

REEL MECHANISM

The principal function of the reel mechanism is to provide the selection of all the payouts in the game. It also controls the timing sequence from the handle pull up to the start of a payout, interrupting any feeds prior to the last reel setting, thus preventing any false payouts.

Over the years, there have been several myths attributed to a slot machine. Two of these can be dispelled by examination of the reel mechanism.

MYTH #1

The slot where the coin is inserted into the game is where the machine derives its name.

COMMENT

Adjacent to each reel is an index wheel consisting of 20 or more slots, each corresponding to a symbol, (i.e., cherry, plum, bell, etc.), on the reel, displayed through the reel glass of the front door.

MYTH #2

There is an adjustment concealed within the machine which can determine the frequency of payout or when the next payout will occur.

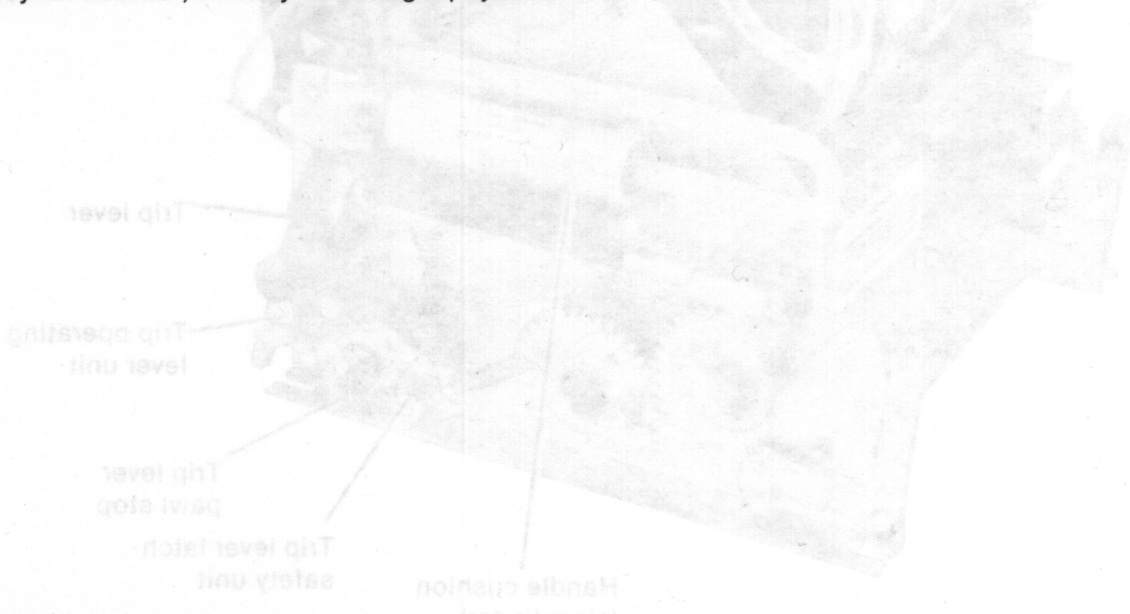
COMMENT

The frequency of payout is as random as a throw of dice. The payout of a machine is determined by which slots the index lever arms fall into during the course of a spin.

