

## THE FRONT DOOR ASSEMBLY

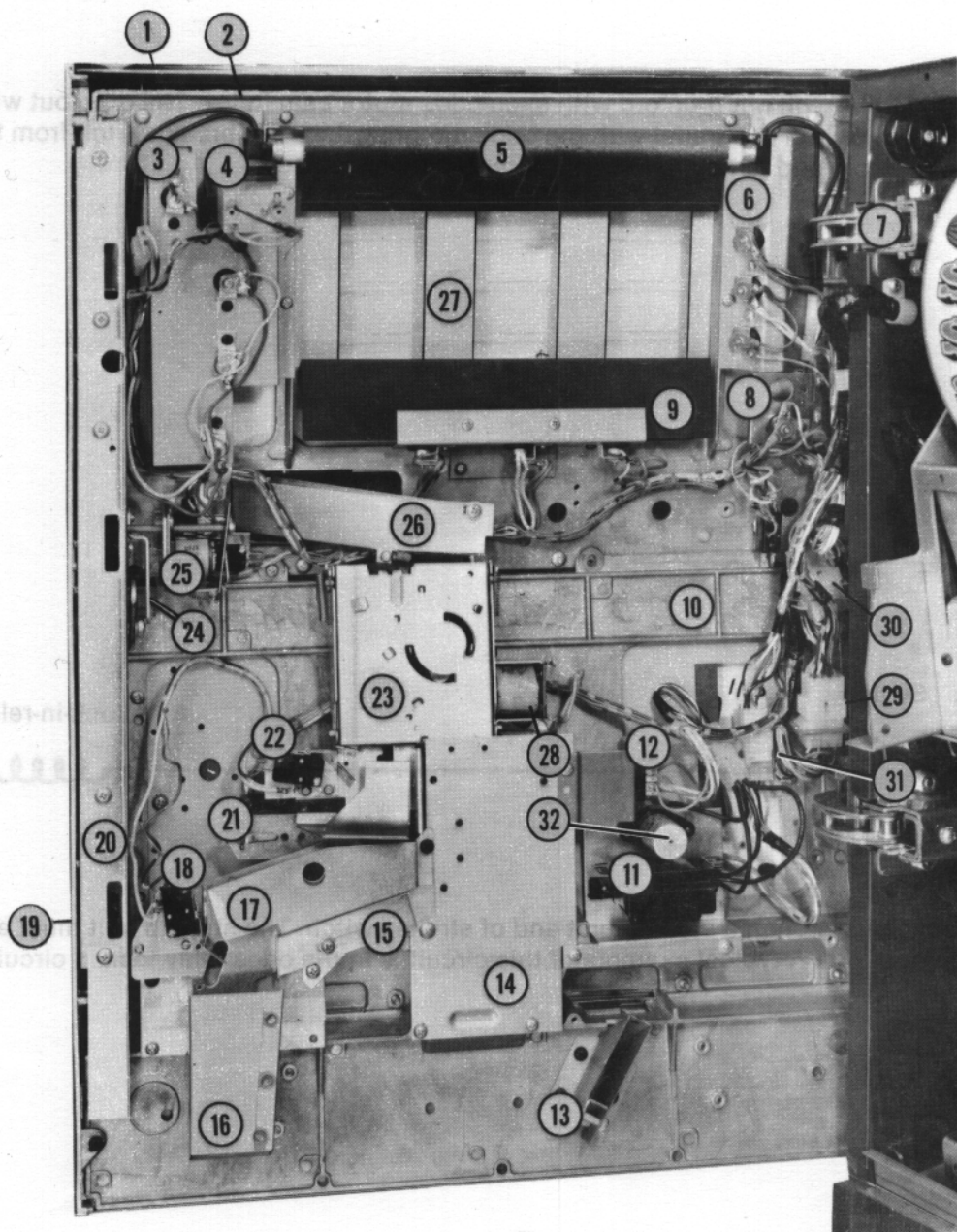
The primary functions of the front door are the coin entrance and accepting assemblies and it is the only access point to the internal components of the game. The front door also houses some feature lighting and some general illumination. (Whether it is 50% or 100% of the lighting depends totally on the model at hand.)

When a coin is inserted into the insert coin slot it can travel one of three routes: 1) It can go back to the tray if it is rejected by the lockout coil\* or the coin mechanism. 2) It can travel to the hopper if it is deflected by the deflector assembly. 3) It can travel to the cash box.

There are (2) two micro type switches mounted to the front door. One switch (coin switch) which is mounted directly below the coin mechanism is operated by all coins which are accepted by and pass thru the coin mechanism. The second switch (ramp switch) is mounted to the coin ramp plate assembly and is operated by all coins which are routed to the cash box.

The glass on most models will display all payouts which are awarded by that model. It will also display the type of model (i.e. 5 line, 3 line, 5 coin multiplier) and the denomination of the coin to be used.

\* Bally dollar models utilize a scavenger coil assembly instead of a lockout assembly.



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## HOPPER ASSEMBLY

The hopper performs all the coin dispensing of the slot machine. Any jackpots too large to effectively be paid by the hopper will cause the game to go into a lockup condition summoning an attendant to pay the balance which would be described on the front glass.

The unit consists of a hopper casting, large enough to hold coins in excess of the largest machine payout. This casting is mounted to a housing containing a pinwheel which rotates during a payout, acting like a circular conveyor belt. As the wheel rotates, it picks up a single coin in each space between the pins to allow for a uniform rate of output during a payout. A coin wiper is installed on the unit, which when properly adjusted, allows only the thickness of one coin to pass beneath it on the rotating pinwheel.

