

Electric Selector System

In the operation of this phonograph coins are registered and selections are made by an electrically controlled means, referred to as the electric selector system. The components which comprise this system are the coin register mechanism, encore program selector, junction box, and an assembly of magnets and selector rods called the electric selector drum.

COIN REGISTRATION

A five cent coin deposited closes the five cent coin switch and completes an electrical circuit which energizes the accumulator coil. This one impulse to the accumulator coil allows the ratchet wheel to escape one tooth, mechanically closing the key switch and setting up a credit for one selection. The coin passes the coin switch and drops directly into the cash box.

A 10 or 25 cent coin deposited is held on the coin switch till the motor completes part of its cycle thus registering the number of credits per the denomination of coin. A circuit is thus completed to energize the anti-cheat relay from ground through coin switch and segments A or D and common segment C of the contactor to anti-cheat relay coil and 24 volt source.

The anti-cheat relay now energized closes its contacts 1 & 2 and 5 & 6 and opens contacts 3 & 4. Contacts 1 & 2 complete motor starting circuit through contactor and coin switch. They later function as an interlock for the anti-cheat relay.

Opening of contacts 3 & 4 of anti-cheat relay opens coin return circuit and allows coin reject assembly to actuate by spring loading. The pins on the reject assembly intercept and reject coins in their three paths of travel through the slug rejector during the entire cycle of registration.

Closing of contacts 5 & 6 of the anti-cheat relay prepares a circuit to the accumulator for impulses. The motor which was started by contactor segments D and C moves the

three point contactor arm to D¹ and B thus furnishing an impulse to the accumulator. The second impulse is sent to the accumulator when the contactor arm rotates to D² and B. In the case of a 25 cent coin, five such impulses occur through common segment B and contact's A¹-2-3-4-5.

When the contactor arm rotates away from segment C, the motor can no longer operate from this source. However the full cycle anti-cheat relay release switch, mechanically closed at approximately 30° of rotation by a cam on the contactor shaft, completes the circuit to the motor. At approximately 210° of rotation, the coin gate is opened by this cam and drops the coin thus opening the coin switch and registration circuit. At approximately 335° of rotation, the full cycle anti-cheat relay release switch is opened by the cam which opens the interlock circuit.

The anti-cheat relay is released by the full cycle anti-cheat relay release switch and the coin return solenoid is again energized permitting further deposits of coins.

At the first escapement of the ratchet wheel on the accumulator, the key switch is mechanically closed. It provides current to the selector and cancel circuits only while isolation contacts 3 & 4 of the anti-cheat relay are closed. Selections cannot be made during the time of coin registration. The selection circuit is now prepared by virtue of the coin isolation relay being energized from ground, through its coil, contacts 5 & 6 of the timing switch, the encore program selector series switch, the release switch contacts, the key switch and contacts 3 & 4 of the anti-cheat relay to the power supply.

At the same time closing of the key switch energizes the make-selection lights.

Closing of the coin isolation relay closes contacts 1 & 2 to interlock, opens contacts 3 & 4 preparatory to selection and closes contacts 5 & 6 preparatory to cancellation.

SELECTION CYCLE

Initial movement of a selected key opens

the series circuit number 29 to 30. However its function has been continued through interlock contacts 1 & 2 of the coin isolation relay. Further movement of the selected key isolates the common circuit number 26. These circuits are wired in series to prevent more than one selector rod being released at one time. Still further movement of the key includes the corresponding selector magnet.

At the end of its movement, the selected key actuates the selector micro switch to close circuit number 28. This closes the circuit from ground, through 28 to the junction box, through number 2 pin on the eight prong of the coin register mechanism, through the cancel solenoid and the circuits prepared by the coin isolation relay, the closed key switch, and the anti-cheat relay contacts 3 & 4, through pin number 7 of the plug to the source of power. As the cancel solenoid plunger starts its travel the timing switch is mechanically released and actuated by spring loading. This closes its contacts 1 & 2 and produces an impulse to the electric counter recording one play.

The movement of the timing switch also opens its contacts 5 & 6, disconnecting the initial selector circuit to prevent canceling more than one registration per selection; the timing switch also closes its contacts 3 & 4 completing the selection circuit only as far as contacts 3 & 4 of the coin isolation relay. At the end of its movement, before the mechanical cancellation of one play from the

accumulator ratchet wheel, the cancel plunger opens the release switch, breaking the interlock circuit of the coin isolation relay.

The coin isolation relay is released breaking its interlock contacts 1 & 2 which have already been rendered ineffective through the opening of the release switch. The releasing of the coin isolation relay closes its contacts 3 & 4 to complete the selector circuit and opens its cancel contacts 5 & 6, thus opening the cancel solenoid circuit.

The cancel plunger now retracts by spring loading, requiring 17 milliseconds for its return travel. This cancels one tooth of the accumulator ratchet wheel.

When the cancel plunger has completed its return action, it positions the timing switch for further selections. Contacts 3 & 4 of the timing switch open to isolate the selector circuit, and contacts 5 & 6 close to initiate the closing of the coin isolation relay circuit for further selections, provided one or more registrations are on the accumulator permitting the key switch to remain closed. As the selector key is released, the micro switch opens, the selector magnet is disconnected, and circuits 29 and 30 close, completing the circuit to the coin isolation relay.

After the last registration has been canceled off the accumulator, the electric selector system reverts to the "Phonograph at Rest" position.

The schematic diagrams which follow illustrate the sequence of electrical functions, described above, that take place in the electric selector system from the time the coin is deposited till selections are made and the credits are canceled. These events take place within a split second.

The schematics are therefore presented to pictorially illustrate each phase in this sequence which will thus enable the serviceman to determine the relative position of switches, relays, etc. during each phase. In this manner trouble may be isolated by point to point continuity and voltage checks.

