

Dec. 25, 1928.

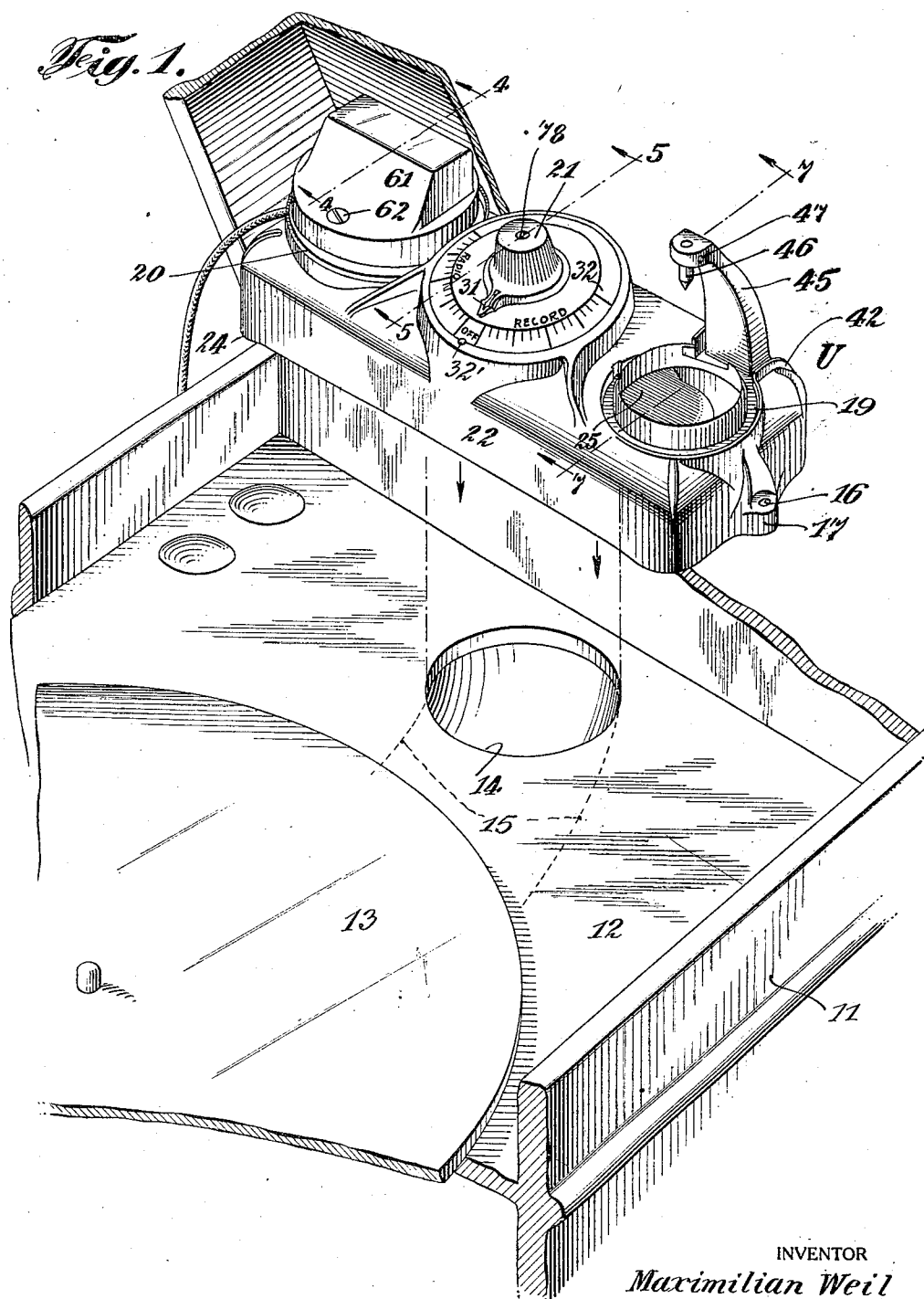
M. WEIL

1,696,872

SOUND REPRODUCING APPARATUS

Filed Oct. 1, 1925

4 Sheets-Sheet 1



INVENTOR

Maximilian Weil

BY

BY
Dean, Fairbank, Obieght & Hiroch.
his ATTORNEYS

His ATTORNEYS

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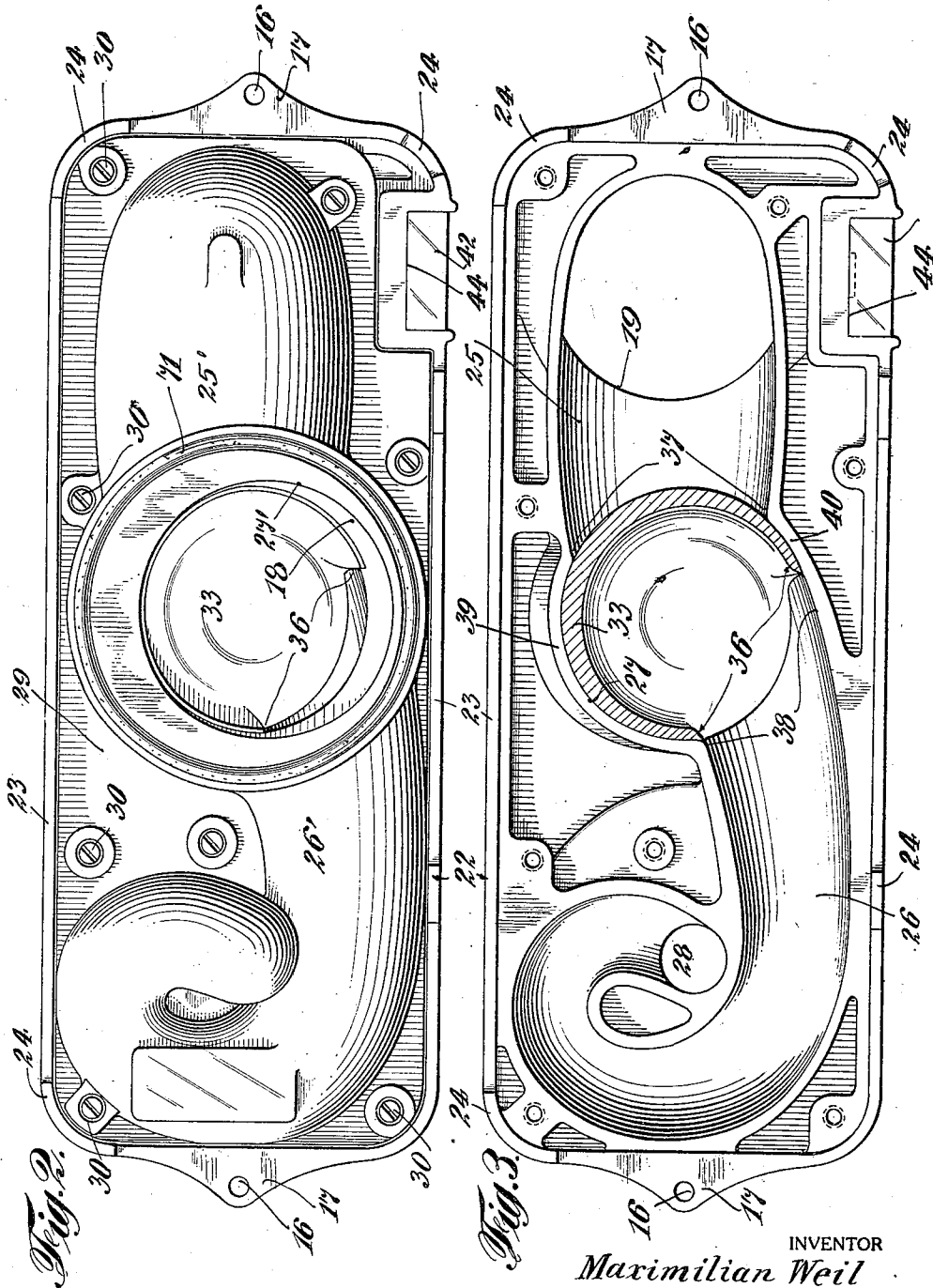
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M. WEIL

