

NOTE:

This is the
“ELECTRICAL SYSTEM” Chapter
of the
Wurlitzer Model 1100
Jukebox Manual

Page 25

was on a “Pull-Out” (Folded) sheets

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Electrical System

The Model 1100 schematic wiring diagram (see figure 22) shows the entire electrical system of the phonograph, including the coin selector mechanism, coin register mechanism, junction box, encore program selector and electric selector drum.

COIN SELECTOR MECHANISM

The 5, 10, and 25 cent coin selector mechanism has a jam proof common entrance for the three coins (see figure 19). The coin immediately encounters a weighing device which rejects light slugs and determines the paths for 5, 10, and 25 cent coins to pass through the mechanism (see figure 20). A wire stop takes out any slugs having a hole in the center, such as washers. The sizing gauge eliminates thick slugs. Steel slugs are rejected by the action of a wiping blade, moved by the linkage from the return key at the coin entrance. The coins are guided through, either against or past gauges, as determined by their speed, which is controlled by the action of the magnetic field exerted by permanent magnets.

The three paths of travel of the coins are normally intercepted by three pins on a coin return arm. Coins are thus returned until the phonograph has been "plugged-in" to energize the coin return solenoid.

COIN REGISTER MECHANISM

Both the coin selector mechanism and the coin register mechanism are mounted on a common bracket inside of the speaker baffle. They are installed with quick action spring latches that position the two units without strain. The action of the coin register mechanism is described in detail under Electric Selector System, in this Section. Figure 21 shows all the switches, relays, etc. on the coin register mechanism and figure 22 illustrates its wiring.

JUNCTION BOX

The junction box consists of an assembly of receptacles for the phonograph motor, the

selector drum, the encore program selector and lighting circuits, the stepper, the coin register mechanism, the sound system, the trip coil, the cabinet light transformer, and a line cord with plug (see figure 22). It includes the power transformer for operation of the 24V and 5½V circuits of the phonograph and lighting system, and the power supply for terminal panel "A" of the stepper. Both the line fuse and a protecting fuse for the 24V circuit are provided in this unit. A service switch and a line switch have been installed for convenience. The electric counter is mounted on the front of the junction box for ease of reading.

