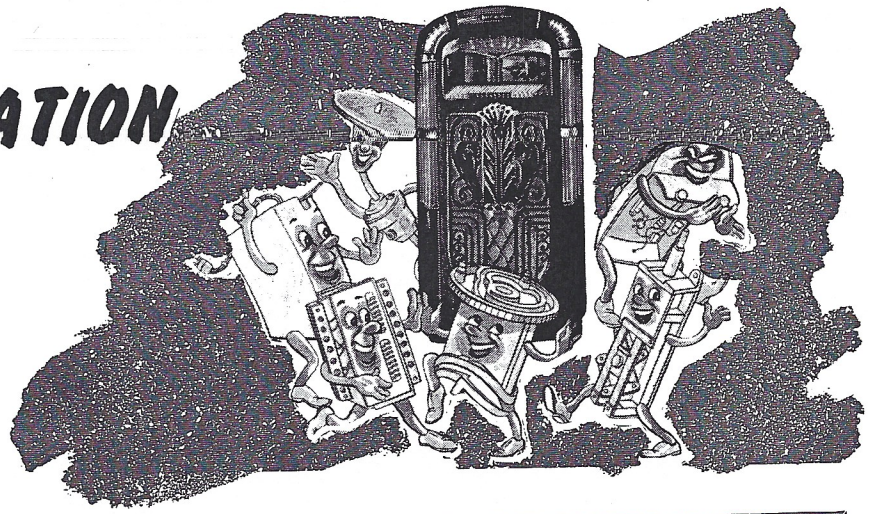
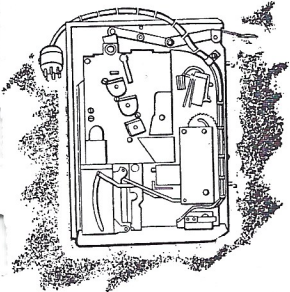


THE STEPS IN OPERATION OF THE ROCK-OLA PHONOGRAPH



As a Rock-Ola Service Specialist, your first problem in understanding the operation of the components which make up the Rock-Ola phonograph is to understand the operation of the unit as a whole. In this section, we are going to describe briefly the steps in operation from the time the customer drops his nickel in the slot until the phonograph shuts itself off. You will be able to see, in reading this section, how each part affects the other parts during the "cycle of operation" of the phonograph.

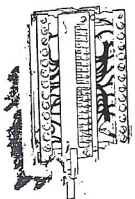
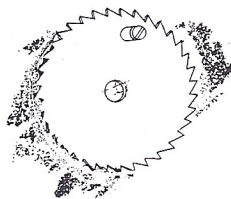
First Half-cycle—Starting The Record Play



The coin drops into the accumulator assembly, where slugs and bad coins are rejected. Good coins are directed to the proper coin lever. The coin rides down the coin lever and then drops off at the bottom, falling down into the coin box. The coin lever, as it is pushed down, allows the master ratchet wheel to move the proper number of teeth; one for a nickel, two for a dime, and, of course, five for a quarter.

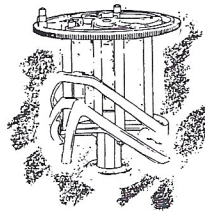
The action of the master ratchet wheel in turning allows the master switch to close, completing the credit circuit back to the 20 key switch. That means that a selection can be made.

When the button is pushed to make a selection, one of the twenty selector solenoids in the coil bank, the one corresponding to the button pushed, is energized. When a selector solenoid is energized it becomes



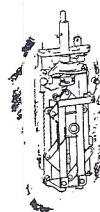
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magnetic and pulls "in" the plunger which runs through it. The plunger in its "out" position holds a brass key, called the selector key, and when the plunger is pulled in by the coil, that key is released. A spring pulls the key into the path of the index elevator. As the key is pulled in, a hook on the end of it pulls in the selector gate.

