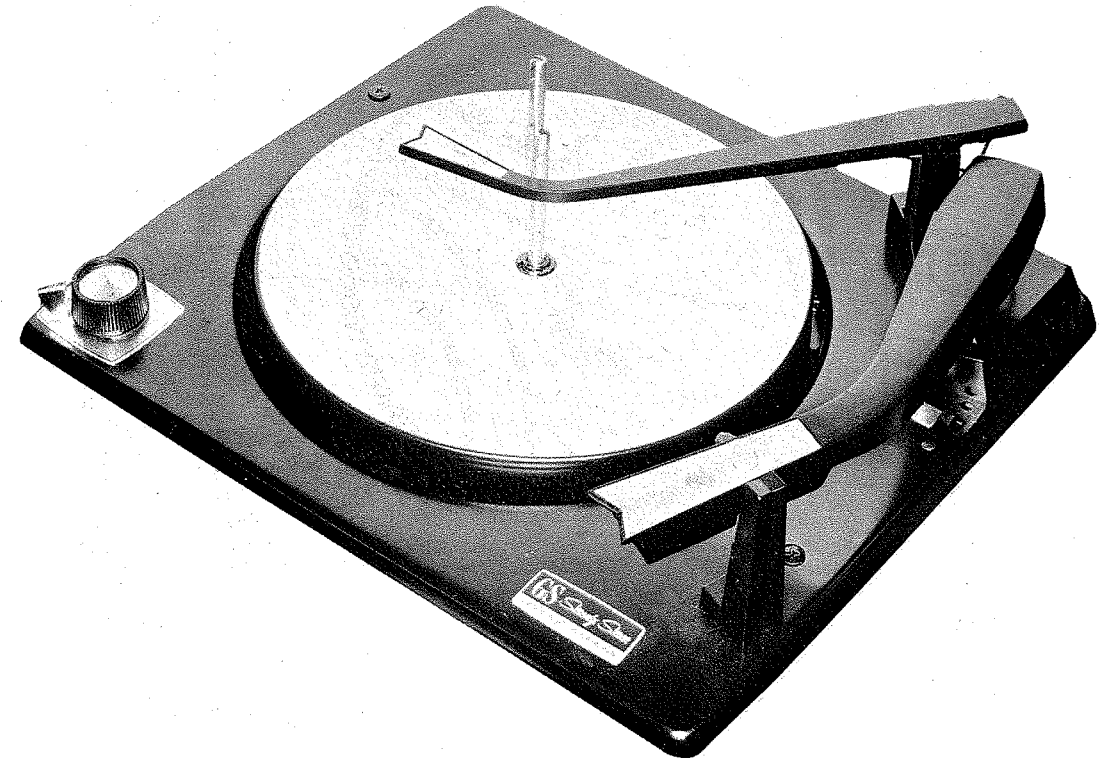




GLASER-STEERS MODEL
GS-77 (Revised)



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GS-77 (Revised)

GENERAL INFORMATION

Glaser-Steers Model GS-77 Revised Stereo/Monaural Record Changers are designed to play in automatic sequence a stack of records and shut off after playing the last record.

The Glaser-Steers Model 77 Turntable pauses during change cycle. It resumes motion only after next record has come in to play position, and stylus is in lead-in grooves of record.

The sound output is muted, during change cycle.

Record separation is accomplished by movement of a finger in the center spindle. This finger directly separates records having a 1/4" centerhole.

Connect this changer to an outlet supplying 117 volts, 60 cycle AC only, unless otherwise specified.

MANUFACTURED by:

Glaser-Steers Corporation
155 Oraton St.
Newark 4, N. J.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana