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INVENTOR
Maximilian Weil
BY
Dean Fairbank, Obrecht & Hirsch
ATTORNEYS

Dec. 25, 1928.

M. WEIL

1,696,872

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Fig. 4.

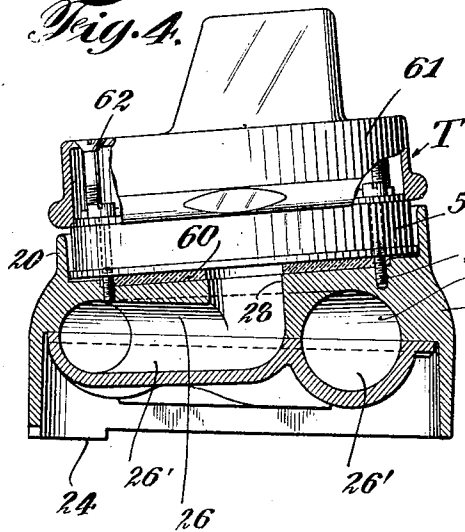


Fig. 5.

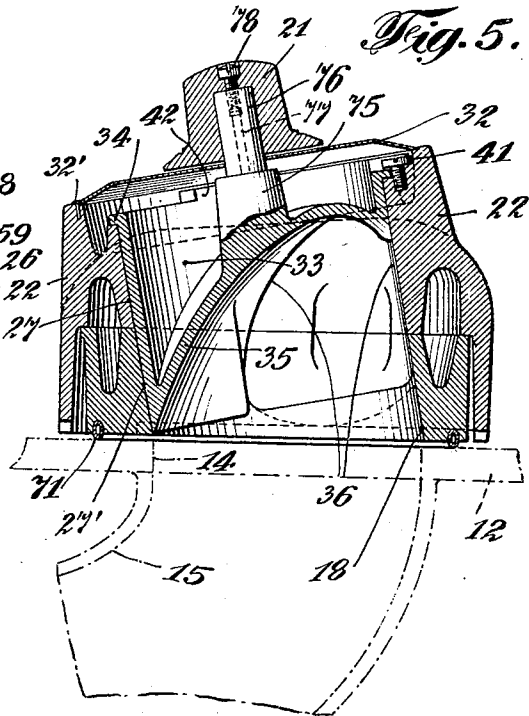


Fig. 6.

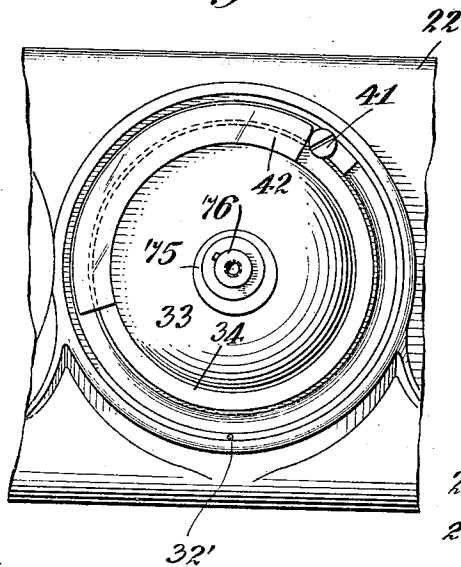
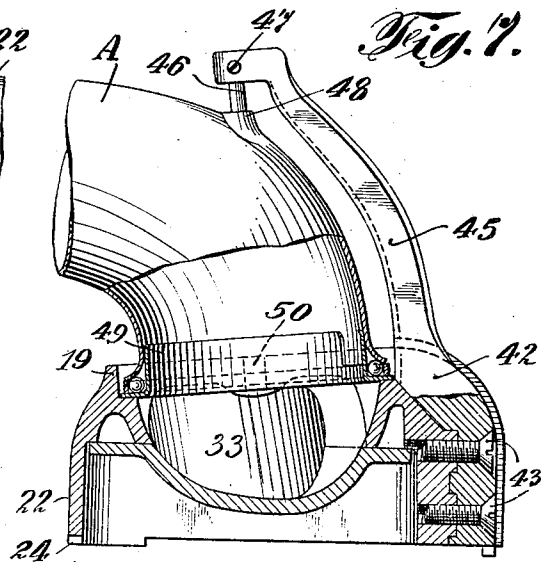


Fig. 7.



