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SERVICE . . .  
INSTRUCTIONS

for  
**WURLITZER**  
*Model 1100*  
PHONOGRAPH  
AND  
MODEL 227 AUXILIARY  
AMPLIFIER

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# General Description

## Cycle of Operation

The operation of any mechanical unit is quite easily understood if instead of looking at it as one complete unit, it is considered as an assembly of individual parts each with an individual function to perform. The complete record changing unit of this phonograph is comprised of an assembly of gears, cams, levers and shafts, each designed to perform a definite function at a definite time.

From the time a coin is inserted until the phonograph has completed playing the record and has returned to the rest position, the machine goes through a definite cycle which never varies. The cycle of operation is assumed to begin with all the trays in the stack and the tone arm in the latched position, as this is the "at rest" position when the phonograph is not playing.

The Model 1100, being an electrical selective phonograph necessitates the use of an accumulative device for registering the proper number of credits according to the denomination of the coin inserted, so that the proper number of selections may be made. This device is located inside the cover in the coin register mechanism. When a coin is inserted it passes through the coin chute and slug rejector into a three pole coin switch which registers one or more plays on an accumulator, depending on the denomination of the coin. A five cent coin registers directly on accumulator. A dime or quarter closes the anti-cheat relay, starting the coin register motor to accumulate credits. This closes the key switch which completes a circuit through the junction

box to the electric selector keys. The phonograph is now ready for a selection.

When a selector key is pressed it operates a sliding switch which is so constructed that two selector coils can not be energized at the same time because the selector key switches are wired in series. Pressing a key opens the common circuit beyond that point.

Further movement of the sliding switch closes a circuit between a corresponding selector coil and a pair of contacts on the coin isolation relay in the coin register mechanism. Still further movement closes the selector micro switch, actuating the cancel solenoid and associated switches completing a circuit through the key as selected.

This causes a corresponding selector coil on the selector drum to become energized and magnetically releases a latch permitting a spring loaded selector pin to pass forward into the path of the rotating selector arm. One registered credit is canceled by the retracting action of the cancel solenoid.

As the selected pin is released it moves a wobble plate in the selector drum assembly causing the over-ride switch to close. The closing of this switch completes the circuit to the motor and the amplifier. The closing of the circuit to the motor starts the cycle of operation illustrated on the pages that follow. These illustrations are designed to breakdown the cycle of operation into steps which will enable the serviceman to fully understand each phase of the cycle and thus isolate trouble.