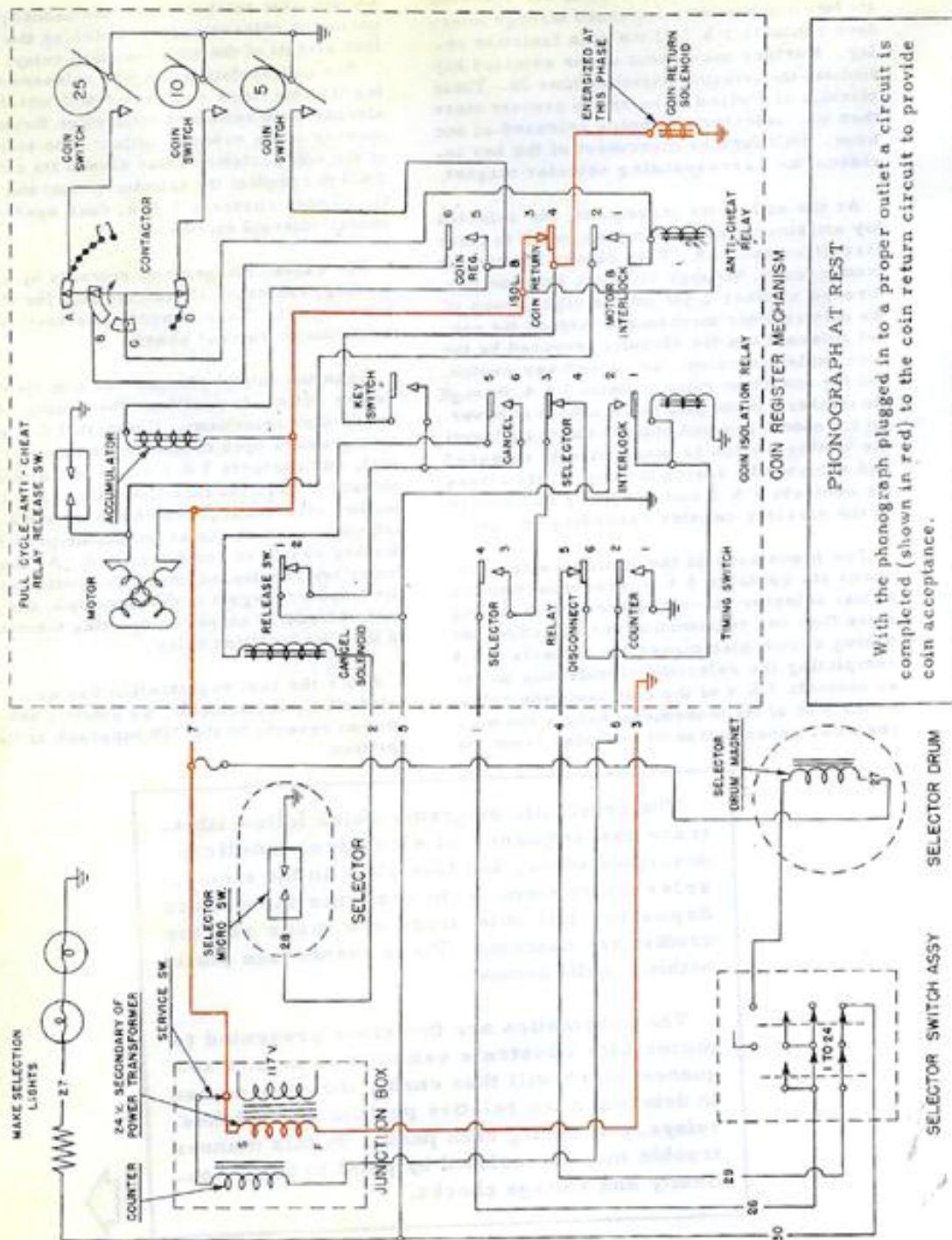


Figure 9-Electric Selector System, Phonograph At Rest

With the phonograph plugged in to a proper outlet a circuit is completed (shown in red) to the coin return circuit to provide coin acceptance.

