Form No. 76.

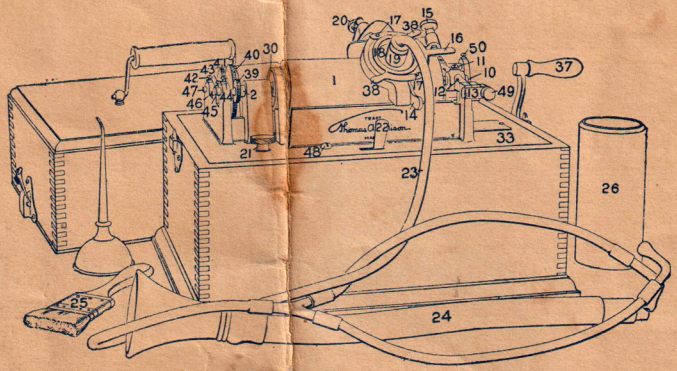
Directions for

Setting Up and Operating

The Edison STANDARD Phonograph

NATIONAL PHONOGRAPH COMPANY,
EDISON LABORATORY,
ORANGE, NEW JERSEY.

EDISON STANDARD PHONOGRAPH.



INDEX OF PARTS.

1. Brass Mandrel, to hold wax cylinder (Assembled with Cylinder Shaft.)
2. Cylinder Shaft. (Assembled with Brass Mandrel.)
3. Feed Spring.
4. Feed Nut.
5. Feed Nut Screw.
6. Back Rod.
7. Drive Belt.
8. Feed Nut Spring Screw.
9. Speaker Arm.
10. Swinging-arm Center.
11. Swinging-arm Center Set Screw.
12. Swinging Arm.
13. Locking Spring.
14. Speaker Arm Lift Lever.
15. Speaker Adjusting Screw.
16. Speaker Lever.
17. Speaker Clamp Screw.
18. Speaker.
19. Plate Tube.
20. Knife Bar Adjusting Screw.
21. Governor Adjusting Screw.
22. Starting Lever.
23. Hearing Tube.
24. Speaking Tube.
25. Chip Brush.
26. Wax Cylinder, or Blank.
27. Swing Arm Spring Washer.
28. Swing Arm Sprint Washer Screw.
29. Chip Chute Thumb Screw.
30. Cylinder Shaft Pulley.
31. Feed Screw Cover.
32. Feed Screw Cover Screw.
33. Top Plate.
34. Speaker Arm Lift Screw.
35. Straight Edge Roller.
36. Straight Edge Roller Screw.
37. Winding Crank.
38. Speaker Clamps.
39. Cylinder Shaft Gear.
40. Intermediate Gear.
41. Feed Screw Gear.
42. Feed Screw Center Set Screw.
43. Intermediate Gear Stud Set Screw.
44. Cylinder Shaft Center Set Screw.
45. Cylinder Shaft Center.
46. Intermediate Gear Stud.
47. Feed Screw Center.
48. Frame Holding Screw.
49. Locking Spring Knob.
50. Back Rod Set Screw.

In ordering supply, renewal or repair parts, take pains to mention the number of your machine, as it will prevent error in selecting the parts.

INSTRUCTIONS FOR OPERATING

The Edison Standard Phonograph.

Before winding or starting the machine, see that all working parts are free, particularly that there is no dirt or packing in the gear wheels, and that all set sc ews are tight. Sometimes these screws work loose from the shock of travel.

The Phonograph, like every other good mechanism, should be clean and free from dust. Instructions as to oiling will be found later in these directions.

Having lifted machine out of its box and removed wrapping from mechanism, oiled the gears and centers, and set the instrument in its box, the operator is ready to begin. Care should be observed in withdrawing the temporary rubber fastening which holds the speaker weight (Speaker 18), not to break the delicate glass diaphragm or detach the metal connections which join it to the sapphire recording-and-reproducing bar.

See that knife adjusting screw (20) is screwed entirely back, or until the chip box rests against the casting of the speaker arm, as it always should do except when shaving. This screw controls the shaving knife, and draws it away or forces its cutting edge against the wax cylinder.

As a precautionary measure, it is well to look to the belt, the shaft (2), and the speaker arm, before starting the machine. All machines are completely adjusted before shipment from the factory. They will sometimes, though not often, become disarranged in transit. The tension of the belt should be moderate.

The cylinder shaft (2) turns on centers (10 and 45), between which it should run easily. If centers are too tight they will bind the shaft, while if too loose, the end shake will destroy the accuracy of the reproduction. There should be no end-shake here. A simple test is to throw off the belt with the hand, and see if the shaft will spin freely. The cylinder shaft centers are regulated by set screws (11 and 44), as shown in the drawing. The speaker arm or carriage of the machine should work free on the back rod.