INVENTOR
Maximilian Weil

BY
Dean, Fairbanks, O'Bright & Hirsch
ATTORNEYS

Dec. 25, 1928.

M. WEIL

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4 Sheets-Sheet 4

Fig. 9.

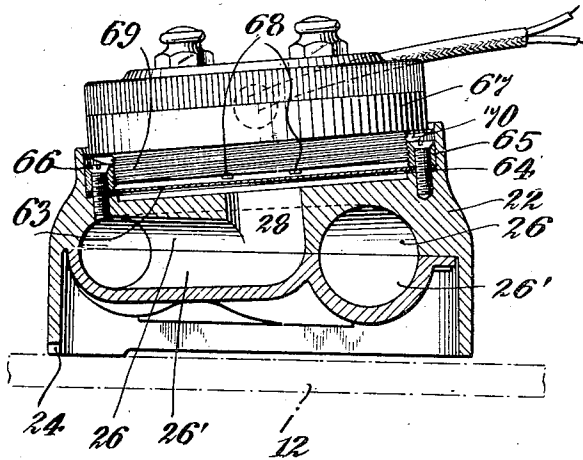


Fig. 10.

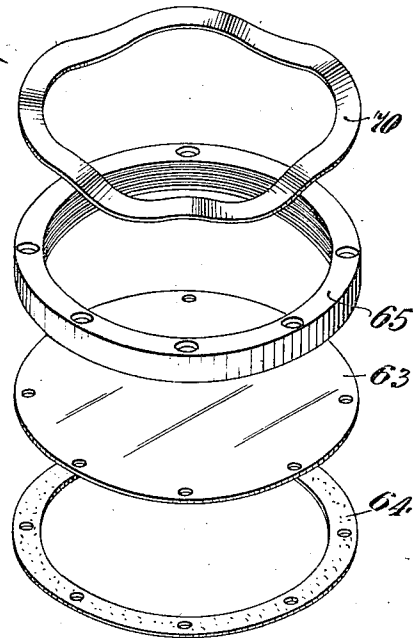
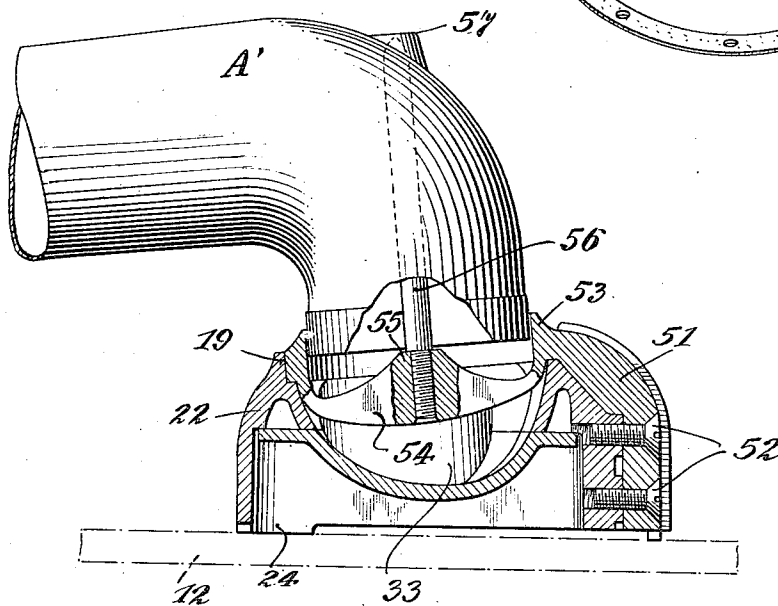


Fig. 8.



INVENTOR

Maximilian Weil

BY *Dean, Fairbanks, Obrieght & Hirsch*
his ATTORNEYS

UNITED STATES PATENT OFFICE.

MAXIMILIAN WEIL, OF NEW YORK, N. Y.

SOUND-REPRODUCING APPARATUS.

Application filed October 1, 1925. Serial No. 59,783.

My present invention relates primarily to combination apparatus for utilizing a common amplifier alternatively with either of two sound reproducers, and has a preferred application in apparatus of this type embodying a phonographic and a telephonic reproducer.

It is among the objects of the invention, from one of its aspects, to provide apparatus of the above type, which will permit, in addition to the choice of reproducers for operative coaction with the common amplifier, the ready modulation of the volume of sound emitted from the amplifier, and which will preclude in all adjustments thereof, the rattle or disturbing resonance effect due to an open communication between the vibrating elements of the two reproducers.

Another object is to provide a valve construction performing the objects previously noted, which shall yet be of simple and rugged construction and occupy only little space.

The invention is preferably embodied in a rotary valve, the end of which delivers into the amplifier horn, while the vibrations from the reproducers are admitted into the valve case, through independent ports therein with either of which a single lateral port in the rotary valve can be brought into registry. The ports in the valve case are preferably of equal width and equal to that of the valve port, and are spaced at one side by a width of wall which may be equal to, but is preferably greater than that of the valve port, stop means being provided to prevent rotary displacement of the valve port beyond the arc intercepted by the two casing ports and the intervening casing wall. Preferably, the valve and its casing are cylindrical, and the valve is formed with a substantially spherical web, connecting the port in the wall thereof with the open end thereof, so that the sound waves from either reproducer can proceed in a continuous sweep along said web.

While a valve of the character described is of use in different types of sound amplifiers, it has a special application to phonographs of familiar or conventional construction, in which the usual phonograph amplifier serves also as the amplifier or loud speaker for a radio set, and the novel valve construction referred to is applicable both to phonographs specially built, to serve alternatively as radio loud speakers and to phonographs of more conventional construction, not specially designed for radio application.

The invention from another aspect, has as

an object to readily adapt any phonograph of familiar type that is not intended or primarily designed to function as a radio loud speaker, to be operated at will as such and without thereby imparting the capability of operation of the instrument as a phonograph. More specifically, it is among the objects to adapt a phonograph of the kind mentioned for radio loud speaker use, without the need in installation, for removal of the motorboard or access to the amplifier, or mutilation thereof, and, in fact, without the use of any tool other than an ordinary screw driver or of any operation that cannot be completed by an unskilled person in a few minutes.

Another object is to provide apparatus of the type last noted which comprises a single compact and rugged unit of small bulk and little cost, that need merely be substituted for the ordinary tone arm base and utilizes, without alteration, the tone arm intended for the phonograph and which enhances rather than detracts from the appearance of the instrument to which it is applied.