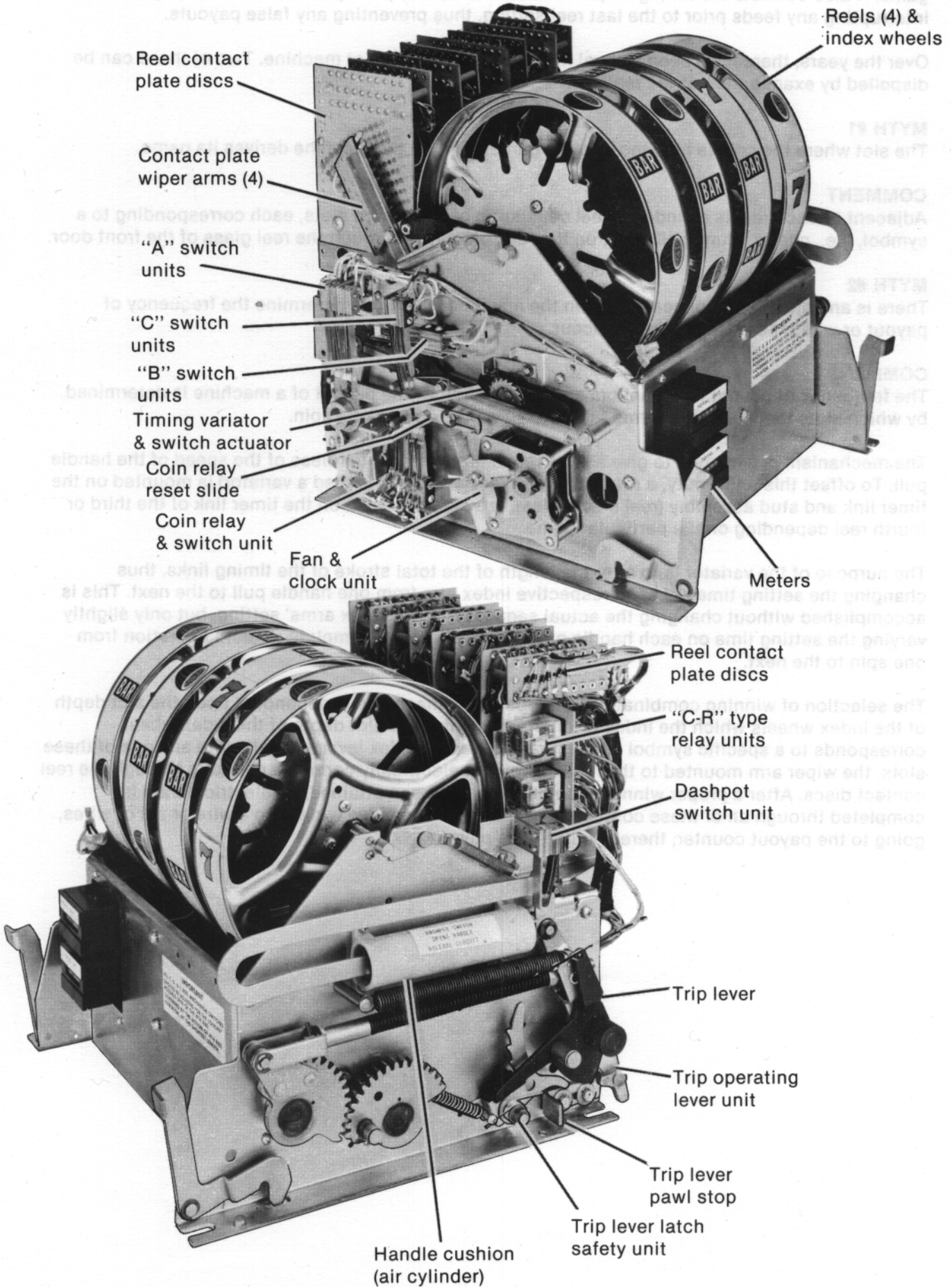
The mechanism is designed to give a relatively uniform spin regardless of the speed of the handle pull. To offset this uniformity, a ratchet with an eccentric hub (called a variator) is mounted on the timer link and stud assembly (reel mechanism, left side) and also on the timer link of the third or fourth reel depending on the particular game.

The purpose of the variator is to alter the length of the total stroke of the timing links, thus changing the setting times of each respective index arm from one handle pull to the next. This is accomplished without changing the actual sequence of the index arms' setting, but only slightly varying the setting time on each handle pull, thereby insuring complete random operation from one spin to the next.