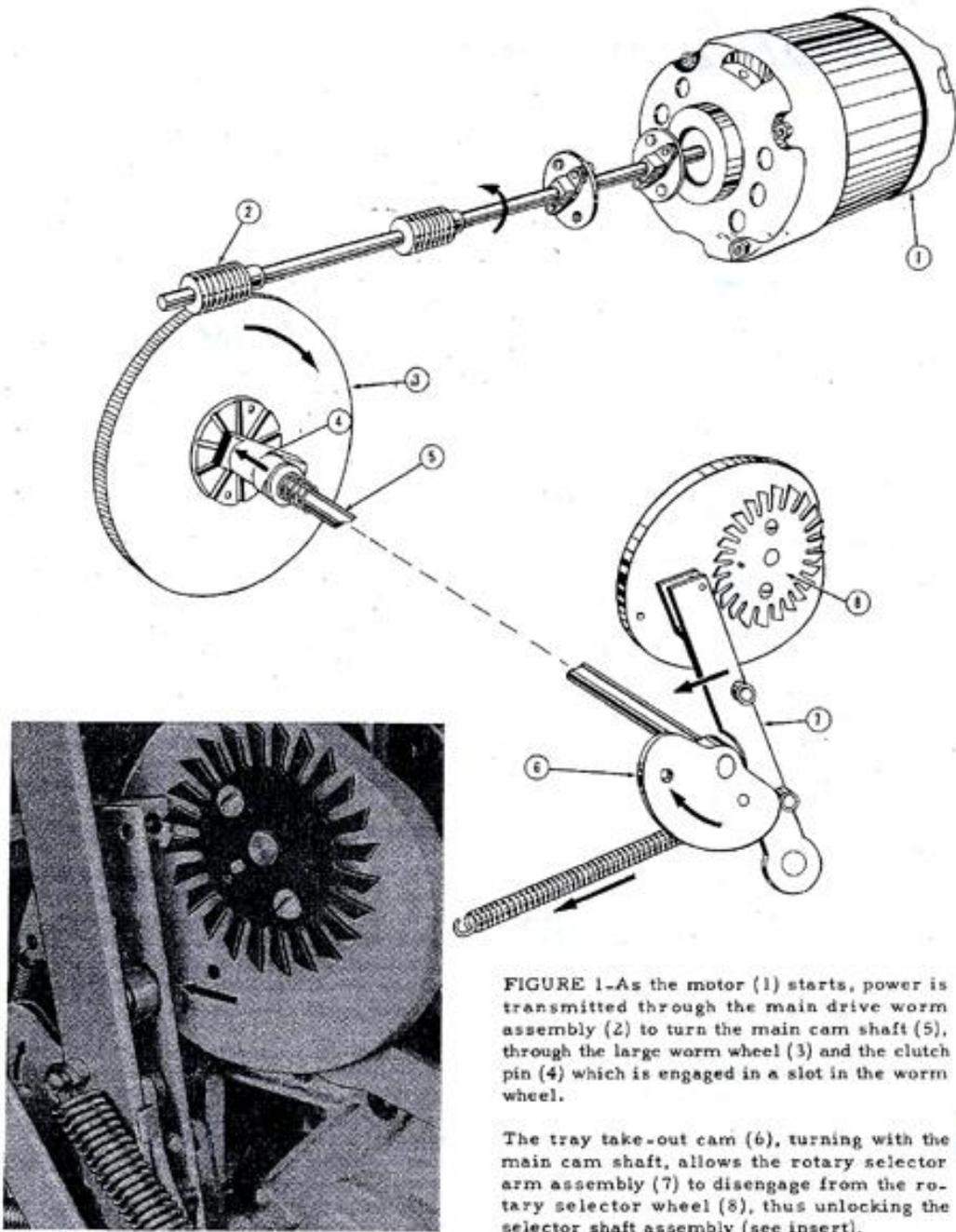


Figure 1-Cycle Of Operation, Step 1

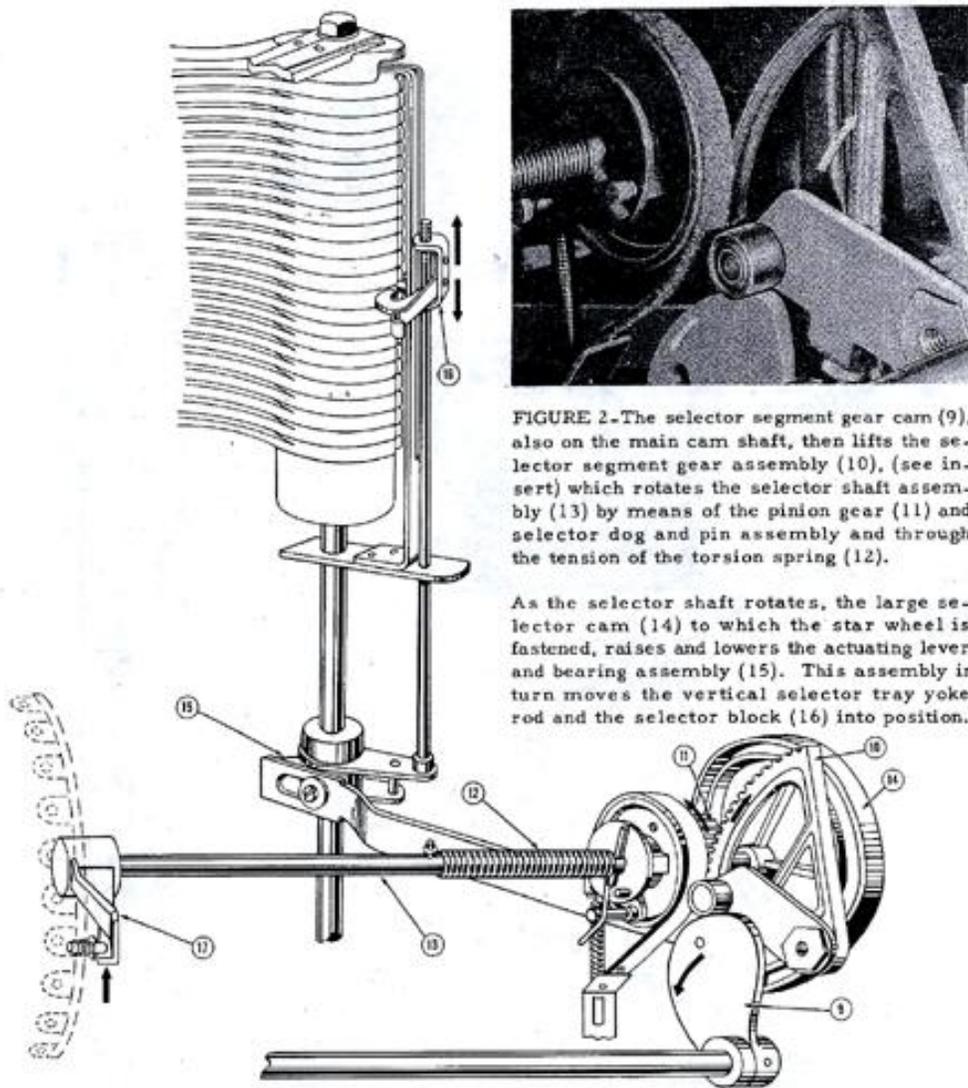


FIGURE 2.-The selector segment gear cam (9), also on the main cam shaft, then lifts the selector segment gear assembly (10), (see insert) which rotates the selector shaft assembly (13) by means of the pinion gear (11) and selector dog and pin assembly and through the tension of the torsion spring (12).

As the selector shaft rotates, the large selector cam (14) to which the star wheel is fastened, raises and lowers the actuating lever and bearing assembly (15). This assembly in turn moves the vertical selector tray yoke rod and the selector block (16) into position.