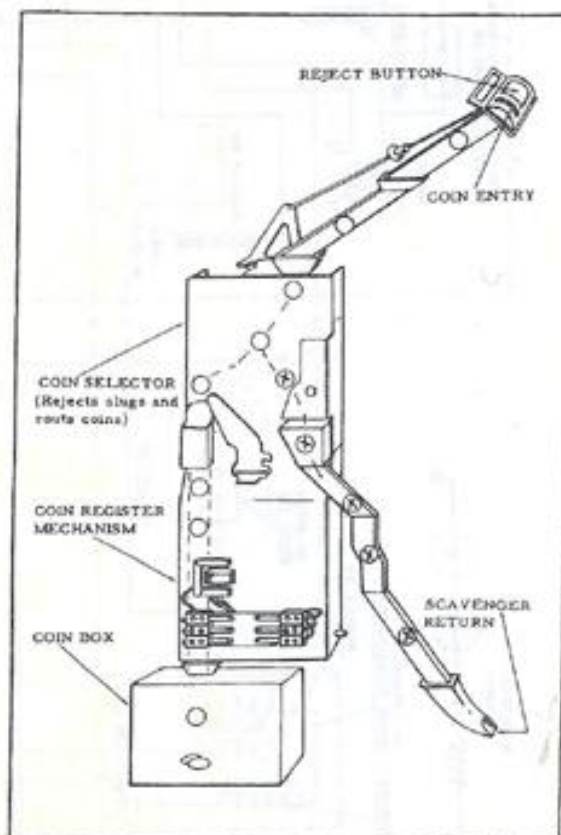


Figure 19-Route Of Coin From Entry To Cash Box Or Scavenge

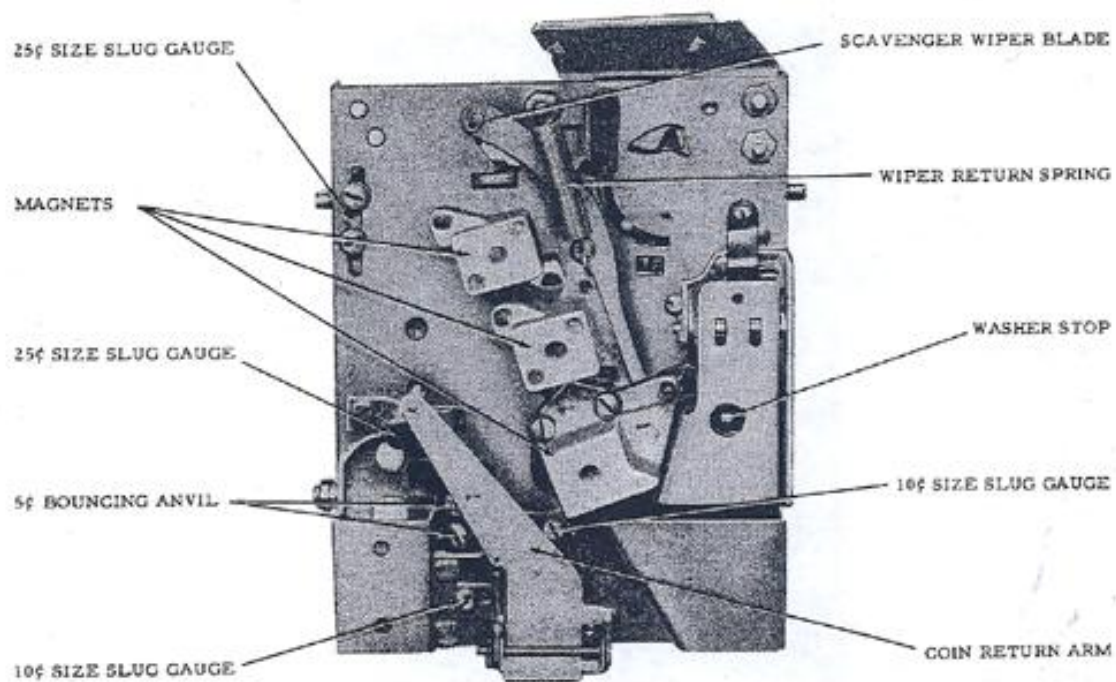
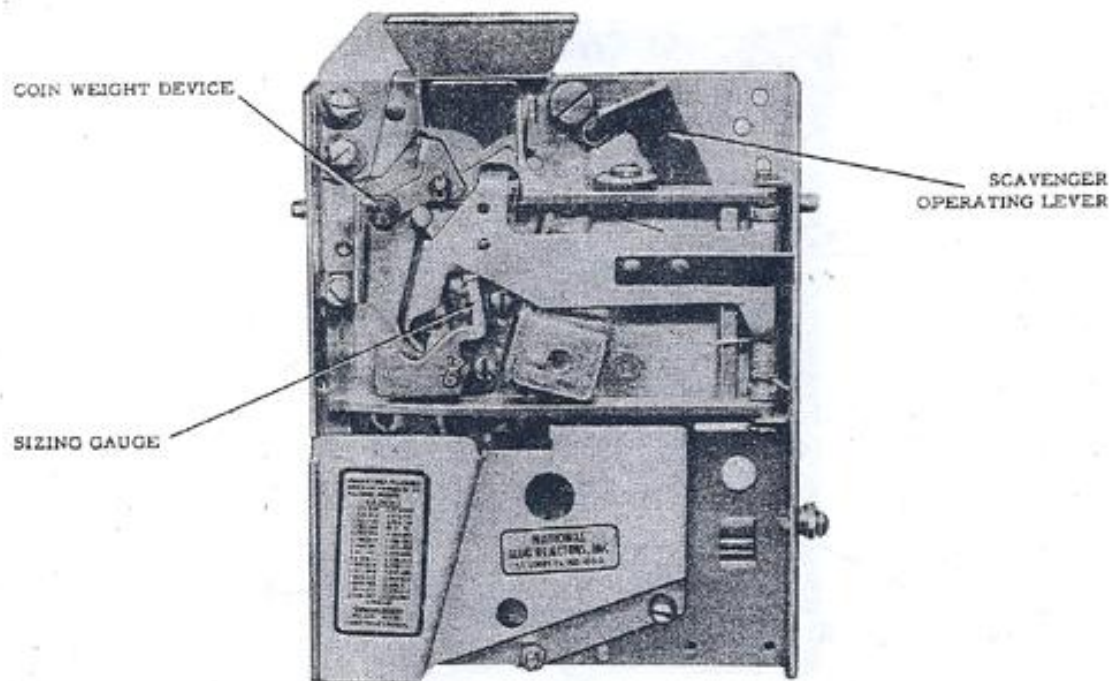