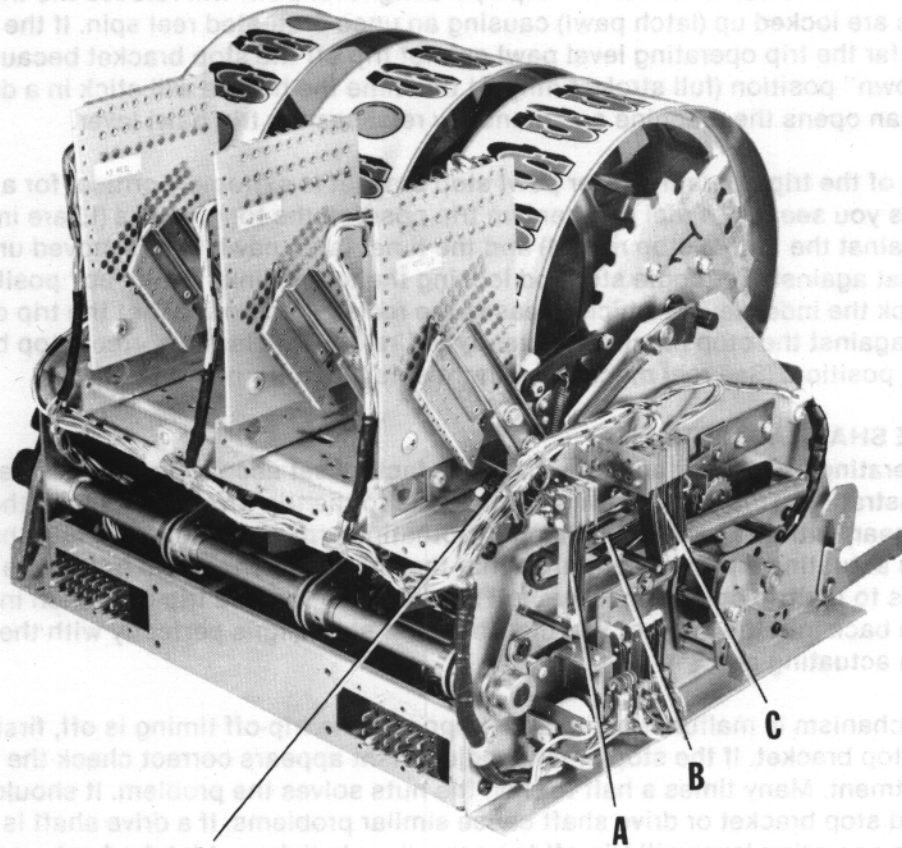
The selection of winning combinations on most Bally machines is dependent upon the slot depth of the index wheels which the index lever arms fall into. The slot depth of the index wheel corresponds to a specific symbol on each reel. When an index lever arm falls into any one of these slots, the wiper arm mounted to the index lever arm electrically connects contacts through the reel contact discs. After a proper winning combination has been attained, an electrical path is completed through all of these contact discs via their respective wipers, to a wire or set of wires, going to the payout counter, thereby initiating a payout.



REEL MECHANISM



REEL MECHANISM FUNCTION DOLLAR GAMES



#1 Snap Switch

Common circuit to multiple coin machine prevents inadvertent resetting of odds when last coin is dropped and handle is pulled before last coin passes the coin switch.

- A Transfer switch opens pay circuit and handle release circuit
- B1 Resets win meter
- B3 Resets payout counter
- C1 Opens payout and handle release circuits
- C2 Opens insert coin light circuit
- C3 Opens handle release circuit
- C4 Completes circuit to coin scavenger coil

REEL MECHANISM SERVICE

RIGHT SIDE REEL TRIP & SPIN ADJUSTMENTS

STOP BRACKET ADJUSTMENT

The next setting to be made is the stop bracket "J". This is done by moving the bracket to a position when measured, that should read approximately $1\frac{7}{8}$ " from the end of the side plate "K" to the inside form of the bracket (see reel mechanism right side illustration, rest position).

If the stop bracket is set in too far the trip operating lever pawl will release the trip lever before the toggle links are locked up (latch pawl) causing an unco-ordinated reel spin. If the stop bracket is set out too far the trip operating level pawl cannot trip off the stop bracket because the handle is in a full "down" position (full stroke limit). At this time the handle will stick in a down position until a service man opens the machine and manually releases the trip pawl lever.

The setting of the trip operating lever pawl stop bracket is extremely critical for a proper kick-off and spin. As you see in the reel mechanism trip position the toggle links (L) are in a "full up" position against the toggle stop rod (M) and the timer latch pawl (P) has moved under the toggle levers almost against the toggle stop rod locking the toggle links in an "up" position (in-turn cocking back the index levers which releases the reels). Also notice that the trip operating lever pawl (O) is against the stop bracket and ready to fire off. This is the correct stop bracket adjustment position. (See reel mechanism right side illustration, trip position.)

TRIP DRIVE SHAFT ADJUSTMENT

The trip operating drive shaft adjustment "F" is factory set according to the dimension shown in the first illustration. This setting gives a full stroke to the trip levers and aligns the roller stud (actuating gear) with the handle mechanism actuating arm. The alignment into the handle mechanism actuating arm is essential so that the handle mechanisms full stroke actuation corresponds to the trip operating levers full stroke actuation and trip-off. When installing a reel mechanism back into the cabinet see that the roller stud aligns perfectly with the handle mechanism actuating arm.

If a reel mechanism is malfunctioning and it appears the trip-off timing is off, first check the trip operating stop bracket. If the stop bracket adjustment appears correct check the trip lever drive shaft adjustment. Many times a half turn on the nuts solves the problem. It should be noted that a maladjusted stop bracket or drive shaft cause similar problems. If a drive shaft is adjusted too long the trip operating lever will trip off too soon (toggle links not latched up) causing an uncoordinated reel spin. If the drive shaft is adjusted too short the trip operating lever cannot trip off the stop (too long of a stroke) causing the handle to lock in a "down" position (reels still cocked). However, the essential drive shaft adjustment is the proper engagement into the handle mechanism actuator for a co-ordinated full stroke action.