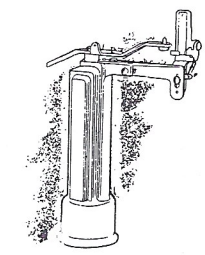
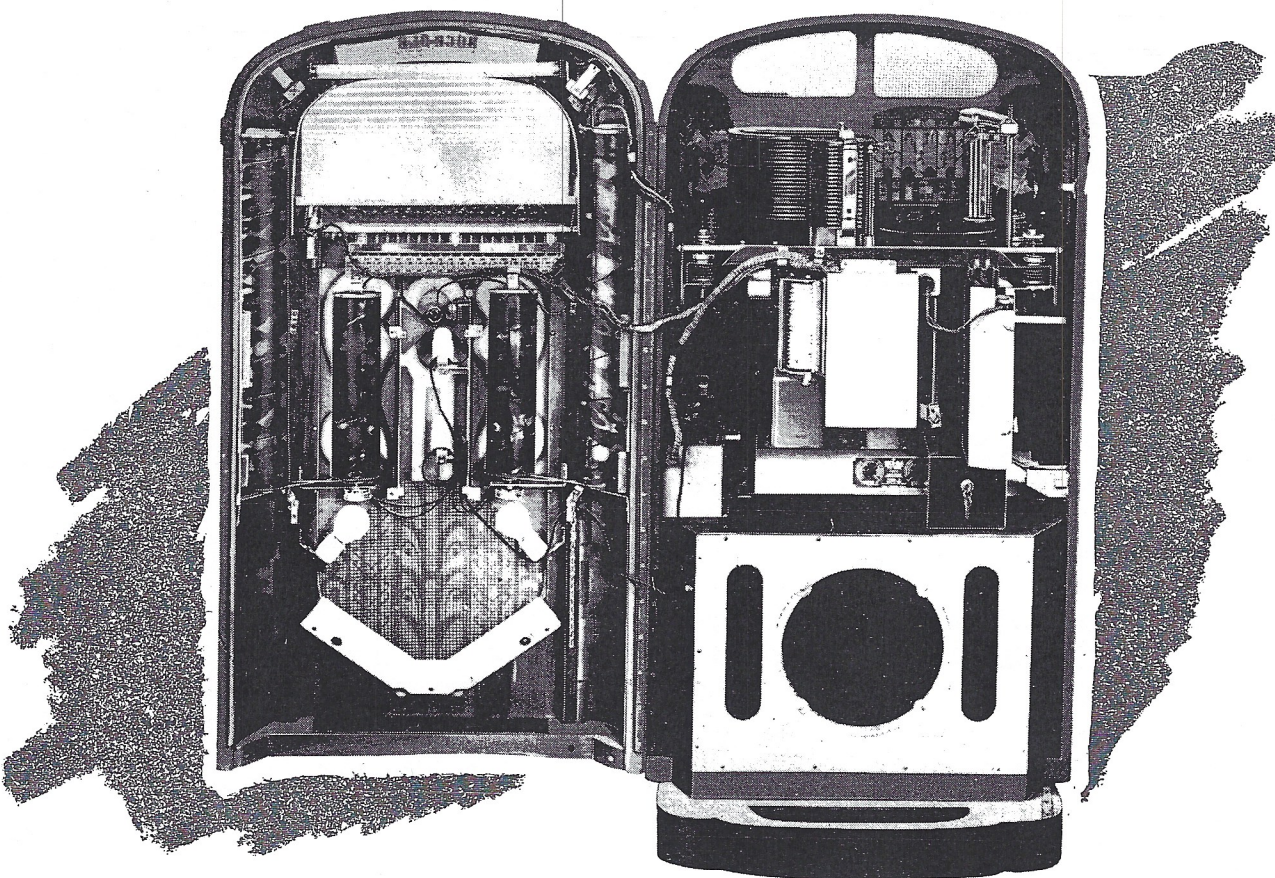


An extension on the bottom of the selector gate is pressed against a lever which closes a micro-switch and starts the power motor. The power motor is geared by a worm gear and

pulley to the main cam, so that when the power motor starts, the main cam begins to revolve. The main cam revolves until it has made one half revolution and then stops. During the time it makes that half revolution it does several things.