The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of C427

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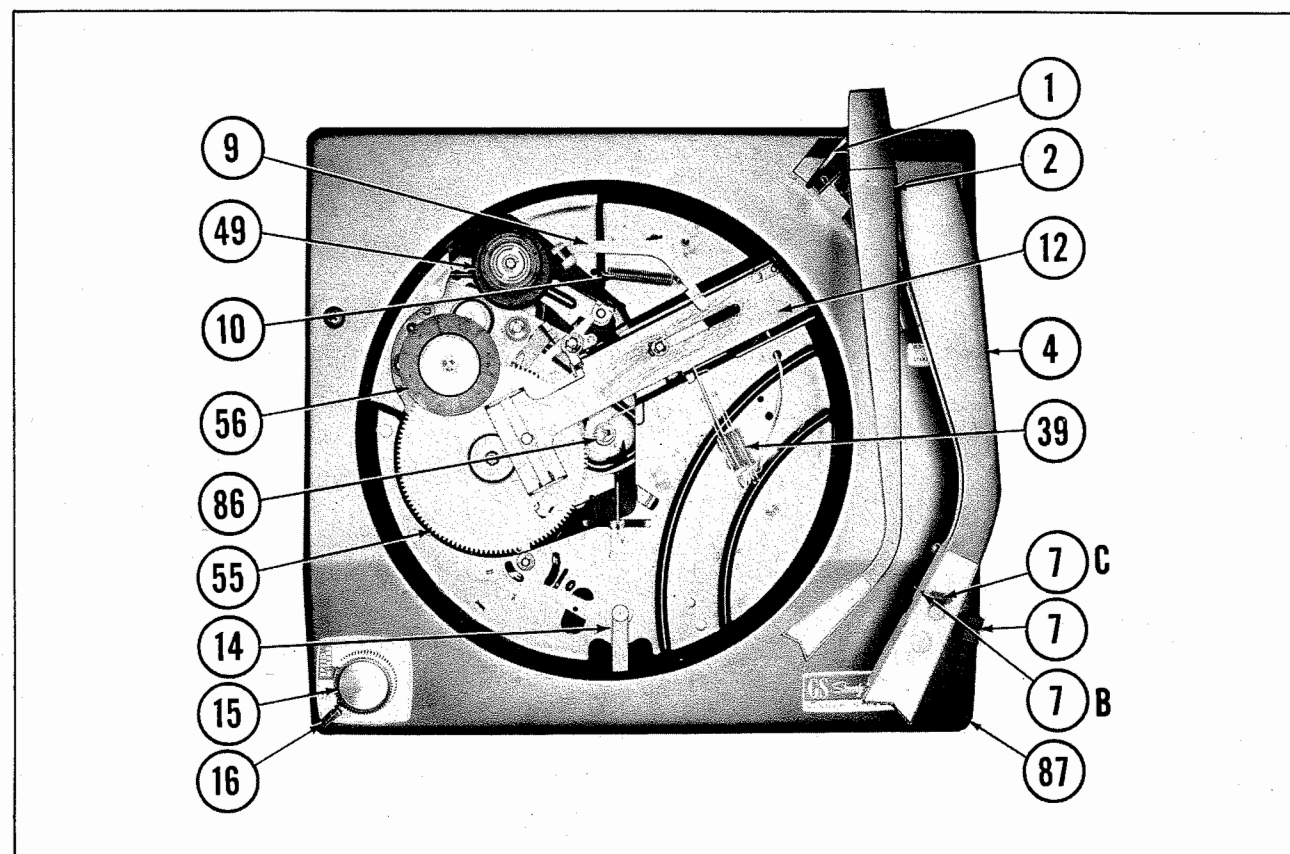


FIG.1 TOP VIEW OF MECHANISM WITH TURNTABLE REMOVED

CONTROLS

Two controls are provided on the baseplate. Both are on the left front corner.

The bottom control is the "On-Off-Reject" control. Turning this control counterclockwise causes the tone arm to lift off the record, then return to the rest post. The mechanism will then shut off automatically.

Turning this control clockwise to the "On-Reject" position energizes the motor, and starts the mechanism in to cycle. The mechanism will shut off automatically after the last record has been played.

The top control is the "Speed Selector" control. By leaving the "Speed Selector" control in "Auto-Brain" position, you may play automatically all records (except 16 r.p.m.) without resetting the

"Speed Selector". You need only select the proper stylus:

7, 10 and 12" records of both 33 and 45 r.p.m. speed may be intermixed in any order. They play at proper speeds. Be sure you use "33-45" stylus (LP, MG).

