

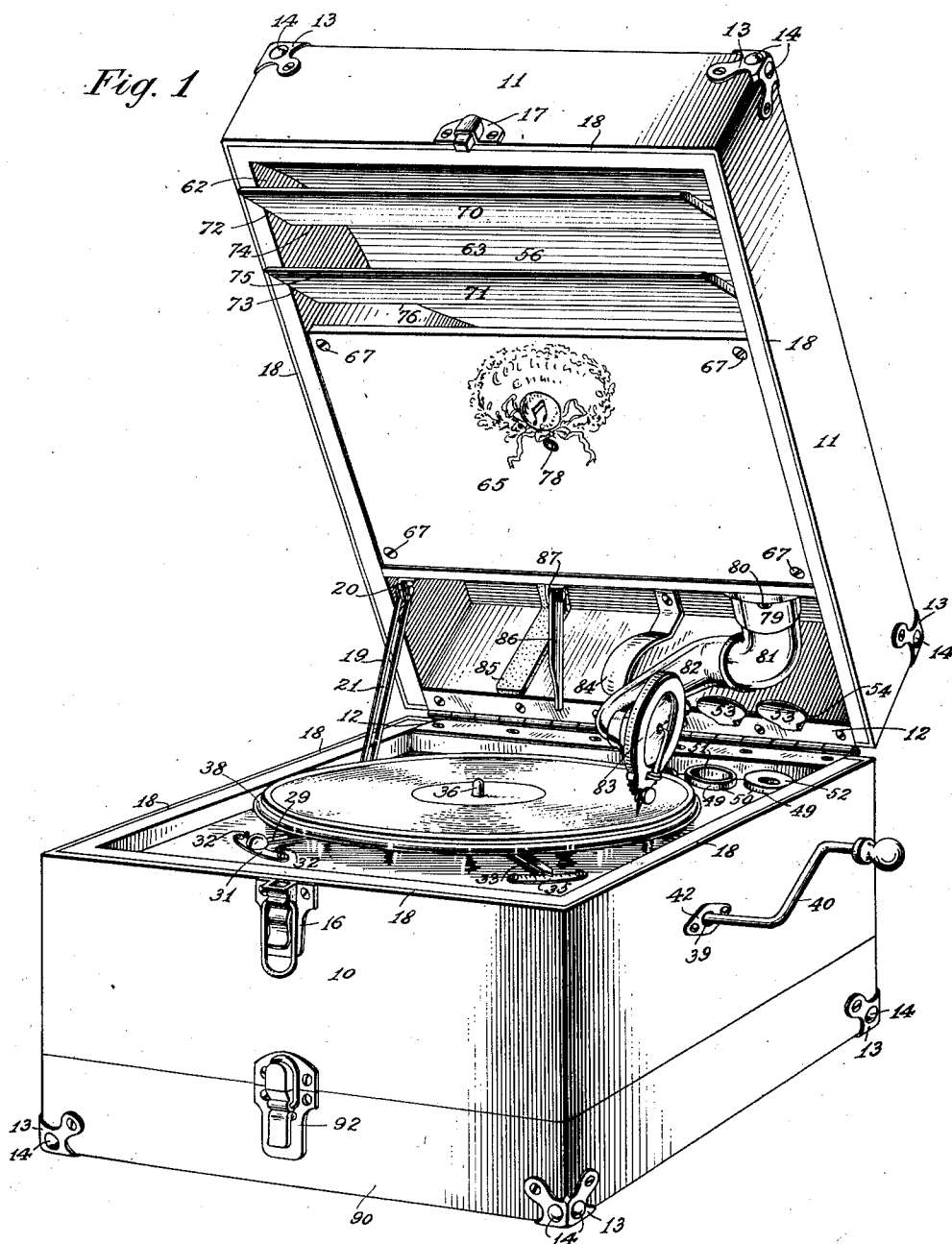
July 21, 1925.