To make this adjustment, turn the outer nut "E" on the threaded drive shaft "F" of the trip operating lever "G" to obtain a $1\frac{11}{16}$ " dimension shown.

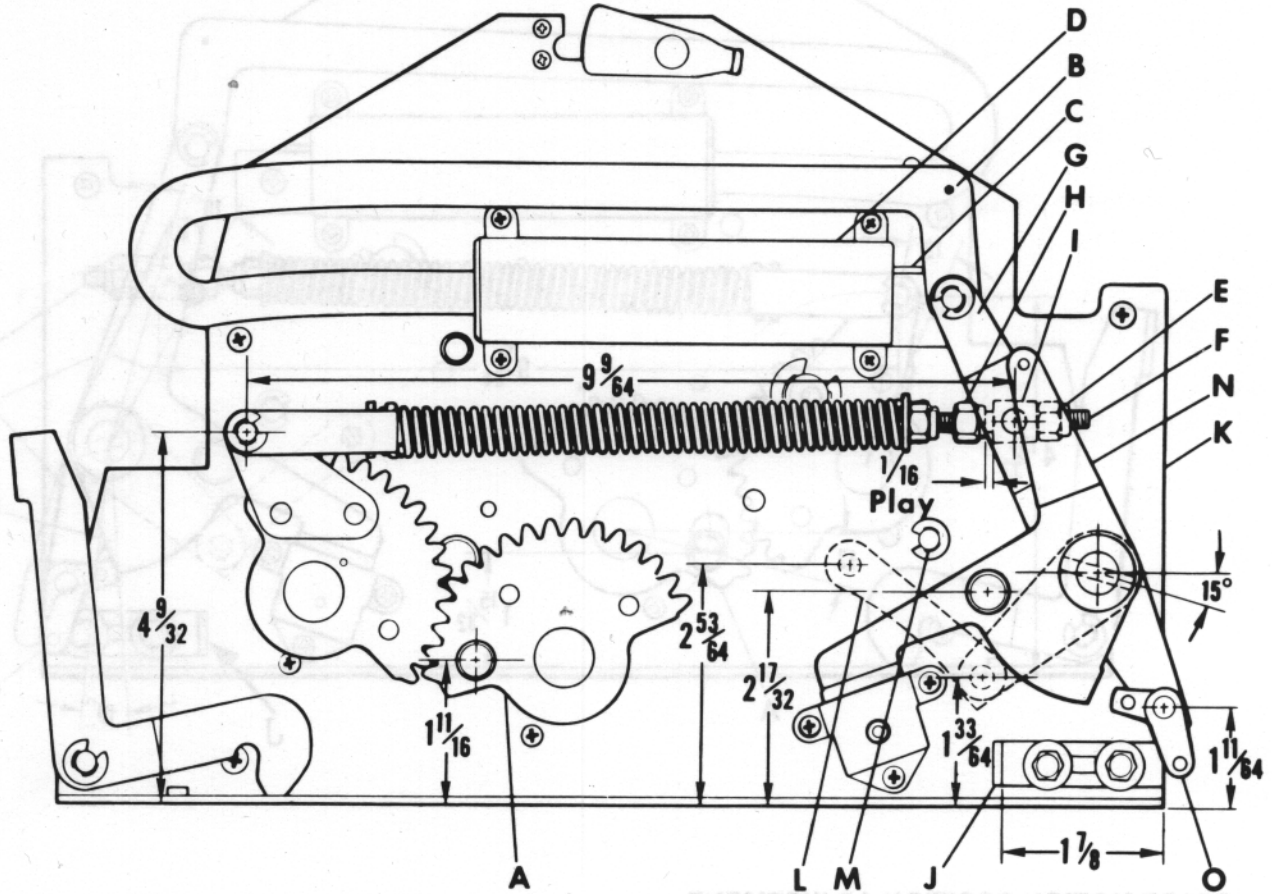
The inner nut "H" is now adjusted to give a minimum of $\frac{1}{16}$ " to a maximum of $\frac{3}{32}$ " of play between nut and coupling "I" as shown.

These figures are dependent on the trip operating lever pawl stop bracket "J" being adjusted exactly as described above.