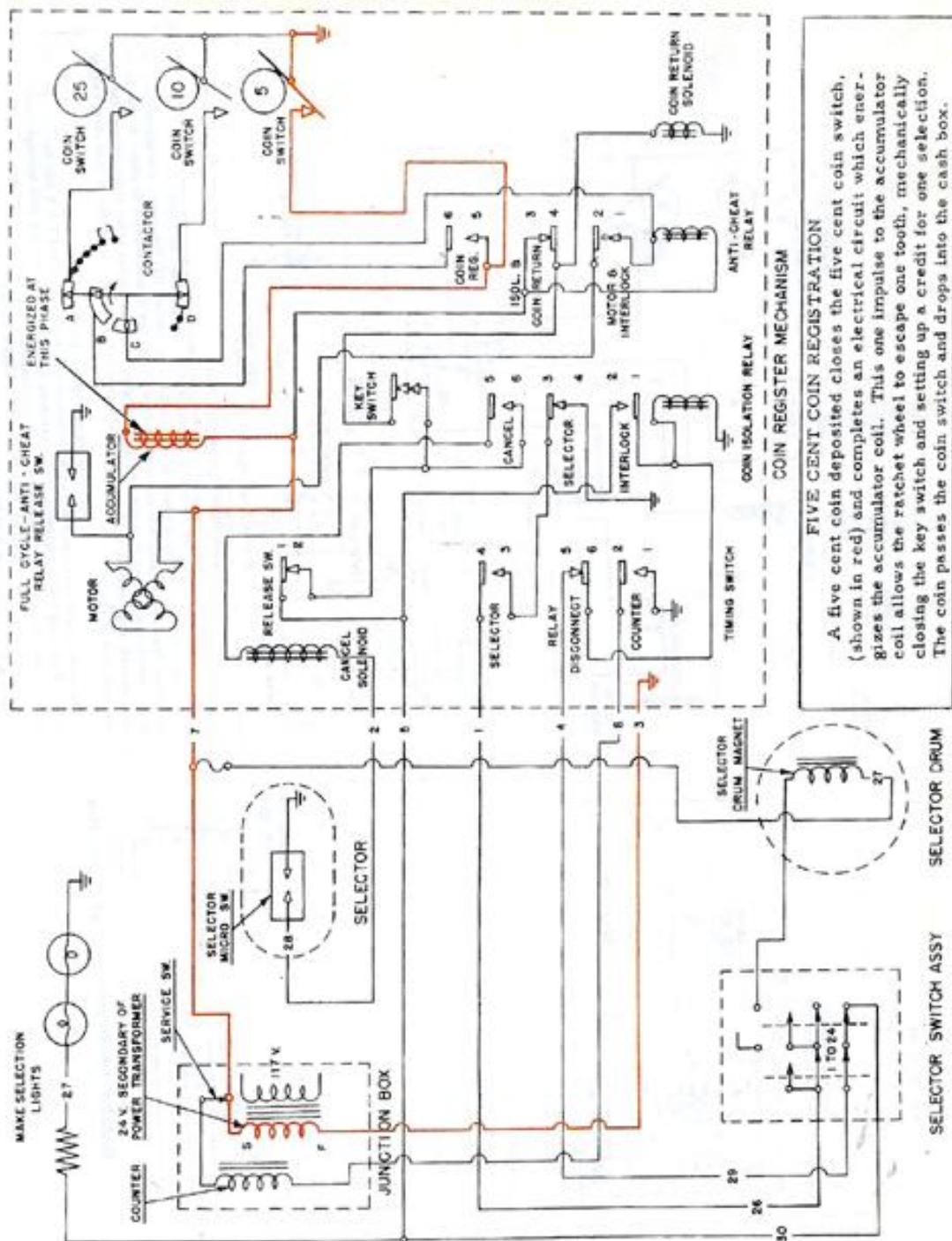


Figure 10-Electric Selector System, Five Cent Coin Registration

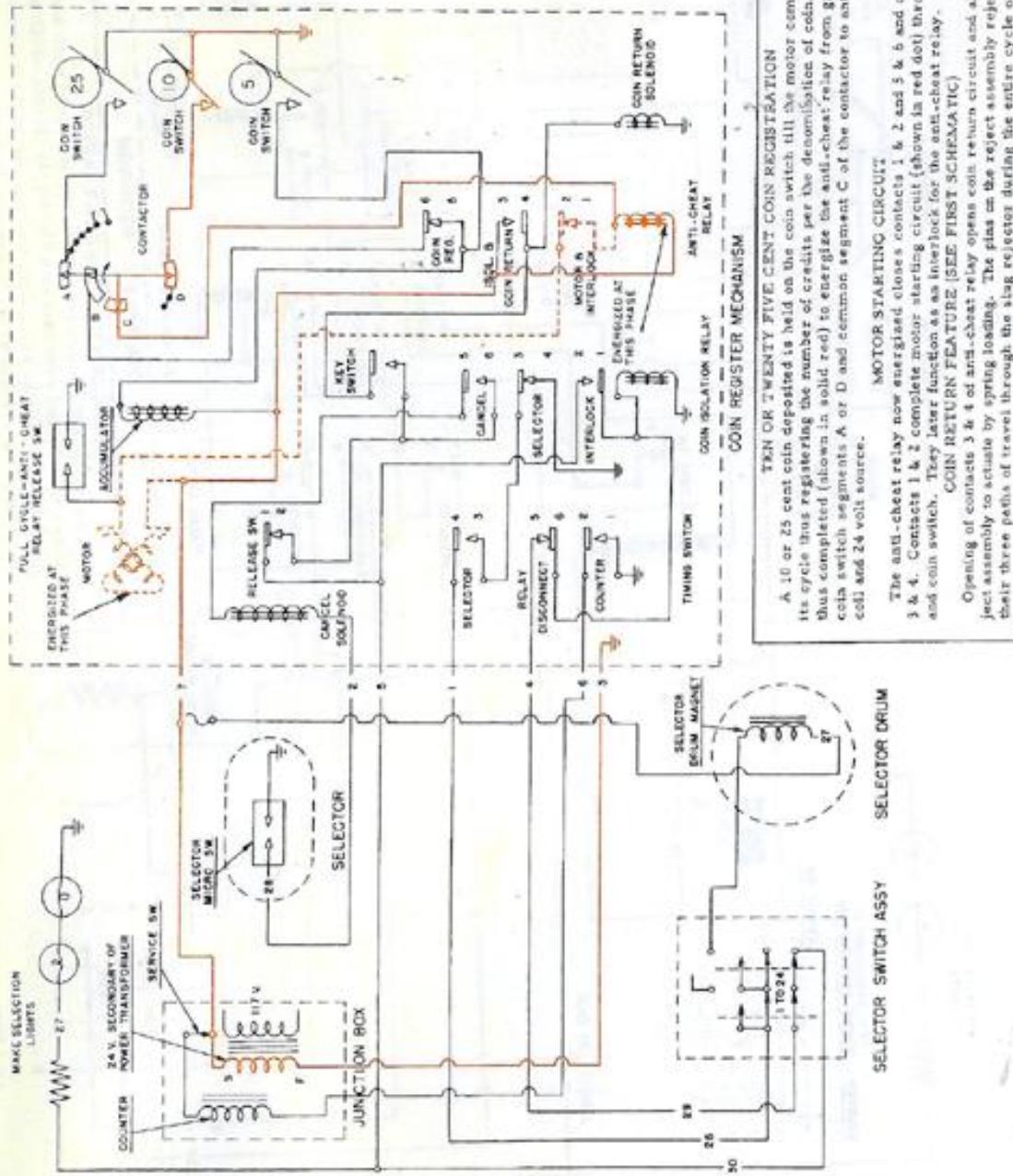


Figure 11-Electric Selector System, Five Or Twenty-Five Cent Coin Registration, Motor Starting Circuit And Coin Return Feature