1,546,931

F. C. HINCKLEY
CABINETED PHONOGRAPH

Filed April 8, 1922

3 Sheets-Sheet 1



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Frank C. Hinckley
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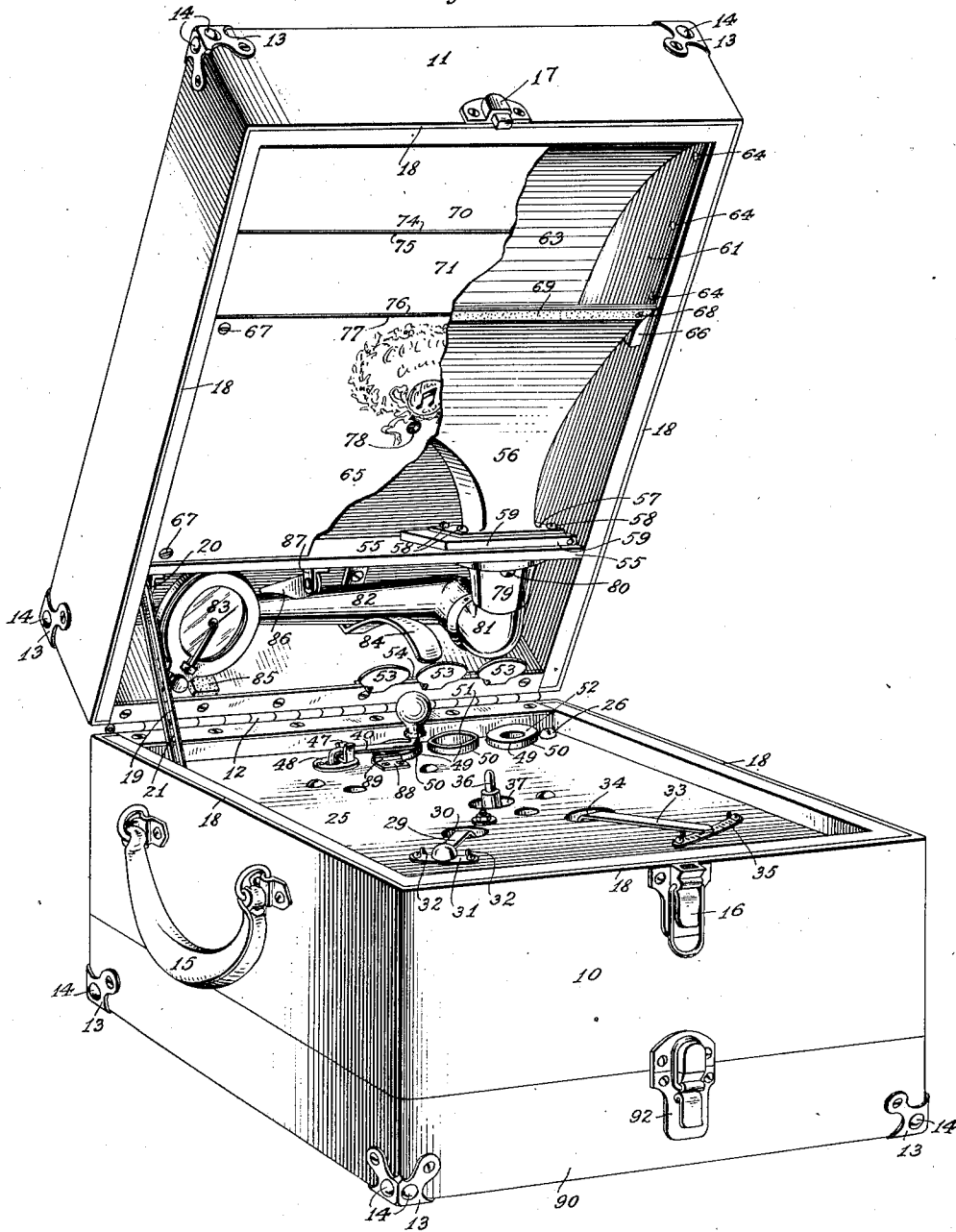
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Fig. 2