78 r.p.m. records of all sizes may be intermixed and will play at proper speed. Be sure you use "78" (Std.) stylus. This feature only applies to cartridges that have a turn-over lever correctly located to enter restpost opening when 78 stylus is in position or when 78 wand is mounted on cartridge bracket as called for on cartridge mounting instruction sheet received with changer.

OPERATING INSTRUCTIONS

Operating With Selector Control At "Speed Minder"

1. Lift and move balance arm to the right. Then place 45 r.p.m. records (with center inserts),

or 33 r.p.m. records, or both speeds intermixed on spindle; return balance arm and lower on top record.

MECHANICAL PARTS LIST (CON'T.)

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
28	11407-1	Spring Trip Arm	57	1423-SP-18	Retaining Ring
29	11011-2	Washer, Reset	58	13701-1	Lever, Cycle Control
30	1063-10	Washer (2)	59	5703-510	Driver Pinion Arm Assembly
31	10219-1	Bushing, Trip Arm	60	12926-2	Spring, Driver Arm
32	11035-1	Lever, Skate	61	12926-8	Spring
33	11418-1	Spring	62	12926-16	Spring
34	1063-7	Washer	63	1424-SP-15	Retaining Ring
35	1424-SBO-X43	Retaining Ring	64	11408-1	Spring, Speed Stop
36	12925-1	Shut-Off Wire	65	11013-1	Reset, Speed Stop
37	11401-1	Rod, On-Off	66	11003-1	Stop, Speed Control
38	5702-505	Balance Arm Trip Lock Ass'y.	67	11402-1	Pivot, Shut-Off
38A	12926-6	Trip Lock Spring	68	1424-SP-18X	Retaining Ring, Motor
39	10022-1	Muting Switch (Under Turntable) (GS-77)	69	12955-1	Click Filter, Motor
39	12973-1	Muting Switch (4-Wire) (GS-77)	70	5703-509	Motor Plate, Sub-Assembly
39	12971-1	Muting Switch (3-Wire)	71	10205-1	Pin, Detent.
40	5702-506	Index Pawl Assembly	72	12927-2	Spring, Compression
41	11007-1	Pawl, Stop Catch	73	1296-5	Nut, Spindle
42	5702-508	Pawl Catch Assembly	74	12303-1	Cam, Shift
43	5712-505	Control Slide Assembly	75	11403-1	Rod, Cam
44	12926-7	Spring, Extension	76	12926-20	Spring, Spindle Slide
45	11029-1	Brace	77	11000-1	Spindle Slide
46	5702-501	Switch Lever Assembly	78	13004-2	Motor 4-Pole (GS-77)
47	11801-3	Power Switch	79	11014-1	Lever, Change
48	11801-2	Shield, Power Switch	80	1424-SP-12	Retaining Ring
49	13005-1	Idler 2-Pole 60 Cycle	81	10152-1	Grommet, Motor Mount
49	13005-2	Idler 4-Pole 60 Cycle (GS-77)	82	12926-1	Spring, Idler Wheel
49	13005-3	Idler 4-Pole 50 Cycle (GS-77)	83	5703-503	Crank, Spindle Actuating
49	13005-4	Idler 2-Pole 50 Cycle	84	5712-503	Arm-Shaft Assembly
50	12475-1	Velocity Trip Washer	85	11024-1	Stop, Speed Knob
51	11804-2	Thrust Washers, Spindle (2)	86	12001-1	Spindle Assembly
52	11804-1	Ball Bearings, Spindle	87	5730-503	Base Plate Sub-Assembly
53	5702-511	Idler Arm Assembly (4-Pole) (GS-77)	88	11805-1	Transit Mtg. Screw
53	5702-512	Idler Arm Assembly (2-Pole)	89	11806-1	Clip, Transit, Mtg. Screw
54	1424-SP-11X	Retaining Ring	90	11419-1	Anti-Skate Wire Rod
55	5703-502	Cycling Gear Assembly	91	DL-5724-501	Cartridge Mtg. Bracket (Not Shown)
56	10001-2	Pinion-Driver Wheel	92	DL-5714-506	Cartridge Mtg. Kit (Not Shown)

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FOLDER 11

TROUBLE CHART (CON'T)

Symptom	Cause	Remedy
	the small screw with lock nut located under right rear side of tone arm.	and tighten nut. Be sure point of screw is in socket of pin and that point on opposite end of pin is in hole of bracket. Do not over tighten as this will cause excessive vertical friction. When properly adjusted, the vertical friction is less than 1/2 gram.
25. Motor has whining, airbourne noise when running.	1. Self-aligning motor bearing jarred out of place in shipping.	1. With motor running under power, sharply tap motor laminations with blunt instrument (such as a plastic screwdriver handle) a few times until noise disappears.