As the coins are about to exit the hopper, they ride upon a coin knife and actuate the pivot roller arm. Dependant upon the particular game, the pivot roller arm either mechanically or electrically (by operating switches) steps the payout counter. Should any coins, riding on other coins, pass by the coin wiper, they would still not be able to leave the hopper due to the construction of the pivot roller arm and the size of the exit slot.

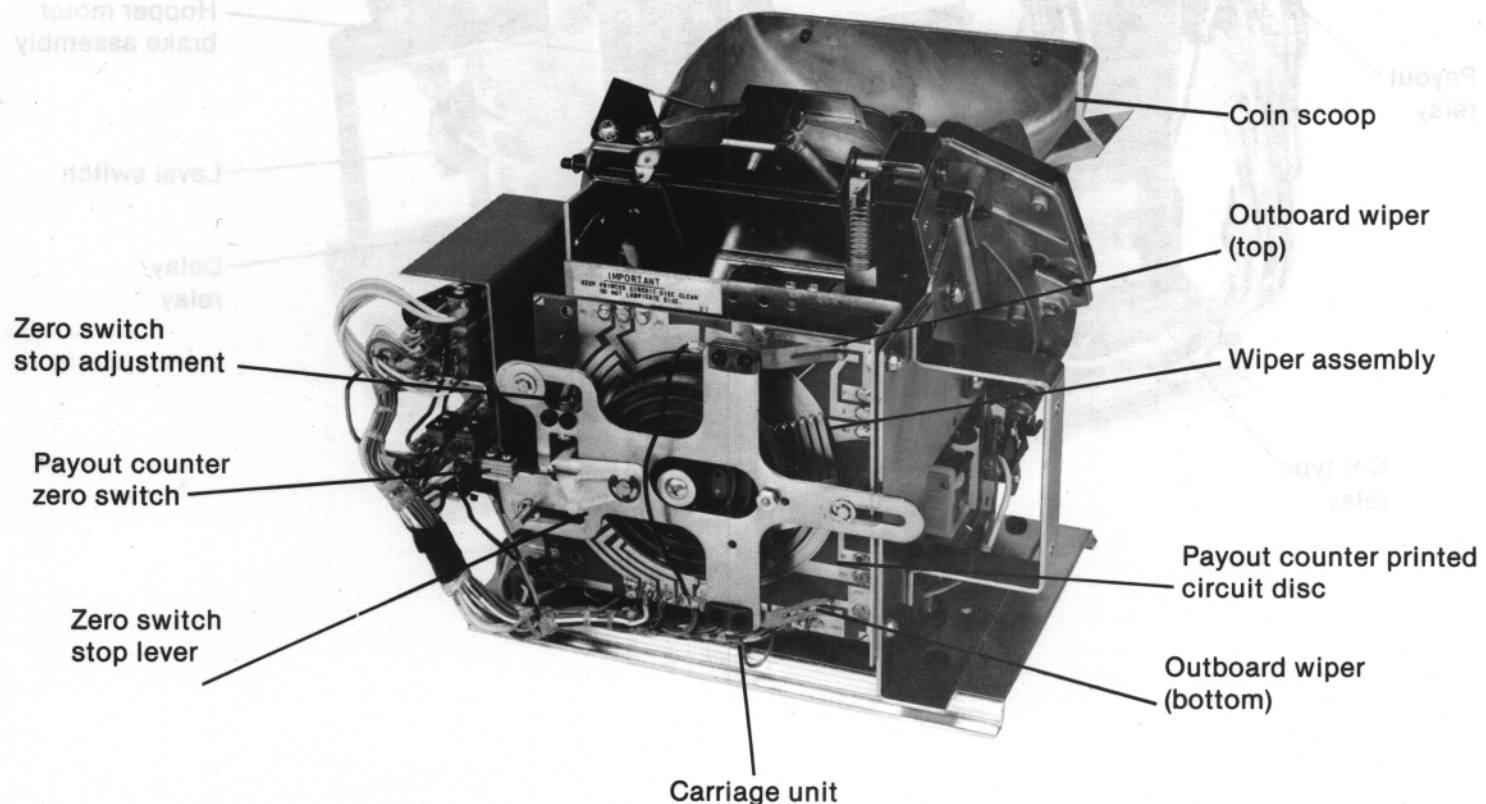
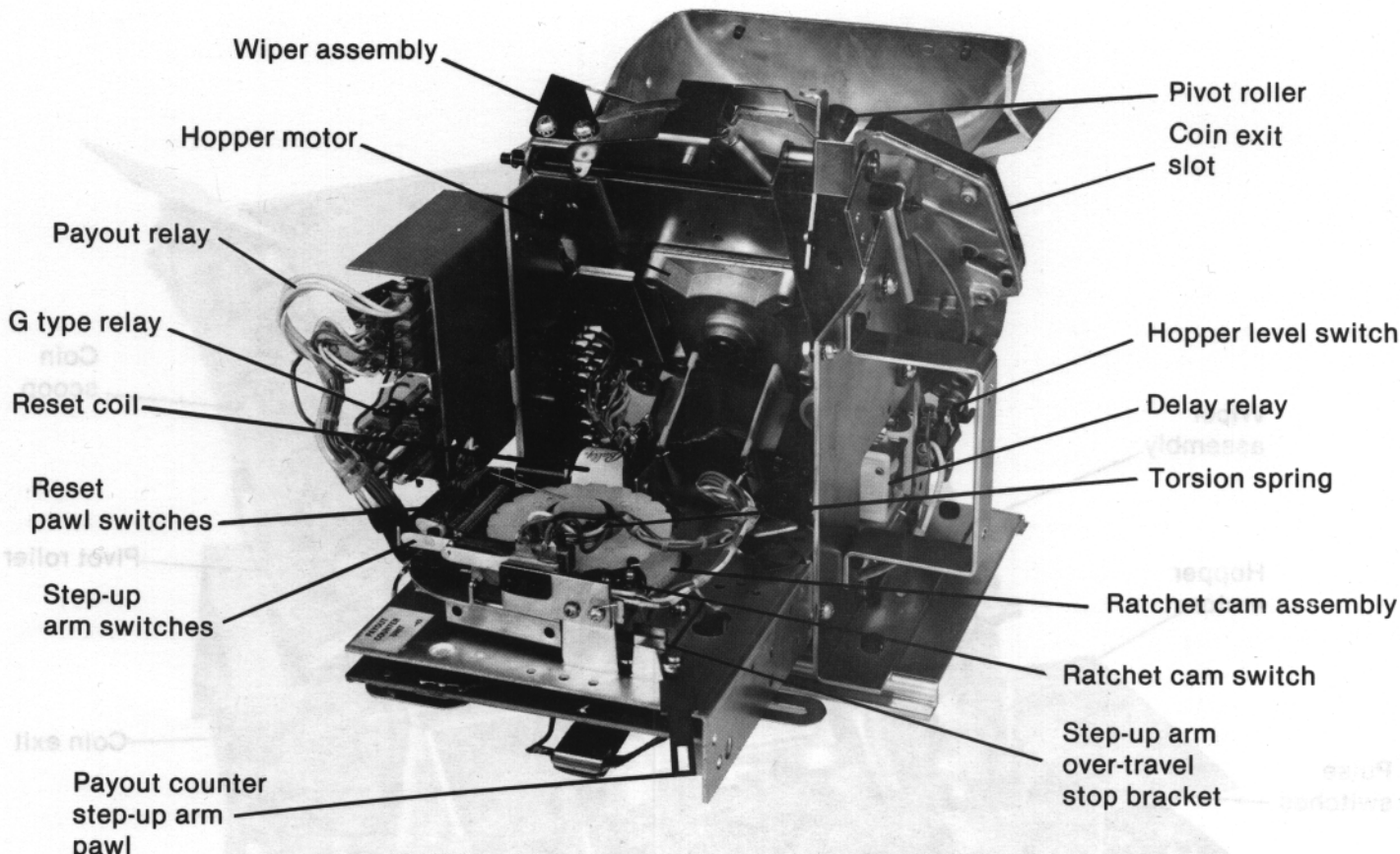
The hopper is also designed to maintain a reasonably large reserve of coins by means of a switch located beneath the hopper (new style) or above the hopper operated by a float ball (old style). The switch energizes the coin diverter coil when the coin level in the hopper is low, which allows coins inserted into the machine to go directly into the hopper. When the hopper is full, the switch opens the circuit to the coil, allowing all inserted coins to be fed directly to the cashbox beneath the slot machine.