All bearings should be oiled, as mentioned before, and to obtain the best results from the motor the gears must be kept clean, particularly the fine-toothed gear which engages the governor pinion. The governor disc (the flat metal plate against which the horse shoe rocker works) must be oiled occasionally. If necessary to adjust the governor, see to it that there is a slight play between centers. If too tight there, regulation is impaired and efficiency is diminished.

Under no circumstances should the governor disc, described above, touch the adjacent gear.

Now place the weight-limiting-screw in position, then turn the speaker so that it rests on the tube-plate as shown in Fig 1, and allow the stratena to dry for at least an hour.

INDEX OF PARTS.

A.—Speaker-Clamp-Ring.
B.—Tube-Plate.
C.—Limiting-Screw.
D.—Diaphragm.
E.—Hinge Pin.
F.—Cross-Head.
G.—Rubber Gasket.
H.—Reproducer Arm.
I.—Reproducing Arm Pin.
J.—Sapphire.
K.—Speaker Lever.
L.—Link
W.—Speaker Weight.

GREAT CARE SHOULD BE TAKEN NOT TO USE THE SPEAKER UNTIL THE STRATENA HAS BECOME THOROUGHLY DRY.

These same instructions apply in the adjustment of the Edison Automatic Reproducer, the Edison Standard Speaker, the Edison Recorder.

A WORD ABOUT BELTS.

The slipping of the drive belt on the main shaft pulley is due to the following conditions:

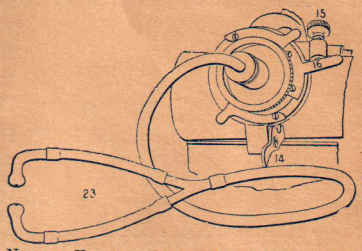
An Oily Belt is the most frequent cause. When oiling a Phonograph, absolutely no oil should be put on the surface of the pulley or on the belt. When this happens it not only makes the belt slip but softens the leather, thus causing it to stretch very easily.

A Loose Belt.—In spite of great care used in selecting material, a belt is sometimes cut from a stretchy part of the leather , or, again (as above noted), oil will cause the best belt to stretch very quickly. With ordinary care a belt will last a year without the need of renewal. A belt should not be renewed or shortened under the impression that it is too loose, until the idler pulley (which is placed on every phonograph for the very purpose of taking up the slack in a belt) touches, or nearly touches, the drive wheel inside of the mechanism.

To Shorten a Belt —Dampen it at the point where it is already joined. When the ends separate, dry thoroughly. Apply stratena on the parts to be joined, overlap a quarter to a half an inch as may be necessary and press firmly together for an hour or two. If the belt is oily it will be impossible to make the cement stick. Buy a new one.

TO REPRODUCE.

Raise lift lever (14) to its highest point. Push speaker lever (16) to its highest point, against adjusting screw (15). Open swing arm (12) wide. Slip the wax cylinder (26), beveled end foremost, upon the tapering brass mandrel (1), and press it firmly, but not too forcibly, into place. Close swing arm. Now place hearing tube (23), or horn, on the speaker plate tube (19), slide speaker arm to point where record appears to begin, and drop lift lever (14), after having first thrown starting lever (22) to the left.



NOTE:—For numbers not shown on this cut, refer to cut of complete machine on Page 1.

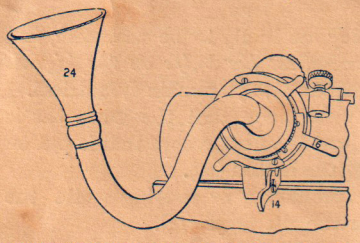
With the Automatic Speaker the following adjustment is unnecessary, as the reproducer ball adjusts itself to the track or groove made by the stylus. With the Standard Speaker (a combination speaker equipped with both recording and reproducing sapphires), it sometimes occurs that clear reproduction is not at first obtained. To obviate this, unscrew the adjusting screw (15) until its point disappears in the lug, and while listening press the speaker lever (16) upward with the thumb of the right hand, and with the first and second fingers of the same hand turn the adjusting screw (15) slowly down until you can hear the record distinctly. This adjustment will bring the reproducer ball into the groove of the record.

TO RECORD.

The machine is at rest. Open speaker clamps (38) and insert recorder with its speaker lever (16) pressed up against lug. Press up lift lever (14). Open swing arm (12) wide.

Slip the wax cylinder (26), beveled end foremost, upon the tapering brass mandrel (1), and press it firmly, but not too forcibly, into place. Close the swing arm.

Raise the speaker arm from the straight edge upon which its rests in front, and slide to the left until directly over the beveled end of the cylinder, or the point at which you wish the record to commence. Again lower it to straight edge. Everything is now ready to record.