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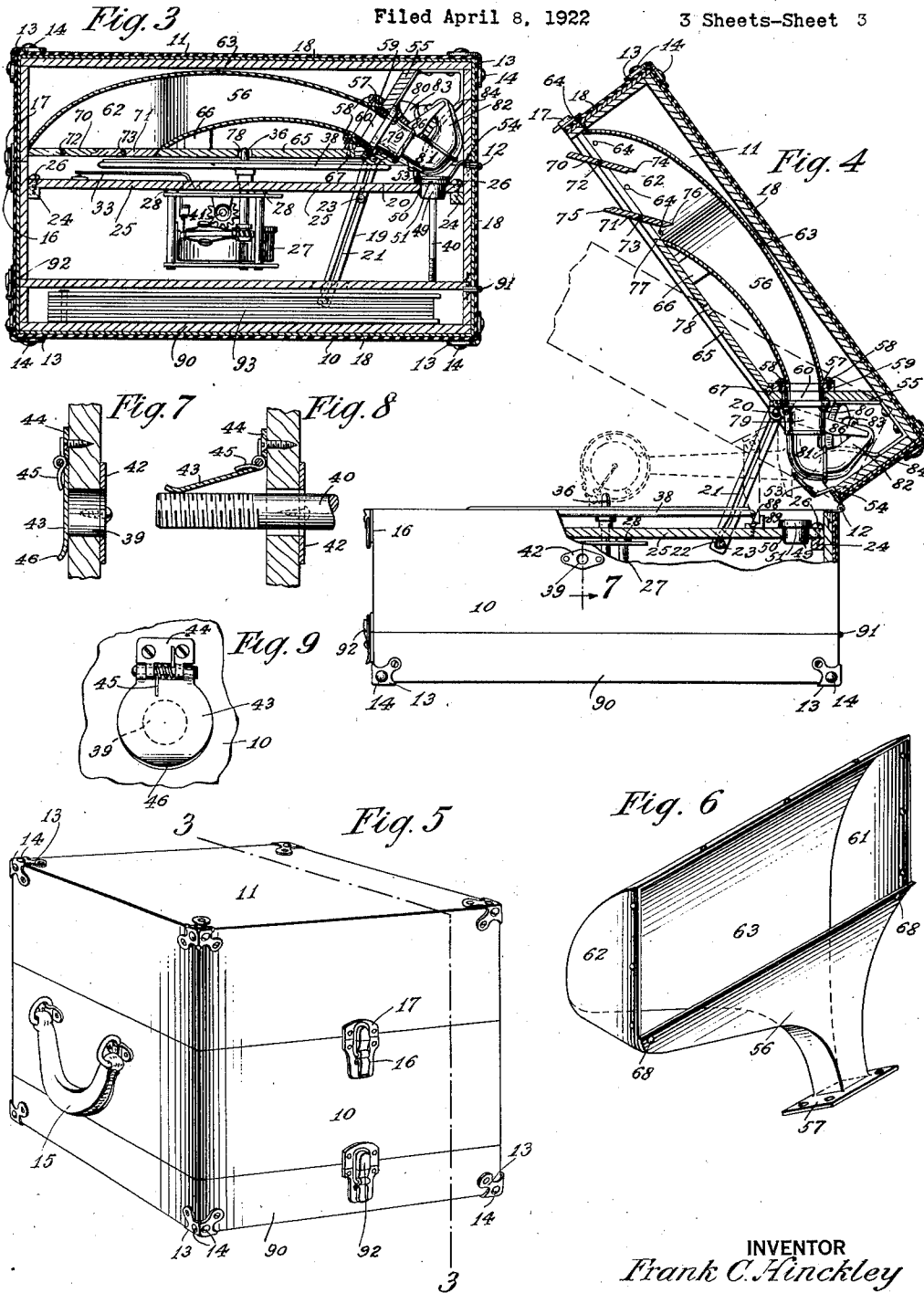
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3 Sheets-Sheet 3



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UNITED STATES PATENT OFFICE.

FRANK C. HINCKLEY, OF STRATFORD, CONNECTICUT, ASSIGNOR, BY MESNE ASSIGNMENTS, TO COLUMBIA PHONOGRAPH COMPANY, INC., A CORPORATION OF NEW YORK.

CABINETED PHONOGRAPH.

Application filed April 8, 1922. Serial No. 550,776.