The selector shaft will rotate until the rotating selector arm (17) strikes the selected pin. This stops the selector block (16) in the position required for selection. Further movement of the selector segment gear is then absorbed by the torsion spring which winds on the selector shaft.

Figure 2-Cycle Of Operation, Step 2

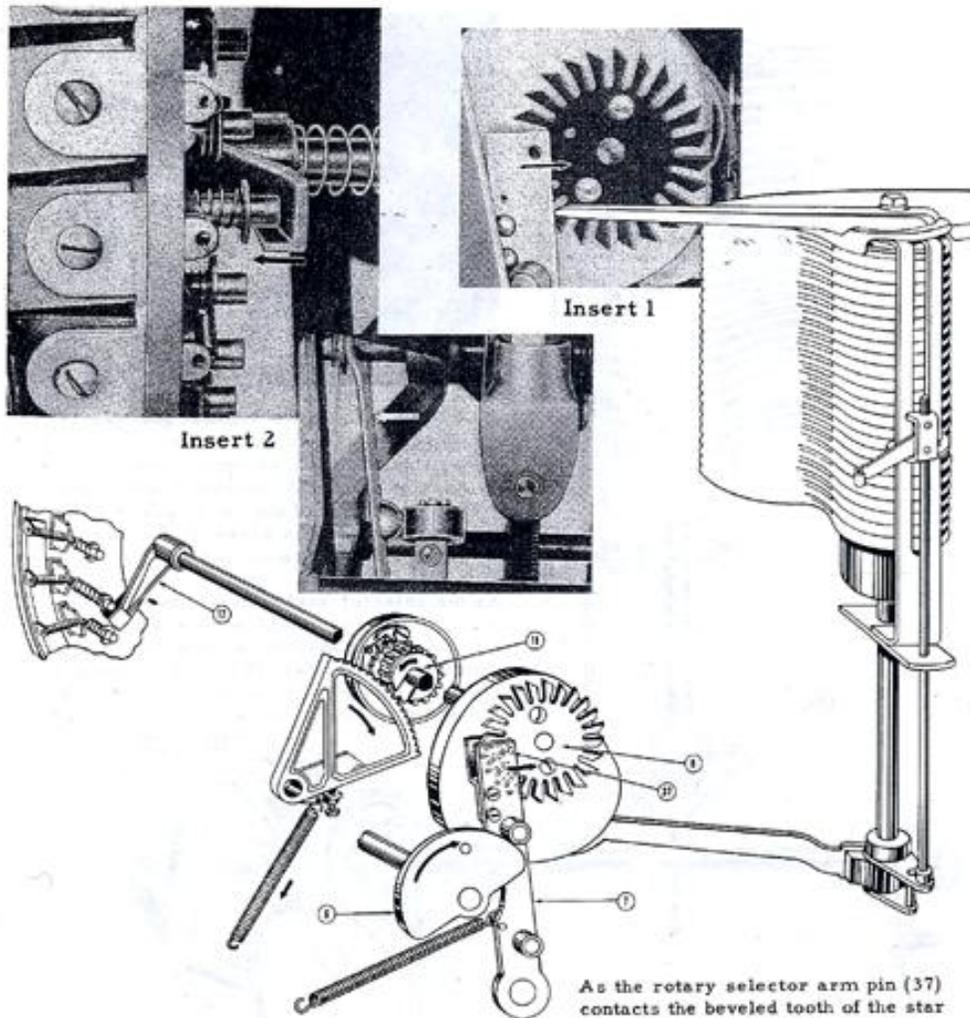


FIGURE 3.-At this time, the tray take-out cam (6) moves the rotary selector arm (7) into the locked position in the star wheel (8), (see insert 1). With the shaft locked, the selector segment gear returns to the rest position as the pinion gear (11) is allowed to ratchet, in that direction, through the dog and pin assembly on the selector brake disc.