REEL MECHANISM SERVICE

RIGHT SIDE REEL TRIP & SPIN ADJUSTMENTS

The following illustrations show the right side of the reel mechanism in the 3 positions prior to kick-off. The illustrations show the factory standard average settings of the trip operating lever stop bracket (J) and trip operating lever drive shaft (F). Also shown are the center line dimensions and operating distances of various levers and shafts. It should also be noted that because of variations in tolerances, these given dimensions are a general guide and may need calibrating when working on an individual machine.



REST POSITION ADJUSTMENT

The illustration of the reel mechanism is shown in a rest position with all adjustments completed for a proper operating mechanism. The dimensions shown are reference points for proper adjustments.

Set the reel mechanism on a flat surface. The first setting to be made is the height of the roller stud on the $\frac{1}{2}$ gear assembly "A". When checking the dimension be sure link assembly "G" is against stop plate "C" at the rear of cylinder "D".

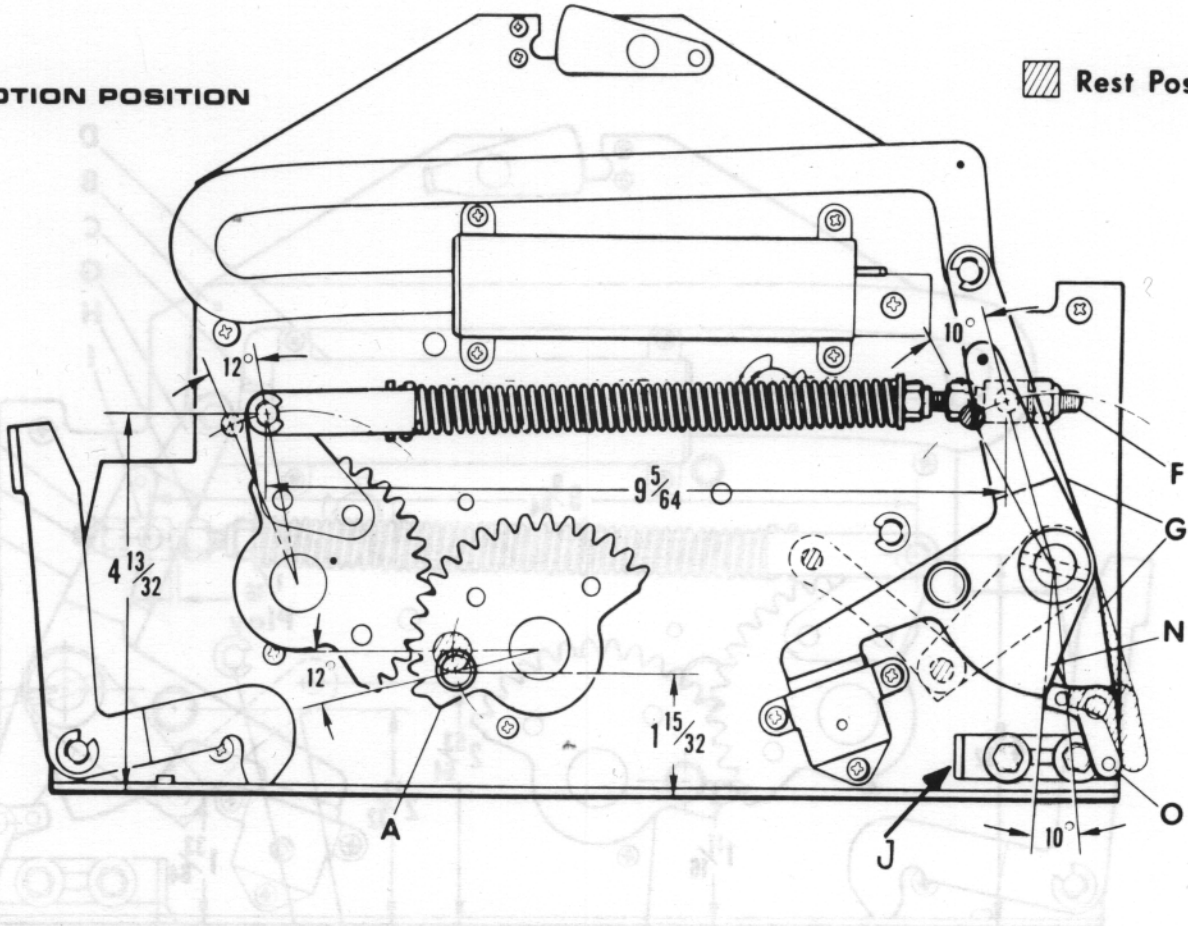
REEL MECHANISM SERVICE

RIGHT SIDE REEL TRIP & SPIN ADJUSTMENTS

The following illustrations show the right side of the reel mechanism in the 3 positions prior to kick-off. The illustrations show the factory standard average settings of the trip operating lever (stop bracket (J) and trip operating lever drive shaft (F). Also shown are the center line dimensions and operating distances of various levels and shafts. It should also be noted that because of variations in tolerances, these given dimensions are a general guide and may need calibrating when working on an individual machine.