To all whom it may concern:

Be it known that I, FRANK C. HINCKLEY, a citizen of the United States, and a resident of Stratford, county of Fairfield, and State of Connecticut, have invented certain new and useful Improvements in Cabineted Phonographs, of which the following, taken in connection with the accompanying drawings, is a specification.

This invention relates to improvements in phonographic machines, and particularly such a machine of the cabineted type. One of the principal objects is to provide a phonographic machine of such compact nature as to be very conveniently portable, and which will, at the same time, be highly efficient as regards its sound-reproducing characteristics. While the machine, according to the present invention, is intended for general use, as in the home, classroom or office, it is especially desirable for use out-of-doors, or for carrying upon trips, and to this end is so designed that it may be conveniently carried upon the running-board or placed in the luggage compartment of an automobile without danger of damaging the mechanism of the machine through jars or jolts encountered. It is, furthermore, moisture and dust proof, so that, when closed, it will effectively withstand the elements. The machine is designed to resemble an ordinary suitcase in appearance and size, with a smooth, unbroken, outer surface, without unseemly or conspicuous projections or projecting apparatus of any kind extending through any portion of it; and it can be carried with the same facility as a suitcase.

An important object of the invention is to provide an amplifier of improved design; disposed in the hinged lid or cover of the cabinet, opening wholly within the cabinet, and combining with the lid and tone-arm supported thereby to produce a cooperative sound-reproducing mechanism, which is only operative when the lid or cover is in raised position, and which, in such position of the lid, will produce, amplify and direct the sound so as to obtain faithful, full and clear reproduction.

A further object is to provide sound-con-

trolling means for the purpose of controlling the direction or volume of the sound, such means being capable of adjustment during the playing of a record, and being positioned entirely within the cabinet.

It is also an object to so direct the sound emitted from the horn, that it will flood over the point of reproduction, thereby rendering inaudible any surface or other mechanical and extraneous sounds incident to reproduction.

A still further object is to provide a tone-arm mounting which will permit the tone-arm to be swung into and out of operative position without the necessity for adjustment, detachment of parts, or, in fact, any operation other than the mere swinging of the arm from its operative to its inoperative position. In the operative playing position, the tone-arm is free to swing upon horizontal and vertical axes; and the permanent connection of the tone-arm to the sound-amplifier is such that a continuously smooth and unbroken sound-passage is provided and maintained. In its inoperative position, the tone-arm is compactly disposed in a recess of the lid and is securely held therein against accidental displacement.

Another important feature consists in providing automatic safety means adapted to prevent closure of the lid while the parts are in operative position, so that there is no possibility of the reproducing parts or the record becoming damaged by the accidental or inadvertent closure of the lid thereon. The safety means is such that, in order to close the lid, it is compulsory that the tone-arm be placed in its inoperative position. In such position the lid may be freely closed without impediment or damage. It is also an object to provide such a safety means which will function as an automatic lid support.

Still another object is to provide receptacles for new and used needles, and cover means therefor which will automatically open and close them as the lid is raised and lowered.

A further object is to provide a cabinet in which a number of records may be con-

veniently stored, and which may be readily removed when desired.

Finally, an object is to provide an improved mounting and enclosure for the motor, which will be thoroughly dust-proof and will enable the motor to be conveniently exposed for adjustment or oiling when desired.

The device, as a whole, presents a highly attractive appearance in both its operative and inoperative positions—the outer surface in the latter position being entirely unbroken, except for the division between the base, the lid, and the record compartment. The weights are so distributed that it will be most convenient for carrying; and all movable parts are effectively held against movement or rattling.

With the above and other objects in view, as may hereinafter appear, an embodiment of the invention is shown in the accompanying drawings, and this embodiment will now be more fully described with reference thereto, and the invention finally pointed out in claims.

In the drawings—

Figure 1 is a perspective view showing the machine with the lid or cover raised and in operative position with the sound-controlling means open, the sound-reproducer being engaged with the record upon the turntable—this view showing the winding side of the cabinet with the winding crank in place.

Fig. 2 is a perspective view with parts broken away to show the construction and mounting of the sound-amplifier, the tone-arm being disposed in its inoperative position, and the turn-table being removed for the purpose of exposing the motor-board and projecting parts therebeneath,—this view also showing the carrying side of the cabinet with the handle.