Figure 20-Coin Selector Mechanism

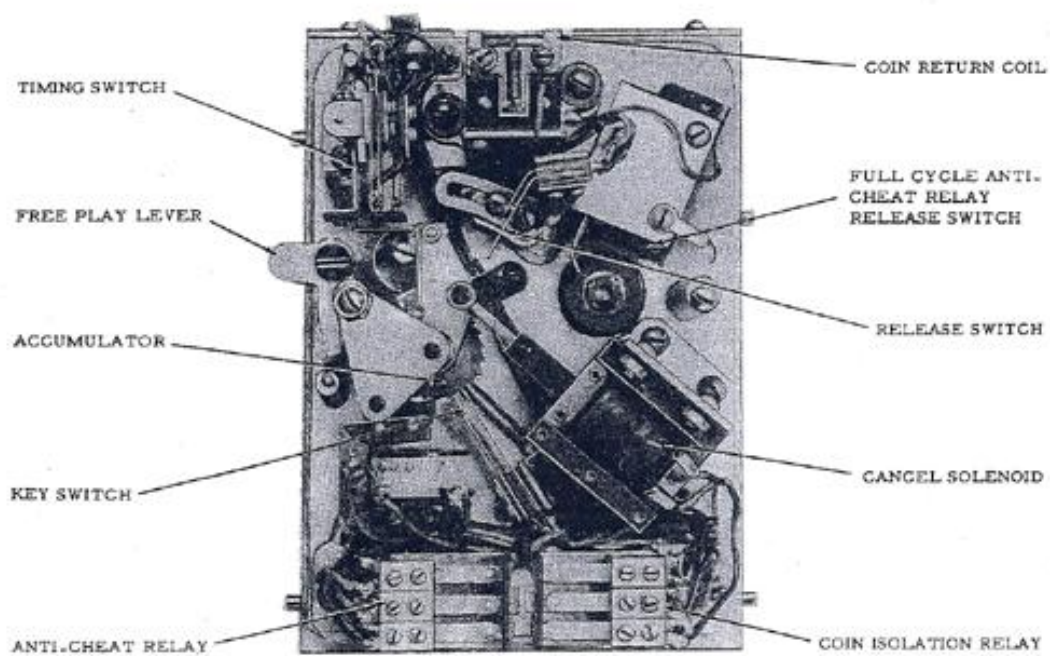
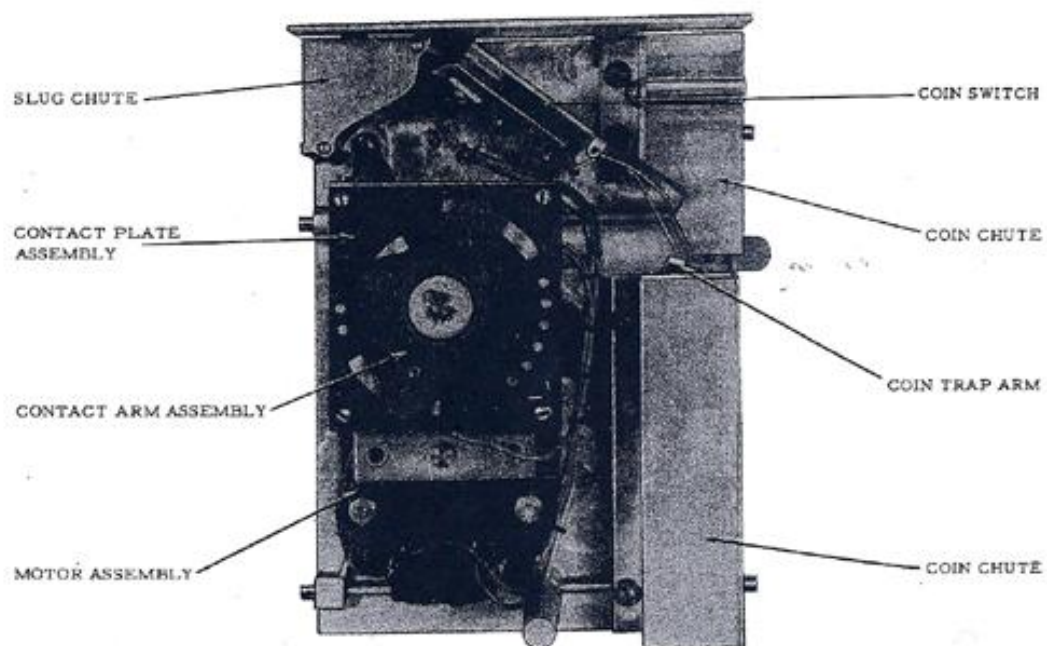