START MOTION POSITION

Rest Position



START MOTION POSITION ADJUSTMENT

This illustration shows the starting movement of the $\frac{1}{2}$ gear assembly "A", trip operating drive shaft assembly "F" and trip operating lever pawl assembly "O" until making contact with trip lever assembly "N". At this point the internal mechanism's cycle begins its motion for cocking the reels.

Observe the toggle levers as they rise up to the point where they almost touch the toggle stop shaft. At this time, the latching pawls will move under the toggles, latching them in place (making a clicking sound as they latch up). At this exact moment, the trip operating lever pawl should be ready to trip off the stop bracket to fire off the reels. See the right side reel mechanism adjustments.

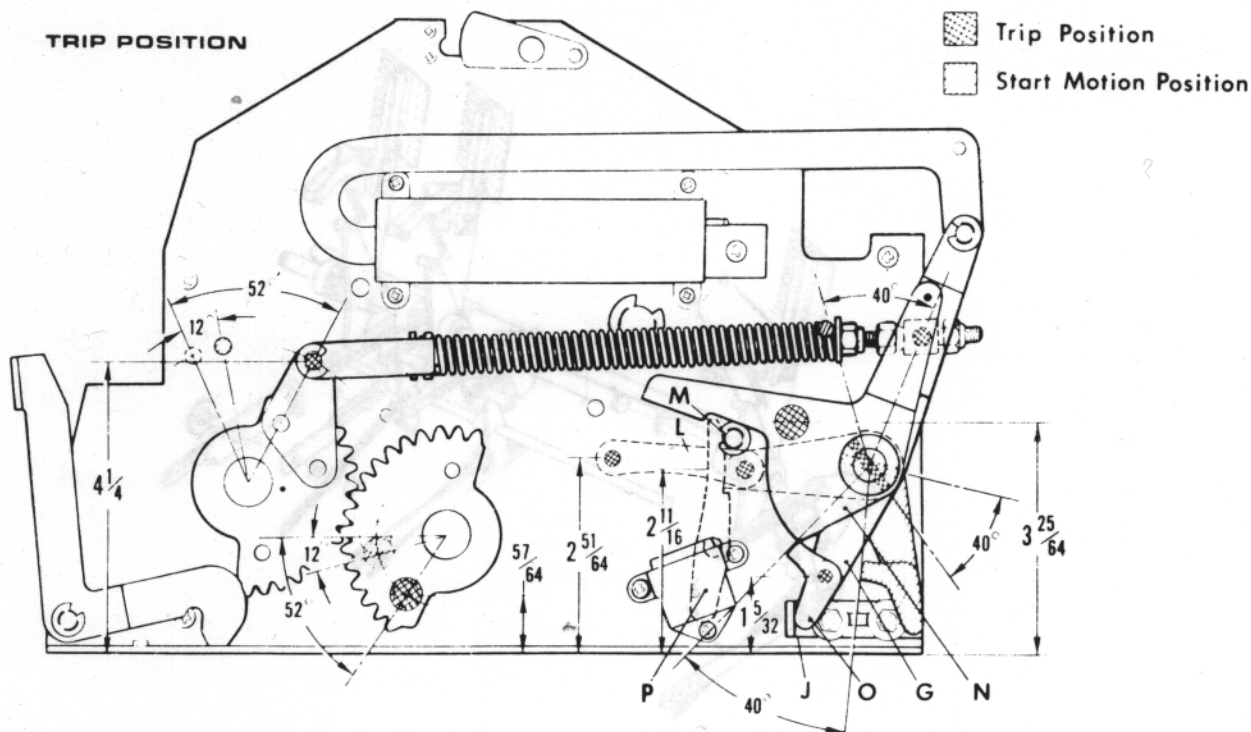
The stop bracket (J) adjustment can be checked by observing the action of the toggle levers as the handle is slowly pulled.

REEL MECHANISM SERVICE

RIGHT SIDE REEL TRIP & SPIN ADJUSTMENTS

TRIP POSITION ADJUSTMENT

This illustration shows the cocked mechanism just at the time of tripping the trip operating lever pawl "O" which in turn fires the drive lever (not shown) to spin the index wheels which in turn cause the reels to spin and unlatch the latch pawl assembly "P".