As a safety consideration on older hoppers, a coin kicker is used to prevent excess coins from leaving the hopper after the completion of a payout. The coin kicker is connected to an override solenoid which is energized during a payout, allowing the coins to exit freely from the hopper. As the last coin of a payout exits the hopper, it operates the pivot roller arm initiating the end of a payout. The override solenoid is now de-energized. When the voltage is removed from the solenoid, an extension spring immediately returns the coin kicker to its normal position, kicking any coins back into the hopper casting which would otherwise be dispensed due to a normal overtravel of the hopper motor.

In the new hoppers, the coin kicker and override solenoid have been eliminated by the special design of the hopper motor. The motor, when energized, magnetically attracts a brake mechanism which allows the motor and pinwheel to turn freely. When the motor is de-energized, the magnetic field collapses immediately, causing the brake to engage with the motor, thus preventing any further coins from being dispensed.

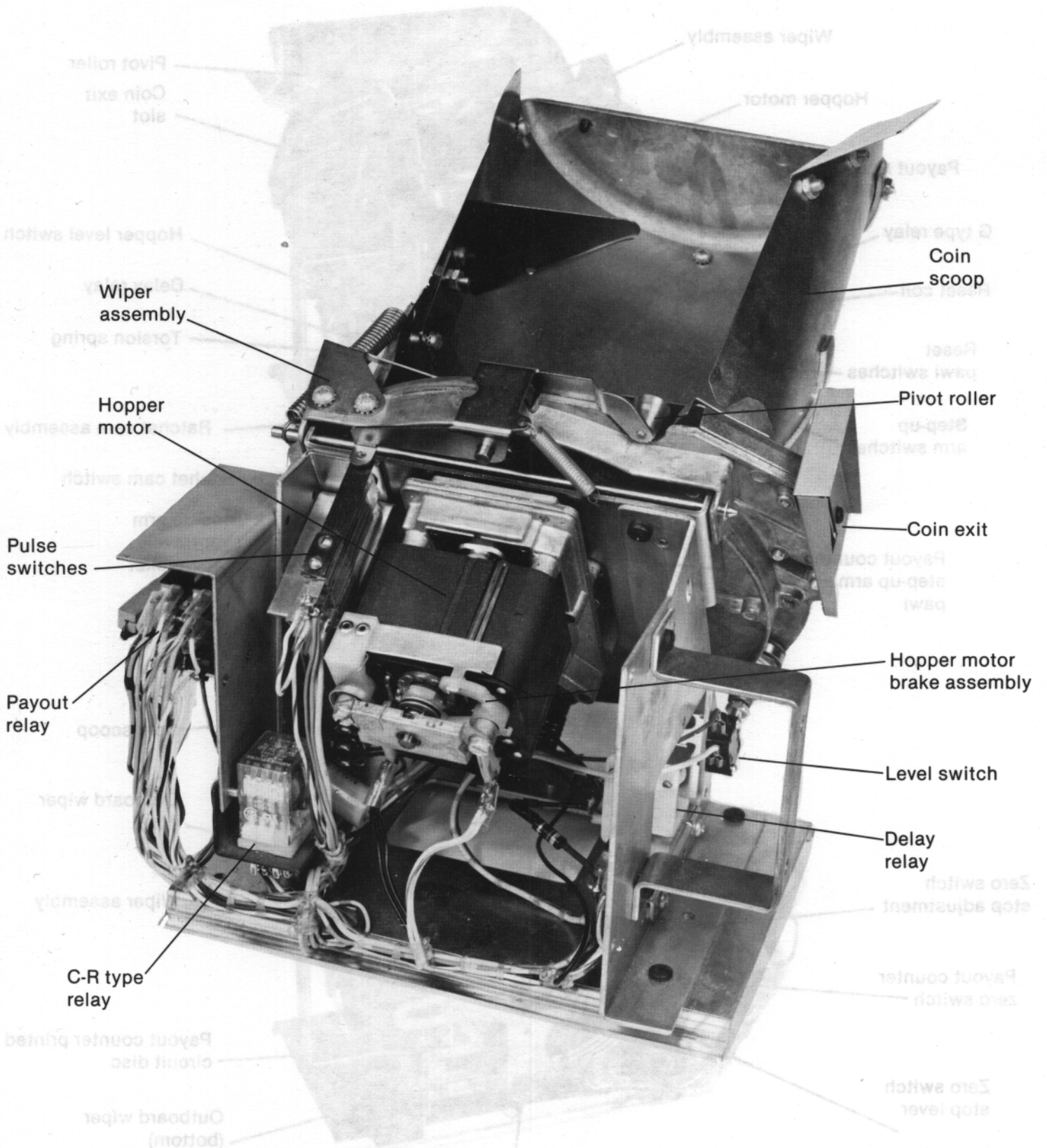
# HOPPER PAYOUT UNIT

## MECH. STEPPED

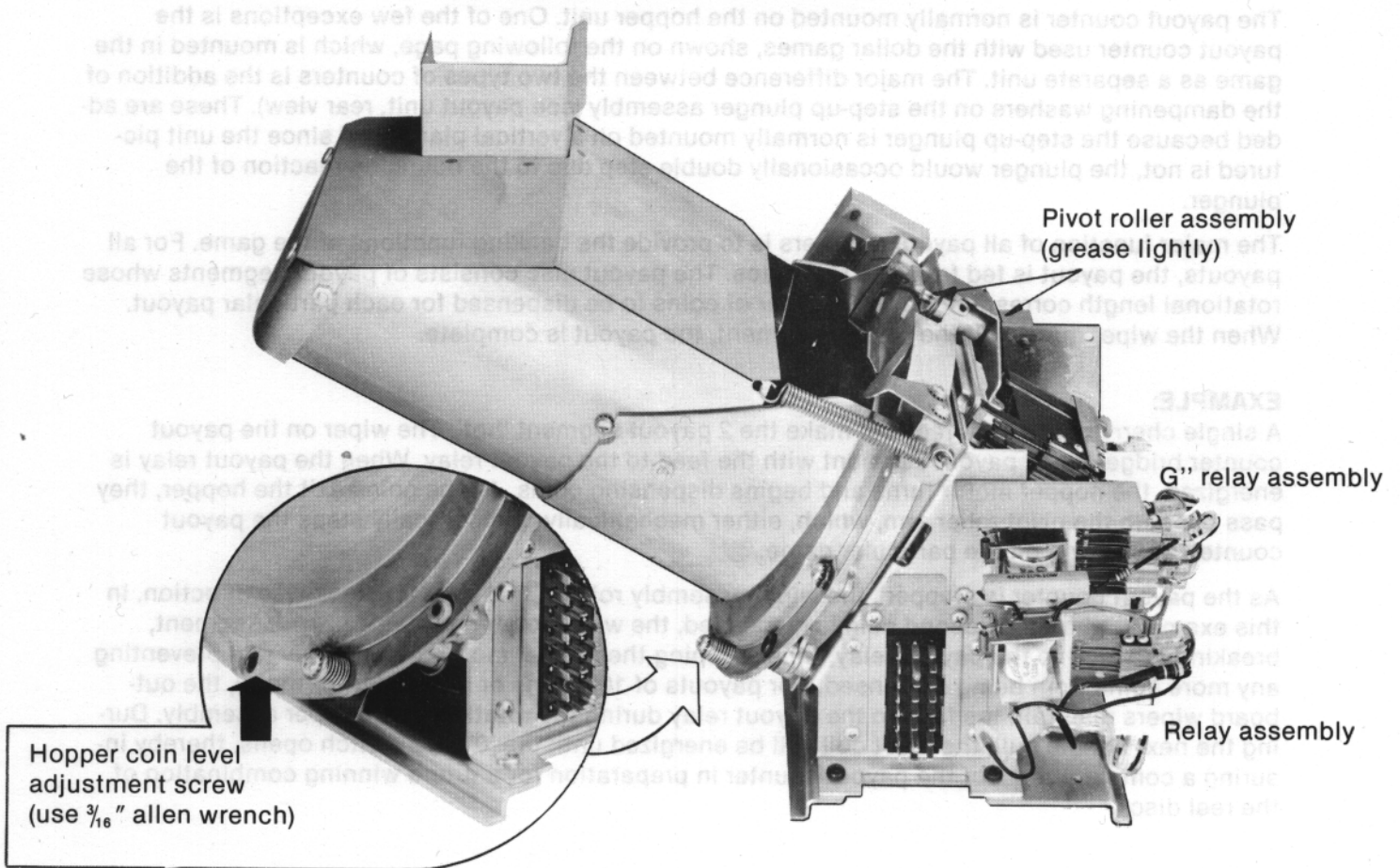


# DOLLAR HOPPER ASSEMBLY

## ELECTRICALLY STEPPED



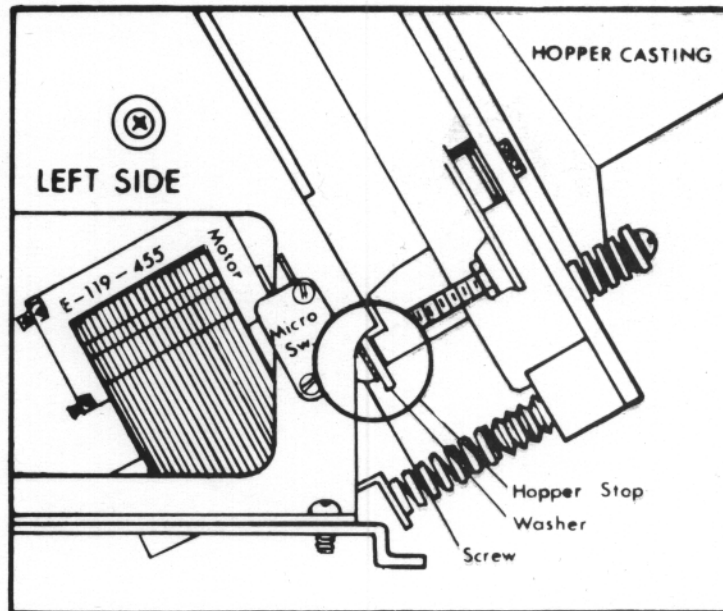
## DOLLAR HOPPER ASSEMBLY



## NICKEL - QUARTER

### HOPPER COUNTER BALANCE ADJUSTMENT

Adjustment is made by first filling the hopper with the desired level of coins. Then start the adjustment with the micro switch in the up position, adjust set screw screwed into a clockwise position. Now back off adjustment set screw counter clockwise very gradually until micro switch clicks into the down position. Now the hopper is set at the given desired capacity.