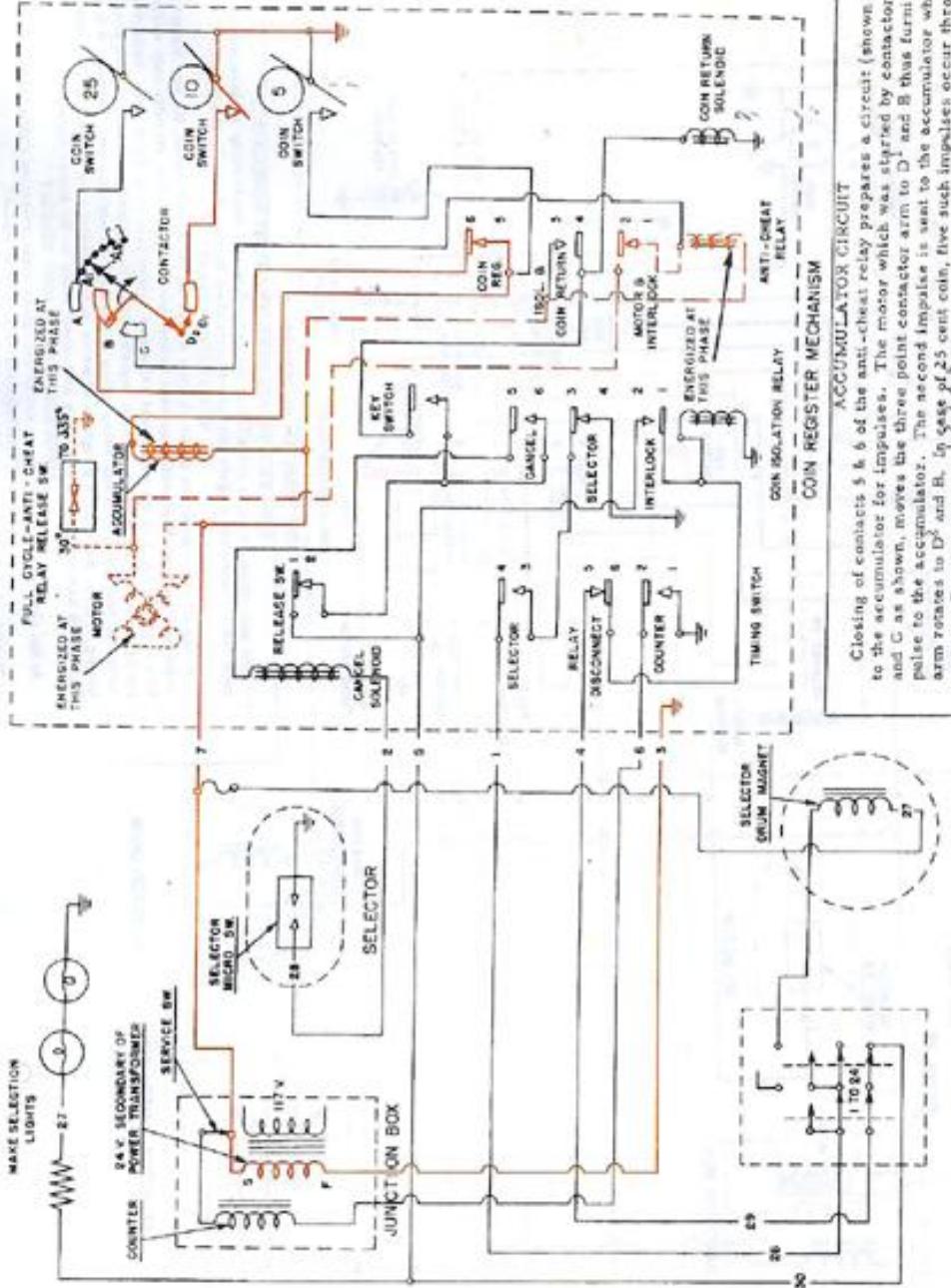


Figure 12-Electric Selector System, Accumulator Circuit And Full Cycle Circuit

ACCUMULATOR CIRCUIT
Closing of contacts 5 & 6 of the anti-cheat relay prepares a circuit (shown in solid red) to the accumulator for impulses. The motor which was started by contactor segments D and G as shown, moves the three point contactor arm to D and B thus furnishing an impulse to the accumulator. The second impulse is sent to the accumulator when contactor arm rotates to D and B. In case of 25 cent coin, five such impulses occur through contactor segment B and contact's A -C-E-I-Z dash.

FULL CYCLE CIRCUIT

When the contactor arm rotates away from segment C, the motor can no longer operate from this source. However the full cycle anti-cheat relay release switch, mechanically closed at approximately 30° of rotation by a cam on the contactor shaft, completes the circuit (shown in red dash) to the motor. At approximately 210° of rotation, the coin gate is opened by this cam and drops the coin thus operating the coin switch and registration circuit. At approximately 335° of rotation, the full cycle anti-cheat relay release switch is opened by the cam which opens the interlock circuit (shown in red dash).