Figure 21-Coin Register Mechanism

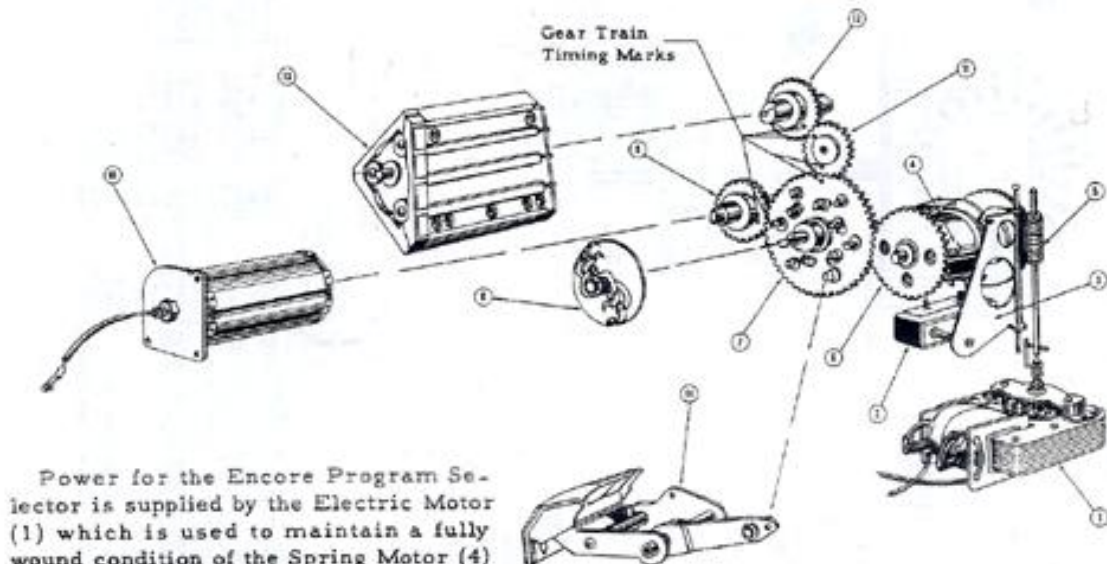
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and is available separately**

ENCORE PROGRAM SELECTOR

The encore program selector is designed as a program change mechanism as well as a selection device. The twenty-four record selections are displayed to the customer in three groups of eight selections each, corresponding to the eight selector keys. Change of the displayed program is accomplished by operation of the program change key (Press to Change Program). Each time the program is changed, the program holders rotate one-third of a revolution bringing into view the successive groups of titles, and the number rollers rotate one-third of a revolution thus changing the numbers above the selector keys to correspond with the numbers displayed alongside the title strips in the program holders. Two internal contact arm assemblies rotate with the program holders and the number rollers, there-

by completing the circuits from the eight selector keys to the eight coils on the 24 solenoid selector drum which correspond to the eight selections displayed.