**NOTE:** The above side illustration shows the hopper stop, a screw and washer which screws into the lower back of the wheel housing casting. (Not shown in view 2-washers, 2 screws).

## PAYOUT COUNTER UNIT

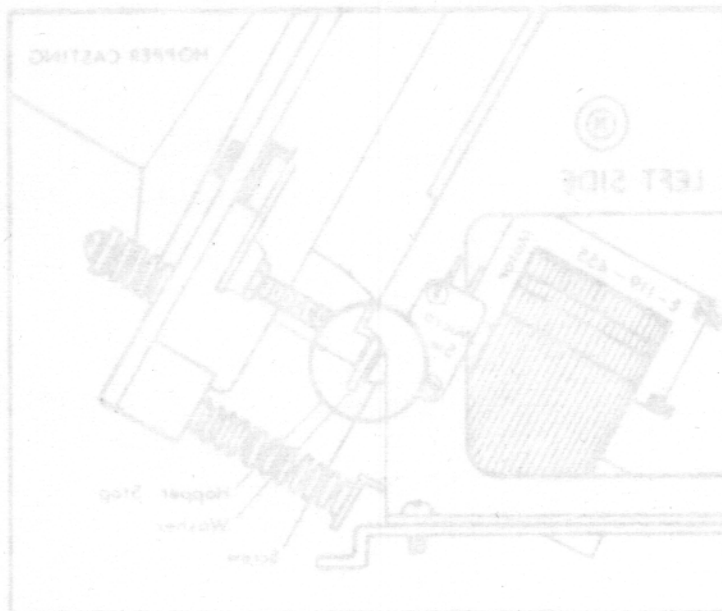
The payout counter is normally mounted on the hopper unit. One of the few exceptions is the payout counter used with the dollar games, shown on the following page, which is mounted in the game as a separate unit. The major difference between the two types of counters is the addition of the dampening washers on the step-up plunger assembly (see payout unit, rear view). These are added because the step-up plunger is normally mounted on a vertical plane, and since the unit pictured is not, the plunger would occasionally double step due to the bouncing reaction of the plunger.

The major function of all payout counters is to provide the banking functions of the game. For all payouts, the payout is fed from the reel discs. The payout disc consists of payout segments whose rotational length correspond to the number of coins to be dispensed for each particular payout. When the wiper moves off the payout segment, the payout is complete.

### EXAMPLE:

A single cherry on the first reel will make the 2 payout segment 'hot'. The wiper on the payout counter bridges the 2 payout segment with the feed to the payout relay. When the payout relay is energized, the hopper motor turns and begins dispensing coins. As the coins exit the hopper, they pass beneath the pivot roller arm, which, either mechanically or electrically steps the payout counter, depending on the particular game.