As the rotary selector arm pin (37) contacts the beveled tooth of the star wheel it moves the wheel backward slightly, which action is transmitted to the selector arm (17) and centers the tray take-out block. This permits the cancel arm to reset the selected pin and open the over-ride switch (see insert 2). The cut-off switch is wired in parallel with the over-ride switch which has closed at this time thus keeping the circuit closed to the drive motor, amplifier and the lights.

Figure 3-Cycle Of Operation, Step 3

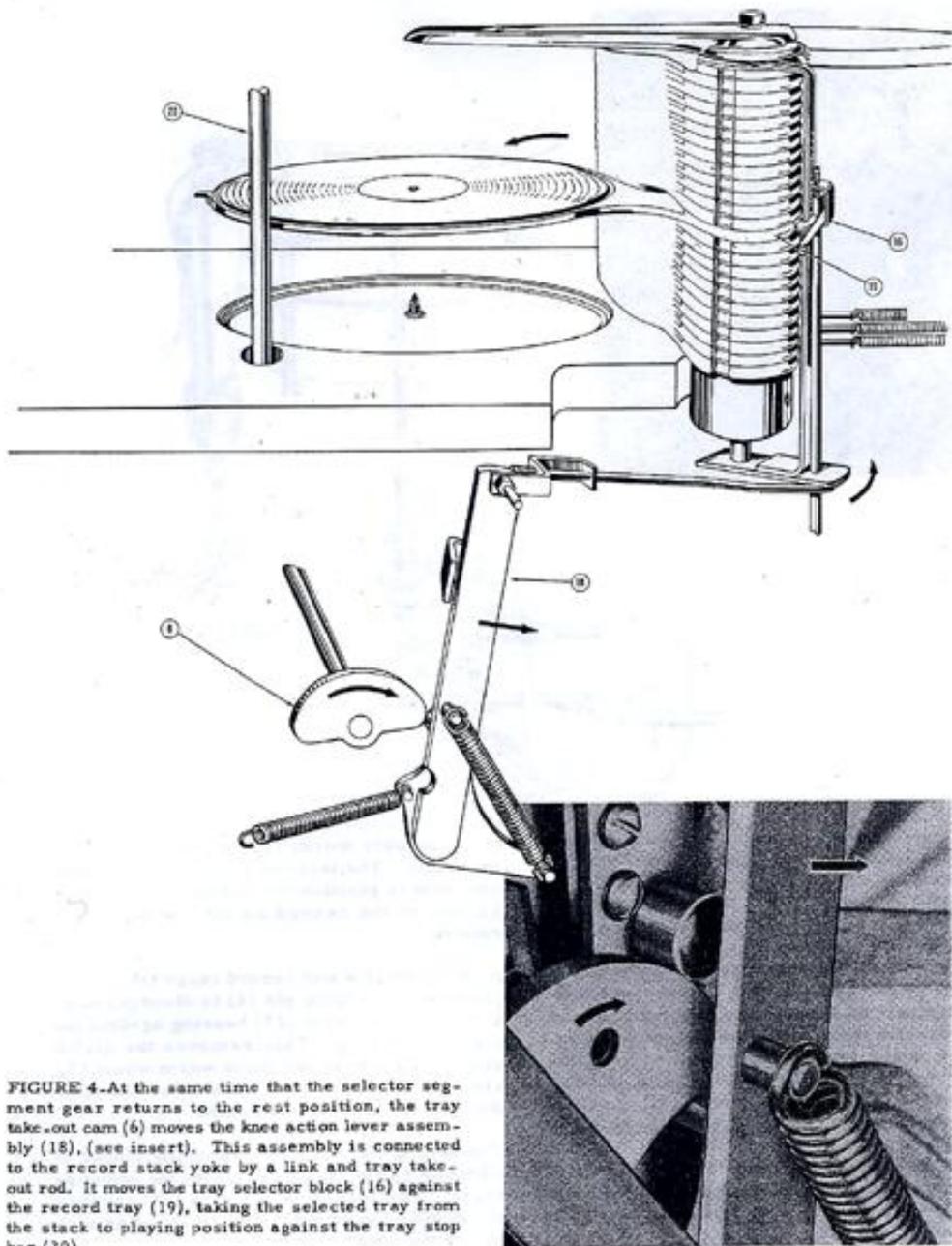


FIGURE 4.-At the same time that the selector segment gear returns to the rest position, the tray take-out cam (6) moves the knee action lever assembly (18), (see insert). This assembly is connected to the record stack yoke by a link and tray take-out rod. It moves the tray selector block (16) against the record tray (19), taking the selected tray from the stack to playing position against the tray stop bar (20).

