# **Baker Pacers**

"The Aristocrat of Console Games"

## **Service Manual**

A partial reprint of the original manual from the collection of Stan and Betty Wilker, dated August 1982.

## TO SET UP GAME FOR USE

REMOVE FRONT DOOR and REMOVE VENT SCREW in top of gear housing of motor. SAVE THIS SCREW for future use to retain the oil when shipping the machine or motor. Next, reach behind pay-out slides and swing the LOADING-DOG (280X) over and block slides. This will prevent slides from paying out coins while loading the coin tube. This dog hangs over and behind rear end of the payout slides and is pivoted on slide cover. It may be necessary to push all slides slightly forward by hand in order to catch this dog behind them. When this is done, play about one hundred coins into the coin slots, seven at a time, and play the game until coin tube is filled. Now RELEASE the LOADING-DOG behind the slides, REPLACE the FRONT DOOR and the game is ready for use. For your convenience, two bags are furnished with each game. When making collections, remove the full bag, install the empty one, LOCK the DOOR and the game is ready for use. Handling collections in this manner saves time and eliminates the necessity of the game standing idle. It is best not to remove or install cash bag while the game is in motion.

## **MOTOR**

THE MOTOR IS OF UNIVERSAL TYPE and can be operated on either AC 110 Volt or 110 Volt direct current. The motor will give good service if it is lubricated properly and the carbon brushes should be examined occasionally for wear. When removing the brushes for examination, be sure that they are replaced in the same position. Turning them will change the contact position on the commutator and this will cause unnecessary arcing. It is advisable to have a spare motor on hand so that the game will not be idle should it be necessary to send the motor to the factory. (Sec GREASING and OILING for proper lubrication of motor.)

# **ELECTRIC CIRCUIT**

THE JACK-SWITCH (RH-9007) is located at the coin-head and it is used to start the game in motion. The MERCURY SWITCH. known as the secondary connection is located at the left hand side of the pay-out slides. The REAR CONTACT on the JACK-SWITCH is broken when the Coin Entry Slide (RH-109) is pushed forward and when a coin is in the coin slide the FRONT CONTACT on the JACK-SWITCH is connected and is held in position until the coin slide moves to the rear and closes the rear contact. The circuit is now closed by both contacts being connected and the current starts the motor. The Carriage (RH-115) travels forward, releasing Lever (RH-296), allowing the MERCURY SWITCH to tip and make contact. When the Carriage (RH-115) travels to

the far end of the track, it travels over pull-down Ramp (RH-207X) which in turn pulls the coins down in coin-head and breaks the contact of the JACK-SWITCH. The coin-head is now. released and in normal position so that coins can be inserted for the next race. The MERCURY SWITCH continues to be connected to complete the operation of the game until the carriage (RH-115) returns and resets the ME'RCURY SWITCH to normal position.

## THE PNEUMATIC PRINCIPLE

BAKERS PACERS being of pneumatic type: it is necessary to somewhat understand the principle of pneumatics so if trouble does arise, it can be quickly and efficiently corrected. The Pneumatic or Vacuum principle is the simplest and most trouble-free system of operation yet devised. The Pneumatic method is reliable and best proven by the fact that piano actions, many of which are fifty years old, are still giving good service today. You will find this system simple, efficient, and very interesting to work with. Vacuum differs from air pressure inasmuch as it has a tendency to seal itself and rarely does a leak occur in the tubes or connections.

#### THE POWER-PLANT

The Four Large Bellows or Pumps which are actuated by the crank-shalt together with the Vacuum Chamber on which the Four Bellows are mounted is called the POWER PLANT. This, when in motion sucks out the air, creating a vacuum. A Vacuum SPILL VALVE (RH-320) or governor which regulates the amount of Vacuum is mounted on the rear of the POWER PLANT. EXCESS vacuum is released by the SPILL VALVE. For proper results, the game requires 25 to 30 inches of vacuum. INSUFFICIENT vacuum will cause a slow forward movement of the horses and sluggish pay-out. For MORE vacuum, tighten tension of (RH-495) spring on SPILL VALVE and LOOSEN the tension of spring for LESS vacuum.