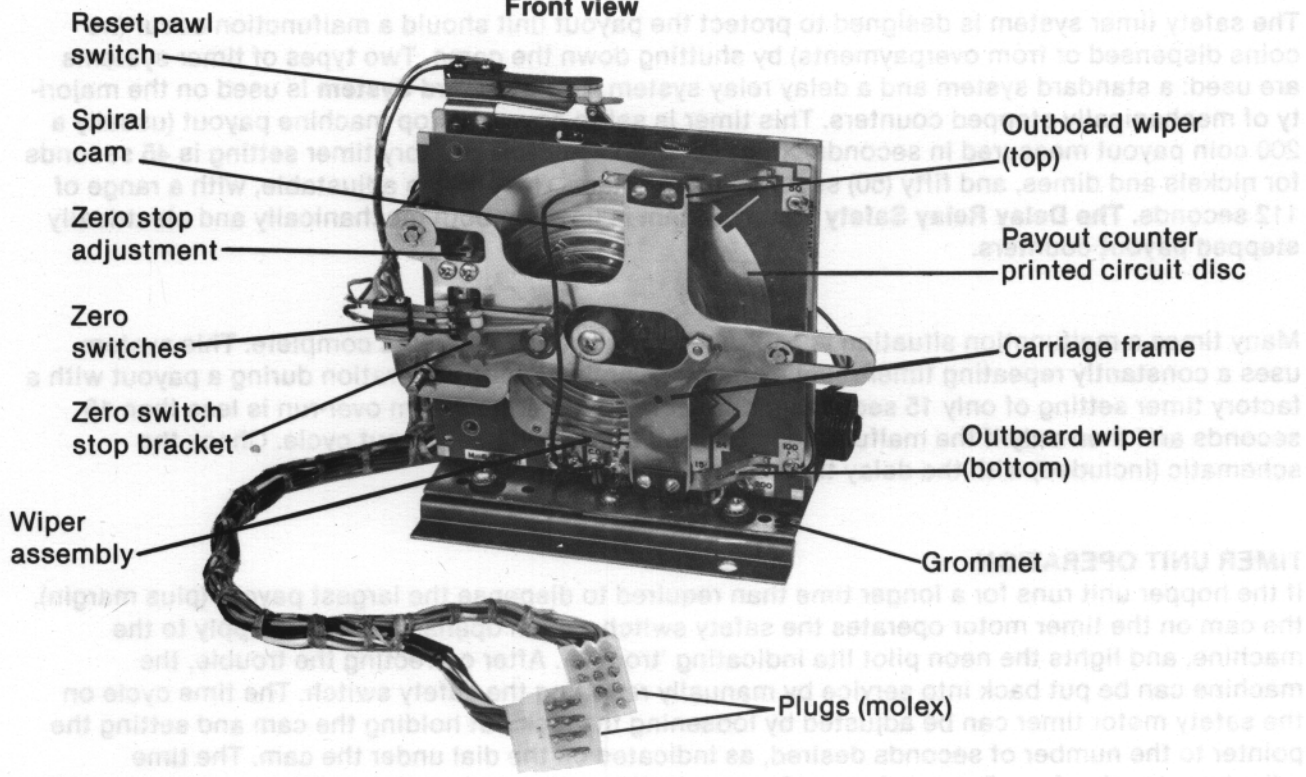
As the payout counter is stepped, the wiper assembly rotates in a counter clockwise direction. In this example, when the second coin is dispensed, the wiper rotates off the 2 payout segment, breaking the feed to the payout relay, thus stopping the hopper motor immediately and preventing any more coins from being dispensed. For payouts of 100 coins or more (360° or more), the out-board wipers maintain the feed to the payout relay during the rotation of the wiper assembly. During the next handle pull, the reset coil will be energized until the '0' stop switch opens, thereby insuring a complete reset of the payout counter in preparation for a future winning combination of the reel discs.



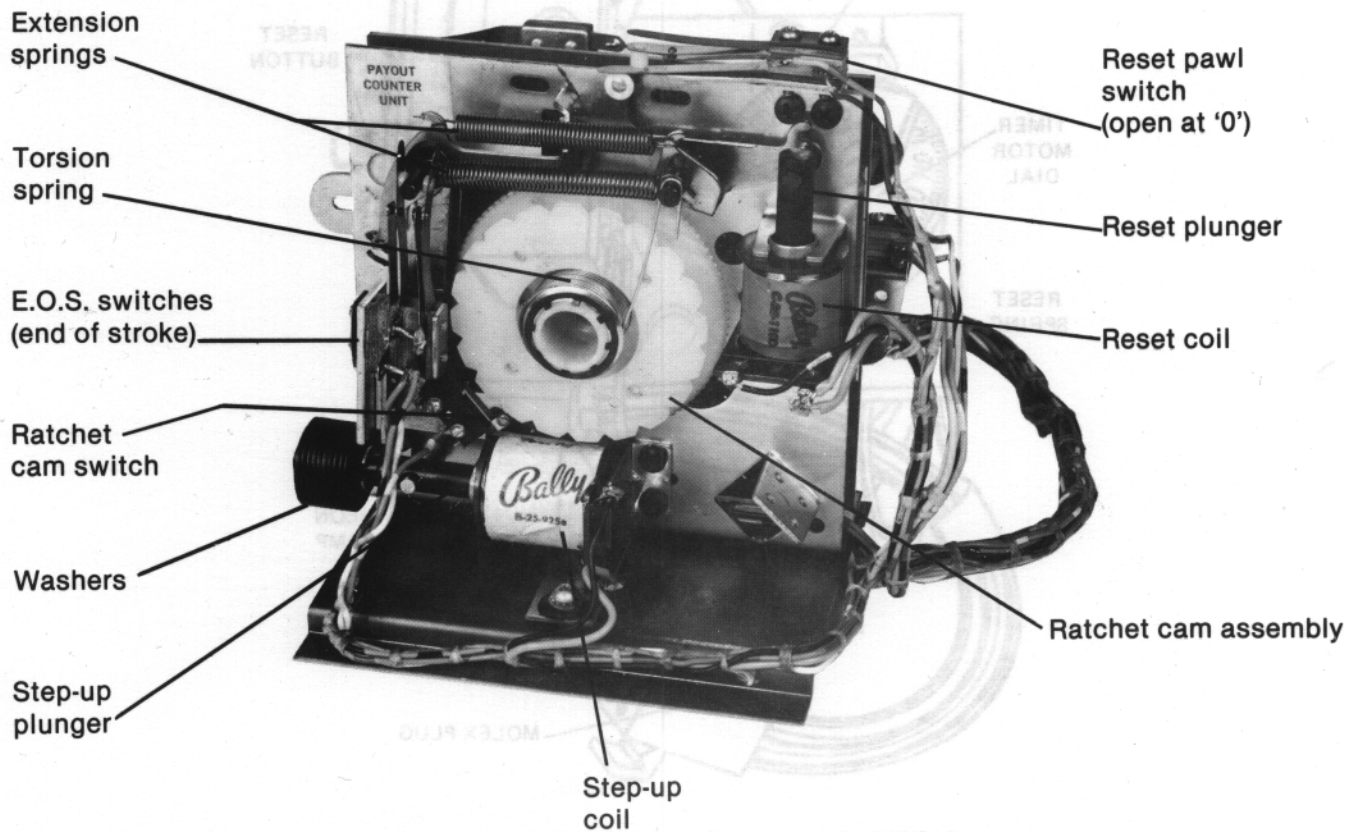
NOTE: The above illustration shows the hopper stop, a screw and washer which screws into the lower back of the wheel housing casting. (Not shown in view 5-washer, 5 screws).