Another object is to provide a construction of the type last noted which will in no way interfere with or impair the performance of, or alter the mode of operation of the instrument as a phonograph, or involve any added weight to be entrained by the phonograph record, and which will provide telephonic or radio reproduction of superior quality.

In a preferred construction, my unit includes a single generally rectangular block, casting or base, having an opening in its lower face for registry with the amplifier inlet opening, usually provided in the motorboard and having a rotary valve above said opening and in a corresponding cylindrical hole in the casting, which constitutes the valve case and is preferably of the character before referred to. The support casting carries a telephonic reproducer near one end thereof, and affords a support or base for the tone arm near the other end thereof, the valve operating handle or knob projecting upward from the support between said telephonic reproducer and said tone arm. The tone arm delivers the phonographic vibrations through a passage in the casting to one of the ports in the valve case and the telephonic reproducer delivers its vibrations through a passageway in the casting to the other of the ports in the valve case. Inasmuch as it is desired to cause a continual

widening of the wave front from the telephonic reproducer to the throat of the amplifier and as for compactness of construction, the telephonic reproducer is quite close to the valve, the casting is formed with a volute-shaped diverging passageway leading from the telephonic reproducer to the valve.

Inasmuch as the casting embodying the passages or conduits set forth is of height greater than the conventional tone arm base, which it replaces, the tone arm is thereby mounted at greater elevation and in the absence of further precautions, the stylus of the sound box would, of course, contact the record at a steeper angle. This is obviated by the simple expedient of forming the unit with a pivot axis for the tone arm inclined forward at a compensating angle. As the tone arm is mounted to the side of the aperture in the motorboard, the casting is formed so that the mounting axis of the tone arm is sufficiently close to the turn table to permit the stylus to reach the turn table shaft as in ordinary constructions.

In the accompanying drawings in which is shown one of various possible embodiments of the various features of the invention.

Fig. 1 is a perspective view of the portion of a phonograph apparatus, showing the motorboard and the unit which is to be placed thereon in raised position prior to attachment,

Fig. 2 is a bottom plan view of the device;

Fig. 3 is a bottom plan view of the case or frame portion of the unit, the closure portion having been removed;

Fig. 4 is a cross-sectional view taken along the line 4—4 of Fig. 1;

Fig. 5 is a similar view taken along the line 5—5 of Fig. 1;

Fig. 6 is a plan view of the control valve, with the indicating means and knob removed;

Fig. 7 is a cross-sectional view along the line 7—7 of Fig. 1, showing the method of attachment of one form of phonograph tone-arm;

Fig. 8 is a view similar to Fig. 7, showing a modification of the device for the attachment of a modified form of tone-arm;

Fig. 9 is a view similar to Fig. 4, showing the method of attachment of a modified form of telephonic reproducer; and

Fig. 10 is a dropped perspective view of portions of Fig. 9.

The phonograph 11 shown of conventional construction includes a motor board 12 above which is the usual turn table 13 that carries the disk record (not shown) and is rotated by a motor not shown. The drawing shows a motor board devoid of the tone-arm base and indicates the circular aperture 14 therein through which the tone-arm delivers into the amplifier 15.

According to my invention in a preferred embodiment, there is substituted for the tone-

arm base the unit U shown in perspective in Fig. 1 which is simply superposed upon the motor board, and preferably secured thereto by a couple of screws through apertures 16 in lugs 17 at the opposite ends thereof. The unit is preferably a cast metal structure the details of which are best shown in Figs. 2 to 5, having a central opening 18 in its lower face for registry with the opening 14 in the motor board through which are delivered into the throat of the amplifier vibrations delivered either from the tone-arm which is mounted at socket 19 on the upper face of the casting, in the embodiment shown, at the right hand part thereof, or from a telephonic receiver which is mounted in a socket 20 on the upper face of the casting and in the embodiment shown, at the left hand part thereof. Communication is established at will to the amplifier from either the tone-arm or the telephonic element by a valve embodied in the construction, interposed between the tone-arm and the telephonic reproducer, at the upper face of the casting, aligned with opening 18, and operated by a knob 21 between the telephonic and tone-arm supports.

Proceeding now, to the detailed construction of the unit, the same may include a casting 22 in the form of a supporting block, frame, casing or box the upper face of which is formed to support the valve at the middle, and the tone-arm and telephonic elements at the sides thereof as previously suggested, and as will be described at greater length hereinafter. The casing has a peripheral support flange 23 which rests upon the motor board and is cast with channels 25 and 26 therein, to be described more fully hereinafter. The support flange 23 of the support casting 22 is provided with short projections or legs 24 at suitably spaced intervals so that the entire device will rest firmly upon the motorboard without any possibility of rocking. Channel 25 communicates from the tone-arm socket 19 to a central opening 27 in the casting, circular in cross-sections and constituting a valve case part. The other channel 26 communicates with said valve case part from the outlet 28 within the support socket 20 for the telephonic element. A generally rectangular closure plate or false bottom 29 is inserted into the rectangular supporting frame or casing, said closure casting having channels 25' and 26' therein complementary to the corresponding channels 25 and 26 in the support casting, and leading to a central valve case opening 27' aligned with the corresponding opening 27 in the casting 22, to form the complete valve case. The walls of the channels and chambers are made as thin as strength and soundproof efficiency will permit, with the object in view of making the entire device as light in weight as possible. The complementary channels 25 and 25' on the one hand and 26 and 26' on the

other, form sound tubes or passages which are preferably generally circular in cross section, and deliver into the valve case 27 respectively at corresponding ports 37 and 38 therein. It is found that by merely applying shellac to the borders or the flat contacting edges of the complementary casting the sound tubes are rendered substantially sound tight at the joints between the constituent halves of the casting when secured together by screws 30. While it is desirable to form the base of two complementary castings in the manner set forth for facility of coring, the device may, if desired, be cast in a single piece.