#### THE VALVE-BOX

THE VALVE-BOX which might be termed the CENTRAL STATION is located just behind the Power Plant. The VALVE-BOX consists of an upper and lower section and between the two is an AIR CHAMBER. When the POWER PLANT is in operation, the air is sucked out of the center chamber through the 7/8" tubing and a vacuum is created. This center section is better known as the VACUUM CHAMBER. There are a series of TWENTY leather DISCS in the lower section of the VALVE-BOX known as VALVE POUCHES. one for each inlet covering its particular function. Vacuum being above the VALVE POUCHES with the aid of the small BLEED-CUP allows a Pouch to rise whenever the holes in the PAPER ROLL or any opening allows the OUTSIDE AIR to SHORT CIRCUIT or break the vacuum. When a VALVE-POUCH is raised, it in turn lifts a VALVE which is located in the UPPER SECTION of the VALVE-BOX and when raised, this valve transfers the VACUUM from the VACUUM CHAMBER and allows the vacuum to collapse or operate any pneumatic connected to it. The BLEED-CUP (RH-226) which is located at the edge of each pouch in the LOWER SECTION allows the vacuum to

suck the air out of the TRACKER-BAR (RH-275) tubing as the paper roll travels over the TRACKER-BAR and closes the holes. The BLEED-CUP allows the VALVE STEM (RH-1007) and Pouch to re-set rapidly. It is possible that dust or foreign substance might be drawn through the tubes and clog the small hole in the BLEED-CUP, preventing the proper action of a pneumatic. This can easily be remedied by removing the BLACK TUBING or in-take of the particular valve giving trouble and clear the line by sucking on the tube. For convenience, we have used BLACK TUBING for the VENT or IN-TAKE and RED TUBING for the VACUUM or POWER LINES.

For example, to understand this better, let's consider the PAPER ROLL and the action of the SEVEN HORSES. The PAPER ROLL travels over the Tracker-Bar (RH-275) to which nine tubes are connected, seven for the horses and one on each end for reversing the Paper Roll. Each row of the perforated round holes in the Paper Roll represent a movement of a certain horse and the elongated holes at each end of the roll operate the TWIN-REVERSE PNEUMATIC (RH-I021).

The HOLES in the Paper Roll cause a SHORT CIRCUIT or BREAK in the vacuum as holes in the paper pass over the VENT HOLES in the TRACKER-BAR, thus allowing the corresponding VALVE-POUCH in the VALVE-BOX to function. The raising of the VALVE POUCH lifts the VALVE STEM above it and transfers the vacuum to one of the seven HORSE PNEUMATICS (RH-1013), collapsing it, which actuates the RATCHET BAR (RH-1006) and moves the horse one notch for each perforated hole in the Paper Roll.

Every pneumatic movement throughout the game is just a duplicate of the above action, with each pneumatic having its individual circuit and function.

The VALVE-BOX contains three rows of Valves: the SEVEN in the FRONT ROW towards the POWER PLANT operate the seven horses 1, 2, 3, etc. reading from left to right: the center row of six Valves operate the payouts 2, 4, 8, etc. or from low to high, numbering from left to right. The third row of seven are the UTILITY VALVES, from left to right operate the COIN HEAD PNEUMATIC, CARRIAGE RETURN, SHUT-OFF PNEUMATIC, UPPER REVERSE PNEUMATIC, LOWER REVERSE PNEUMATIC, DIAL SPINNER PNEUMATIC and the last valve to the right is a SPARE. (Sec Diagram PLATE-12.)

# THE COIN·HEAD PNEUMATIC

The COIN-HEAD PNEUMATIC (RH-1022) which has seven COIN FINGERS (RH-266X) attached to it is located on the front of the Coin-Head. The vacuum is transferred and collapses this pneumatic after each race by the opening of the SHUT-OFF VALVE on the FINISH-BOARD. When this pneumatic collapses, the seven COIN FINGERS travel in and engage with the last coin or coins played. The fingers contacting the coin or coins played hold up the travel of the coin fingers which open the respective VALVES in the COIN-HEAD PNEUMATIC and this transfers the vacuum through to the KICKOFF VALVES (RH-239) on the Finish-Board and if a coin was played on the WINNING HORSE, the vacuum then travels through to the proper DIAL HEAD PNEUMATIC

(RH-1019) and a pay-out takes place, according the the odds shown on the ODDS DIAL. If the COIN FINGERS (RH-266X) happen to get bent out of adjustment or do not re-seat properly. they might cause a pay-out the same as if a coin were played. To determine a LEAKY VALVE, press the COIN FINGER-VALVE gently by hand with no coins in the slots. If the COIN FINGERS are seating properly but not contacting the coins enough to allow the vacuum to be transferred, then the game will fail to payout. This can be determined by raising the COIN FINGERS by hand. If this trouble occurs, bend the upper end of the fingers in towards the coin to get the proper lift. If the fingers are raising high enough on all seven coins to transfer the vacuum properly to the KICK-OFF VALVES, they are working satisfactory. If the game still fails to pay properly, the next step is to test the KICK-OFF VALVES located on the FINISH-BOARD at the end of the tracks. (Sec Kick-Off Valves.)