# PAYOUT COUNTER

Front view



Rear view





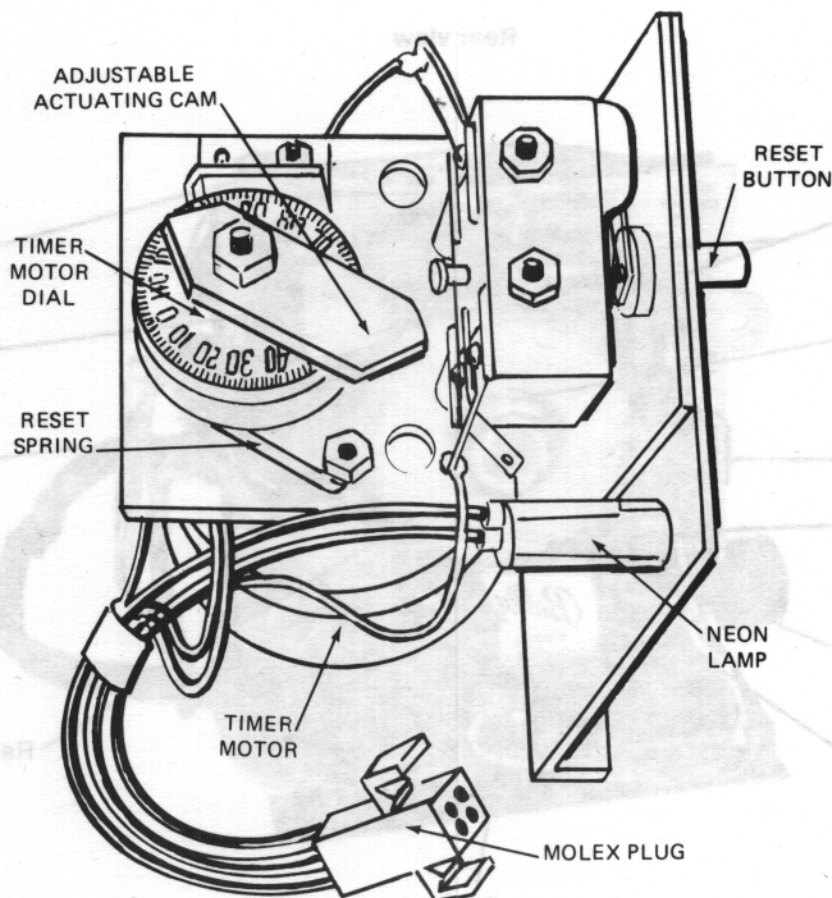
## PAYOUT SAFETY TIMER SYSTEM

The safety timer system is designed to protect the payout unit should a malfunction occur (no coins dispensed or from overpayments) by shutting down the game. Two types of timer systems are used: a standard system and a delay relay system. **The Standard System** is used on the majority of mechanically stepped counters. This timer is set to cover the top machine payout (usually a 200 coin payout measured in seconds), then cut-off. The normal factory timer setting is 45 seconds for nickels and dimes, and fifty (50) seconds for quarters. The timer is adjustable, with a range of 112 seconds. **The Delay Relay Safety Timer System** is used on both mechanically and electrically stepped payout counters.

Many times a malfunction situation is caught even before the payout is complete. This system uses a constantly repeating timer reset cycle of several seconds in duration during a payout with a factory timer setting of only 15 seconds (adjustable). So, the maximum over-run is less than 15 seconds and then only if the malfunction occurred at the end of a payout cycle. Check the schematic (included) with the delay time circuit for further details.

### TIMER UNIT OPERATION

If the hopper unit runs for a longer time than required to dispense the largest payout (plus margin), the cam on the timer motor operates the safety switch, which opens the power supply to the machine, and lights the neon pilot lite indicating 'trouble'. After correcting the trouble, the machine can be put back into service by manually resetting the safety switch. The time cycle on the safety motor timer can be adjusted by loosening the lock nut holding the cam and setting the pointer to the number of seconds desired, as indicated on the dial under the cam. The time adjustment varies from 5 seconds to 112 seconds. When the desired time setting is made, lock the cam securely and check by cycling the cam several times.