The valve knob 21 has an integral pointer 31 moving in the adjustment thereof over a dial 32 fixed by stud 32' in the upper face of the casting, said dial indicating the setting of the instrument in manner to be described more fully below. To enhance the appearance of the instrument and to facilitate reading of the dial, it is not in a horizontal but in a forwardly inclined plane as shown, and the axis of the valve and of its case are thus correspondingly inclined forward. The valve case 27—27' is preferably cylindrical as shown and the valve 33 therein comprises a casting having a flange 34 at its upper edge resting on the support casting 22. The valve 33 has an arcuate generally spherical web 35 determining a port, or notch 36 in the side wall of the valve and extending peripherally of the lower rim of the valve which accordingly is open throughout its area as shown. An integral axial hub 75 protrudes at an angle upward from web 35, and has a stud 76 at the upper end thereof over which the knob 21 is telescoped and keyed by a spline 77 on the stud, a set screw 78 through the end of the knob securing it to said stud.

The width and height of the valve port 36 are preferably substantially equal to the corresponding dimensions of the ports 37 and 38 in the cylindrical valve case so that when the valve port 36 is in full registry with either of said case ports, the valve will afford a continuous unthrottled passageway for transmitting the vibrations from the corresponding telephonic or phonographic conduit into the amplifier horn.

Preferably, as shown, the valve case ports 37 and 38 are so arranged that the width of wall portion 39 between them subtends an arc greater, as shown, than either of said ports. It will, therefore, be seen that when the valve is rotated from the position shown in Fig. 3 in clockwise direction to change over from the radio connection shown in that figure to phonographic connection, the valve can in no intermediate position, at any time, establish a communication between the telephonic conduit 26 and the phonographic conduit 25.

As shown, the valve ports have widths substantially in the order of the diameter of the

tone-arm support socket 19 and the diameter of the valve is yet to be maintained at a minimum. The two valve casing ports 37 and 38 of the intervening wall port 39 are therefore preferably of a combined width almost equal to the circumference of the valve casing. Only a narrow part of the valve casing wall shown at 40 remains between the edges of the ports 37 and 38 opposite those separated by wall portion 39. Were the valve port allowed to straddle the narrow wall strip 40 vibrations originating in one reproducer would impinge on the other, causing rattle and undesirable resonance. This is obviated by the simple expedient of providing a stop for the valve, limiting the rotary displacement thereof, so that the uninterrupted part of the valve wall can at no time uncover the wall strip 40. This result is accomplished by providing in the upper edge of the valve case 40 a stop stud or screw 41 exteriorly of support flange 34 and in the path of the ends of a segmental flange 42 protruding therebeyond from said support flange and of such length that the ends thereof, when contacting the stop screw determines the desired limiting positions of the valve.

For reasons well understood, it is desired to provide an amplifying structure diverging continuously from the small exposed opening 28 through which the telephonic reproducer delivers, to the valve casing port 38 which is of much larger diameter. Inasmuch as the telephonic unit T is closely adjacent the valve 33 as shown, there is an insufficient interval or space therebetween to admit of gradual divergence of an ordinary conduit wall. I have produced the result desired in manner best shown in Figs. 2 and 3 by providing a conduit intervening between the telephonic element and the valve case of substantial length and gradually diverging from its inlet to its outlet end, said conduit being disposed within the limited space available by forming the same of volute or ram's horn shape, as shown. The outer wall of the outlet end of conduit 26 as shown extends substantially tangentially of the valve case 27 so that a greater width of the port results and the length of said conduit is increased as compared with a construction in which the conduit extends radially into the valve case. With the phonographic conduit 25 extending directly or radially inward toward the valve case and of relatively short length there is thus provided the desirable relation previously described of the two valve ports 37 and 38 in the valve case spaced by a relatively wide intervening wall portion 39 at one side thereof and by a relatively minute wall portion 40 at the other side thereof.

In the relation disclosed in which my unit is employed for the purpose of adapting an ordinary phonograph for use, at will, as a radio loud speaker, it is desirable to utilize the tone arm initially provided for such

phonograph without any alteration thereof. Inasmuch as my unit presents a support base of height greater than the ordinary tone arm base that it replaces, the pivot mount of the sound box is sustained higher than usual, and the sound box would tilt forward at a steeper angle for its stylus to contact the record. In order to obviate this condition and cause the stylus to extend at correct angle relative to the record, I have simply tilted forward the pivot axis provided by my unit for the tone arm through a compensating angle as appears best in Figs. 7 and 8. The tone arm being mounted, with the use of my unit, laterally of the motorboard aperture, the mounting socket or axis for the tone arm on the casting unit is disposed nearer the front of the motorboard than is said aperture, so that the mount of the tone arm is at the same distance from the turn table shaft as in the tone arm base replaced by my invention. Accordingly, the stylus on the tone arm when drawn inward to its limit will substantially contact the turntable shaft.

I have constructed my unit to be universally applicable to either of the two general well-known types of tone arm one of which is shown in Fig. 7 and has a pivot mount externally thereof and the other of which is shown in Fig. 8 and has the pivot stud therefor extending therethrough. For the embodiment of Fig. 7 a special bracket 42 is secured by screws 43 in a corresponding notch 44 in the wall of the casing and provides an arm 45 extending upward therefrom, at the upper end of which there is secured the pivot stud 46 maintained in place by a set screw 47 and extending into the usual depression 48 in the upper part of the standard type of tone-arm shown. The socket 19 for mounting the tone-arm has mounted therein the stamped supporting frame 49 which may be keyed therein at 50 and upon which the lower end of the tone-arm rests. Support frame 49 is removable and may be replaced by a smaller one of similar construction for mounting a tone-arm of smaller dimensions.

For mounting a tone-arm of the type shown in Fig. 8 there is used instead of the bracket shown in Fig. 7, a bracket 51 secured by screws 52 in the same manner as that of Fig. 7 and having a corresponding tone-arm support socket 53 cast unitary therewith and fitting into the socket 19 in the support casting, socket 53 providing a unitary spider construction 54 into the hub 55 of which is threaded the pivot stud 56 for the tone-arm A' which latter is sustained at its upper end at 57 upon the pointed end of said stud 56. Any other type of tone-arm may, of course, readily be mounted on my tone-arm base by providing the proper securing means.