## THE BY-PASS PNEUMATIC

The BY-PASS (RB-1014) is located on the base of the cabinet directly behind and operated by a wire connected to the PAY-OUT SLIDES.

As the CARRIAGE (RH-115) returns to normal, the SHUT-OFF VALVE (RH-855) is open, causing the COIN-HEAD PNEUMATIC (RH-1022) to remain closed thus allowing the COIN FINGERS (RH-266X) to scan the coin-head for a pay-out. The pressure of the coin fingers against the coins must be released as the CARRIAGE resets LEVER (RH-296). This is done by the BY-PASS (RH-1014) which closes the vacuum to the COIN-HEAD PNEUMATIC just after the pay-out takes place and allows the COIN FINGERS to travel away from the coins in the coin-head. If the BY-PASS should fail to operate, the COIN FINGERS would stay in and the coins for the next race might lap and clog the coin chute, also bending the COIN FINGERS out of adjustment. If this should happen, the machine would continue to play, allowing the COIN TUBE to be drained. When installing BY-PASS PNEUMATIC or making adjustment DO NOT TIGHTEN CLIP (RH-289X) on WIRE (RH-227X) while game is in normal position. Clip (RH-289X) should be back far enough on wire to pull Valve Lever (RH-266) about 1/4" when carriage returns SET-UP LEVER (RH-296) to normal position. Too much pull on (RH-266) will pull the cloth off the BY-PASS PNEUMATIC.

## THE FINISH-BOARD

The KICK-OFF VALVES (RH-239) are on the FINISH-BOARD (RH-1020) at the end of the track. If, for example: a coin is played on NUMBER ONE HORSE and number one WINS and NO PAYOUT occurs, it is evident that the corresponding KICK-OFF VALVE (RH-239) is not rising high enough to allow the transfer of the vacuum from the COIN-HEAD VALVE to the proper DIAL-HEAD PNEUMATIC (RH-1019). There are two tubes under each KICK-OFF VALVE and this valve should seal the vacuum in the center tube until the valve is raised to allow the vacuum to transfer through the second tube which is to one side of the center tube. The transfer of the vacuum from the FINISH-BOARD should collapse the DIAL-HEAD PNEUMATIC, raising the PIN in the DISC which in turn lifts the VENT LIFTING-RING (RH-260) above it for a pay-out. The VENT LIFTING-

RING raises and opens VENT-VALVE (RH-288X) allowing a short circuit or break in the vacuum which operates the valve in the valve-box and transfers the vacuum to the proper pay-out pneumatic (RH-1018) for a pay-out. PLUNGER (RH-237) should not touch KICK-OFF VALVE (RH-239) on 36th notch of ratchet but PLUNGER (RH-237) should get full travel under (RH-239) on the 37th beat to insure proper hold and lift of valve.

## THE SHUT-OFF VALVE AND SHUT.OFF PNEUMATIC

The SHUT-OFF VALVE (RH-855) is located on the FINISH-BOARD (R1020). This valve is merely a brass nipple with a rubber tube connected to it. A round pad (RH-855) is fastened on strip (RH-238) and this valve is opened by the winning horse through the medium of lifter (RH-239). This valve is opened at the finish of the race which makes a short circuit or break in the vacuum and transfers the vacuum through the Valve Box to The SHUT-OFF PNEUMATIC (RH-1023). The SHUT-OFF PNEUMATIC is located on the lower part of the main center frame (RH-l02). At the end of each race, this pneumatic is collapsed by the opening of the SHUT -OFF VALVE which short circuits or breaks the vacuum to the seven horse operating tubes leading from the Tracker-Bar and stops any further travel of the horses and at the same time collapsing the pneumatic (RH-1016) which operates LEVER (RH-209), causing CAM (RH-270) to engage the chain and return carriage to normal position. The SHUT-OFF PNEUMATIC also causes the COIN-HEAD PNEUMATIC (RH-1022) to collapse.

It is very important that the SHUT-OFF VALVE on the Finish-Board is seating properly so as not to leak: Otherwise the carriage will return before the race is completed. It is also essential that the horses do not touch the Finish Plunger (RH-237) on the 36th notch of the Ratchet Bar: Otherwise the vibration may lift this valve sufficient to return the carriage before setting up Valve (RH-239) for a pay-out. Part (RH-239) should be adjusted so that part (RH-237) raises (RH-239) just before it raises Bar (RH-238), thereby assuring that the winning horse sets up the valve to transfer the vacuum to The PAYOUT-PNEUMATICS before SHUT-OFF VALVE opens.