Figure 4-Cycle Of Operation, Step 4

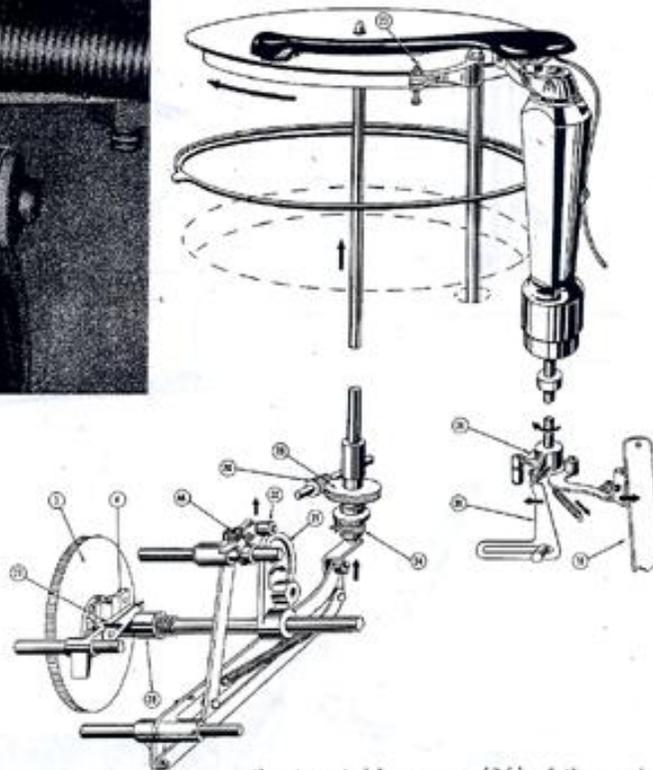
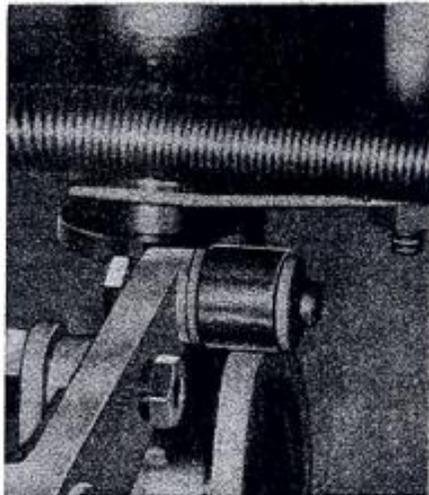


FIGURE 5.—After the tray has reached the playing position, the turntable lift cam (21) engages the roller arm (22) of the turntable lift assembly and lifts the turntable (see insert). When the knee action assembly (18) is moved away from the return arm (38), it allows the feed-in weight and lever (39) to move the tone arm against the stop pin assembly (23) where it is positioned in relation to the starting groove in the record by the tone arm latch. As the turntable reaches the top of its stroke, the needle contacts the record and the tone arm latch is lifted clear of the stop pin (23).

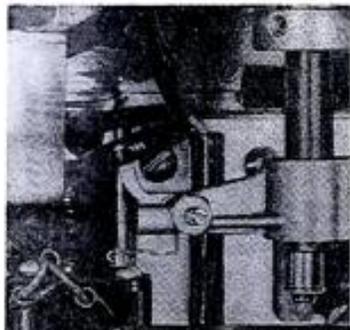
At this time, the spring clutch (24) at the end of the turntable shaft is engaged by a pin on the turntable gear assembly (25), which rotates the turntable. This gear is driven by

the turntable worm (26) of the main drive assembly. The feed-in lever (39) moves the tone arm to position the needle in the playing groove of the record as the record starts rotating.

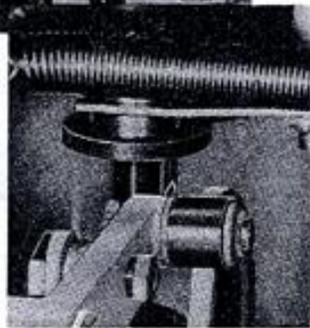
As the turntable and record reach the playing position, the clutch pin (4) is disengaged by the clutch trip arm (27) bearing against the clutch cam (28). This removes the clutch pin from a slot in the main worm wheel (3), allowing the main worm wheel to rotate without turning the main cam shaft.

The muting switch (44) is normally closed to eliminate extraneous noise during the selecting cycle. The turntable lift arm (22) engages the muting switch and opens the muting circuit to the sound system.