MECHANICAL PARTS LIST

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
1	11411-1	Index Finger	9	5702-504	Brake Lever Assembly
1A	1424-SP-18	Retaining Ring for Index Finger	10	12926-15	Brake Lever Spring
1B	12926-12	Index Finger Spring	11	5702-503	Main Slide Assembly (consists of 12 & 13)
2	5709-501	Balance Arm Assembly	12	12478-2	Main Slide
2A	1424-SP-21X	Balance Arm Retaining Ring	13	11421-1	Main Slide Spring
2B	B	Balance Arm Trim Plate	14	12477-1	Control Lever
3	13403-2	Rubber Mat	15	12307-2	Speed Knob (Brass Insert) (GS-77)
3A	1424-SBO-X43	Turntable Retaining Ring	15	12307-3	Speed Knob (Chrome Insert)
4		Tone Arm Assembly (consists of:) GS-77	15	12309-1	Speed Knob (All Chrome)
4A	13406	Tone Arm	16	10151-1	On-Off Lever (Brass) (GS-77)
4B	12950-7	Tone Arm Trim Plate	16	10151-2	On-Off Lever (Satin Chrome)
4C	11841-1	Tone Arm Plug Button	16	10155-1	On-Off Lever (Bright Chrome Plate)
4D	10220-1	Knob	17	11840-1	Acetate Washer
4E	10215-1	Stylus Pressure Screw	18	1021-11	Screws #6X3/16 (6)
4F	10213-1	Stylus Pressure Nut	19	11400-1	78 rpm Change Wire (Steel) (GS-77)
4G	12926-14	Stylus Pressure Spring	19	11400-3	78 rpm Change Wire (Copper Plate)
4H	5705-508	Pivot Screw & Nut Assembly	20	5710-505	Tone Arm Hinge Assembly
4I	5710-503	Tone Arm Mount Assembly	21	5702-507	Tone Arm Index Cam
5	5708-502	Turntable Assembly (GS-77)	22	5710-506	Index-Tone Arm Bracket Ass'y.
5A	11420-1	Spring	23	1423-SP-37	Retaining Ring
6	13401-1	Balance Arm Support	24	1023-9	Washer (Spring)
6A	1021-10	Screws #6-38 (2)	25	11406-1	Spring, Safety
7	5704-501	Rest Post Assembly	26	1063-7	Washer (Plastic)
7A	13405-1	Rest Post	27	12482-1	Velocity Trip Arm
7B	11412-1	Lock, Tone Arm Hold Down			
7C	11836-2	End Bumper, T. A. Lock			
7D	11809-1BK3	Rivet			
8	5702-510	Speed Control Arm Assembly			

2. After checking to be certain that 33-45 stylus is in play position, simply push "On-Off-Reject" control to "On" and release. (The changer will now automatically play all records you have loaded and will shut off after the last record.)

3. To play 78 r. p. m. records by "Speed Minder", simply be sure that when you load 78 r. p. m. records on spindle, stylus is in 78 position. Then push "On-Off-Reject" control to "On". This applies to certain cartridges only. Otherwise, simply dial 78 R. P. M. directly.

4. To reject a record, push "On-Off-Reject" control to "Reject" and release. To discontinue play, push control to "Off" and release.

Automatic Operation At 16 rpm

1. Set "Speed Selector" control at 16 r. p. m.

2. Turn stylus to 33-45.

3. Load records, lower balance arm, push control to "On".

Manual Operation

1. Move balance arm over rest post. Leave in that position during manual play. Place record on turntable. Set at speed desired.