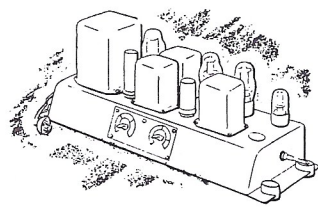
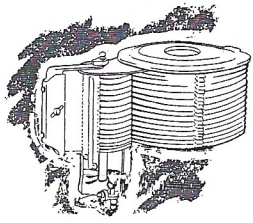


It allows the selector slide unit to fall until it rests on the index elevator, which rests on the selected key. The tray release dog is now in the correct position to unlock the proper tray.



The turning of the cam then operates the tray driver, bringing the tray out of the stack and over the turntable. The master cam at the same time raises the turntable which comes up through the record tray and picks up the record. When the turntable reaches the top, the edge of the record picks the tone arm up off its latch and the needle starts into the grooves of the record.

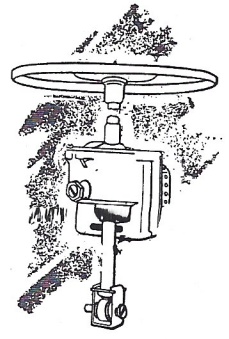
The small voltage from the pick-up is fed to the amplifier where it is built up so that it is strong enough to drive the speaker. That begins the play and completes the first half cycle of the phonograph. When the record has been played the mechanism must return to its original position so that it will be ready to make the next play.



**Second Half-cycle
—Resetting the
Phonograph**

At the base of the tone arm is a timing disc which is set so that when the tone arm reaches the center of the record, a lever slips into a notch on the disc. When that lever slips into the notch, it closes a micro-switch, starting the power motor.

When the power motor starts, it begins to turn the main cam again, and the cam makes another half-revolution bringing it back to the home position. As it turns, it lowers the turntable, operates the tray driver, returning the tray to the stack, and returns the selector slide to its top position again. That completes the second half cycle of the phonograph and all the components are now reset and ready to begin another play. The following sections of this book describe the operation of each of these parts in detail, and discuss probable troubles and their corrections.



THE ACCUMULATOR ASSEMBLY



The accumulator assembly collects the money, so you'll want to be sure that it is operating properly. Correct adjustment of this assembly is necessary to keep it accepting those coins and operating the phonograph, so check yourself with the information in this section before attempting any maintenance work on the accumulator.

How The Accumulator Assembly Operates

The coin which is put into the chute of the accumulator assembly falls down to the slug rejector where slugs and bad coins are thrown out. These bad coins are returned to a cup on the side of the machine. The good coins, nickels, dimes, and quarters, are directed to the proper coin lever through chutes.

When a coin reaches the end of the proper coin lever, its weight forces the lever down until it reaches the bottom where the coin falls off into the coin box. The lever is brought back up to its top position by the action of the coin lever springs.

The movement of the coin lever, as it is brought down by the weight of the coin, trips the escapement lever which allows the master ratchet wheel to slip around one tooth for each nickel put in the machine, two teeth for a dime and five teeth for a quarter. That is accomplished through the action of the escapement lever on the escapement pawl.