The device may be used with substantially any type of telephonic reproducer or receiver and as the electrical details of such device are

not material to the present invention they are not described. The mode of mounting the telephonic reproducer may be briefly indicated. In Fig. 4 is shown one type of such reproducer which comprises a base 58 supporting the constituent diaphragm and electro-magnetic parts (not shown). Base 58 fits into the integral socket 20 therefor in the casting and rests upon the base thereof to which it is attached by screws 59, the connection being rendered sound tight by an interposed compressible gasket 60 pressed into a corresponding annular depression in the casting as shown. The base 58 is enclosed in a cover piece 61 telescoped thereover and in turn secured to the base by screws 62. As shown, the telephonic element and its socket are inclined forward for attractiveness of appearance to conform with the forward inclination of the dial 32 and of the tone-arm, A.

In Fig. 9, is shown an alternative mount for a telephonic reproducer. In this embodiment the electro-magnetic diaphragm 63 is rested upon a gasket 64 in the socket of the support base and an internally threaded ring 65 is superposed over the rim of the diaphragm and clamped thereon by a plurality of screws 66 threaded into the casting. The case 67 of the reproducer which includes the pole pieces 68 and coils (not shown) has an attachment flange 69 to be threaded into the ring 65 and obviously adjustable thereby to regulate the gap between the pole pieces 68 and the diaphragm 63. In Fig. 10 the gasket 64, the diaphragm 63, and the clamping ring 65 are shown in dropped perspective. A corrugated spring ring 70 is also shown superposed over the clamping ring to react against the case member 67 and maintain the threaded parts against coming loose from adjusted position.

Assuming the instrument is to be installed on an already completed phonograph of familiar type not primarily intended for radio use, the ordinary tone-arm base (not shown) is merely removed, and the unit U shown in Fig. 1 is substituted therefor, the valve outlet 18 being brought into registry with aperture 14 in the motor board and screws applied through apertures 16, if desired, to attach the block to the motor board. The tone-arm removed from the replaced tone-arm base may now be applied at the socket 19 therefor in the manner previously described, the bracket 42 or 51 being previously attached to the block depending on whether the type of tone-arm shown in Fig. 7 or that of Fig. 8 is employed. The installation is now complete.

For phonograph use the sound box stylus is set upon the record in the usual manner and the knob 21 is turned so that the pointer 31 extends toward the side of the dial marked "Record." When the pointer is

5 moved to the extreme position the valve port 36 is brought into full registry with the valve case port 37 from the phonograph tone-arm. The phonograph will now function in exactly the same manner as theretofore. The sound vibrations from the tone-arm are conveyed through the passage 25 which preferably diverges slightly and the wave front advances in a continuous and unobstructed curved path along the arcuate web 35 of the valve into the amplifier throat.

10 By setting the valve pointer 31 in any intermediate position between that indicated as off and the extreme of the scale at the record side of the dial, the valve passage may be throttled to a variable extent so that my unit affords an efficient tone modifier to reduce the volume emitted by the phonograph.

20 In order to cause the instrument to perform from the telephonic reproducer in order to function, for instance, as a radio loud speaker the knob 21 is merely turned so that its pointer 31 extends at the side of the dial marked "Radio". When at the extreme of its scale it affords a fully open connection as shown in Fig. 3 from the telephonic reproducer into the amplifier. In this relation it will be seen that there is provided a continuous long diverging passageway from the telephonic unit through the casting unit advancing along the continuously curved wall determined by the valve web, and thence directly into the throat of the amplifier. Leakage of sound is avoided and the superior tone qualities of the highly developed phonograph amplifier are utilized to their full advantage for radio reproduction. Moreover, when the knob is moved to a position at the side marked "Radio" and between the ends of the scale, the passage is throttled down and thus the volume in radio reproduction may be cut down independently of the electrical adjustments of the receiving set. To avoid leakage from between the unit and the motor board, I prefer as shown in Fig. 5 to provide a yielding, preferably a rubber ring 71 in a corresponding groove about the valve in the lower face of the unit which ring is compressed by the weight thereof when resting on legs 24 and affords a sound tight communication to the motor board aperture by reason of the weight of the unit, even if the unit is not screwed to the motor board.

55 In all settings of the valve, communication between the undesired conduit and the amplifying horn is effectually shut off, and the compact and staunch construction of the entire device renders this shut off condition entirely soundproof, leakage being prevented by the valve 33. In no position of the valve is there ever any intercommunication between both conduits. The movement of the valve from one extreme position to the other necessitates a movement through a "zero" position at which time communication be-

tween both conduits is effectually shut off from the outlet 18. Moreover, the rotary valve, is sufficiently tight in its case to preclude any rattling or setting up of vibrations of its own, and leakage or interference which may attend the use of flap or disc or spring actuated valves for this purpose, is avoided.

70 My valve arrangement, whereby there is eliminated for the extreme as well as for all intermediate settings thereof, the disturbing effect of vibrations originating at the diaphragm of one of the reproducers and impinging on the other is claimed by me as of more general application to sound reproducers other than that specifically shown in the drawing.

80 It will be understood that although in a preferred construction I mount the tone-arm at one side of the valve knob and the independent reproducer at the other side thereof, my invention is not limited to such arrangement. For instance, in a phonograph apparatus wherein the tone-arm is mounted at the corner of the motor board, it might be preferable to position the valve knob at the corner and to construct the conduits at such angles as would bring their ends to positions along the adjacent walls of the phonograph cabinet. It will also be understood that the conduits may extend in other relative directions, depending upon the particular apparatus with which the unit is to be used.

85 The complete unit, while intended to be used with the amplifier of a phonograph, operates with substantial volume even when disconnected from the amplifier, to deliver directly into the room past the rim of opening 18. It is preferred, however, to employ the unit in the relation shown and described.

90 It will be understood that while the invention has a preferred application for operation at will either from a phonographic or a telephonic reproducer, it may be used to advantage in relations in which either of two reproducers of the same type are connected through a common amplifier and the principle of the invention may be carried forward for selectively connecting any one of three or more sources of sound, to speak through a common amplifier.

115 As many changes could be made in the above construction, and many apparently widely different embodiments of this invention could be made without departing from the scope thereof, it is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

I claim:—

1. A unit for attachment in lieu of the tone arm base upon the motorboard of a phonograph, said unit comprising a support having an opening in its lower face registering with the amplifier inlet in the motorboard, said

support constituting a base for the tone arm mounted thereon and including a passageway therein from the tone arm to said opening, said support also mounting a telephonic reproducer and having a second passageway therein merging with said first passageway at said outlet aperture.