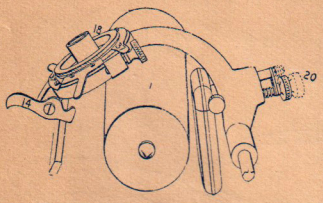
NOTE:—For numbers not shown on this cut, refer to cut of complete machine, Page 1.

Start the machine by pushing the starting lever (22) to the left. The machine is now in motion. Place speaking tube or horn upon the plate tube (19) of the speaker, lower lift lever (14) as far as possible and commence recording. In speaking to the instrument use a clear voice, and articulate well. Do not force the voice or speak too loud, if best results are sought.

A fine white shaving will appear on the surface of the cylinder where it has been passed over by the stylus. Remove the horn or speaking tube; raise the speaker arm, and, throwing it back as far as possible, dust off the shavings, by holding the camel's-hair chip brush against the revolving cylinder, and passing it very slowly from left to right.

SHAVING CYLINDERS.

Every Edison Phonograph is equipped with a simple device for shaving off or smoothing blank cylinders, which preparation is necessary before a blank can be used for recording. Here are the instructions for operating the turning rest. Machine is at rest. Wax cylinder firmly set upon mandrel. Hearing tube or horn removed. Fasten back the speaker weight by passing rubber band around lower end of the weight and over the speaker arm, or, what is better still, remove speaker (18).



Lower the speaker arm about over the center of the cylinder, by dropping lift lever (14). Hold the end of the arm down firmly with the thumb and forefinger of the left hand, while with the same fingers of the right, screw down the button (20) which controls the knife bar. This will bring the sapphire shaving knife to the surface of the wax. As the depth of the cut to be taken is very slight indeed, the knife must be set very gently into the wax, as shallowly as possible. The machine is still at rest, with lift lever (14) down. Now raise speaker arm, slide it back to the extreme left, and start the Phonograph.

The knife should always be allowed to pass over the entire length of the surface of the cylinder, otherwise there will remain a portion of the wax which is thicker than the rest, and if a new adjustment of the knife be made to the right of the end of former cut, it will not touch the surface to the left of it. If adjusted to the left, on reaching that part which was before unshaved the knife will take too deep a chip, and tear instead of cutting the wax.

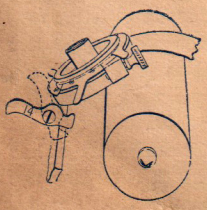
If the chip box becomes clogged, it will prevent shaving. Keep the chip box clean by removing it from knife bar, by unscrewing thumb screw, taking off cap and emptying chips.

If the slot in the face of the chip box, through which the sapphire knife projects and into which the chips or shavings feed, becomes clogged, apply the camel's-hair chip brush or a wooden tooth pick. Never touch the cutting edge of the sapphire with metal or any tool.

The thinnest possible shaving will leave the smoothest surface. Shave several times in preference to a single deep cut.

New blank cylinders require trueing, as they are likely to be eccentric, and do not have prepared surfaces. In trueing these, *set the knife on the highest part*, if any, of the blank. When once trued, blanks always remain cylindrical.

When the shaving of a cylinder is completed, see that the knife bar is screwed back away from the cylinder, or it will cut the next record that is put on the machine. This is managed by manipulating the button (20).



To stop recording, reproducing or shaving while the machine is running raise the lift lever (14).

OILING.

Apply oil sparingly but thoroughly to the following parts: Back-rod, feed screw, cylinder shaft centers (10 and 45), feed screw centers (47), roller on the straight edge, all motor shafts at their bearings, all gears, arbor on which main spring turns, idler pulley, occasionally, where tension spring holds it, governor disc, occasionally, winding shaft, if necessary.

No oil should be permitted to get on the belt, and oil must not be smeared on the machine, as it will catch dust and make trouble.

When the oil on the gear teeth gets black and dirty, wash it off with benzine before putting on new oil, which apply sparingly. Use best Phonograph oil, to avoid gumming. Above all, keep the machine clean. No mechanism will work perfectly unless free from grit.

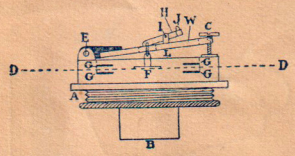
HOW TO REPAIR A SPEAKER.

Unscrew the speaker-clamp-ring A and remove the tube-plate B. On top of the glass diaphragm you will find a thin rubber ring G G (called a gasket). If this gasket has become hard, do not use it again. Take it out. Then remove the glass diaphragm.

On the underside of the diaphragm D D is another gasket G G. If this has not become hard it can be used again, otherwise throw it away.

See that a rubber gasket is always placed under the diaphragm. Now put the diaphragm into place on top of the gasket, being careful that it does not touch the sides of the cup. This is important. Now place another gasket on top of the glass, adjust tube-plate in position and tighten the speaker-clamp-ring, which should not be screwed in too tight or yet left too loose. If too tight the diaphragm ceases to be sensitive. If too loose the record will whistle or blast. There is a happy medium which you must discover for yourself.