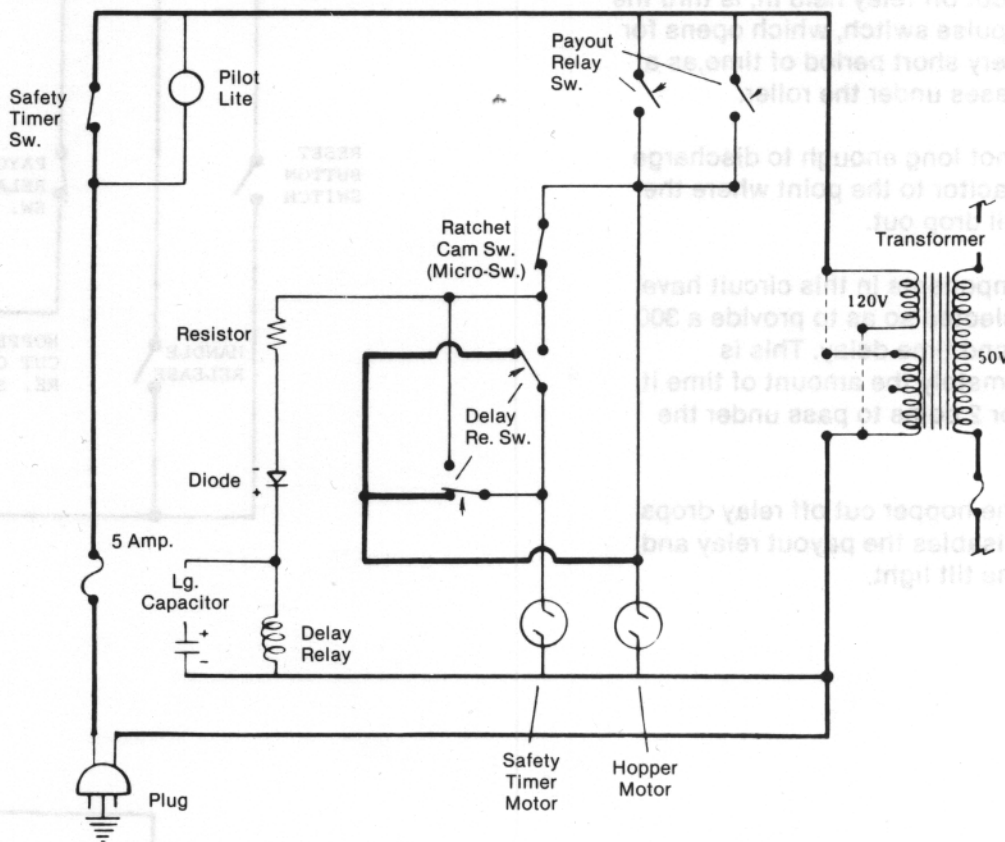
SAFETY TIMER MOTOR ASSEMBLY

## DELAY RELAY SAFETY TIMER SYSTEM CIRCUIT FUNCTION

The delay relay timer has the advantage of a very quick cut-off if a payout malfunction or over-run situation occurs. This system uses a cam operated micro switch unit installed on the payout counter ratchet gear, causing the circuit to the safety timer to open every few seconds during a payout. This action causes the timer to constantly reset itself every few seconds (every 5th step) until the payout is complete.

Because the timer cycle is only a few seconds in duration, the timer over-run is adjusted to only 15 seconds (factory set adjustable). This means if a malfunction occurs, causing an inability of the payout counter to step, this fault will be immediately caught (at any time during a payout) and the timer will quickly run out (15 second maximum). In many cases, this will cut off the game even before a payout is complete, which is in contrast to the 45-50 second run of the standard timer system.

The delay relay itself protects the timer system in two ways. When the payout relay switches energize the circuit, the delay relay switches (2 for insurance) complete a circuit from the ratchet cam micro switch to the safety timer. As the payout counter steps-up, the ratchet cam micro switch opens every 5th step, causing the safety timer and motor circuit to open and thus resetting the timer motor. The delay relay remains energized momentarily (large capacitor) to allow sufficient time for the safety timer motor to reset and, at the same time, momentarily preventing the second safety circuit from connecting into the hopper motor circuit. If this micro switch circuit does not pulse (counter does not step) and the micro switch does not open, the 15 seconds on the timer will run out and shut off the game. If the micro switch is stuck in an open position (payout counter not stepping), circuit continuity to this timer is maintained by a second safety circuit. At this time, the momentary charge held by the delay relay capacitor will be gone, de-energizing the delay relay. Now circuit continuity to the timer will be maintained via the hopper motor feed. Again the timer will be allowed to run out, shutting off the game.



In addition to reporting a payout malfunction by shutting the game down, the safety timer will also shut the game down should the hopper become empty before completing a payout.

## RATCHET CAM MICRO SWITCH ADJUSTMENT

On machines using a delay relay type safety timer system, an additional micro-switch is installed on the payout counter and it is operated by the ratchet cam gear. This cam operated micro-switch opens every fifth step and opens the safety timer motor circuit. (See the schematic circuit explanation). The micro-switch position is adjustable.

When the payout counter is at zero, the micro-switch should be on the first step of its five step cycle (circuit is closed). On the payout counters fourth step, the micro-switch follower should drop into the gear dwell which opens the circuit (fifth micro-switch position). As the counter continues to step-up, the micro-switch opens its circuit every fifth step during a payout cycle. (Adjust accordingly.)

## HOPPER CUT OFF RELAY

The primary purpose of this circuit is to prevent cheating by means of a wire being inserted thru the coin chute, holding up the hopper roller arm and preventing the payout unit from stepping during a payout. The hopper cut off relay is pulled in when the handle release trips or by pushing the reset button. Once energized, the relay is held in thru its own make switch and the parallel combination of normally closed payout relay and hopper pulse switches.

## HOPPER CUTOFF CIRCUIT

### USED IN DOLLAR MACHINES AND HIGH CAPACITY HOPPER MACHINES

When the payout relay is energized, the only path for current to keep the hopper cut off relay held in, is thru the hopper pulse switch, which opens for only a very short period of time, as a coin passes under the roller.

This is not long enough to discharge the capacitor to the point where the relay will drop out.

The components in this circuit have been selected so as to provide a 300 millisecond time delay. This is approximately the amount of time it takes for 2 coins to pass under the roller.

When the hopper cut off relay drops out, it disables the payout relay and lights the tilt light.

