

## COMPONENT PARTS OF THE SIX CARD TYPE BINGO GAME

BALL LIFT MOTOR - Lifts ball to playfield & pulses timer unit.

SHUTTER MOTOR - At start of new game opens the shutter and drops all the balls. Also resets trip relays, payout counters (replay counters), timer unit and card selector unit. Closes shutter when first ball is shot or when game is tilted.

CONTROL UNIT - Consists of motor driven cam switches which turn on or turn off certain circuits at certain times.

- A. TIMER CAMS - Turns when coins are inserted or replays are played. Each revolution of the timer cam will:
  - 1. Subtract one replay off the replay register (if replays are registered)
  - 2. Step the card selector one step.
  - 3. Pulse the reflex unit play magnet.
- B. REPLAY CAMS - Turns when scoring a "hit". When turning, the replay cams will:
  - 1. Send pulses to the replay register to add replays.
  - 2. Send pulses to the replay counter to count replays added.
  - 3. Send pulses to the reflex out magnet.
- C. 1,2,3 & 4,5,6 SEARCH DISCS & WIPERS - Turns to sense a bingo "hit". When turning, the search wiper will stop when it senses a "hit" until the score is collected.

TIMER UNIT - Senses how many <sup>balls</sup> have been shot at any given time and controls certain functions of the game at specific times.

CARD SELECTOR UNIT - Determines how many cards (from 1 to 6) player is playing. The card selector unit steps up once for each coin inserted (or replay played off).

REPLAY COUNTERS (sometimes called payout counters) - Counts the number of replays added onto the replay register.

4<sup>th</sup> BALL RELAY - Energizes after fourth ball is shot and allows scores to be collected.

SEARCH RELAYS - Any 3, 4, or 5 adjacent search relays stop the search disc on a winning "hit"

REFLEX UNIT - Self-adjusting unit that controls overall proportioning of the game.

- A. PLAY MAGNET - (also called the "in" magnet) pulses as games are played off (or coins inserted) to "loosen" the game.
- B. OUT MAGNET - Pulses as scores are added on the replay register to "tighten" the game.

PROBABILITY UNIT (sometimes called RANDOM UNIT) - A mixing device which turns on certain circuits at mystery intervals. It controls such items as corners feature, spotting feature, super lines feature and double or nothing.

REPLAY REGISTER UNIT - Stores replays and visually displays them to the player as a score.

TIMER CAMS INDEX COIL - When energized, allows timer cams to turn.

REPLAY CAMS INDEX COIL - When energized, allows replay cams to turn.

SEARCH INDEX COIL - When energized, stops the search disc wiper from turning.