Figure 5.—Cycle Of Operation, Step 5



Insert 1



Insert 2

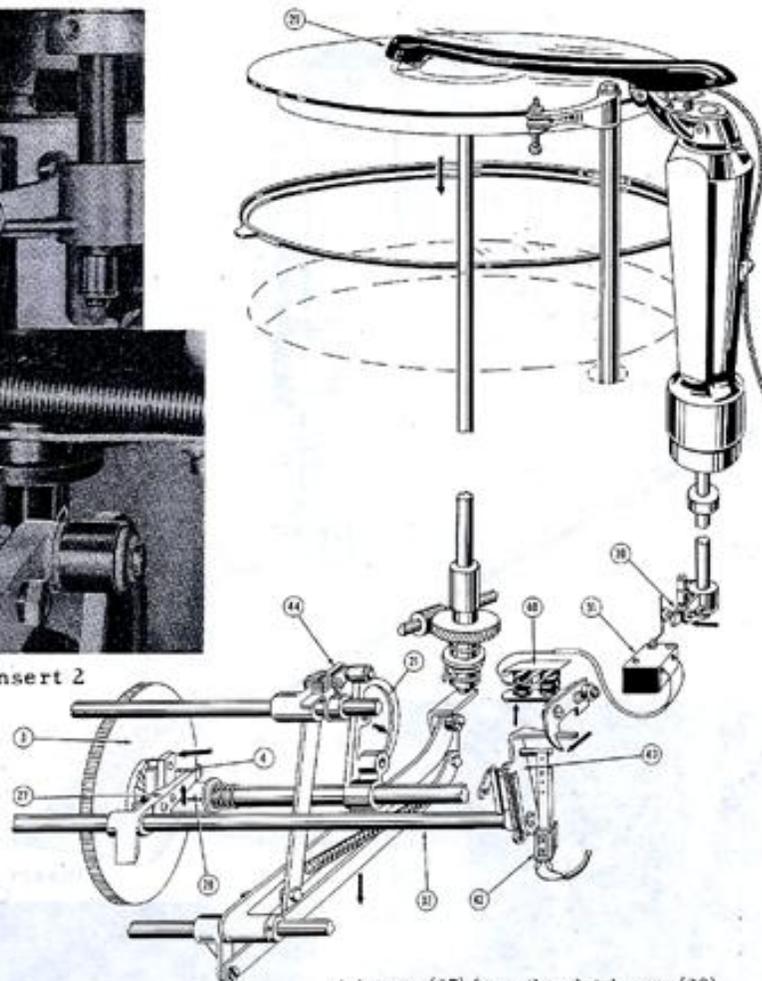


FIGURE 6.—After the record has been played through, the tone arm (29) is swung toward the center of the record by the trip groove in the record. This causes the trip arm assembly (30) at the end of the tone arm shaft to engage the trip wire of the micro switch (31), (see insert 1). This completes a circuit to energize the trip coil assembly (40) unlatching the trip catch. This action moves the trip shaft assembly (32) unlatching the

trip arm (27) from the clutch cam (28) and allows the clutch pin (4) to engage in a slot of the main worm wheel (3). It also allows the trip support assembly (43) to move to its released position under spring loading to open the trip coil release switch (42). As the main cam shaft starts to turn, the turntable is brought to the lowered position through the movement of the turntable lift cam (21), (see insert 2) and the muting switch (44) returns to the normally closed position.