2. Push operating control to "On". Tone arm will come in to 7" position. Move tone arm back to rest post. (You may stop tone arm, if you prefer, just before it lands on record, and then move it to rest post and leave it there).

3. Now, check to be sure you have "Speed Selector" control set correctly for your record, and the proper stylus chosen. Set tone arm on any position on the record and play.

NOTE: In manual play, tone arm will not cycle after playing the record. However, if you wish changer to stop automatically after completion of the record, move balance arm over spindle, before lifting tone arm from rest post.

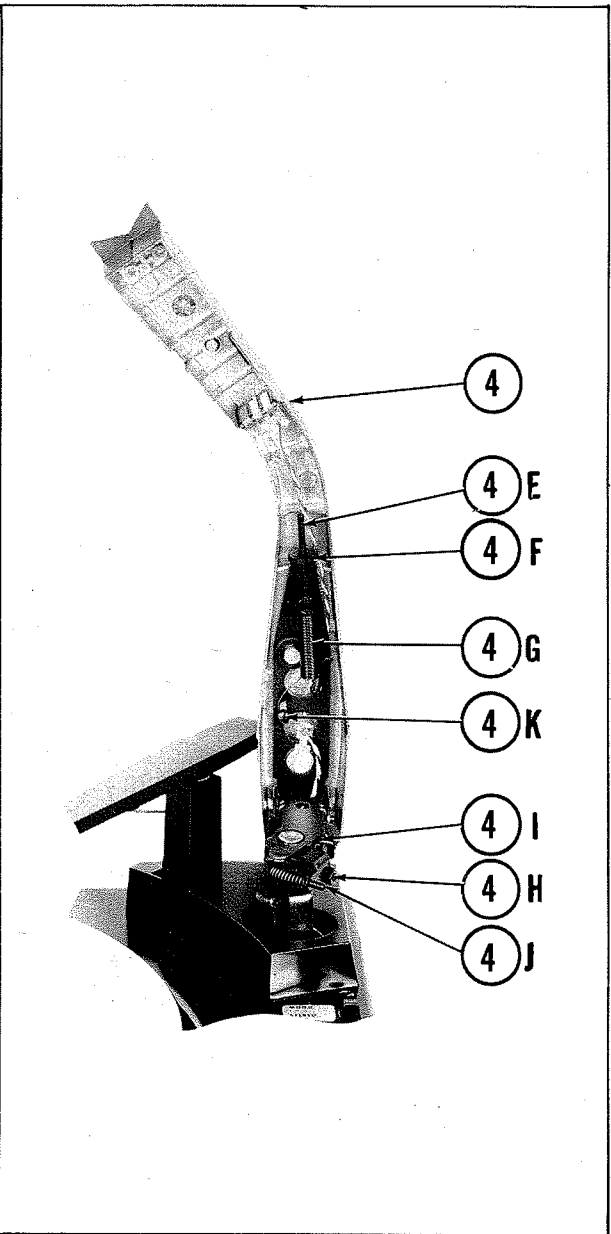


FIG. 2 UNDERSIDE OF TONE ARM

ADJUSTMENTS

Stylus Pressure Adjustment

Knurled nut (4F) for adjusting stylus pressure is located slightly to the rear of the tone arm center. With tone arm in horizontal position turn nut from right to left to reduce pressure; and from left to right to increase pressure. Adjust to pressure recommended for your cartridge.

Set-Down Adjustment

By lifting tone arm upward about 1" from rest

post, set-down adjusting screw (4J) becomes accessible under rear of tone arm. Using any size record, adjust so that stylus comes to rest on the lead-in grooves. Turning screw (4J) clockwise moves stylus away from center.

Tone Arm Height Adjustment

By pivoting tone arm to an almost vertical position, height adjustment screw (4K) is visible. Tone arm height should be set so that the bottom edge of tone arm clears highest point of rest post shelf by approximately 1/8 inch.