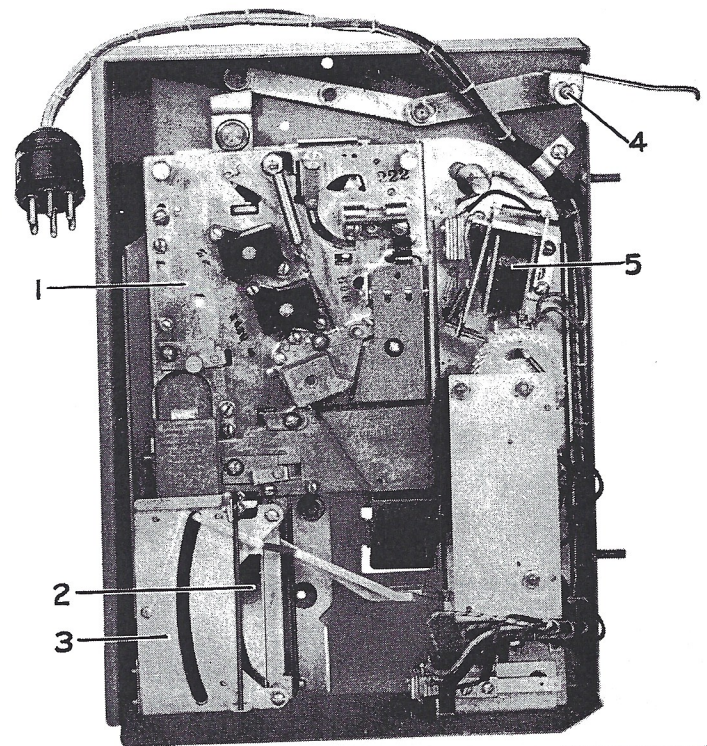
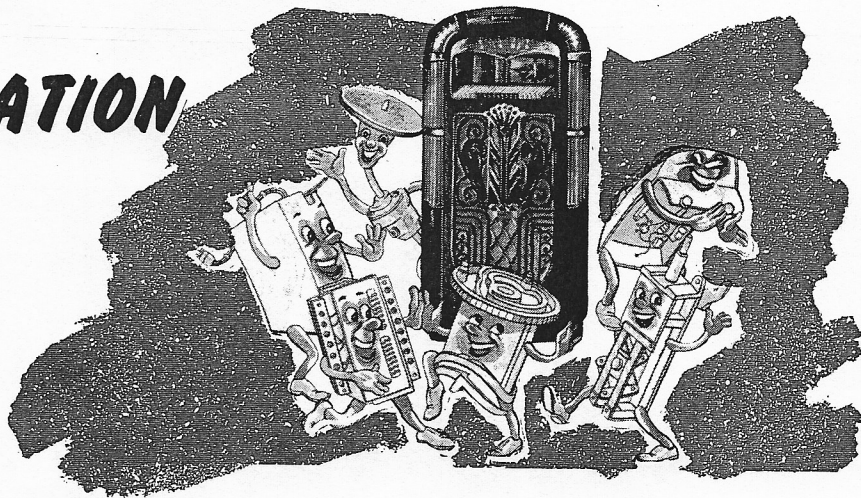


Fig. 1—Accumulator Assembly

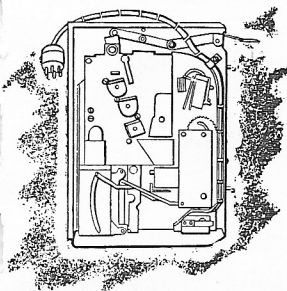
1. National slug rejector
2. 5c and 10c coin chute assembly
3. 25c coin chute assembly
4. Coin connecting link assembly
5. Coil and armature assembly

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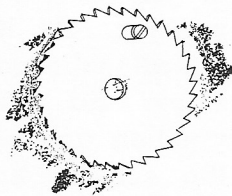
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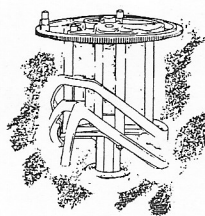
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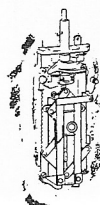


magnetic and pulls "in" the plunger which runs through it. The plunger in its "out" position holds a brass key, called the selector key, and when the plunger is pulled in by the coil, that key is released. A spring pulls the key into the path of the index elevator. As the key is pulled in, a hook on the end of it pulls in the selector gate.