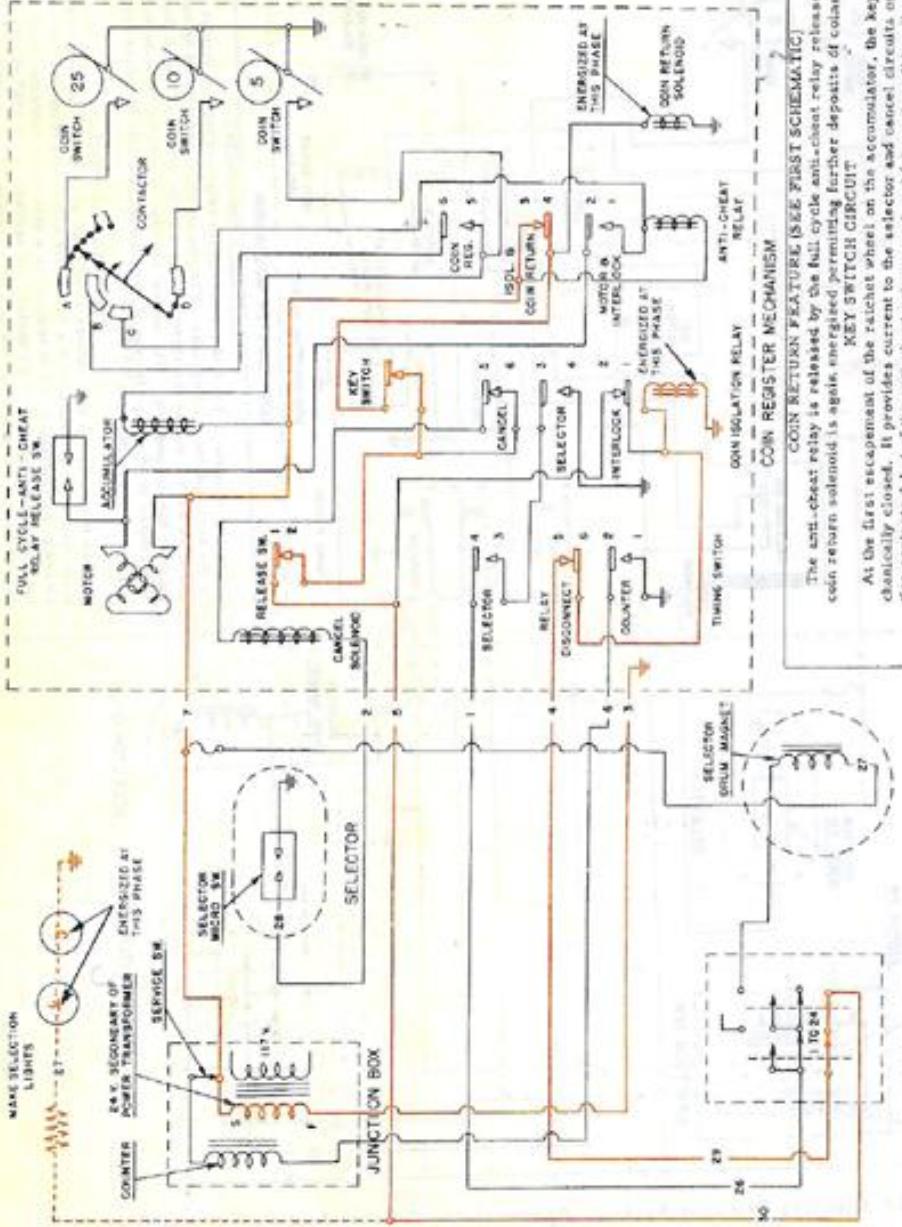


Figure 13-Electric Selector System, Coin Return Feature, Key Switch Circuit, Make-Selection Light Circuit And Function Of Isolation Relay

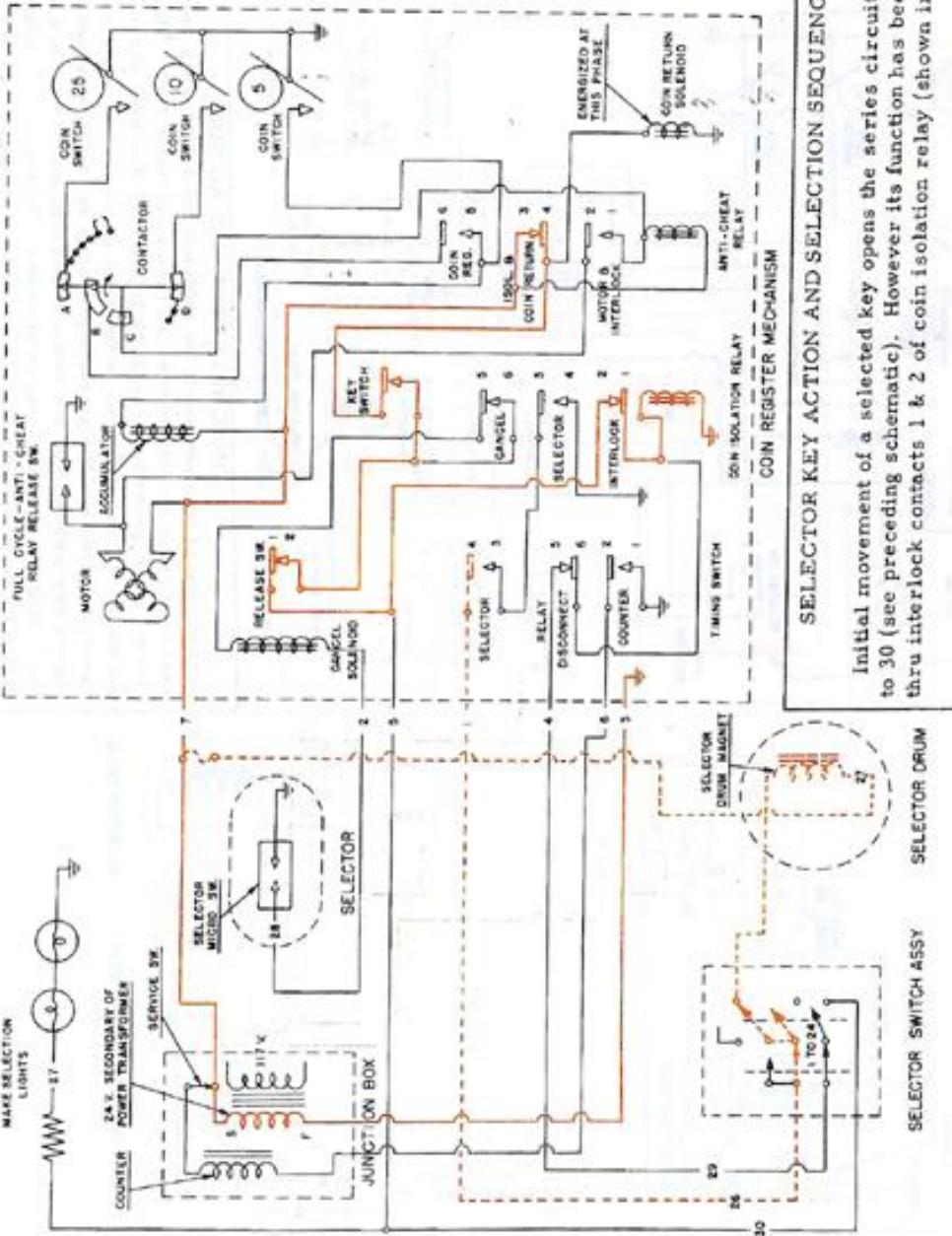


Figure 14-Electric Selector System, Selector Key Action And Selection Sequence

Initial movement of a selected key opens the series circuit number 29 to 30 (see preceding schematic). However its function has been continued thru interlock contacts 1 & 2 of coin isolation relay (shown in solid red).