Figure 6.—Cycle Of Operation, Step 6

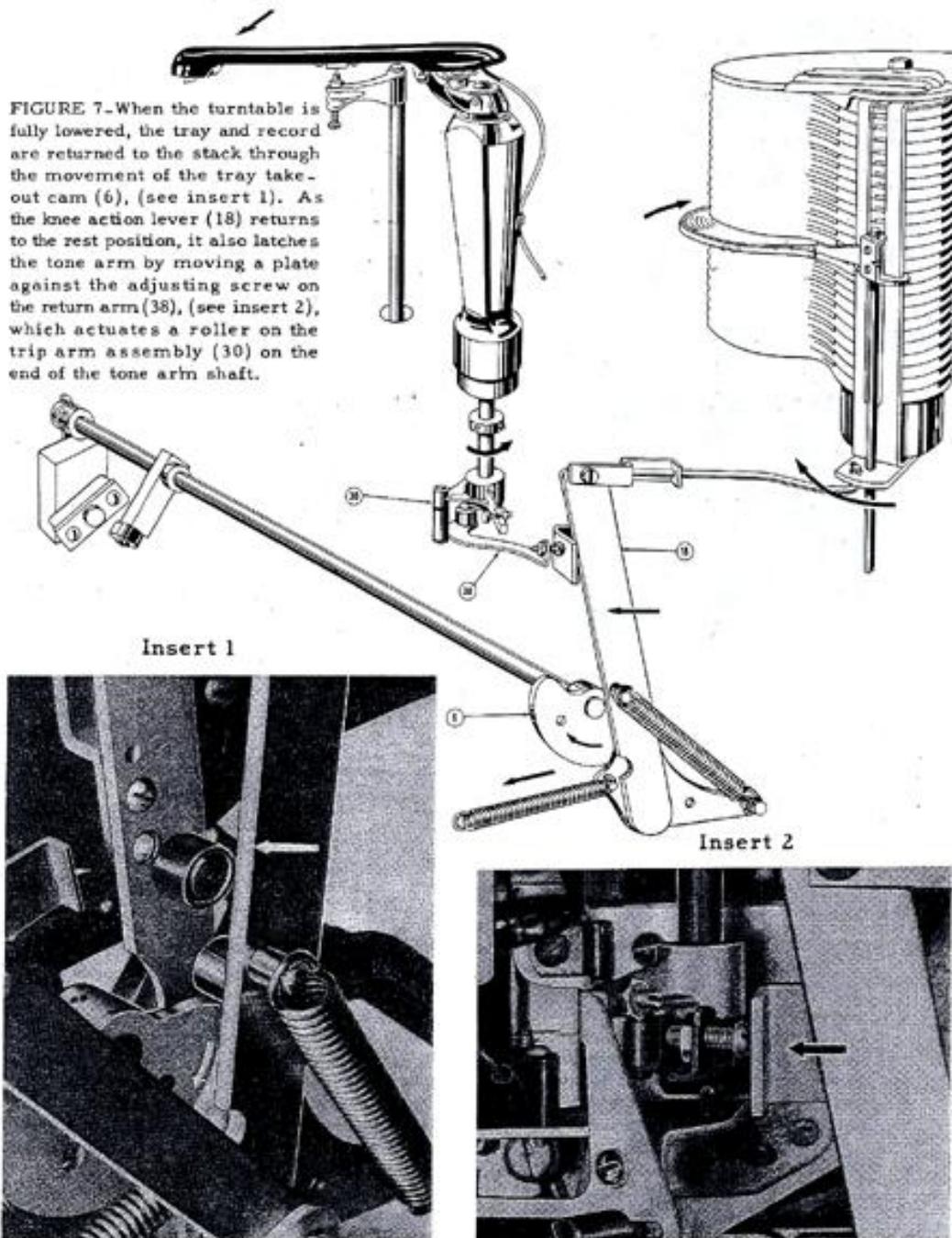
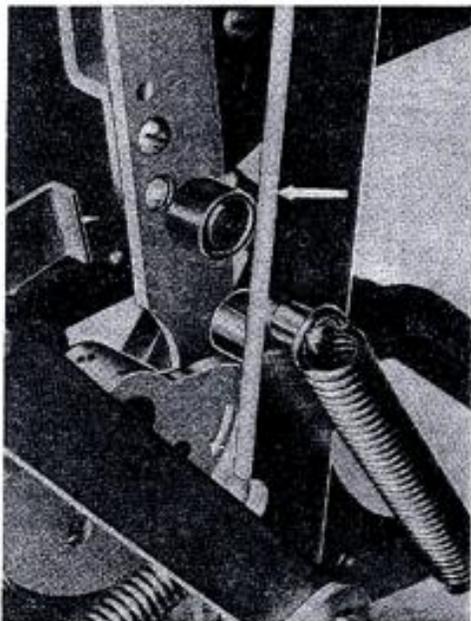


FIGURE 7.—When the turntable is fully lowered, the tray and record are returned to the stack through the movement of the tray take-out cam (6), (see insert 1). As the knee action lever (18) returns to the rest position, it also latches the tone arm by moving a plate against the adjusting screw on the return arm (38), (see insert 2), which actuates a roller on the trip arm assembly (30) on the end of the tone arm shaft.