With the reel unit out of the mechanism, you can easily see if the trip operating lever is tripping off the stop bracket at the correct moment. (Note: Reel mechanism, right side stop bracket adjustment).

AIR CYLINDER OPERATION AND SERVICE

The air cylinder unit cushions the reel mechanism from stress caused by hard and fast handle pulls (in conjunction with the drive shaft compression spring) and also provides a smooth handle return. If it appears there is undue resistance to a handle pull check to see if the tiny hole in the end of the air cylinder (center) is plugged causing compression resistance. If it appears there is no delay action to cushion hard, fast handle pulls, you may need a new piston cup seal. The piston cylinder should be greased occasionally. (See lubrication specifications in the game manual).

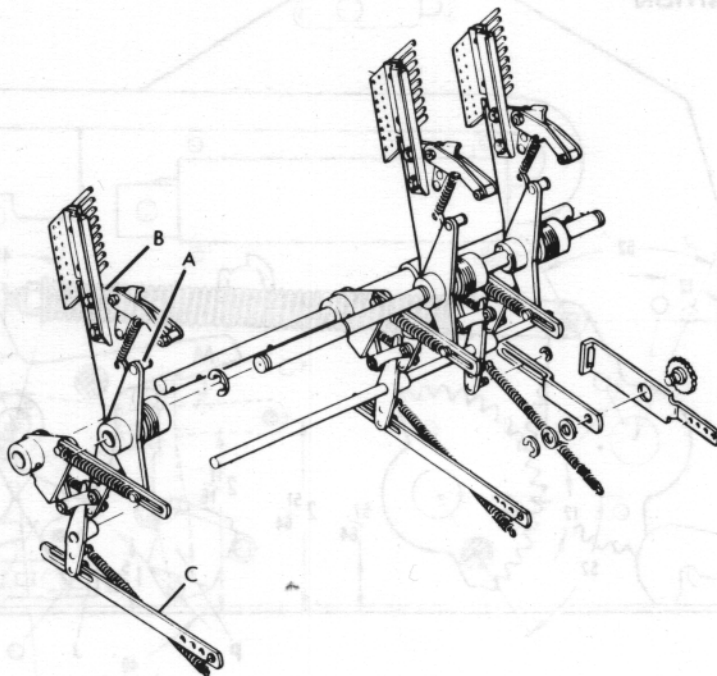
It is very important that this unit function correctly to prevent undue strain on the trip shaft's levers and arms, and also to prevent erratic reel motion during repeated fast, jerking Handle pulls.

REEL MECHANISM

INTERNAL SERVICE AND ADJUSTMENTS

For good service access to the internal working parts, remove the reel unit. Now wipe off excess grease and grime. The unit can now be lightly lubricated with our Lubriplate #1 oil. Slides and units with heavy duty loads can be lightly greased, using our Hydrotex Lube #651.

The only internal part variations from game to game are different drive lever arms (20 - 22 - 25 stop units), and wiper lever arm assemblies. Index arms for 22 and 25 stop games and timer latch arm links. The timer latch links have slightly different length adjustments (longer to shorter) so that the index lever arms can release in a timed 1-2-3-(4) (-5) reel stop sequence. (See the exploded view for adjustments).