Further movement of the selected key, isolates the common circuit number 26 (shown in red dot). These circuits are wired in series to prevent more than one selector rod from being released at one time. Still further movement of the key includes the corresponding selector magnet.

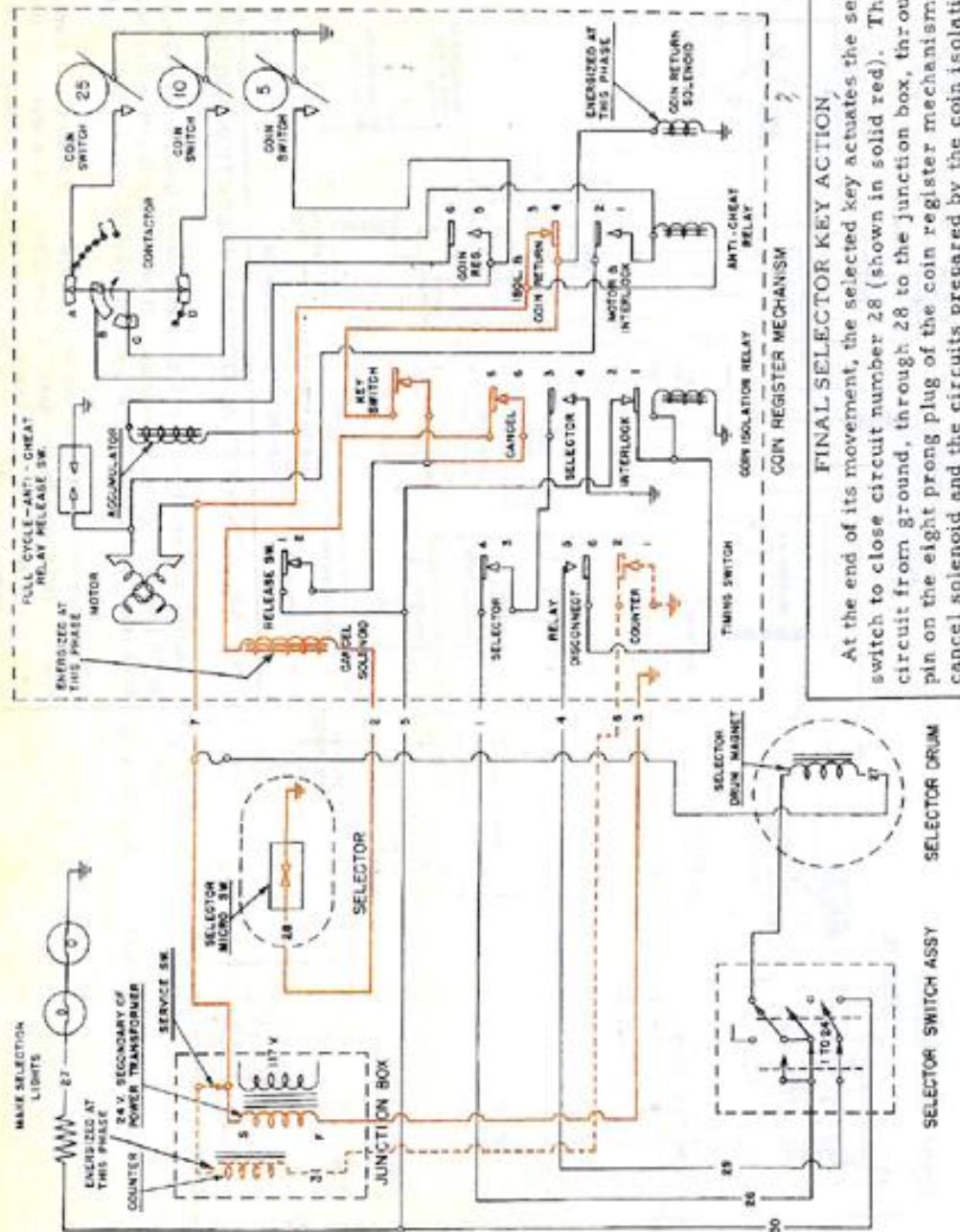


Figure 15-Electric Selector System, Final Selector Key Action

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General Description

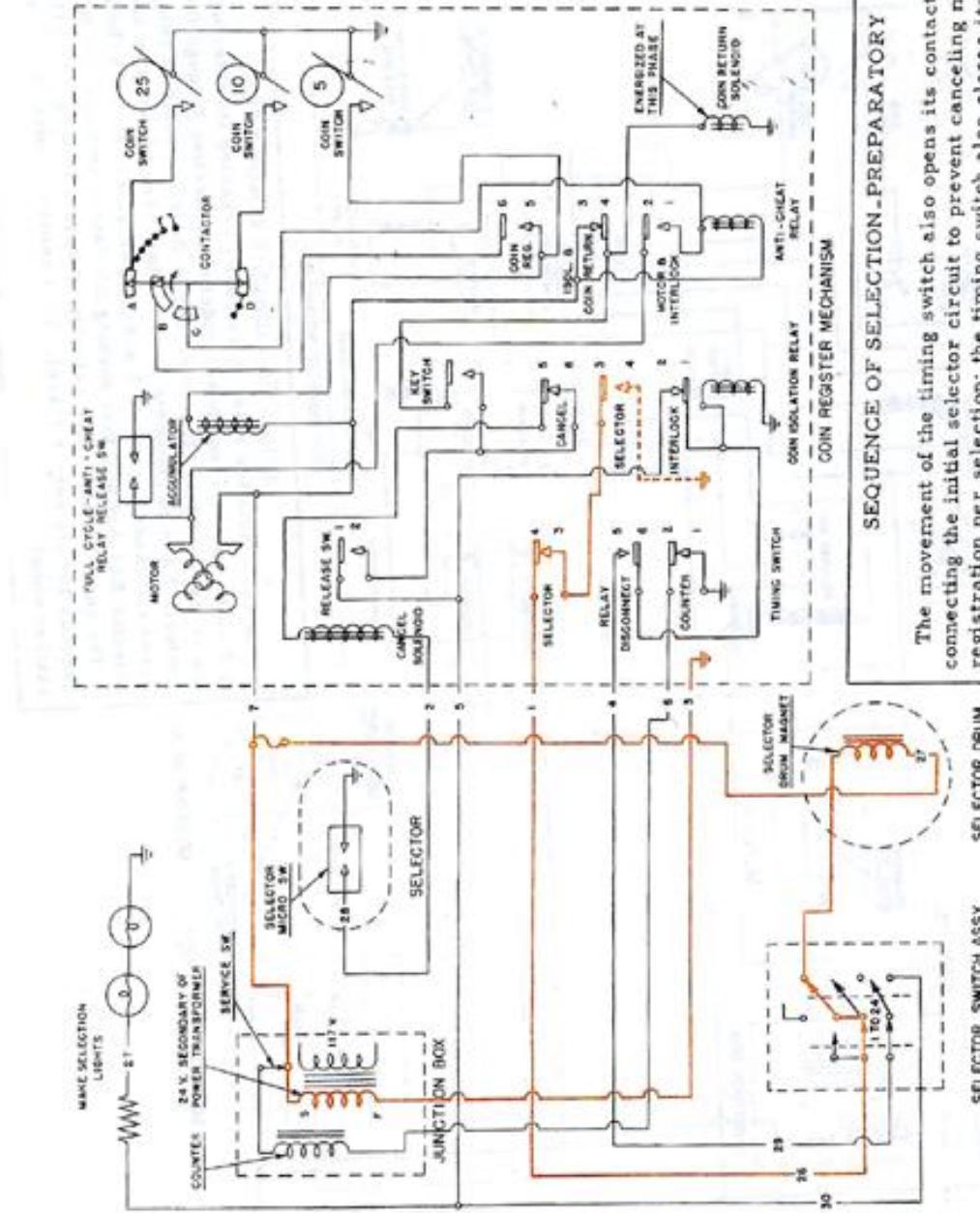


Figure 16-Electric Selector System, Sequence Of Selection-Preparatory

The movement of the timing switch also opens its contacts 5 & 6, disconnecting the initial selector circuit to prevent canceling more than one registration per selection; the timing switch also closes its contacts 3 & 4 (shown in solid red) completing the selection circuit only as far as contacts 3 & 4 of the coin isolation relay (shown in red dot). At the end of its movement, before the mechanical cancellation of one play from the accumulator ratchet wheel, the cancel plunger opens the release switch, breaking the interlock circuit of the coin isolation relay.

