and mechanically gripping the prongs in secure holding engagement.

In addition to the underlying layer of insulation, the forms of the invention shown in Figs. 1 to 7 have an over-lying layer of insulating material 14, which besides giving additional protection electrically, reinforces and stiffens the structure and provides a handhold by which the device may be readily slipped onto the tube prongs or be removed therefrom. This top plate of insulation is shown as extended beyond the perimeter of the tube base, and as carrying on such extended portion, the split spring sockets or eyelets 15 riveted through the insulation and the contact strips beneath the same, Fig. 3, and providing terminals for the cord tips 16. The two layers of insulation are shown as secured together, with the contact strips therebetween by a central eyelet 17.

To insure the engagement of the contacts with the input prongs of the tube, the base may be provided with a suitable marker or indicator, such as the arrow 17' for registry with the positioning pin 18 on the base of the vacuum tube 19, and when used with a tube having different sized prongs, such as the four prong tubes now in general use, the one lug 9 may be made with a small opening to fit one of the small prongs of the tube, and the other lug 10 with a larger opening to fit one of the larger prongs of the tube, Fig. 2. Where the prongs of the tube are all the same size, as in the case of a standard five prong tube, the contact lugs will be perforated accordingly, and will be positioned as indicated in Fig. 4, so as to engage the proper prongs of the tube.

With the form of tube sockets now in general use, such as indicated at 20 in Fig. 1, there is ample room for the connector, on the prongs beneath the base of the tube, and the device therefore does not interfere in any way with the regular use of the tube in the receiving set. The connector is mounted by simply slipping it over the prongs of the tube, and may be left in place on the tube ready to be used at any time by simply engaging the cord tips with the terminals of the same.

To facilitate the change from radio to phonograph operation and vice versa, one of the contact strips, in this case the one for making connection with the grid prong may be utilized as a switch arm, as the strip 9 is

shown in Figs. 5, 6 and 7, the spring fingers 11 constituting an eyelet pivotally holding the inner end of the strip to the insulating base, and the outer end of the strip swinging into and out of engagement with a switch blade or contact 21 secured to or forming a part of the base of the contact socket 15, between the two layers of insulation. To enable convenient operation of this switch, the movable member of the switch is shown as perforated in its outer end portion 22 to receive the point of a pencil or other actuating medium, the said opening being exposed through slots 23 in the base layers 13, 14.

The forms of the invention illustrated in Figs. 5, 6 and 7 have the advantage that the cord from the phonograph pick-up may be left connected all the time, and the change over from phonograph to radio be controlled by means of the change over switch described, the switch being closed when the phonograph is to be used and being shifted to open circuit position when it is wished to cut off the phonograph and use the radio.

Instead of being combined on a single base, the prong engaging pick-up contacts may be in the form of separate pieces as illustrated in Figs. 8 and 9.

The contact strips shown in Figs. 8 and 9 are like those already described, except that each is mounted on a separate insulating base strip 13', so that each contact may be handled as a separate unit. The Fig. 8 contact is shown intended for use on a small sized tube prong, and the Fig. 9 contact for a large sized prong. These separate unit contacts may conveniently be put up in sets of three, two for small prongs, and the third for a large sized prong, so that the purchaser may use them with either a four prong or a five prong tube, according as to whichever style is employed in the receiving set.

In all the several forms of the invention, it will be seen that no prong carrying member, such as has heretofore been necessary is required, that the connection is made with the radio set through the prongs of the tube, that the tube remains in place in its socket, and therefore can be used in the set in its usual way, or else be used for the phonograph pick-up, and that when used for the pick-up, the amplifying effect of the tube is utilized in the re-production. The forms of the invention having the switch incorporated therewith illustrated in Figs. 5 to 7 enable the change from phonograph re-production to radio reception to be accomplished immediately without disconnecting or removing parts. All forms of the device are relatively simple and inexpensive, and can be readily applied to, or removed from the tube, and are of such compact form as not to be in the way of any other parts of the receiving set.

The connector may be detachably con-

ected with the volume control as indicated, or be permanently connected therewith as desired. By connecting the pick-up unit with the input prongs of the detector or amplifier tube, the amplification of the tube is utilized, but when this amplification is not required or desired, the connector may be engaged with the output prongs of the tube by suitable rearrangement of the parts.

10 What is claimed is:

1. A tube adapter comprising a light thin sheet of insulating material pierced for the passage of a prong of a radio receiving tube, a contact strip extending from the outer edge portion of said insulating sheet to the opening therein and pierced in line with such opening to fit over and make contact with the prong of a radio tube extending through such opening, said contact strip having points about the opening therein and curled through the opening in the sheet of insulating material to thereby mechanically position the strip relatively to the opening in the sheet of insulation and a spring socket for a cord tip terminal electrically connected with the outer end of said contact strip at the edge of said sheet of insulating material.

2. A tube adapter comprising a light thin sheet of insulating material pierced for the passage of a prong of a radio receiving tube, a contact strip extending from the outer edge portion of said insulating sheet to the opening therein and pierced in line with such opening to fit over and make contact with the prong of a radio tube extending through such opening, said contact strip having points about the opening therein and curled through the opening in the sheet of insulating material to thereby mechanically position the strip relatively to the opening in the sheet of insulation, a spring socket for a cord tip terminal electrically connected with the outer end of said contact strip at the edge of said sheet of insulating material, said cord tip terminal socket having a base portion riveted through both the sheet of insulating material and the contact strip to thereby bind the sheet and contact together.

3. A tube adapter for mounting on the prongs of radio receiving tubes and comprising a piece of sheet insulation pierced for the passage of a prong of a radio receiving tube and a contact strip extending over the face of said sheet insulation, said contact strip having a portion at one end bent down through the opening and curled under the lower side of the sheet insulation, a wiring terminal at the opposite end of said contact strip, said wiring terminal being maintained in definite position on the insulation by a fastening member extending through said sheet insulation and whereby said contact strip is secured to and definitely positioned on the sheet insulation at both ends and sepa-

ration of the strip from the insulation is prevented at both ends of the strip.

4. An adapter for mounting on the prongs of radio tubes, comprising superposed layers of sheet insulation pierced for passage of the tube prongs, a substantially centrally disposed rivet securing the layers of insulation together, a contact strip held between the two layers and extending from the rim portion to a pierced portion of the two layers, said strip having a portion at its inner end extended in through the opening in one of the insulating layers and a cord tip terminal riveted through one of the insulating layers and mechanically and electrically connected with the outer end of the contact strip.

5. An adapter for mounting on the prongs of radio receiving tubes, comprising a sheet of insulating material, pierced to pass over the prong of a radio tube, a wiring terminal fastened on the insulation at a point removed from the prong opening therein and provided with a switch terminal and a contact strip extending over the insulating material from the opening to the switch terminal, said strip having a portion extended through the opening to pivotally secure the contact strip and providing a contact for engagement with a tube prong and also a pivot by which the strip may be swung into and out of engagement with the switch terminal of the wiring terminal.

6. An adapter for electric phonographs, comprising insulating members secured in superposed relation, contacts for engagement by the prongs of a radio receiving tube carried by said members, a laterally swinging switch lever pivotally mounted between said insulating members and projecting to an operating position off to one side of the tube prong contacts, a switch contact positioned for engagement by said laterally swinging lever off to one side of the prong engaging contacts and stop means limiting the lateral throw of said switch lever, all whereby said switch lever is readily operable in a plane transversely of the tube prongs within the limits afforded by the stop means aforesaid.

In testimony whereof I affix my signature.

CARL F. GOUDY.