#### THE PAYOUT SLIDES

The PAYOUT SLIDES are of the standard old reliable Bell machine type and they rarely give trouble. If the came should fail to pay out, examine the coin-tube first and see if there is a sufficient supply of coins. Examine the SLIDES and TUBE to see if the coins are lying flat and not on edge. If this occurs, hold out the 30 pay-out horizontal lever and empty out the coins until clog is eliminated and then reload the lube. DO NOT OIL SLIDES as they should be free from oil and grease. It is advisable to remove the payout slides occasionally and wipe them clean with a cloth.

## THE RATCHET BARS

THE HORSES are moved forward by the RATCHET-BARS (RH-1006), one being located underneath each horse. The RATCHET-BARS limit forward and backward on the two rubber bumpers (RH-811). It is very important that the bumpers are in good order as they govern the throw of the horses. To keep the GAME BALANCED. the winning horse should trip the FINISH PLUNGER (RH-237) on the 37th beat. TO TEST this, START THE GAME and allow HORSE RETURN CARRIAGE (RH-115) to travel to the far end of the track. Then PULL the MOTOR PLUG from receptacle behind the motor, DISCONNECTING the CURRENT. The RATCHET-BARS can then be operated by hand and the HORSE BRACKET (RH-235A) should be about 3/16" from the FINISH PLUNGER (RH-237) on the 36th BEAT or NOTCH. To maintain this adjustment, Washer 6207-C can be installed on The Limil Bumpers (RH-811). The ROLLERS (RH-302) that carry the RATCHET-BARS should be oiled at the hole occasionally. PUSHERS (RH-271X) on HORSE PNEUMATIC (RH-1013) should not be tight against ANGLES (RH-228) on RATCHET-BARS. There should be about 3/8" slack or give in the HORSE PNEUMATIC when in normal position and RATCHET-BAR is limiting on front RUBBERBUMPER (RH-811). (See FINISH-BOARD.)

## THE 2 & 4 REVERSE

THE 2 and 4 REVERSE PNEUMATICS are the two small pneumatics located on the top of the SHUT-OFF PNEUMATIC (RH-1023). When a "2" payout takes place, one of these small pneumatics will collapse. allowing a short circuit or break in the vacuum which causes the paper roll to reverse, when a "4" payout takes place. the opposite small pneumatic will collapse and the paper roll will reverse in the opposite direction. If a "2" or "4" pay-out repeats. the roll will not reverse until the opposite pay-out takes place. This action can take place at any time during the travel or the paper roll, thereby breaking up the combination on the roll.

# THE CARRIAGE

CARRIAGE (RH-115) travels on ROD (RH-300) and is operated by the MAIN CARRIAGE CHAIN (RH-211X). The CARRIAGE has four functions: Releasing and reselling the PAY-OUT SLIDES, operating the PULL DOWN RAMP. resetting the FINISH-BOARD plungers and returning the HORSES to normal position.

ROLLER on (RH-273) should be free on STUD, The SHIFT LEVER (RH-271) is on the inside race of the carriage and this lever operates the carriage GRAB-ARM (RH-270) into upper, lower, and neutral position. The carriage does a lot of work and all rollers and moving parts should be lubricated properly and regularly. If carriage is not working property, examine Roller on RH-273. Stud on RH-272, Lever RH-270 and Lever RH-271 for wear.

#### THE PAPER ROLL ASSEMBLY

The METAL SPOOLS (RH-299X) are operated by the paper roll chain leading from the clutch at the end of the main carriage chain. There is one LUG protruding frum the

paper roll chain which engages with CAM (RH-282X) operated by PNEUMATIC (RH-1016). This LUG engages with the CAM at the end of each race and holds up further travel of the paper roll until the start of the next race. It is necessary that the CLUTCH be free enough to slip when chain is engaged with the lug but tight enough to operate the paper rolls without slipping, otherwise the clutch will slip and cause the horses to travel in jerks. The set-screw at the side of the clutch plate can be adjusted for more or less tension. The lug on the chain is used to assist in breaking up the combinations of the paper roll. FRICTION SPRING (RH-493) should have sufficient tension against the metal spools to hold paper roll snug against the TRACKER-BAR. A loose roll will allow the vacuum to escape and cause the reverse pneumatics to operate the roll back and forth. FRICTION SPRING (RH-493) should not have excess tension otherwise the clutch will slip or the paper roll will tear. If the PAPER ROLL becomes ragged on either edge then the TRACKER-BAR is out of line and pulling the paper to one side. This is a very fine adjustment. Turning the left hand SET-SCREW (RH-305) OUT will guide the paper roll to the RIGHT. Turning the SET-SCREW (RII-30S) IN will guide the paper roll to the LEFT. If the TRACKER-BAR is straight the tension of the roll will be balanced and travel freely without binding either edge.