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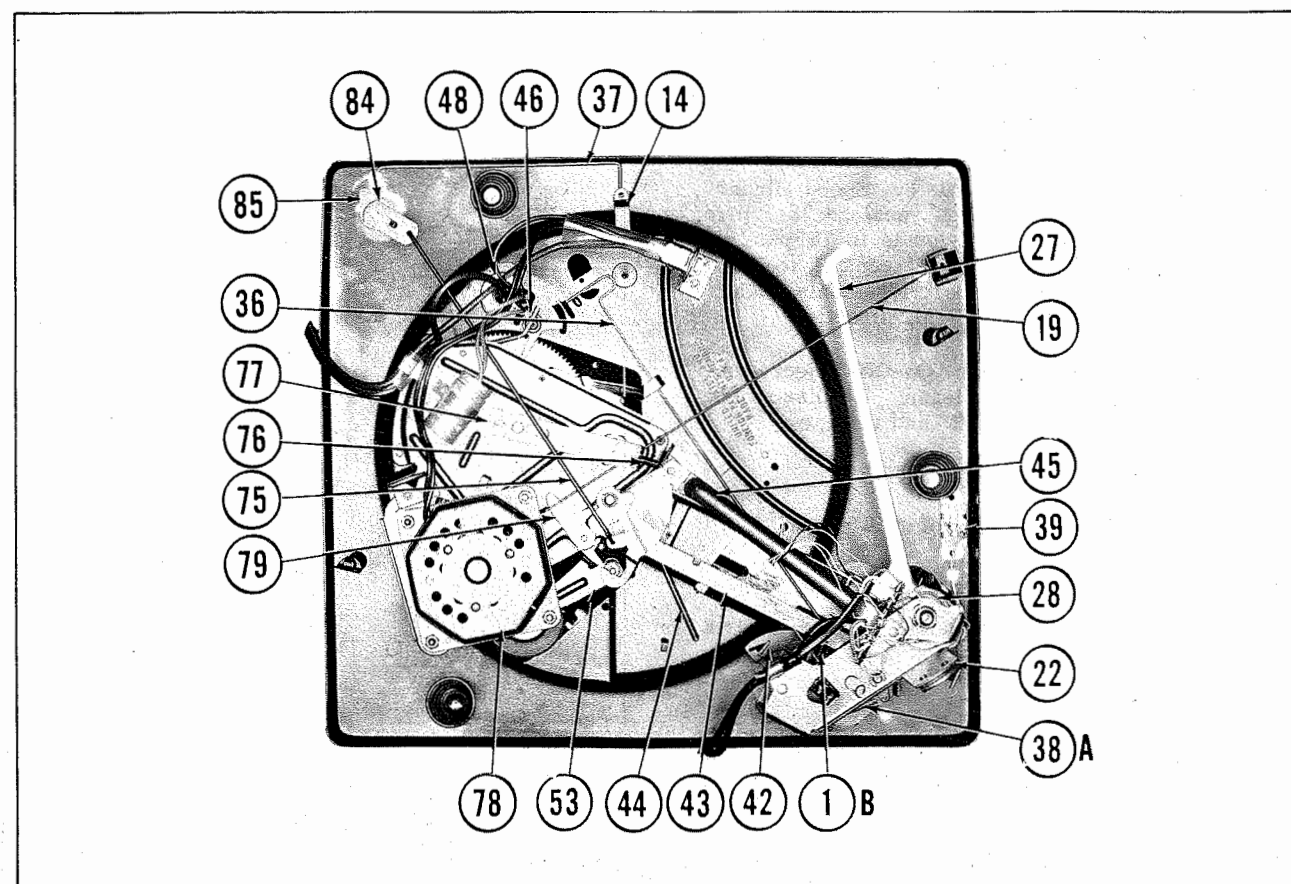


FIG. 3 BOTTOM VIEW OF MECHANISM

CHANGE CYCLE

Observe the change cycle operation by removing turntable and turning changer on, or by manually rotating the cycling gear (55) counterclockwise. The action described below can then be readily followed and each part's function more easily understood.

This changer has a "Velocity Trip" mechanism. Change cycle is started by the fast inward motion of the tone arm when the needle enters leadout grooves at the end of a record.

Tone arm hinge assembly and velocity trip arm (27) are secured together so they move in unison. While a record is playing, the slight movement of velocity trip arm (27) is not sufficient to trip the mechanism because the wiping action by velocity trip washer (50) moves velocity trip arm (27) back with each revolution of the turntable.