Fig. 3 is a vertical sectional view, taken lengthwise of the cabinet through the tone-arm connection,—3—3 of Fig. 5—and showing the same in its closed, inoperative position.

Fig. 4 is a similar view, the base being partly in elevation, and showing, in full lines, the cover in its full raised position, and the tone-arm in its inoperative position; and showing in dotted lines the playing position of the tone-arm and the cover partially lowered, and in which partially lowered position the safety device functions in the manner also shown by dotted lines.

Fig. 5 is a perspective view, showing the cabinet closed, and ready to be carried.

Fig. 6 is a perspective view of the sound-amplifier horn detached from the cabinet.

Fig. 7 is an enlarged sectional view along the line 7 of Fig. 4 and showing the dust-cap for the winding crank aperture, this figure showing the cap closed upon the aperture.

Fig. 8 is a similar view and showing the crank-handle within the aperture, and the cap raised.

Fig. 9 is a front elevation of the closure cap.

Similar reference characters indicate corresponding parts throughout the several figures of the drawings.

In the preferred embodiment of the invention disclosed herein, the cabinet comprises two parts,—a base 10, and a cover 11 connected by a piano-hinge 12—the tone-arm and amplifying means being carried by the lid, while the motor and turn-table are carried by the base in a manner to be presently more fully described. At each corner of the cabinet, there are provided corner plates 13 adapted to reinforce the corner construction, and having bosses 14 thereon for supporting the flat surfaces of the cabinet out of contact with the supporting surface. A handle 15 is secured to one side of the base of the cabinet, as shown, and at the front side, there is provided a hasp comprising a portion 16 secured to the base, and a cooperating portion 17 secured to the lid. The exterior surface of the cabinet is preferably provided with a suitable protective covering 18 of leather, fibre or other wear-resistive material. A lid-supporting member 19 is hingedly secured to the interior of the cover at 20, and is provided with an elongated slot 21, having a notched portion 22 (Fig. 4) at its lower end adapted to cooperate with a pin or projection 23 secured to the base in such manner that it will support the lid in a given raised position. The parts so far described constitute the cabinet or container proper. While the several details described have been found desirable and preferable, it will be understood that these may be varied within wide range.

Within the base of the cabinet and spaced from the upper edge thereof, there are provided at each end cleats 24 (Fig. 3), upon which is supported a motor-board 25 detachably secured by screws 26. The motor 27, which may be of any suitable type, but preferably, of course, of light weight, is suspended from the motor-board and is secured to the under side by bolts 28. The start and stop lever 29 (Figs. 1 and 2) extends through an opening 30 in the motor-board, and at its end is disposed above a plate 31 provided with limiting stops 32, while the speed indicating lever 33 extends through an opening 34 of the motor-board, also in the position shown, and has its pointed end disposed above a scale-plate 35.

The turn-table shaft 36 projects upwardly through an opening 37 in the motor-board and supports the turn-table 38 (Figs. 1, 3 and 4). The upper surface of the turn-table is preferably slightly above the upper edge of the base part 10; as indicated more

clearly in Figs. 3 and 4, the purpose of this being to permit the playing of a 12" record where the interior dimensions of the cabinet might otherwise be so small as to prevent such use.

An opening 39 for the winding crank 40 is provided in the side of the cabinet in alignment with the winding shaft 41 of the motor, an escutcheon plate 42 surrounding the opening at its outer end. At its inner end, the opening 39 is adapted to be closed by a dust-cap 43 (Fig. 7) hingedly connected to a plate 44, and normally pressed into closed position by means of a spring 45. The end of the dust-cap is curved away from the inner surface of the cabinet, as at 46, so that it will not catch with the threaded end of the crank-handle as it is withdrawn. It will be understood that the cap is forced into open position by the insertion of the crank-handle, that it does not interfere in any way with the turning of the crank-handle, and automatically closes upon withdrawing the crank-handle. When not in use, the crank-handle is stored within the base, being inserted through an aperture provided in the motor-board 25, and held against movement by means of a spring clip 47 provided upon an escutcheon plate 48 positioned in this opening.