The CLIP-SPRING (RH-494) controlling the REVERSE LEVER (RH-112) should have proper tension to hold the gears in mesh on both the UPPER and LOWER SPOOLS. Excess tension will cause failure of the roll to reverse and the paper roll will run off the spool. USE "BAKERS PACERS" PAPER ROLLS for BEST RESULTS. Adjust or set clip spring so that pressure is uniform in both directions.

## **INSTALLING PAPER ROLL**

When INSTALLING PAPER ROLL, lay the roll on the floor of the game and with the elongated reverse perforations to the right, insert the end of the paper in the slot and feed the roll on the lower spool OVER and DOWN towards the center MAIN FRAME (RH-102). The loose end or start of BAKERS PACERS PAPER ROLLS are made with the ELONGATED reverse PERFORATIONS on the RIGHT HAND SIDE and the roll should be installed on the lower SPOOL FIRST, with the REVERSE PERFORATIONS on the COIN-HEAD side of the game. When the roll is completely fed on the LOWER SPOOL, then attach the other end of the roll to the UPPER SPOOL and feed this end of the roll UNDER and UP towards the MAIN CENTER FRAME (RH-102). Check with the arrows embossed on SIDE FRAME (RH-110L) for proper feed of paper roll. Allow the paper to run to one end and back again so that the paper will straighten out and run true, then examine the holes in the paper and see if the holes in the paper are traveling over the holes in the TRACKER-BAR. The holes in the TRACKER-BAR can be seen through the paper. If holes do not track properly, loosen right hand setscrew holding TRACKER-BAR and shift TRACKER-BAR to proper position. Be careful not to throw TRACKER-BAR out of square. When using Paper Rolls supplied by others, it might be necessary to INTERCHANGE the TWO OUTSIDE rubber TUBES on the TRACKER-BAR to get the paper roll to reverse properly. FOR BEST RESULTS use BAKERS PACERS PAPER ROLLS. They are made in our own shop and carefully inspected for uniformity.

# TO TEST THE HORSES

There is a SECTION at the UPPER END of the PAPER ROLL especially perforated for TESTING the traveling of the HORSES. To operate the game in the TEST LANE, it is necessary to run the roll onto the lower spool and when coming to the reverse slots in the roll, hold the REVERSE LEVER (RH-112I) with the hand. This will prevent the roll from reversing and allow the roll to travel over into the TEST SECTION. This section is about 12" from the main race perforations. With the paper roll in the test section. operate the game and you will note that each horse receives three beats at a time. If a horse misses a beat, it is due to anyone of several reasons: The STEEL ROD on which the horse travels may be "gummy" or the HORSE BRACKET may be rubbing against the side of the track: The PNEUMATIC (RH-1013) which operates the RATCHET-BAR underneath the horse may not be receiving the proper pulsations. Examine the PAPER ROLL and see if holes in paper are traveling properly over the holes in the TRACKER-BAR. All horses must run uniform otherwise slow horses will seldom win and this will affect the profits, as the players will put their money only on the favorites.

## THE HORSE AND BRAKE ASSEMBLY

The BRAKES (RH-233A) should be changed about twice a year. After considerable use the RODS (RH-301) will become GUMMY or TOO DRY. These rods should be wiped clean occasionally and then wiped with an oil soaked cloth. USE a LIGHT GRADE machine OIL. The horses are carried forward one notch with each pulsation of the PNEUMATIC (RH-103). When The Ratchet-Bar is in motion the tension of the BRAKE is released and as the pressure stops, the BRAKE swings back by the pull of the two springs (RH-458) and locks the brake against the ROD (RH-101). If BRACKET (RH-235A) should become bent, it would prevent brake from releasing and horse would not travel property. The front end of BRACKET (RH-235A) would line up square with BRAKE (RH-233A) for free action of horse both FORWARD and ON the RETURN. Release the pressure of the brake and SLIDE HORSE ASSEMBLY BACK and FORTH on rod TO TEST free movement. If horses are jumping or skidding too far, see that springs (RH-445) and (RH-458) are hooked up properly and examine the brakes for wear. Also examine RUBBER BUMPERS (RH-811) for wear and proper throw. ALL HORSE BRACKET and BRAKE adjustments should be made with the HORSE-BRACKET assembly on the rods.