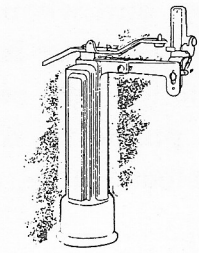
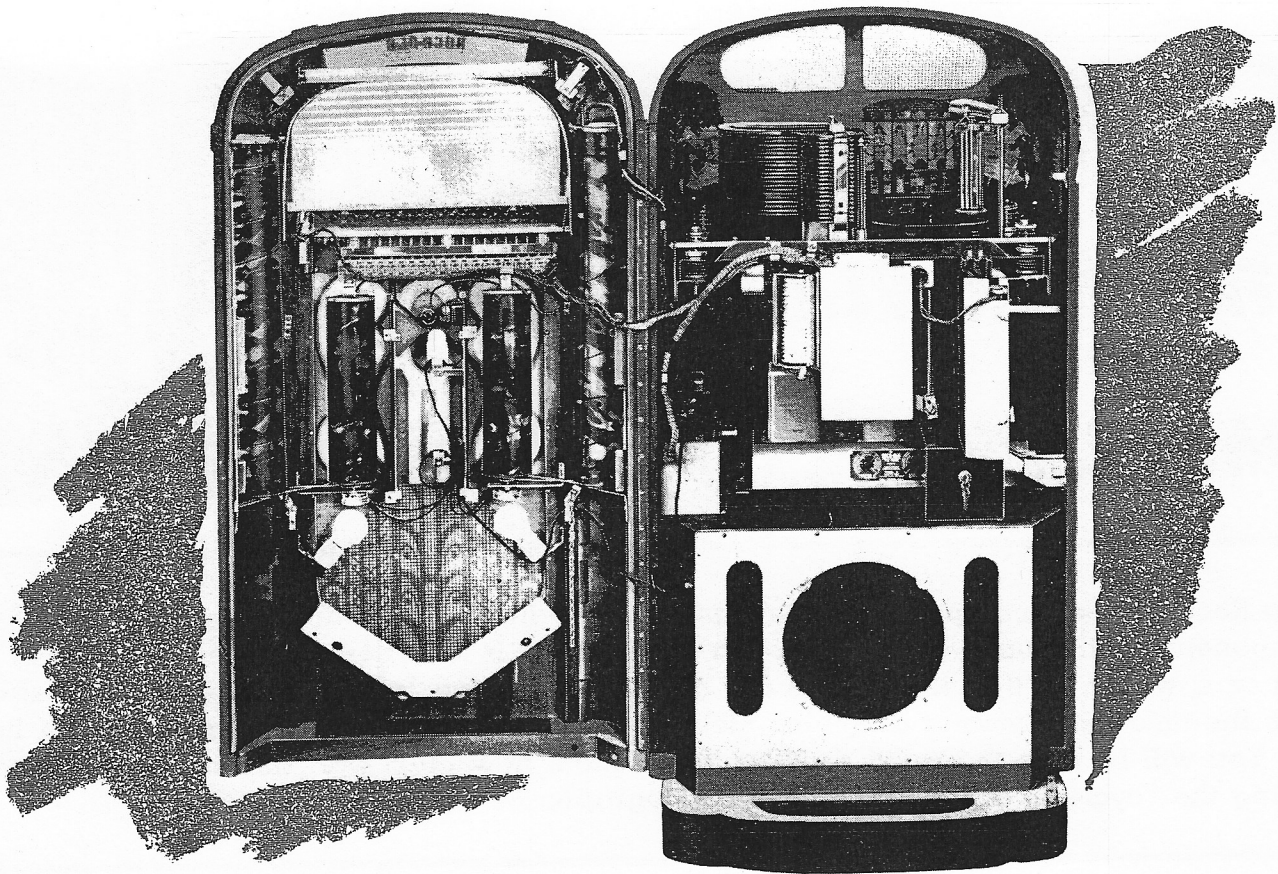


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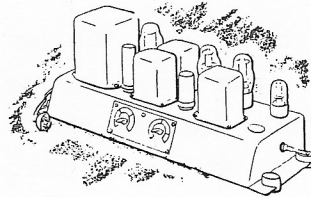
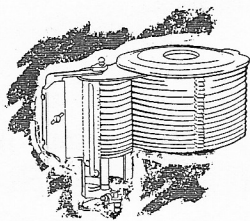