The Program Holder (13), Number Rollers (10) and Contact Arm Assemblies (8) are actuated through a gear train housed in the center casting assembly (see figure 23). Their synchronized rotation is controlled by escapement of the Main Cam Gear and Escapement Disc Assembly (7) which escapes when the Program Change Key (14) is depressed, moving the extension shaft stop pin away from the escapement disc outer ring of stop pin. The extension lever stop pin is shifted toward the main cam gear shaft, moving off the outer pin on the main cam gear, thus allowing the gear to revolve. The stop pin then comes into the path of the inner circle of pins on the main cam gear, which are so positioned as to stop the gear just previous to the completion of one-sixth



Power for the Encore Program Selector is supplied by the Electric Motor (1) which is used to maintain a fully wound condition of the Spring Motor (4) through its Worm Gear (5). The circuit to the electric motor is controlled by the Micro Switch (2). It is actuated by the Yoke (3) which moves as the spring motor winds and unwinds.

Power is transmitted from the spring through Gear (6) to the Main Cam Gear and Escapement Disc Assembly (7). The shaft of Gear (7) drives the two Contact Arm Assemblies (8). Gear (7) also transmits power to Gear (9) the shaft of which

drives the two Number Roller Assemblies (10). Power is also supplied by Gear (7) through the Idler Gear (11) to Gear (12), the shaft of which drives the two Program Holder Assemblies.

The Escapement Pawl (14) permits operation of the gear train to produce a third of a revolution of the Program Holder (13) and Number Roller (10) for each escapement.

Figure 23-Operation Of Encore Program Selector

turn. The inner pins are mounted on a separate plate, which is spring loaded with respect to the main cam gear, to provide a shock absorber effect in the stopping of the main cam gear.

When the program change key is released, it returns through spring action to its original position. This allows the change key extension lever stop pin to move off the inner pin of the main cam gear and back into the path of the outer pin. When the outer pin comes to rest against the stop pin the main cam gear has completed its one-sixth turn and the number roller gear and program holder gear have completed their one-third turn. The contact arm assemblies which rotate with the main cam gear, are correctly positioned to allow the selections on display to be made by operating the selector keys.

An interlock arm, operated in conjunction with the program change key, acts with an interlock bracket assembly to prevent operation of the selector switches while the program change key is depressed. This same interlock mechanism also functions to prevent actuation of the change mechanism while a selector key is depressed.

Power for the gear train is furnished by the Spring Motor (4) which is used because of its rapid starting and stopping characteristics, its almost instantaneous action, its ability to withstand sudden starting and stopping, and because it supplies a comparatively large quantity of energy for a short period from a very compact unit.

The spring motor is wound by the Electric Motor (1). The electric motor is controlled by the Micro Switch (2), which is operated by the Yoke (3). The yoke moving with the spring motor shaft is so adjusted that the circuit to the electric motor is closed when the spring motor is partially unwound. In this way the spring motor is rewound with each program change and thus assures fast program change action at all times.

The yoke is operated by a hub on the shaft of the spring motor. The hub is threaded on the shaft. As the spring motor approaches its fully wound position, the hub traveling on the shaft moves the yoke in such a way that the adjusting screw on the yoke opens the cut-off switch at the time when the spring motor reaches its fully wound condition. Unwinding of the spring motor causes the hub to travel on the spring motor shaft and move the yoke, closing the cut-off switch and causing the electric motor to wind the spring motor and again cut-off in the fully wound position.

The Drive Gear (6) of the spring motor is meshed with the Main Cam Gear (7) of the gear train. Through it, power is transmitted to the Number Roller Gear (9), the Idler Gear (11), and from the idler gear to the Program Holder Gear (12). The rotary Contact Arm Assemblies (8) are on and rotate with the main gear shaft. The ratio between the main cam gear and the other gears is 1:2, that is, the main cam gear makes one revolution for each two revolutions of the other gears. In the action of the program change mechanism, the main cam gear makes one-sixth turn while the other gears make one third turn.

There are gear train timing marks (see figure 23) on the main cam gear, the number roller gear, the idler gear, and the program holder gear. When these marks are aligned, as shown in the illustration, the gears are properly synchronized for correct operation of the mechanism. Since the program holders, number rollers, and contact arm assemblies are keyed to their shafts, they are synchronized when properly installed.