#### **GREASING AND OILING**

Any valuable piece or machinery requires proper lubrication. Use a good grade of machine oil and apply sparingly. DO NOT USE AN OIL CAN as it is difficult to regulate the flow and TOO MUCH OIL IS AS BAD AS NONE. It is best to use a tapered stick or small screw driver dipped in the oil and apply to the part so that only a drop can be applied to the proper part. USE VASOLINE or PRESSURE-GUN GREASE on all rubbing parts such as cams, chains, gears, etc. Use NUMBER 30 GRADE MOTOR OIL in Gear Housing of Motor. Maintain oil at about 3/4" deep which can be measured

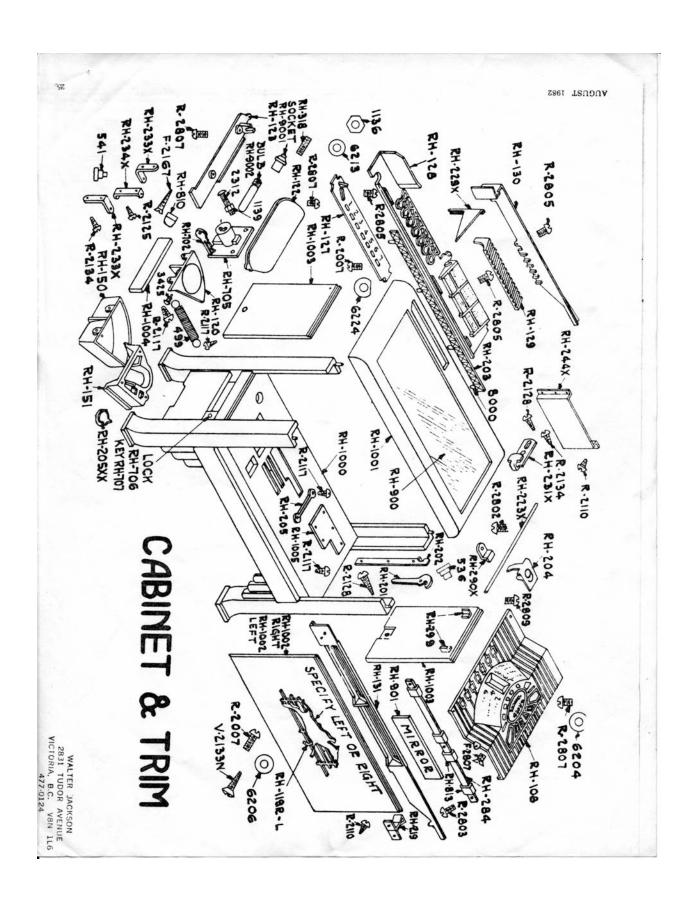
with wire through hole in motor housing provided for this purpose. Oil or grease any and all moving parts where friction might have a tendency to cause wear.

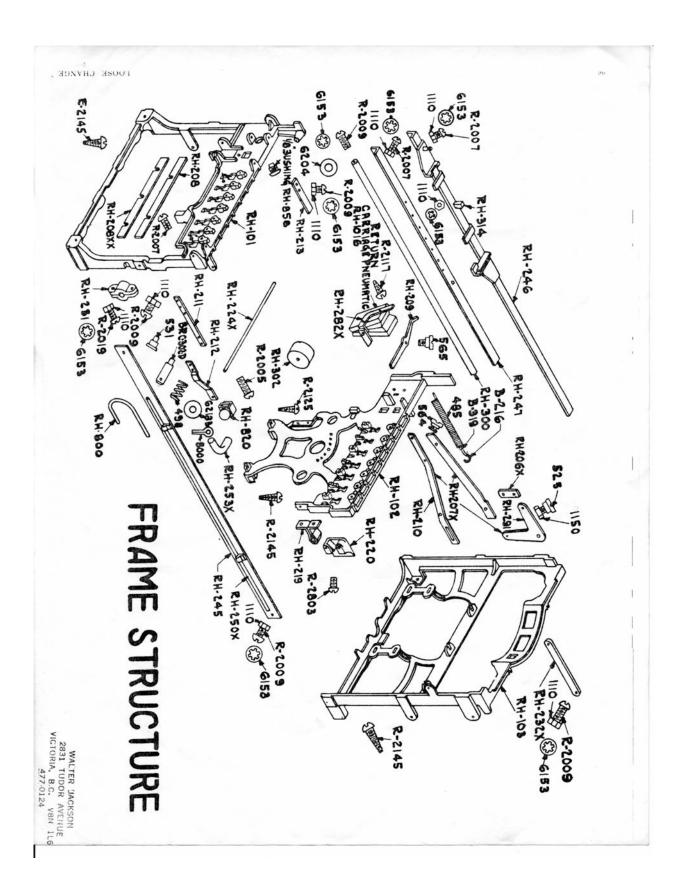
DO NOT OIL OR GREASE PAY-OUT SLIDES: keep these and COIN-HEAD where coins travel free from oil, grease and dirt.