SEQUENCE OF SELECTION-PREPARED

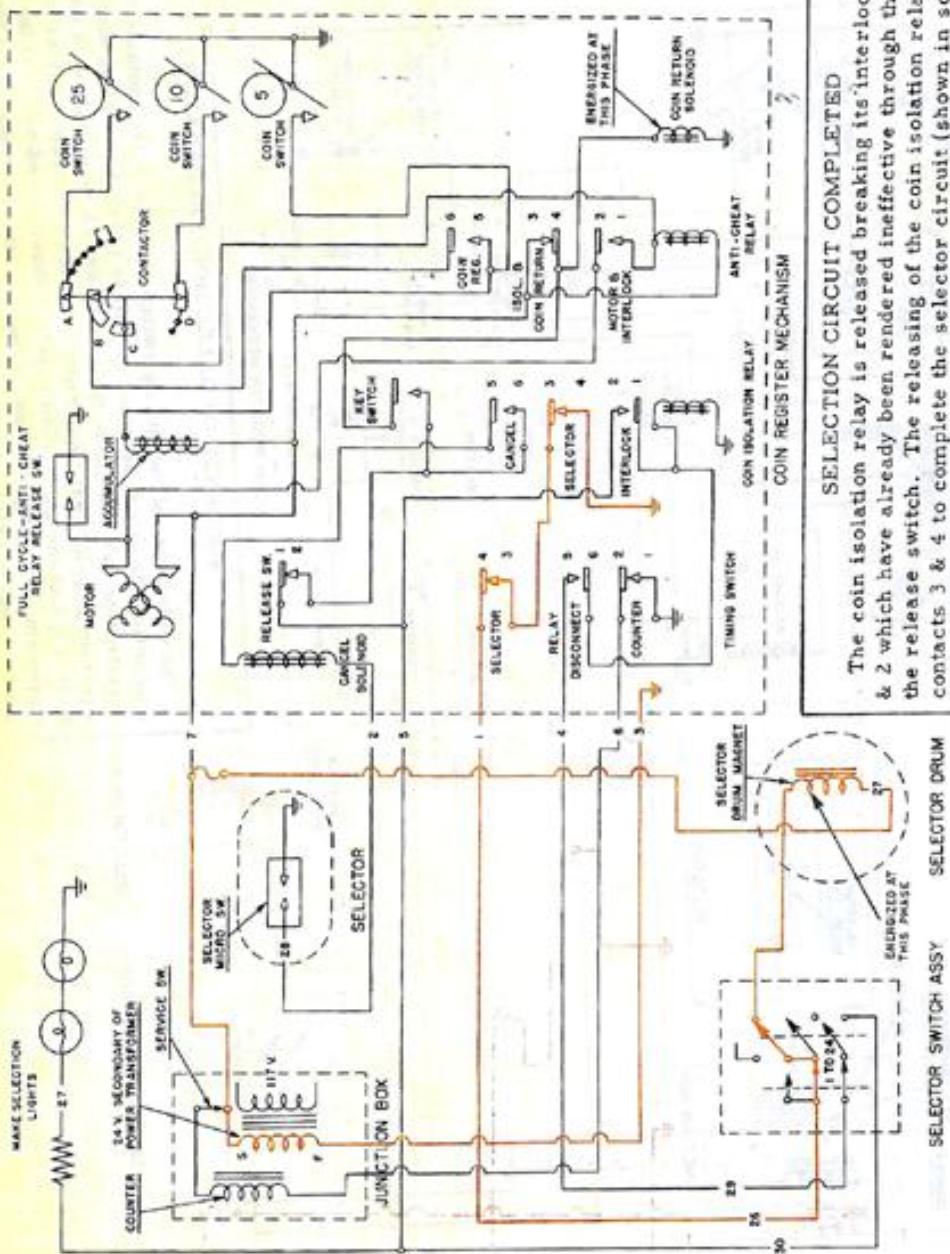


Figure 17-Electric Selector System, Selection Circuit Completed

SELECTION CIRCUIT COMPLETED

The coin isolation relay is released breaking its interlock contacts 1 & 2 which have already been rendered ineffective through the opening of the release switch. The releasing of the coin isolation relay closes its contacts 3 & 4 to complete the selector circuit (shown in solid red) and opens its cancel contacts 5 & 6 (shown closed in the schematic). Final Selector Key Action, thus opening the cancel solenoid circuit. The cancel plunger now retracts by spring loading, requiring 17 milliseconds for its return travel. This cancels 1 tooth of the accumulator ratchet wheel.

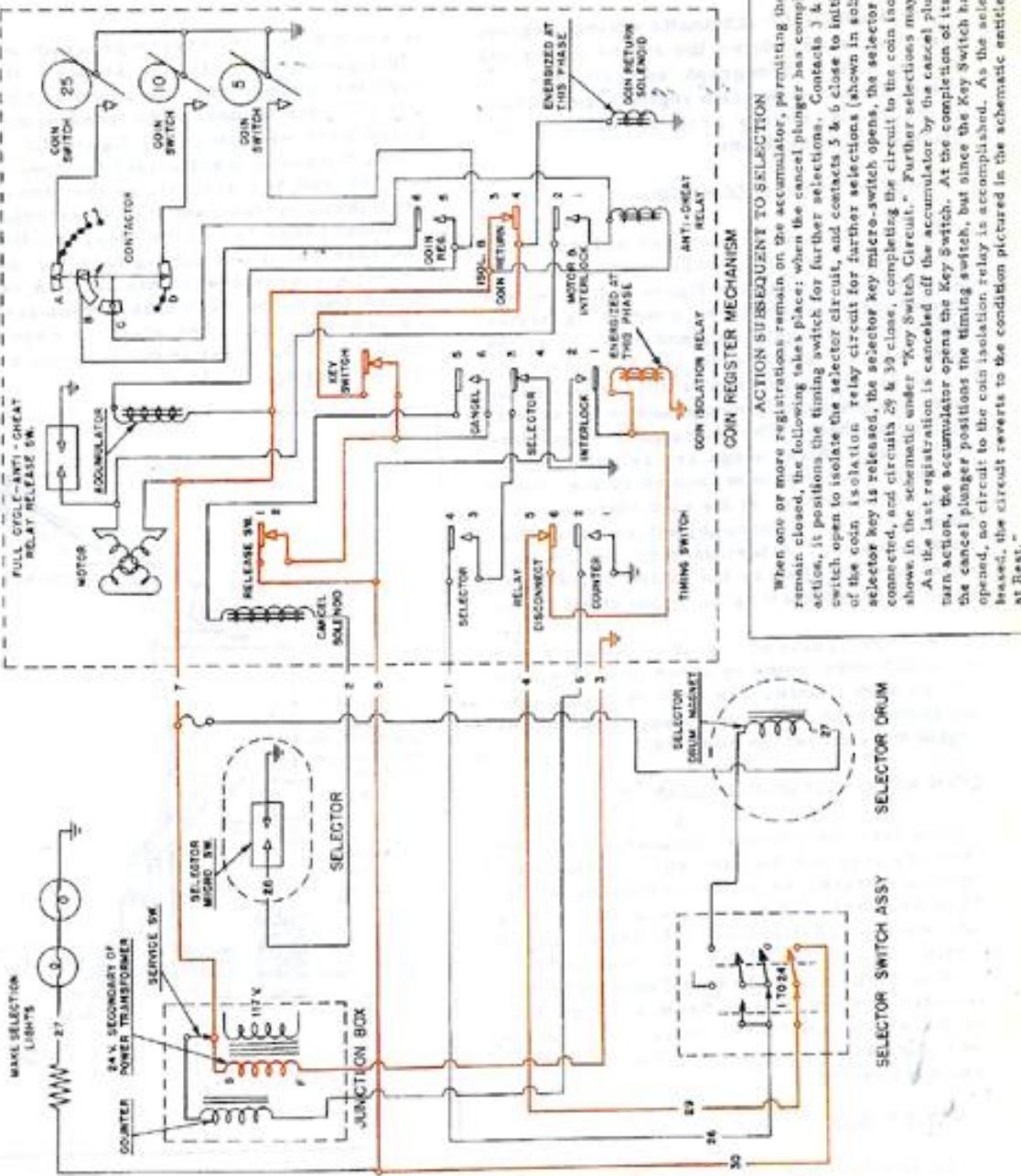


Figure 18-Electric Selector System, Action Subsequent To Selection