Insert 1



Insert 2

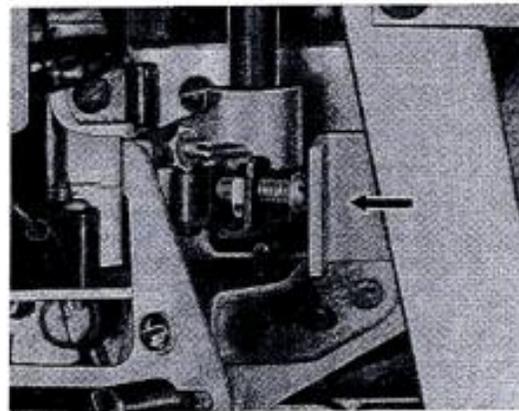
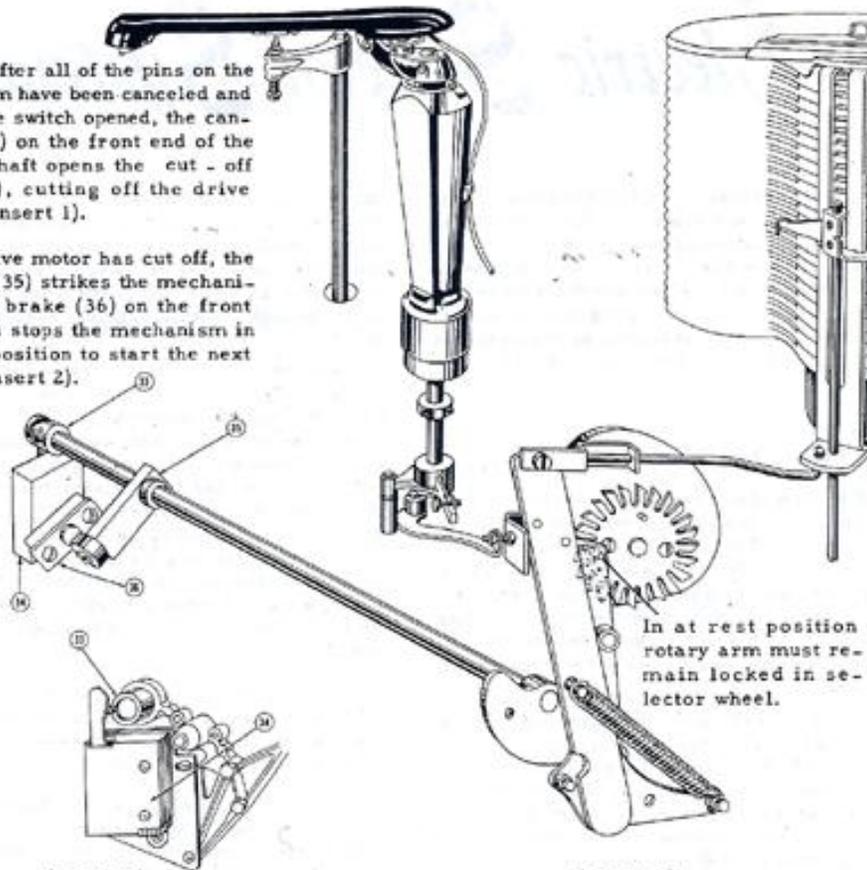


Figure 7.—Cycle Of Operation, Step 7

FIGURE 8-After all of the pins on the selector drum have been canceled and the over-ride switch opened, the cancel cam (33) on the front end of the main cam shaft opens the cut - off switch (34), cutting off the drive motor (see insert 1).

After the drive motor has cut off, the cancel arm (35) strikes the mechanical coaster brake (36) on the front frame. This stops the mechanism in the proper position to start the next cycle (see insert 2).



Insert 1

Insert 2

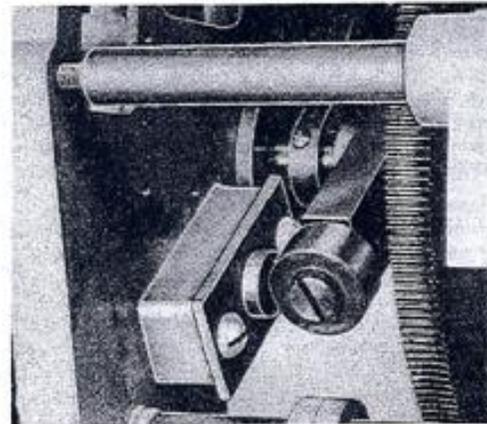
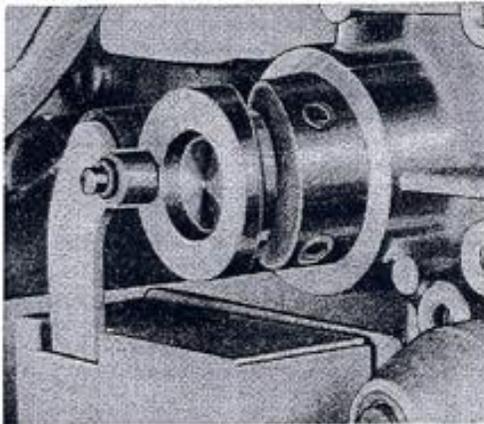


Figure 8-Cycle Of Operation, Step 8