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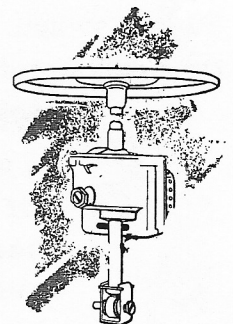
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Second Half-cycle —Resetting the Phonograph

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operation. At the same time, the blade switch energizes the reset coil in the interlock which again throws the interlock switch breaking the debit coil circuit which in turn breaks the reset coil circuit. That completes the electrical cycle of the accumulator assembly.

The action of the debit coil in cancelling credits from the master ratchet wheel is as follows:

When the selector button is pushed, current is allowed to flow through the debit relay. When that current flows, the armature of the debit coil becomes magnetized and pulls in the kicker plate. The edge of the kicker plate catches a tooth on the master ratchet wheel and kicks the wheel back a notch, cancelling one credit.

When the wheel has been kicked back to its starting position by the action of the debit coil and kicker plate, the fibre stud on the wheel is again pressing on the master switch blade, opening the circuit to the coil bank.

That completes one cycle of operation of the accumulator assembly. Correct operation of this assembly depends on proper adjustment of all the moving parts and synchronization of the relays which control it.

ADJUSTMENT OF THE ACCUMULATOR ASSEMBLY

■ 1. Coin levers

Adjust so that levers move freely up and down in slots. If the levers bind, bend them from the first elbow with long nose pliers until they are free.

■ 2. Master switch

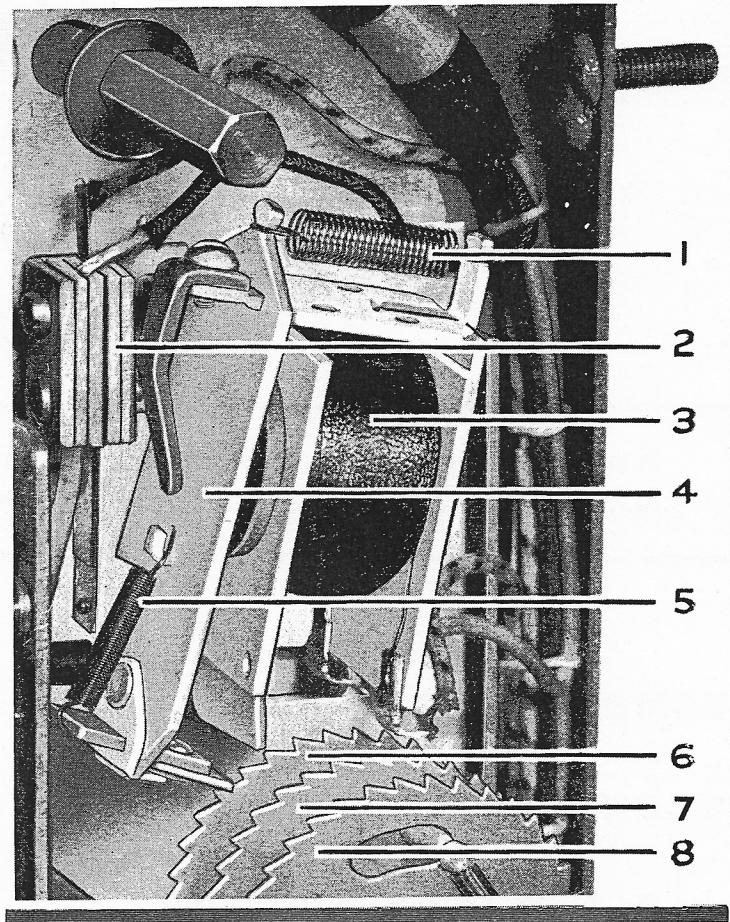
The master switch must be open when the last credit has been cancelled. If the switch is not opened by the stud on the ratchet wheel, adjust the switch blades until it opens.