2. A device for use with phonograph apparatus which has an amplifying horn and an apertured motorboard thereover, said device comprising a unit mountable upon the motorboard over said aperture and having a pair of conduits terminating in a common chamber overlying said aperture, and a control valve in said chamber for optionally sealing either or both conduits from said aperture.

3. A unit for attachment in lieu of the tone arm base upon the motorboard of a phonograph, said unit comprising a support having an opening in its lower face registering with the amplifier inlet in the motorboard, said support constituting a base for a tone arm mounted thereon and including a passageway therein from the tone arm to said opening, said support also mounting a telephonic reproducer and having a second passageway therein merging with said first passageway at said opening, and a valve mounted in said support and accessible from the exterior thereof for interposing a barrier at will across either of said passageways.

4. A unit for application to the motorboard of a phonograph cabinet in lieu of the ordinary tone arm base, said unit comprising a base having an outlet in its lower face for registry with the corresponding aperture in the motorboard that leads to the amplifier, said base mounting a telephonic reproducer at one end thereof and including therein a passageway communicating with said reproducer at its upper and outer end, delivering into the outlet and diverging from the telephonic to the outlet end thereof, a tone arm pivoted upon the base at the other end thereof, a passageway through said base from said tone arm also delivering into the opening through the bottom of the base, and a valve supported in the base between the telephonic reproducer and the tone arm and having an operating member exposed above said base, and serving alternatively to shut off communication with the outlet from either the reproducer or the tone arm.

5. An article of the character described, comprising a support having means for carrying a tone arm, a valve adjusting knob and dial and a telephonic reproducer, said three elements arranged side by side on said support and in close contiguity, said support including a cylindrical valve case aligned with said dial, a cylindrical valve in said case and delivering through an opening in the face of said support opposite said dial, said support having therein an elongated passageway of volute form, for communication at its inlet

end with the telephonic reproducer and at its outlet end with the lateral wall of the valve case and diverging from its inlet to its outlet end, and a passage for communication from the tone arm through said support and also delivering into the cylindrical wall of said valve case, said valve having a lateral port therein to establish communication to an outlet in the end thereof, either from said tone arm or from said telephonic reproducer depending on the position of the valve, while shutting off communication from the other of said elements.

6. A unit adapted to be mounted on the motorboard of a phonograph in lieu of the usual tone arm base, said unit comprising a generally rectangular block having on the upper face and near one end thereof, mounting means for pivotally supporting a phonograph tone arm, and having near the other end thereof, mounting means for a telephonic reproducer, a valve knob and a dial therefor interposed between said two mounting means, said dial leaving small clearance with respect to said reproducer and tone arm mounts, a cylindrical valve case in said unit below said valve dial communicating through the lower face of said unit, a passage in said unit from said tone arm mount, communicating into a lateral port in said valve chamber, a passageway of greater length than the distance between the valve case and the telephone reproducer and extending in volute shape from the latter to a corresponding port in the former, and diverging continuously from its inlet to its outlet end, and a cylindrical valve connected to said valve knob and rotatable within said valve case, said valve having a port in the lateral wall thereof adapted to register with either of said valve case ports while the structure of the valve closes the other of said ports.

7. In a combined phonograph-radio apparatus, in combination, an amplifier, a phonograph reproducer, a telephonic reproducer, a stationary valve member, conduits from said reproducers to said amplifier, said conduits each including a stationary part delivering into a distinct port at said stationary valve member, a movable valve having a port adapted to register with either of said stationary ports, the distance along said valve case in the path of movement of said valve therein between the stationary ports thereof being of greater width than that of said valve port, whereby in all positions of said valve at least one of the reproducers is shut off from the amplifier.

8. In a phonograph-radio apparatus, in combination, an amplifier, a rotary valve associated with the inlet end thereof for the communication thereto at will of vibrations either from a phonograph or telephonic reproducer, said valve comprising a fixed case having distinct ports in the wall thereof

asymmetrically of the case and, affording passageways for vibrations from the respective reproducers, and a rotary valve fitting within said case and opening through an end thereof, an operating handle for said valve, said valve having a lateral port adapted to register with either of the ports in the valve case, said valve port of width no greater than the wall part between the adjacent edges of the case ports, and means limiting the rotary movement of said valve to confine the path of said valve port to the length of arc subtended by said case ports and the intervening wall portion of greater width.

9. The combination set forth in claim 8 in which the valve case ports are of width of the order of the diameter of the outlet end of the tone arm and the circumference of the valve case is only a little in excess of the combined arcuate widths of the valve case ports and of the intervening wall part of greater width.

10. In a phonograph-radio apparatus, in combination, an amplifier, a rotary valve associated with the inlet end thereof for communication thereto at will of vibrations either from a phonographic or a telephonic reproducer, said valve including a stationary case having ports in the lateral wall thereof, to which vibrations are delivered from the respective reproducers, said ports of substantially equal width, and spaced at one side by a width of wall subtending an arc greater than that of one of said ports and at the other side by a substantially lesser width, said rotary valve having a port in the wall thereof of width equal to that of the case ports and delivering through the end thereof into the amplifier, and means to limit the rotary displacement of said valve port through an arc limited at the ends of said case ports more remote from said intervening wall part, whereby said valve in no position of setting will establish communication between said two reproducers.

11. In a phonograph-radio apparatus, in combination, an amplifier, a telephonic reproducer and a phonographic reproducer, means for establishing communication at will from either of said elements to the throat of said amplifier, said means comprising a rotary valve including a stationary cylindrical case opening at its end into the throat of the amplifier, a pair of ports in the wall of said casing of equal width and communicating respectively with the telephonic and the phonographic reproducers, said ports spaced at one side by a width of wall subtending an arc greater than the width of either of said ports, and a rotary cylindrical valve member in said casing having a port in the side thereof of width substantially equal to that of said case ports, and means limiting the rotary displacement of said valve to prevent the valve

port from being displaced beyond registry with the case ports at the side opposite said width of wall, whereby said valve in each position will shut off communication from one or the other of said ports.

12. The combination set forth in claim 11 in which the valve has a flange at the upper end thereof, resting on the case and a segmental extension on said flange, the opposite ends of which are adapted to contact a stop lug secured in the case for limiting the rotary displacement of the valve.