FIG. 1.

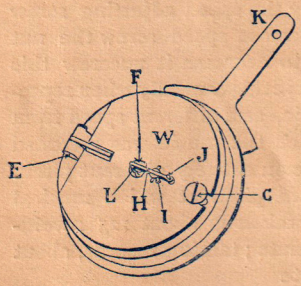


Unscrew the speaker-weight-limiting-screw C, allowing the speaker-weight W to swing freely on the hinge pin E. Do not allow the weight to touch the glass. If this is done it may crack the glass.

The cross-head F (a small flat metal disc) hangs from a tiny link L from the reproducer arm H. If the glass diaphragm has been broken, the cross-head should be scraped so that no cement or bits of broken glass remain on it. It should also be washed with a clean cloth so that no dirt or oil remains on it. Benzine will do this thoroughly.

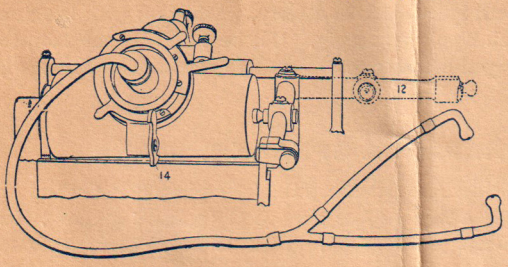
If you are changing the diaphragm (substituting either a thinner or thicker glass for the one in use) the stratena which cements the cross-head to the glass may be melted by applying heat to it. The safest way is to heat the head of a nail fairly hot and press it gradually against the glass under the cross-head. It may crack the glass but it is the surest way of detaching the cross-head. The new glass to be substituted must also be cleaned thoroughly (preferably with benzine) as any oil or dirt on either the diaphragm or the cross-head makes it difficult to make a good joint with cement.

FIG. 2.



Dip the end of a match into the stratena and drop a very small drop in the center of the glass diaphragm. Lower the speaker-weight very, very slowly to the glass and then with the aid of a pin or some sharp pointed instrument, place the cross-head in position; pressing it firmly. A small wedge of paper under the sapphire point will serve this purpose very nicely.

TO PUT THE WAX CYLINDER ON OR TO REMOVE IT.



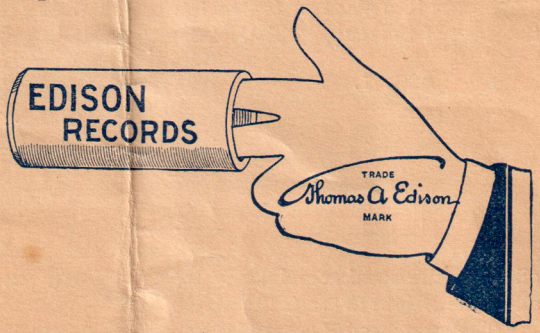
Open swing arm (12), raise lift lever (14), and slip the wax cylinder (26), beveled end foremost, upon tapering brass mandrel (1), handling cylinder as shown below.

NOTE: For numbers not shown on this cut refer to cut of complete machine on Page 1.

HANDLING THE CYLINDER.

The wax cylinder, which is somewhat brittle, should be handled gently at first, until the operator becomes practised.

Thrust the first and second finger of the right hand into the thick end of the cylinder, and hold it fast by spreading the fingers apart. Touching the outside surface of a prepared cylinder, or record as it is called, destroys the attractiveness and generally the value of such record.

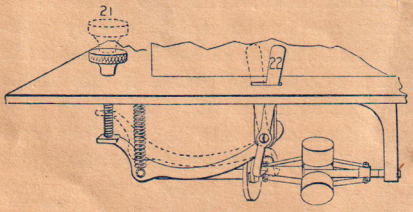


Cylinders should be kept in boxes or cabinets made for the purpose, which have perpendicular pegs at fixed distances to prevent cylinders from coming in contact with each other. Over these pegs they are placed beveled end down. Use the camel's-hair chip brush to remove chips and dust from the wax. Do not attempt to blow it off.

Do not leave the cylinder upon the brass mandrel (1) of the Phonograph for any length of time when the machine is not in use.

REGULATION OF SPEED.

The speed of the machine in revolutions of the main shaft per minute is regulated by the speed adjusting screw (21). To increase speed screw the nut down, and to decrease it unscrew this nut. Observe this carefully when reproducing music, as a different speed from that at which the music was recorded will produce an entirely different pitch. The standard pitch at which musical records are taken is about 125 revolutions per minute ; talking records, about 80 per minute.



To start or stop, and regulate speed, throw switch lever (22) to the right to stop and or to the left to start. Regulate speed by turning speed adjusting screw (21).