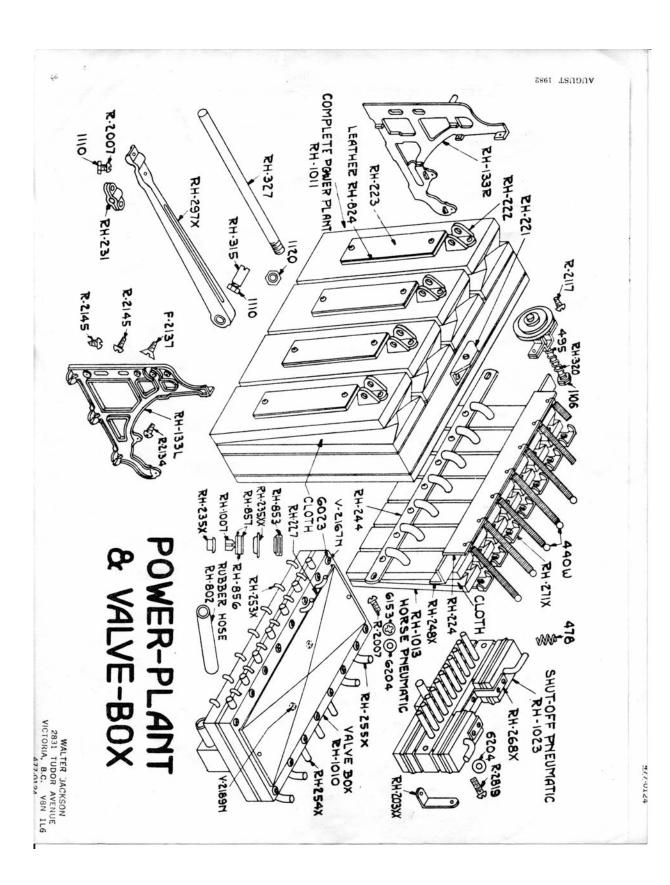
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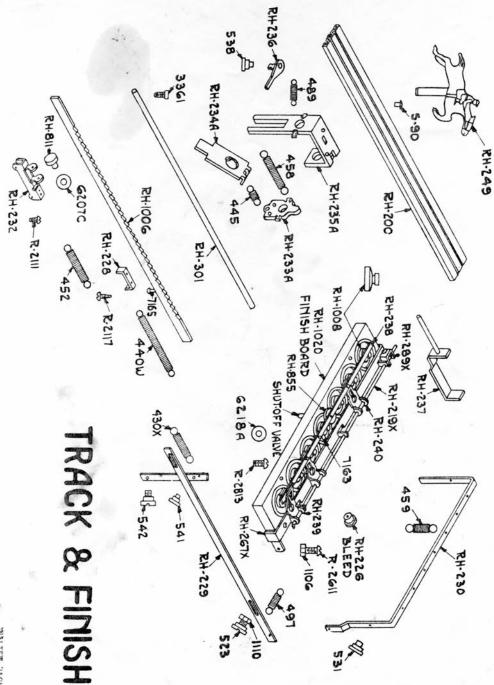
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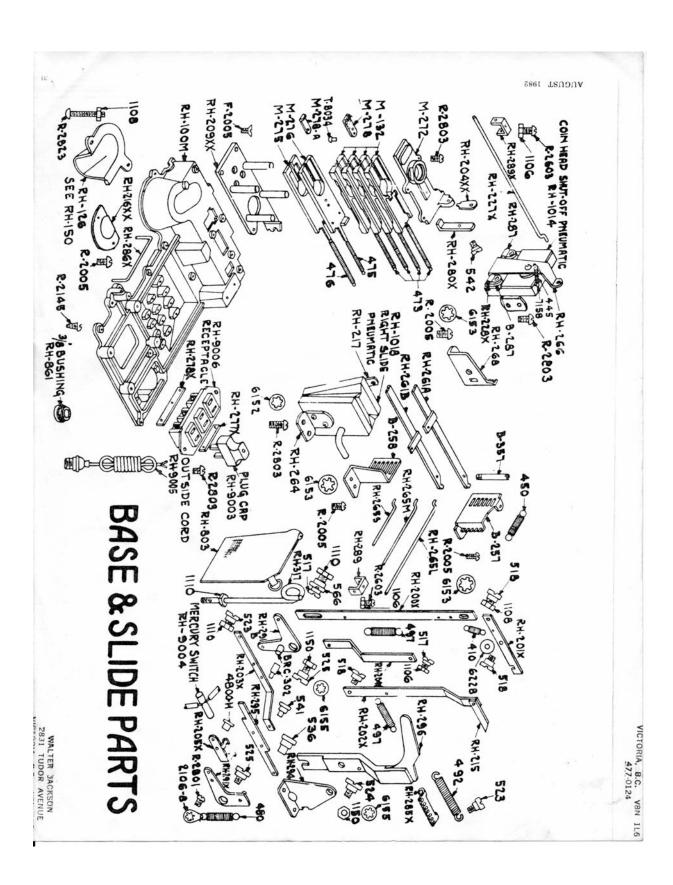