A plurality of needle-holding cups 49 are inserted in openings 50 provided in the motor-board, these cups being flanged, as at 51 (Figs. 3 and 4), and at least one of them being flanged inwardly at its upper side, as at 52 this cup being for used needles. In order to retain the cups in place and to prevent spilling of the needles therefrom, individual cover flaps 53 are provided upon the lid or cover 11, these flaps being formed integral with a strip 54 inserted beneath the piano-hinge 12 and secured by some of the same screws that secure the hinge. The flaps are preferably formed of spring metal and effectually close the cups and retain them in position when the lid or cover 11 is closed, as shown in Fig. 3.

Within the lid 11, there is secured a transversely disposed and inclined partition 55 spaced from the rear end of the lid, and so inclined that, in the raised position of the lid shown in Figs. 2 and 4, it will be disposed horizontally. At the upper side of this partition and within the lid, there is secured the sound-amplifying horn, and at the lower side and in communication therewith, there is supported the tone-arm and sound-box. The amplifying horn 56 is provided at its reduced or inlet end with a flanged plate or equivalent structure 57, disposed at the same inclination relative to the cover as the partition 55 and secured by screws 58 to an apertured block 59 surrounding the aperture 60 in the partition and disposed relatively near one side of the cover.

The amplifying horn is flared at one side to a relatively small extent, as at 61, terminating in a line parallel with the inner edge of the side of the cabinet, and at its other side is flared along an ogee curve to a relatively great extent, and terminating in a portion 62 disposed substantially parallel to the side of the lid and having its edge parallel and adjacent the edge of the side of the lid. The rear wall 63 of the horn flares rearwardly and in a continuous curve forwardly to the forward edge of the end of the lid, while the front wall is flared forwardly and terminates in parallel and spaced relation to the edge of the rear wall, thereby providing an enlarged outlet opening for the horn of rectangular shape and disposed in a plane parallel to the under side of the lid, and at an angle to the plane of the opening of more than ninety degrees. (See Fig. 6.) The horn proper, as shown in Fig. 6, is preferably constructed of sheet metal, although it may be constructed of wood or other material. In addition to being secured at its lower end by means of the screws 58, it is also secured at its upper end along the side edges and top edge of the horn opening by screws 64, engaged with the sides and end of the lid. These screws may be of any suitable number to secure the proper rigidity of the horn.

A cover-board 65 is mounted over the horn below the horn opening, the lower edge of the board resting upon the partition 55, while the upper edge is substantially in alignment with the lower edge of the horn opening. The cover-board rests at three corners upon cleats 66, and at its fourth corner upon the block 59, being secured by screws 67 provided at its corners and engaging respectively the block 59 and the lower cleat, and two tapped holes 68 (Fig. 6) provided in the front wall of the horn, so that by tightening upon these screws, the lower edge of the horn opening is drawn into close contact with the inner side of the cover-board. A strip of felt 69 (Fig. 2) is interposed between the horn and the cover-board.

A pair of tone-leaves 70 and 71 is mounted over the horn opening, each being pivotally mounted along their horizontal central axes, as at 72 and 73 (Figs. 3 and 4). The adjacent edges of the tone-leaves are beveled and overlap, as at 74 and 75, (Figs. 1 and 2), while the lower edge of the lower leaf is beveled, as at 76, to engage the upper beveled edge 77 of the cover-board 65. This construction permits the tone-leaves to be turned to any desired position to control and direct the escape of the sound waves, and allows them to assume an absolutely flush position with the cover-board 65 when closed. An aperture 78 is provided in the cover-board 65 substantially centrally there-

of, and is adapted in the closed position of the cabinet, as shown in Fig. 3, to be engaged by the projecting end of the turn-table spindle, the turn-table being thus retained in place by engagement of the cover-board with its upper surface.