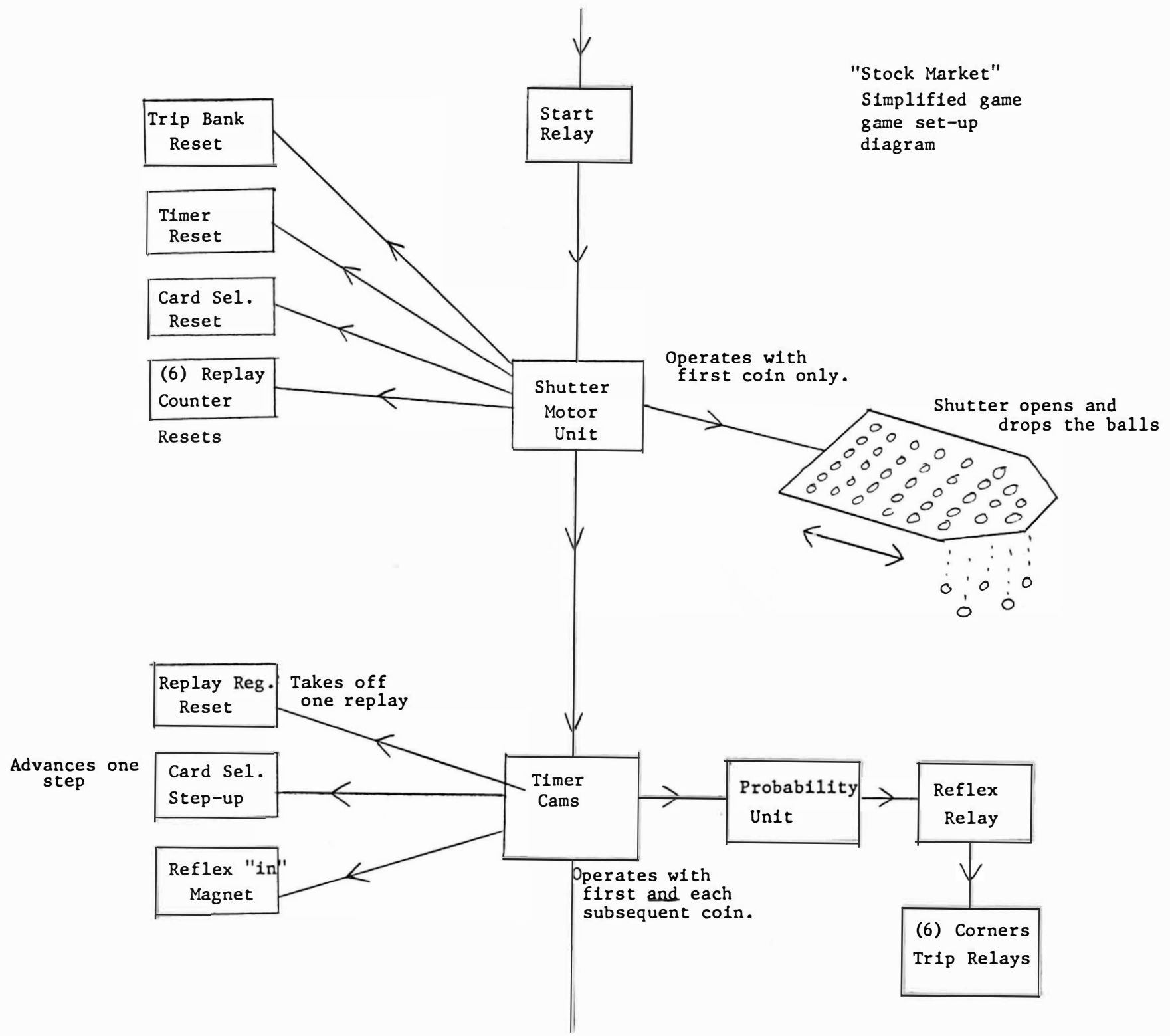
#### SIX CARD BINGO GAME SEQUENCE OF OPERATION

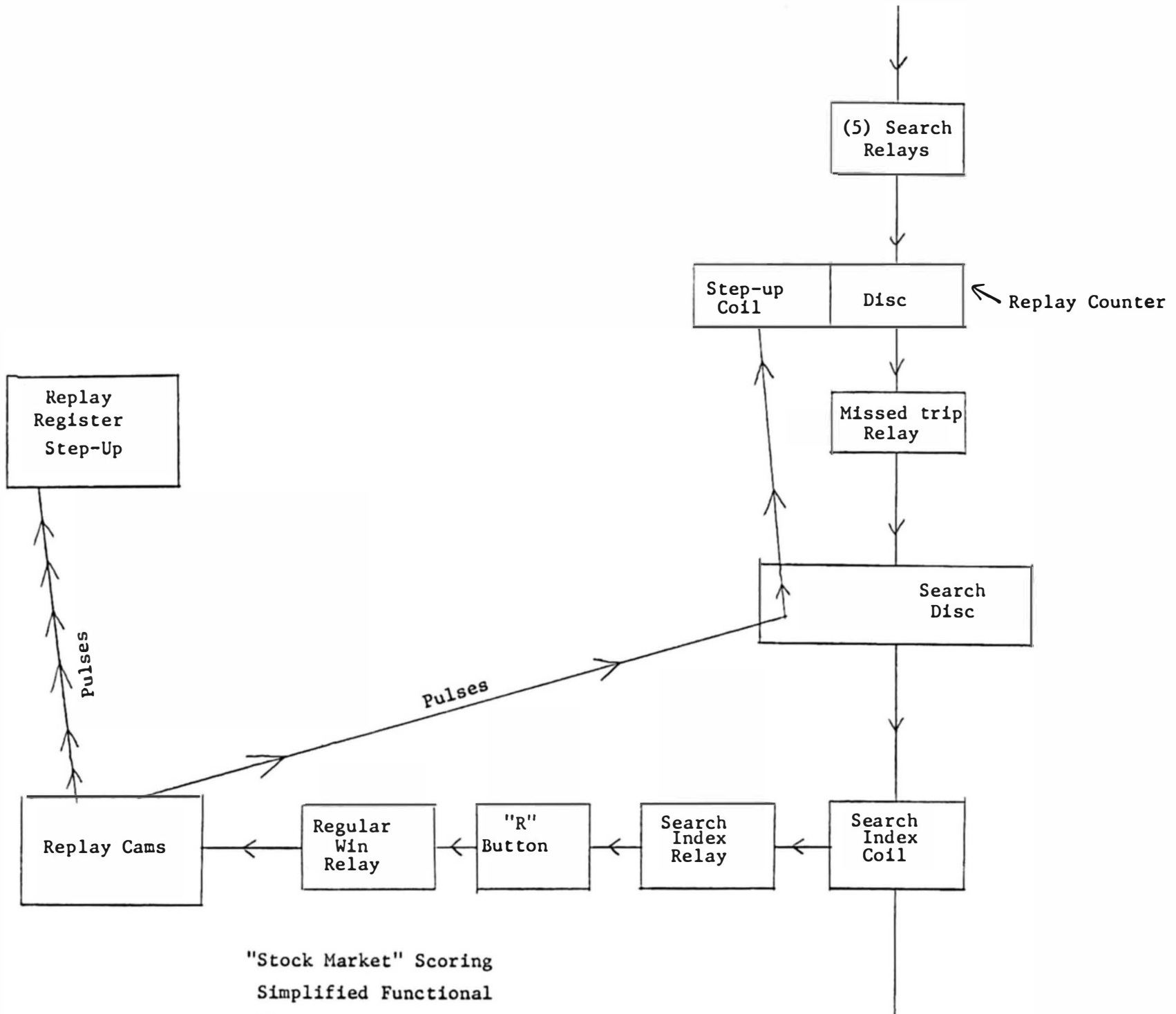
##### GAME SEQUENCE:

1. Coin switch (or red button if replays are being played) energizes the start relay.
2. Switch on the start relay energizes the shutter motor.
3. Shutter motor runs from shutter closed position to shutter open position which drops the balls and resets the units through various shutter cam switches.
4. Timer cams index coil energizes allowing timer cams to turn.  
The timer cam:
  - A. Steps the card selector once.
  - B. Subtracts one game from the replay register.
  - C. Pulses the reflex unit "in" magnet.
5. Ball lifter motor lifts the ball to the playfield and steps the timer unit once with each ball lifted.
6. At 5th position the timer unit turns off the control unit motor and enables the circuits to the "C" Button.
7. Pressing the "C" Button:
  - A. Resets the timer unit which turns on the control unit motor.
  - B. Energizes the 4th Ball Relay.
  - C. Energizes the 1,2,3 Search Wiper Lock Coil which allows the 1,2,3 Search Wiper to turn with the control unit motor.
8. The search wiper turns and scans all of the lines on the cards looking for a possible "hit".
9. When any three (or four or five) adjacent search relays energize simultaneously they cause the Search Index coil to energize which stops the search wiper until the score is collected.
10. When the player depresses the "R" Button (regular score), the Regular score relay will be energized.
11. When the Regular Score relay is energized, it also causes the Replay Cams Index Coil to be energized. When energized the Replay Cams Index allows the Replay cams to turn. When turning, the replay cams:
  - A. Pulse the Replay Register to add replays.
  - B. Pulse the replay counter to count the number of replays added.
12. The Replay Cams Index Coil will remain energized and add replays until such time as the Replay Counter reaches the proper position and stops the scoring cycle.