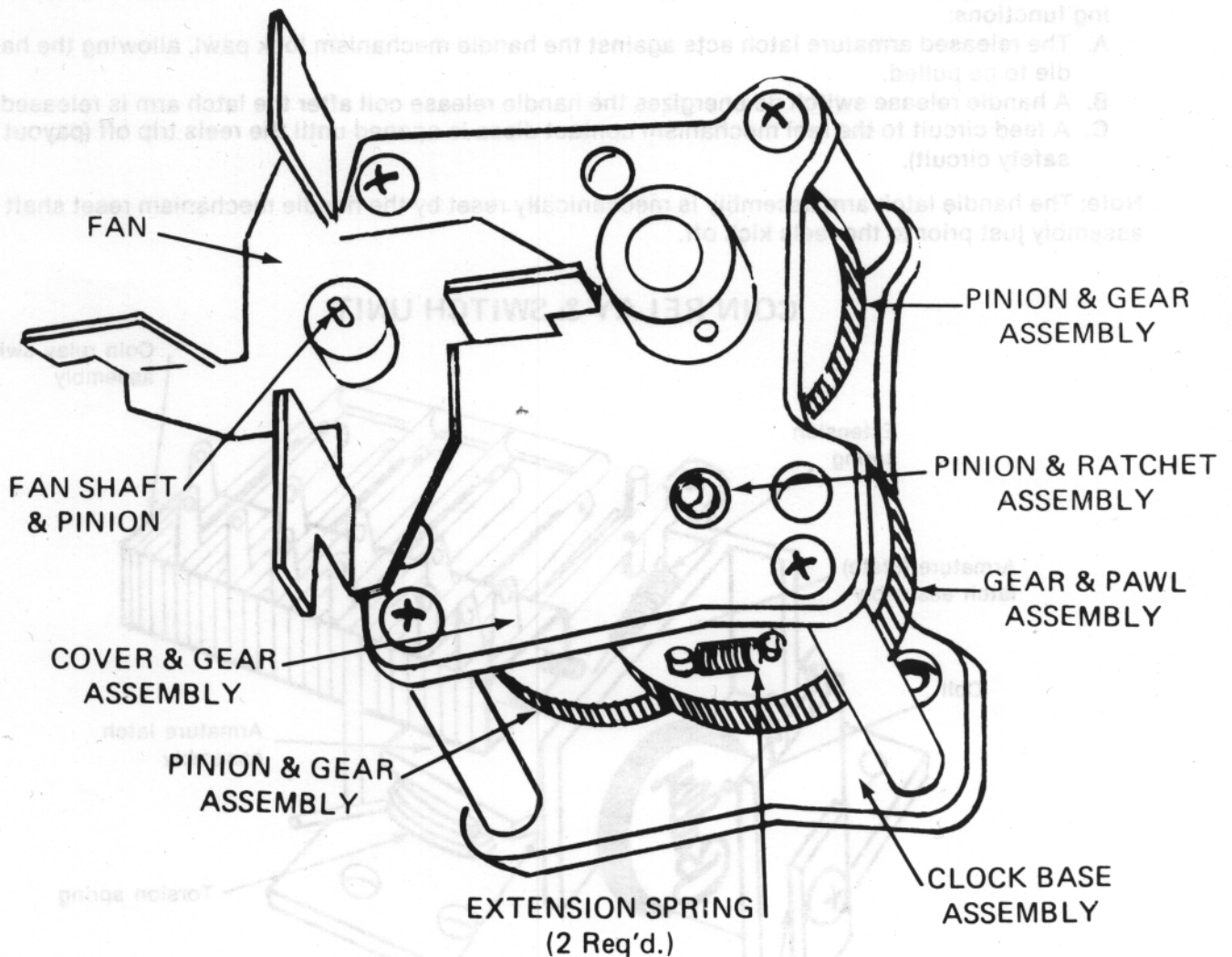
- A. Drive lever assembly
- B. Wiper arm assembly
- C. Timer latch link assembly

CLOCK UNIT

REEL MECHANISM

The clock controls the timed return action of the timer shaft after the reels kick off. It's the timer latch link action which drops out the latch lever pawls (toggle links are released). This clock-controlled action allows the index lever arms to index back into the reel slot to halt the spin. The clock is precision engineered to take heavy duty use, but it must be cleaned and lubricated occasionally (For lubrication specifications refer to the game manual.)

CLOCK ASSEMBLY



COIN RELAY UNIT

REEL MECHANISM

The coin relay unit is a major coil-operated (mechanically latched) switching unit on the left side of the reel mechanism. This unit is energized by a pulse from the coin switch and is mechanically reset by the coin relay reset slide which is connected to the trip shaft (via switch operating lever trip shaft.)

When the coin relay unit is activated, the switch functions are as follows:

1. The circuit to the coin relay coil is de-energized after tripping the switches.
2. The circuit to the 'insert coin' lite is transferred to 'coin accepted' lite.
3. The feed circuit to the reel mechanism contact plate discs is instantly opened to prevent any possibility of the payout relay from being energized (i.e. payout counter malfunction) before the play cycle has been completed.
4. After the initial coin has been deposited (single coin game), the coin lockout coil is de-energized to return any further deposited coins until the play cycle is complete. Multi-coin games use additional odds/line coin limit switches and jackpot lock-up switches in this circuit.
5. The circuit to the handle release and total-in meter is now energized. The handle release coil releases a spring loaded armature latch which actuates its switches, which perform the following functions:
 - A. The released armature latch acts against the handle mechanism lock pawl, allowing the handle to be pulled.
 - B. A handle release switch de-energizes the handle release coil after the latch arm is released.
 - C. A feed circuit to the reel mechanism contact discs is opened until the reels trip off (payout safety circuit).

Note: The handle latch arm assembly is mechanically reset by the handle mechanism reset shaft assembly just prior to the reels kick off.

COIN RELAY & SWITCH UNIT