The tone-arm is supported upon the under side of the partition 55, and comprises a flanged tubular base 79 (Fig. 2), secured to the partition by screws 80 engaging the block 59, and in direct communication with the opening 60 of the partition; a right angle elbow tube 81 pivotal in the base; and a tapered tube or arm 82 pivotally mounted in the elbow 81 and having a right angle bend adjacent the elbow, and a right angle bend adjacent its outer reduced terminal and to which terminal, the sound-box 83 is secured. This construction is such that the tone-arm is free to pivot upon both vertical and horizontal axes, as shown in Fig. 1. In the inoperative position of the tone-arm, it is disposed within the compartment or space beneath the partition 55, and is securely held therein by means of a spring tongue 84, this tongue being secured to the top of the lid, and being bent to form a recess and a resilient curved guiding and retaining portion, enabling the tone-arm to be swung into operative position by merely pulling it from the recess. The force of this movement is sufficient to depress the tongue. The tone-arm is swung from operative to inoperative position in a similar manner, being forced over the tongue, which is thus depressed sufficiently to permit it to move into place.

The horn outlet is so disposed, with relation to the turn-table, or point of reproduction, that the sounds emitted from the horn flood over the point of reproduction, thus rendering inaudible any surface or other mechanical and extraneous sounds incident to reproduction.

A protective strip 85, of leather, felt or other suitable material, is secured about the recess at the point engaged by the sound-box, to protect the surfaces of the cabinet and sound-box, and to provide a slightly yielding seat for the sound-box.

In order to prevent the accidental or inadvertent lowering of the lid, while the tone-arm is in operative position, and which, of course, would result in possible damage to the sound-box and record, a safety device is provided, consisting of a finger 86 (Fig. 2), pivotally connected to a lug 87, secured to the under side of the partition 55, and adapted to depend freely of its own weight in a vertical line in the raised position of the lid, and in the operative position of the tone-arm. Upon the motor-board 25, a small metal plate 88 is secured in such position that lowering of the lid from its normally raised position, when the

tone-arm with its sound-box is swung into operative position, will cause the end of the finger to engage the plate, thereby preventing further lowering of the lid beyond a given point at which it is known that the mechanism will not be damaged. This point is indicated by the dotted lines in Fig. 4. When the tone-arm is moved to inoperative position, however, it automatically moves the finger with it into the recess, and supports it in such position that it will not impede the lowering of the lid. This position is clearly shown in Figs. 2, 3, and 4.

The prop 86 is such that it can be employed as a lid support, instead of the support 19, and in such case, it will be of a length suitable to support the lid in its full, open position to permit the tone-arm to operate. This type of lid-support is automatic in operation, inasmuch as movement of the tone-arm into its operative position will allow the prop to fall by gravity into its lid-supporting position, while movement of the tone-arm into its inoperative position within the recess of the lid—after first slightly raising the lid to release the end of the prop from the lug 89—moves the prop into inoperative position to permit lowering of the lid.

A flange 89, along the rear edge of the plate 88, (Figs. 2 and 4), prevents the finger from slipping off the plate and thereby allowing the lid to be lowered. The pivot point of the finger, being slightly forward of its reduced end, causes the pressure of the lid to pivotally move the finger rearwardly against the flange 89 upon engagement with the plate 88.

The lower portion of the base of the cabinet is, in the present embodiment, in the form of a record compartment 90, hingedly connected to the rear edge of the base at one end, as at 91, (Figs. 3 and 4), and adapted to be fastened at its other end by means of a hasp 92.

A record album or container 93, adapted to receive a plurality of records,—say, 6 to 12—is provided in the compartment 90.

The present invention provides a portable phonograph, which is most convenient to carry, and at the same time will be highly efficient as a sound-reproducing instrument, possessing all of the essential characteristics necessary and desirable to perfect sound-reproduction. Without sacrificing any of these essential characteristics, the various parts of the machine are so designed that they may be compactly arranged to facilitate carrying, and this without the necessity of assembling any of the parts when it is desired to play the machine. Its novel features represent improvements, both from the standpoint of sound-reproduction and portability.

While the invention is illustrated in the drawings and described with particularity, it is especially understood that it is not restricted to the form shown or to any of the specific details thereof, as, obviously, changes in construction and design can be made without departing from the invention and without affecting the different sub-combinations thereof.

Moreover, certain features of the invention are capable of use without other features. Such changes are, of course, contemplated by the invention and would not constitute any departure therefrom, as defined in the appended claims.