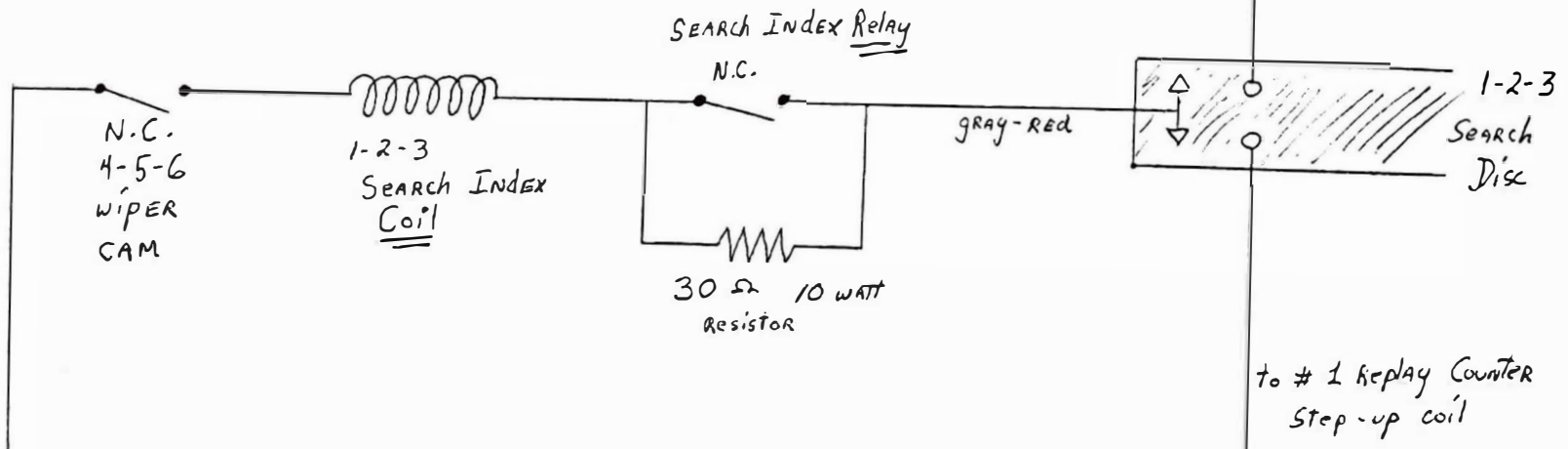
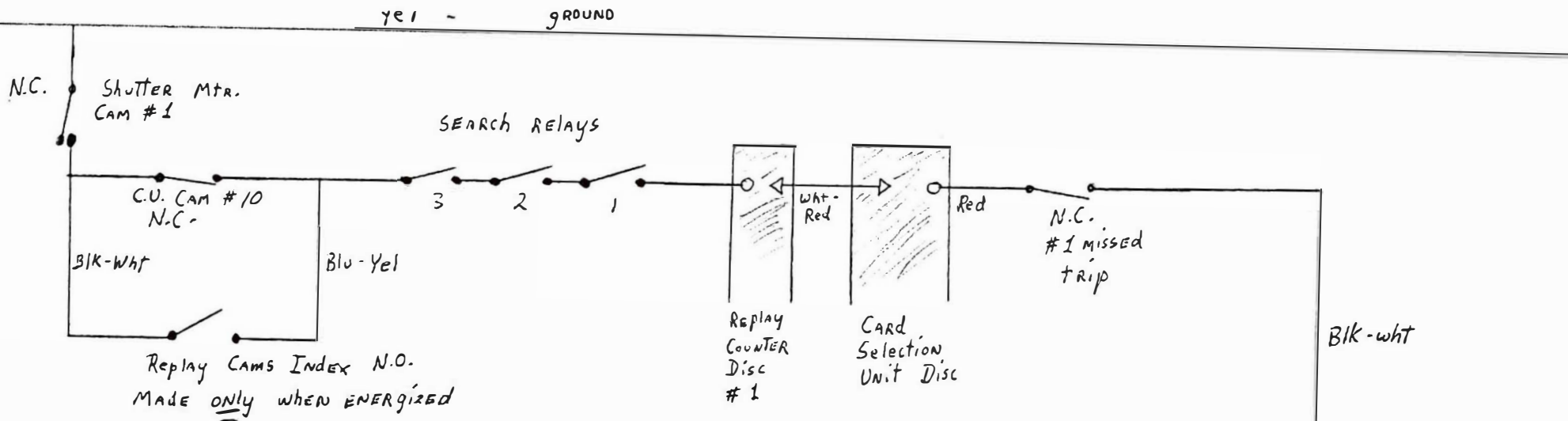
How are the scores counted? The ratio of pulses sent to the Replay Register to pulses sent to the Replay Counter is 4 to 1. That is to say that for every one step of the replay counter four games will be added to the replay register. For example if a score of 16 is to be added, the replay cams index will stay energized until the replay counter has stepped four times. Four times four equals sixteen games on the replay register.

"Stock Market"  
Simplified game  
game set-up  
diagram





"Stock Market" Scoring  
 Simplified Functional  
 Diagram



"STOCK MARKET"

Simplified 3 in line search index circuit

ORANGE - 50 v.