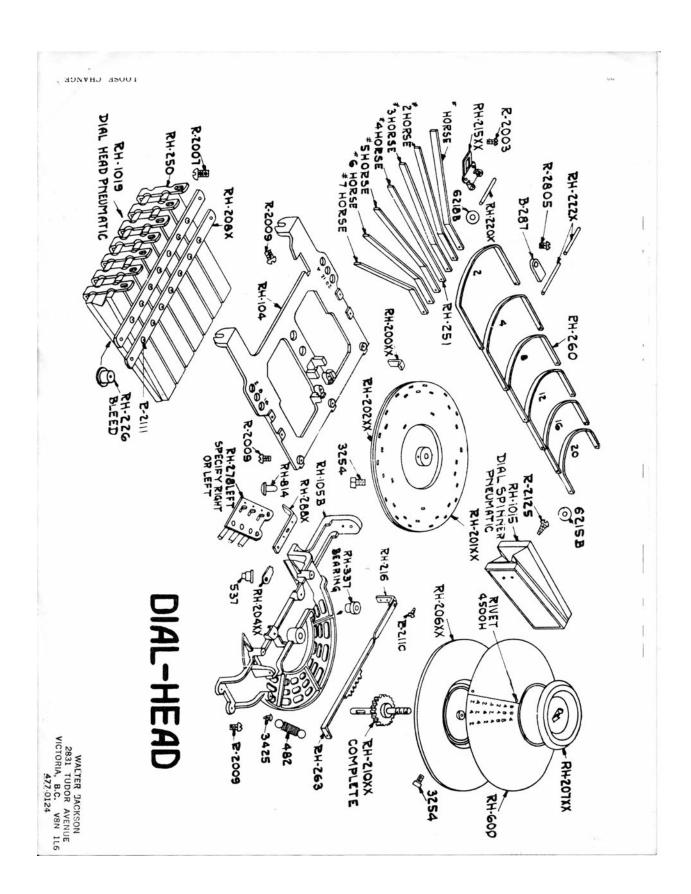


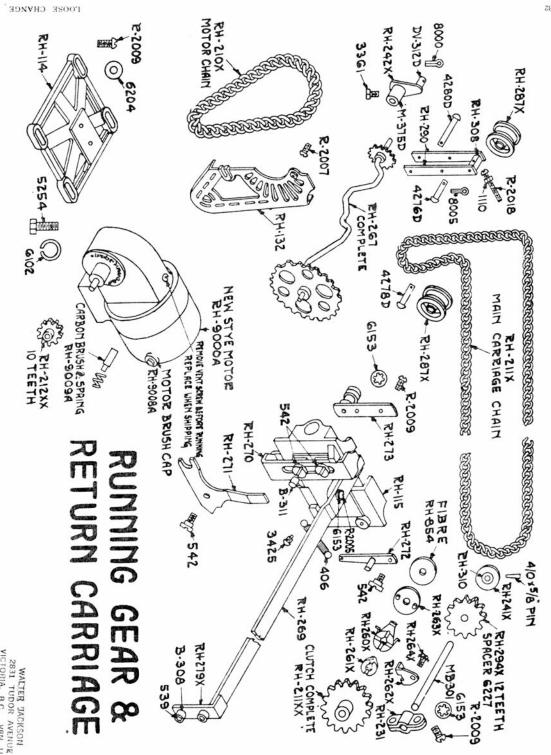




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