Having described the invention, what is claimed is:—

1. In a phonograph, a cabinet comprising a base and a lid, a sound-reproducing means and means movable into operative and inoperative positions by the sound-reproducing means to prevent closure of the lid while the sound-reproducing means is in operative position.

2. In a phonograph, a cabinet comprising a base and a lid, sound-reproducing means adapted to be placed in operative and inoperative positions, and means to prevent closure of the lid while the sound-reproducing means is in operative position, said means being rendered inoperative by the placing of the sound-reproducing means in inoperative position.

3. In a phonograph, a cabinet comprising a base and a lid, a support for the lid, sound-reproducing means, means mounting the sound-reproducing means for movement to operative and inoperative positions, and a hinged member depending from the lid and adapted to prevent closing of the lid only during the time the sound-reproducing means is in operative position.

4. In a phonograph, a cabinet comprising a base and a lid, sound-reproducing means, means mounting the sound-reproducing means for movement to operative and inoperative positions, and a hinged member depending from the lid and adapted to prevent closing of the lid in the operative position of the sound-reproducing means, and adapted to be so moved by the placing of the sound-reproducing means in inoperative position as to permit the lid to be closed.

5. In a phonograph, a cabinet comprising a base and a lid, a support for the lid, sound-reproducing means, means mounting the sound-reproducing means for movement to operative and inoperative positions, and a hinged member depending from the lid in its open position, and in the operative position of the sound-reproducing means, and adapted to prevent closing of the lid while the sound-reproducing means is in said operative position.

6. In a phonograph, a cabinet comprising

a base and a lid, a support for the lid, a tone-arm compartment provided in the lid, a tone-arm pivotally mounted within said compartment so as to be movable into and out of said compartment into inoperative and operative positions, means adapted to prevent closing of the lid when the tone-arm is moved out of said compartment into operative position, and adapted to permit lowering of the lid when the tone-arm is moved into the compartment.

7. In a phonograph, a cabinet comprising a base and a lid, a support for the lid, sound-reproducing means, means mounting the sound-reproducing means for movement to operative and inoperative positions, a hinged member depending from the lid in the operative position of the sound-reproducing means, and an abutment on the base adapted to be engaged by the hinged member to prevent collapse of the latter, said hinged member preventing closing of the lid in the operative position of the sound-reproducing means.

8. In a phonograph, a cabinet comprising a base and a lid, a hinged member depending from the lid in the operative position of the sound-reproducing means, the lower end of the member being disposed in offset relation to the pivotal axis whereby downward pressure of the lid tends to move the member about its pivot, and an abutment on the base which is engaged by the end of said hinged member to prevent collapse thereof.

9. In a phonograph, a cabinet comprising a base and a hinged lid, means for supporting the hinged lid in an inclined open position, a partition diagonally disposed in said lid and having an opening therethrough, and being adapted to assume a horizontal position in the open inclined position of the lid, a sound-amplifier mounted in the lid and communicating with said opening at one side of the partition, and sound-reproducing means in communication with said opening at the other side of the partition.

10. In a phonograph, a cabinet comprising a base and a lid, a motor in the base, a turn-table rotated by the motor, a record centering pin projecting above the turn-table, sound-reproducing means, said lid having an opening at its inner side adapted to be engaged by said centering pin when the lid is in closed position.

11. In combination with a phonograph having a tone-arm connected to a lid, a lid-support comprising a prop member hinged to the lid and adapted to be held in inoperative position when the tone-arm is swung within the lid, and to drop by gravity to operative position when the tone-arm is in operative position.

12. In a phonograph, a base, a lid, an amplifier movable with the lid, a tone-arm

mounted on the base and adapted to occupy an inoperative position within the lid, a prop means carried by the lid and held in inoperative position when the tone-arm is in inoperative position, and the prop means pivoted so as to move into operative position when the tone-arm is in operative position. 10

a lid-support means automatically moved to operative and inoperative positions as the tone-arm is moved to operative and inoperative positions respectively.

Signed at Bridgeport, in the county of Fairfield, and State of Connecticut, this 7th day of April, A. D. 1922.

FRANK C. HINCKLEY.