<u>PROBLEM</u>	<u>CAUSE</u>	<u>CORRECTION</u>
Won't accept coins.	Coin lockout coil not energized.	<ol style="list-style-type: none"> <li>1. Check to see that no replays are registered; if replays are present, no coins will be accepted.</li> <li>2. Check fuses and make sure that 50 volt supply is present.</li> <li>3. Check that all components of the control unit (timer cams, replay cams, &amp; both search wipers) are indexing properly.</li> <li>4. Check switches: <ol style="list-style-type: none"> <li>A. timer cam index N.C.</li> <li>B. card selector unit, open at top</li> <li>C. anti-cheat re. N.C.</li> <li>D. shutter cam #4, O.W.O.</li> <li>E. replay register zero switch</li> <li>F. 1-2-3 &amp; 4-5-6 search wiper cams</li> <li>G. C.U. cam #3 N.C.</li> </ol> </li> </ol>
Game will not start. With coins or with replay button.		<ol style="list-style-type: none"> <li>1. Check indexing as above.</li> <li>2. Check switches: <ol style="list-style-type: none"> <li>A. replay reset relay N.C.</li> <li>B. C.U. cam #5 N.C.</li> <li>C. Coin switch</li> <li>D. Replay register zero switches.</li> <li>E. 1-2-3 &amp; 4-5-6 search wiper cams</li> <li>F. C.U. #3 cam N.C.</li> <li>G. Shutter cam #5 N.O.</li> <li>H. anti-cheat relay switches</li> <li>I. card selector open at top switch</li> <li>J. replay button</li> </ol> </li> </ol>
Balls drop but are not lifted to playfield.	Ball lift motor fails to run.	<ol style="list-style-type: none"> <li>1. Check switches: <ol style="list-style-type: none"> <li>A. 5th ball trough switch</li> <li>B. Ball lifter switch</li> <li>C. lifter start relay N.C.</li> <li>D. ball lifter motor cam #1B</li> </ol> </li> </ol>
First ball is shot & no more balls are lifted to playfield.	Ball lifter motor inoperative after first ball.	<ol style="list-style-type: none"> <li>1. Check ball shooter lane gate switch for positive opening.</li> <li>2. Ball lifter relay sticking or magnetized.</li> </ol>
First ball is shot and shutter doesn't close.	1st ball keeps coming up.	<ol style="list-style-type: none"> <li>1. Timer unit not stepping up. Check the following: <ol style="list-style-type: none"> <li>A. timer unit switch, open at top</li> <li>B. replay cam index N.C.</li> <li>C. ball lifter motor cam sw. #2</li> <li>D. broken wire on timer unit S.U. coi</li> </ol> </li> </ol>
All five balls can be shot but shutter fails to close. Timer unit stepping OK.	Shutter motor fails to run.	<ol style="list-style-type: none"> <li>1. Check switches: <ol style="list-style-type: none"> <li>A. Ball lifter motor cam switch #1 N.C.</li> <li>B. Shutter cam #6 C.W.O.</li> <li>C. lifter start relay N.C.</li> <li>D. timer unit wipers &amp; disc</li> </ol> </li> </ol>
"C" (Collect) button inoperative.	4th ball relay doesn't energize.	<ol style="list-style-type: none"> <li>1. Check switches: <ol style="list-style-type: none"> <li>A. anti-cheat relay N.O.</li> <li>B. timer unit wipers &amp; disc</li> <li>C. "C" button switch</li> <li>D. shutter cam #2 O.W.O.</li> <li>E. 4th ball relay N.O.</li> </ol> </li> </ol>

"R" (Regular)  
button inoperative.

"D" Button inoperative

After "C" button is  
pressed, game fails  
to pick up (stop on)  
in-line "hits". May  
affect some or all  
cards.

Game stops on "hits"  
when no in-line  
"hits" are present.

Game lights more  
than one card at  
a time.

Search index coil  
fails to energize

One or more search  
relays magnetized  
or sticking.

Card selector  
unit sticking  
and not resetting  
properly.

Timer cams turn-  
ing more than one  
turn at a time.

1. Check switches:

- A. "R" button switch
- B. "D" button switch
- C. double play relay N.C.
- D. 4th ball relay N.O.
- E. search index relay N.O.

1. Check switches:

- A. "D" button switch
- B. "R" button switch
- C. Replay index N.C. (made only at rest)
- D. regular win relay N.C.
- E. 4th ball relay N.O.
- F. search index relay N.O.

- 1. 1-2-3 & 4-5-6 search discs dirty or gummed up.
- 2. Clutches on 1-2-3 & 4-5-6 search wipers slipping
- 3. One or both 30 ohm 10 watt resistors (on search index relay) defective. Check by shorting it out.

- 4. One or more search relay contacts burnt or out of adjustment.

5. Check switches:

- A. 1-2-3 & 4-5-6 search wiper cam sws.
- B. 1-2-3 & 4-5-6 search index coils
- C. search index relay N.C.
- D. switches on search index coils
- E. #1 thru #6 missed trip relays N.C.
- F. card selector wiper & disc
- G. replay counter(s) wiper & disc
- H. C.U. cam #10
- I. replay index N.O. (made only when energized)
- J. shutter motor cam #1

1. Check as follows:

Take a jumper and connect to any yellow (30) ground wire. Carefully touch jumper to coil "hot" side intermittently of each search relay and observe if relays are sticking. Even the slightest hesitation indicates a problem. Install tape on any sticking relays and re-adjust switches.

1. Clean unit & lubricate.

- 1. Check for excessive clutch tension.
- 2. Check timer cams index assembly adjustment. Index arm should fall straight into notch on index cam.