ELECTRIC SELECTOR DRUM

When a selector key is pressed a circuit is completed to the selector magnet coil corresponding to the key, thus releasing its selector rod (see figure 22). The rod is moved by a spring into the path of the selector arm (see figure 24). As the selector arm rotates it strikes the selector rod and stops the movement of the selector shaft. This stops the selector cam in the position required for selection of the record desired. While the record is being brought into the playing position, the selector arm returns the selector rod to its latched position. At the time the selector rod is released, its movement to the selecting position causes a wobble plate to be displaced. The movement of the wobble plate closes an over-ride switch for the motor and amplifier. The cut-off switch, operated by a cam on the main cam shaft, is in parallel with this motor and amplifier over-ride switch. The over-ride switch remains closed until all the selector rods are moved into the latched position. The cut-off switch, which closes shortly after the main cam shaft rotates from the normal cut-off position, remains closed and keeps the record changing motor and amplifier operating until the last record selected has been played and returned to the record stack. Figure 24 illustrates the operation of the electric selector drum.

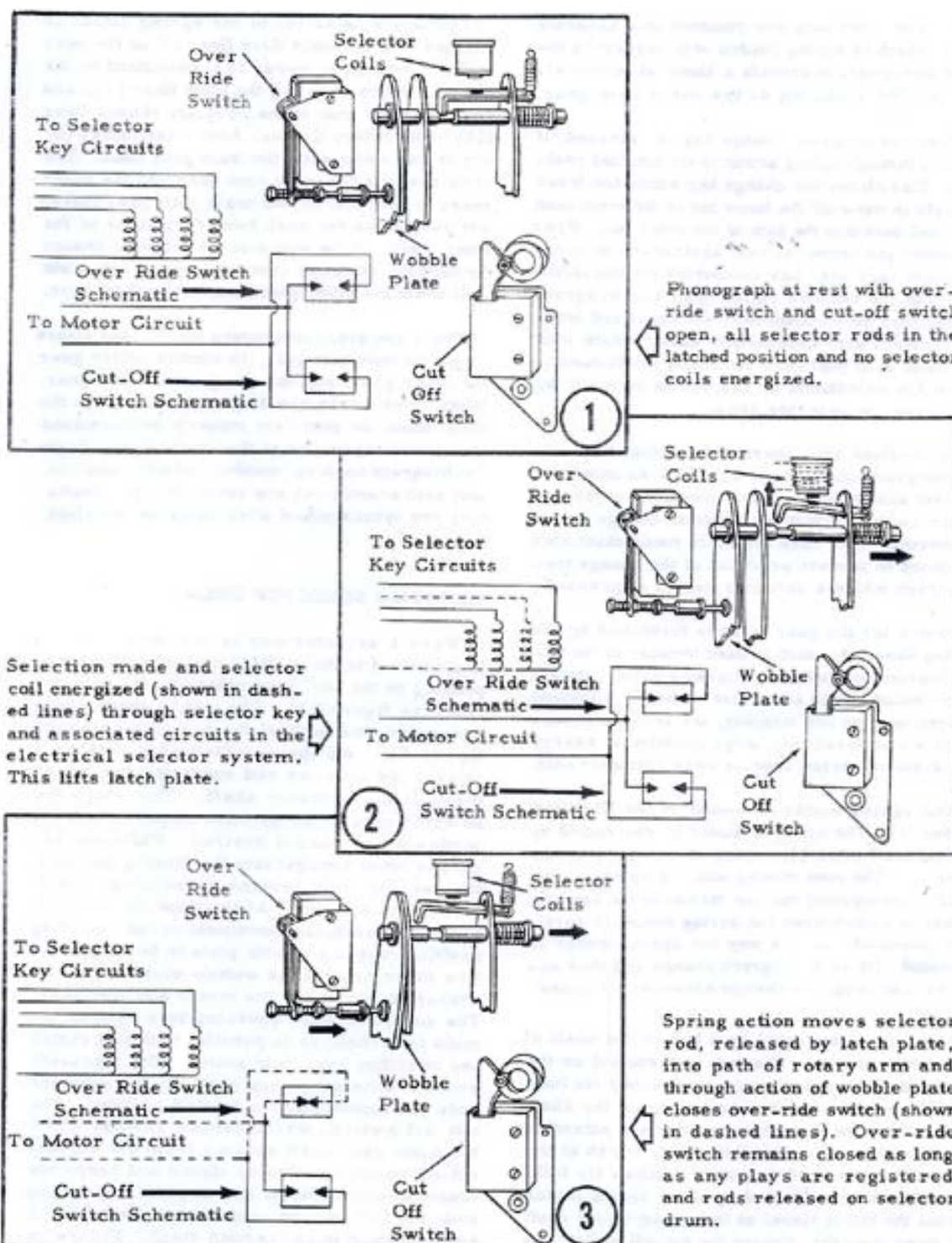
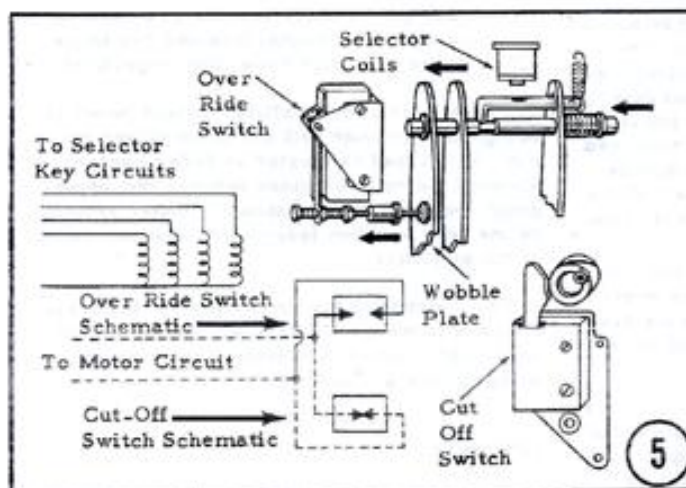
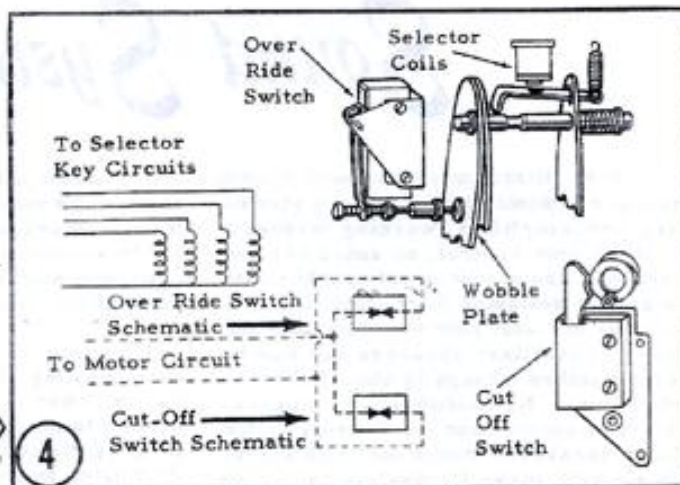


Figure 24-Operation Of Electric Selector Drum

Motor starts, and cam revolves, closing cut-off switch (shown in dashed lines).



At approximately the time the turntable begins to rise, the rotary selector arm returns the selector rod to the latched position. (Refer to the Cycle of Operation in this section of the Handbook.) IF THIS IS THE LAST SELECTION registered on the selector drum, the wobble plate is permitted to return to its normal position by spring action and to open the over-ride switch. However, the cut-off switch holds the motor circuit closed and the motor continues to run.

As the changer completes the playing of the last selection and the clutch engages, the cut-off cam revolves. It is timed to open the cut-off switch and cut-off the motor at the point where the mechanical coaster brake can halt the mechanism in the correct "at rest" position. The circuits then revert to the condition shown in Step 1. Should other selections be registered on the selector drum and the corresponding rods released, the over-ride switch will remain closed through the action of the wobble plate (see Step 3) and the motor will not be cut-off by the opening of the cut-off switch.

Figure 24-(Continued)