■ 3. Debit kicker plate

The kicker plate on the debit relay must cancel one credit every time the coil is energized. It must be adjusted so that when the plate is pulled in by the pole-piece, it picks up one tooth and kicks it back and then comes up against the stop at the base of the debit coil. This adjustment can be made by moving the two "fingers" under the kicker plate so that only one tooth is kicked back and by bending the stop slightly to catch the kicker plate at the right instant.

■ 4. Debit blade switch

The blade switch located just to the left of the debit coil controls the energizing of the selector solenoid and also, through the reset coil, opens the circuit to the debit coil.



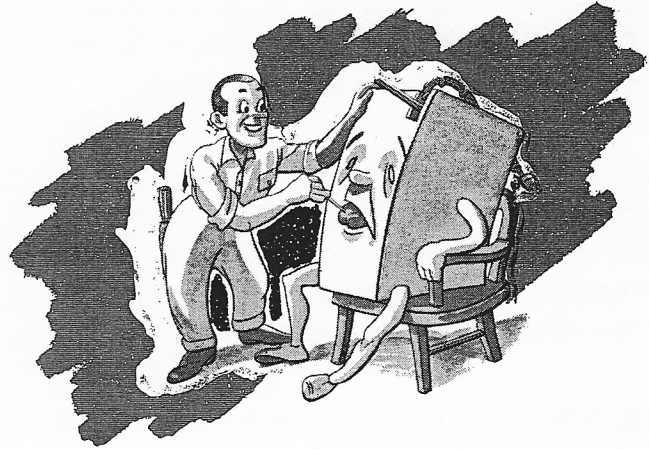
■ Fig. 5—Debit Relay

- | | |
|--------------------------|---------------------------------|
| 1. Coil spring | 6. 5c ratchet and hub assembly |
| 2. Blade switch | 7. 10c ratchet and hub assembly |
| 3. Debit coil | 8. 25c ratchet and hub assembly |
| 4. Armature and retainer | |
| 5. Tension spring | |

That means that the blade switch must make at the instant that the kicker plate cancels the credit. If the switch closes before the credit is cancelled, the debit coil will be de-energized before the credit is taken off the wheel, resulting in a play, but no cancel. If the credit is cancelled before the blade switch makes, there will be no play even though a credit is cancelled. This blade switch must be adjusted to make when the kicker plate is about 1/32 inch from the end of its stroke. The adjustment can be made by bending the blade of the switch slightly.

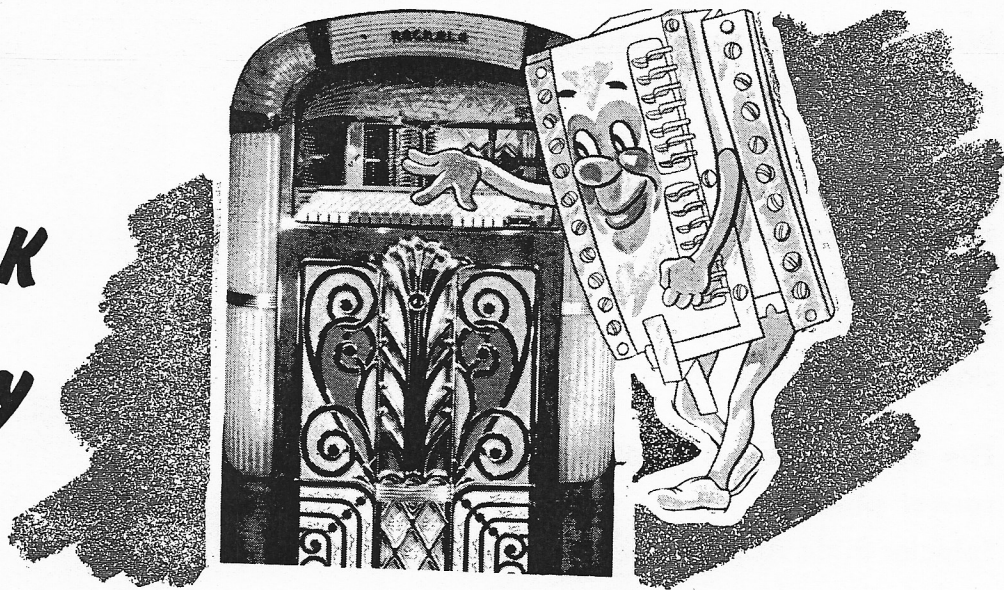
A new phonograph, when delivered, will be in proper adjustment. Do not attempt to readjust an accumulator assembly unless you are sure that the trouble is in the assembly.