13. In a phonograph-radio apparatus, in combination, an amplifier, a valve case circular in cross-section having an opening at the end thereof leading into the amplifier, a conduit to deliver from a phonograph reproducer and delivering into said valve case from one side and substantially radially thereof, a conduit to deliver from a telephonic reproducer and extending from the opposite side and delivering into said valve case substantially tangentially thereof, the valve case ends of said conduits determining ports in said case of equal dimensions closely contiguous to each other at one edge and separated at the other edges thereof, by a width of wall greater than the width of each of said ports, and a valve in said case having a port therein of width equal to that of said case ports, said port connected by a curved web to deliver through the lower open end of the valve into the throat of the amplifier.

14. A device for use with phonograph apparatus having an amplifying horn and an apertured motorboard thereover, said device comprising a unit mountable upon the motorboard over said aperture and having a cylindrical open-ended chamber overlying the aperture and a pair of conduits terminating in opposite walls of said chamber, and a cylindrical control valve in said chamber for optionally sealing either or both of said conduits from said aperture, said valve including a cylindrical wall portion having a peripheral flange supported over one end of said chamber, and a substantially concavo-convex web extending obliquely and transversely thereof.

15. In combination, a cabinet having an amplifier therein, a motorboard thereon having an aperture leading into the throat of the amplifier, a reproducer unit resting upon said motorboard and having an outlet in the lower face thereof registering with said motorboard aperture, said unit including a pair of passageways opening at the exterior thereof and merging at said outlet, a telephonic reproducer at the exposed end of one of said conduits, and a tone arm movably secured at the exposed end of the other of said conduits.

16. The combination with a phonograph, including a motorboard having an opening therein and an amplifier registering with and

connected to the underface of the motorboard about said opening, of a separable structure supported upon the motorboard, and including a tone arm and a telephone receiver, said structure having a pair of passageways therein, connected respectively with the tone arm and the receiver, and both communicating with the amplifier, and a common control member for both passageways mounted in the structure directly above the opening in the motorboard.

17. In combination, a cabinet having an amplifier therein, a motorboard thereon having an aperture leading into the throat of the amplifier, a reproducer unit resting upon said motorboard and having an outlet in the lower face thereof registering with said motorboard aperture, a valve dial at the upper face of said unit between the ends thereof, a stationary valve case below said dial, a valve therein, a tone arm socket on said unit closely adjacent said dial and at one side thereof, a socket on said unit for sustaining a telephonic reproducer, closely adjacent said dial and at the other side thereof, conduits in said unit extending from said tone arm mount and said telephonic reproducer socket respectively to deliver into lateral ports in said valve case, said valve having an arcuate web leading from a port in the lateral face thereof through the end thereof to deliver, depending upon its setting, from either the tone arm or the telephonic reproducer into the throat of the amplifier.

18. In combination, a cabinet having an amplifier therein, a motorboard thereon having an aperture leading into the throat of the amplifier, a reproducer unit resting upon said motorboard, said unit including a cylindrical valve therein, extending directly above said amplifier throat, and operable from the upper part of said unit, a telephonic reproducer contiguous to said valve at one side thereof, a tone arm mount contiguous to said valve at the other side thereof, said mount comprising a socket in the upper face of the unit, conduits within said unit extending therethrough to deliver into the valve case at ports in the side wall thereof, said valve having a port adapted to register wholly or in part with either of said case ports and delivering through the end thereof into the amplifier, the conduit from the telephone reproducer to the valve case extending in volute form and diverging from its inlet to its outlet end.

19. A device for use with phonograph apparatus, said device comprising a two-part unit including a case member having a flange adapted to rest on a phonograph motorboard, said case member having channels in the lower face thereof leading from openings near the opposite end, said case having a central opening therethrough into which said

channels lead at their inner ends, a false bottom or closure member within said case member having channels in the upper face thereof complementary to the grooves in the case member and forming conduits therewith and having a central aperture into which said channels merge, aligned with the central aperture in the case member to form a valve case, and means securing said closure or false bottom member to said casing member in close contact therewith about said conduit parts.

20. A device for use with phonograph apparatus having an amplifying horn and an apertured motorboard thereover, said device comprising a unit mountable upon the motorboard over said aperture and having a pair of conduits terminating in a common cylindrical chamber overlying said aperture, and a cylindrical control valve rotatably mounted in said chamber for optionally sealing either or both of said conduits from said aperture, said valve comprising a cylindrical wall portion, a substantially spherical web extending diagonally between opposite sides of the wall, and an integral axial control shaft carried by said web.

21. A device for use with phonograph apparatus having an amplifying horn and an apertured motorboard thereover, said device comprising a unit mountable upon the motorboard over said aperture and having a pair of conduits terminating in a common chamber overlying said aperture, said chamber having a circular opening adapted to register with said aperture, and a resilient ring carried about said circular opening and sustaining the weight of said unit to render sound-tight the connection of said unit to said apertured motorboard.

22. In a radio accessory for a phonograph, a unit to be mounted on top of a motorboard in lieu of the tone arm base and including a telephonic receiver, said unit protruding by a substantial height above the motorboard, a tone arm movably secured thereon having its lower end at a substantial distance above the level of the motorboard, said tone arm including a sound box, the mounting axle of said tone arm being inclined forward from the vertical to compensate for the elevated position thereof, in order to cause the stylus thereof to engage the record at substantially the same angle as it would, were the tone arm mounted on an ordinary tone arm base.

23. In a radio accessory for a phonograph, a unit to be mounted on top of a phonograph in lieu of the tone arm base and including a telephonic receiver, said unit protruding by a substantial height above the motorboard, a tone arm removably secured upon the unit, having its lower end at a substantial distance above the level of the motorboard, said tone

arm including a sound box, the mounting axis of said tone arm being inclined forward from the vertical to compensate for the elevated position thereof, in order to cause the stylus thereof to engage the record at substantially the same angle as it would, were the tone arm mounted on an ordinary tone arm base, the mounting axis of the tone arm being at a distance from the turntable shaft equal to that of the stylus from said axis. 10

Signed at New York city, in the county of New York and State of New York, this 29th day of September, A. D. 1925.

MAXIMILIAN WEIL.