SOME COMMON TROUBLES OF THE ACCUMULATOR ASSEMBLY



If your trouble is:	Look for:	Corrected by:
1. No credit established by dropping coin	Bent or binding coin lever Interference with levers of interlock wires Master switch open	Straightening lever or bending to free in slot. Move wires to eliminate interference Adjust switch blade
2. Two credits cancelled by debit coil (three or four plays for 25c)	Kicker-plate or stop out of adjustment Contacts not making properly in 20 key switch	Adjust kicker plate or stop Adjust contacts of 20 key switch on faulty key
3. Credit cancelled — no play	Debit blade switch making too late	Adjust switch blades
4. Play made—no credit cancelled	Debit blade switch making too soon	Adjust switch blades

THE COIL BANK ASSEMBLY



The function of the coil bank assembly is to release a selector key which will select the number that the customer wants. You want your cash customers to get the music they pay to hear, so you'll want to be sure that the coil bank assembly is operating properly. This section will help you to do that job.

How The Coil Bank Assembly Works

The coil bank is made up of a series of twenty solenoids, each one wired through a cable to one of the twenty selector buttons on the front door of the phonograph. When the circuit to the solenoids has been closed by the action of the main switch and interlock switch, one of the selector solenoids can be energized by pushing one of the selector buttons.

When a selector button is pushed, the solenoid in the coil bank corresponding to it is energized producing a magnetic field. The magnetism of the solenoid pulls in the plunger which runs through the center of it. When that plunger is pulled back, it releases one of the twenty selector keys which it has been holding locked in position.

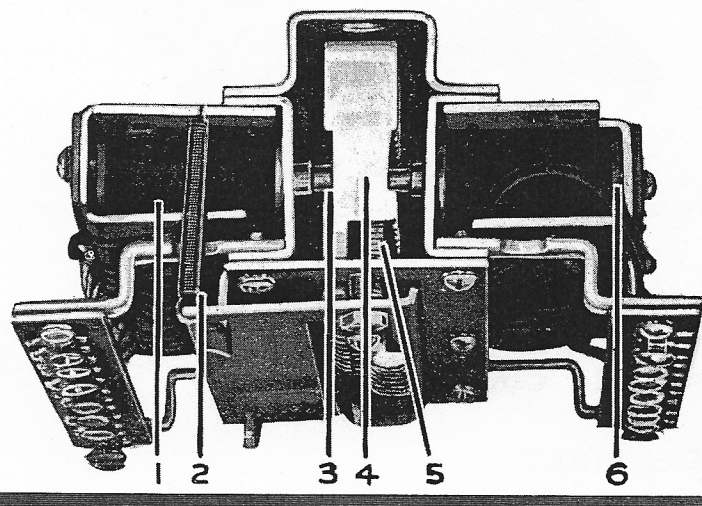


Fig. 6—Coil Bank Assembly (Top View)

- | | |
|-------------------------|------------------------|
| 1. Selector coil | 4. Selector key |
| 2. Selector gate spring | 5. Selector key spring |
| 3. Coil bank plunger | 6. Plunger spring |

If your trouble is:	Look for:	Corrected by:
1. No selection	Bent or binding keys	Bending keys to move freely in slot
2. Continuous operation	Plunger sticking in solenoid	Remove plunger and polish