In the first revolution of the turntable, as the tone arm advances rapidly toward the spindle, velocity trip arm (27) is moved fast enough and far enough to engage velocity trip washer (50). Contact between velocity trip arm (27) and velocity trip washer (50) gives the necessary lift to force cycle control lever (58) out of engagement with driver pinion arm (59). Driver pinion arm (59) by action of driver arm spring (60), brings driver pinion wheel (56) into engagement with the motor pulley, supplying driving force to cycling gear (55). As the cycling gear (55) rotates,

main slide (12) moves to the left thru the action of the eccentric mounted pin on cycling gear (55) riding in the cross slot on the main slide assembly (12).

As main slide (12) begins to move, cam (12A) (part of main slide) will cause tone arm index cam (21) to move down. This pulls the back part of the tone arm hinge assembly (20) down, lifting the front part of the tone arm up and off the record. Projection (12B) on rear of main slide (12) now comes in contact with safety spring (25), forcing the spring forward. Safety spring (25), tone arm hinge assembly (20), and tone arm index cam (21) are secured together so they move in unison. The action of safety spring (25), tone arm hinge assembly (20), and tone arm index cam (21) pivot the arm toward rest post (7).

As the tone arm moves toward the rest post, spindle actuating crank (83), attached to bottom part of cycling gear (55) has rotated far enough to actuate spindle slide (77), moving it to the left. Spindle slide (77) actuates the spindle, dropping one record on the turntable. During the record drop, turntable (5) does not revolve, due to the braking action of brake lever (9) actuated by the main slide (12).

At about the same time, index finger (1) moves forward by action of the main slide (12) moving away from the index finger. As the record drops to the

TROUBLE CHART (CON'T)

Symptom	Cause	Remedy
		and check to see that contacts are touching after the main slide withdraws.
20. Tone arm skates in over starting grooves.	1. Tone arm not level.	1. After changer is installed in operating position, permit the arm to hang freely between the rest post and the turntable, about 3/4" from turntable. Tap changer with finger. If tone arm remains stationary without swinging either way, the changer is level, and may be used immediately. If the arm swings to one side, merely raise the changer slightly on that side, or lower the other, until the arm remains at rest.
	2. Right angle bend on index pawl (40) damaged or bent less than 90 degrees.	2. Open right angle end of pawl (40), that engages with index cam (21), slightly with pliers. Do not open to more than 93 degrees. You should then re-adjust indexing and muting switch. See No. 19-4 and 9-1.
21. Tone arm goes to 10 inch position when playing 7 inch records.	1. Index finger (1) does not come all the way forward.	1. Shorten the length (by bending) of the extended end of spring (13) attached to main slide. This will allow the finger to move completely forward before it is caught by the pawl.
22. Changer will not shut off when turning lever to "off".	1. See No. 15-2 & 15-3.	1. See No. 15-2 & 15-3.
	2. Shut-off pivot (67) that lifts power switch shut off lever (46) does not raise the lever high enough or raise it at all.	2. Unexposed end of rod is under cycle control slide (43). Remove slide and replace with rod resting on top of slide. Bend end of shut off lever (46) (under gear) upwards so that lanced tap on gear (55) will engage the lever.
	3. Off lever (16) snaps back too rapidly causing shut-off wire (36) to bounce back into "on" position.	3. Turn on-off lever (16) to off with normal, steady movement. Do not snap off rapidly.
23. Spindle will not drop last record (or a record).	1. Balance arm (2) not holding records parallel to turntable.	1. Twist or bend the balance arm slightly in the required direction so that the records are supported parallel to the turntable.
	2. Record Push-off fingers of spindle (86) not retracting within the spindle diameter.	2. Hold ends of blades under motor base, and bend these fingers back, so they fall inside the diameter of the top portion of spindle and clear the shelf.
24. Erratic Indexing.	1. Tone arm mount assembly (41) is loose. This pivot is	1. Loosen nut, tighten screw gently then back off 1/8 turn

TROUBLE CHART (CON'T.)

Symptom	Cause	Remedy
	3. Tone arm index cam (21) does not catch pawl (40) at last or rest post position.	3. Loosen rest post (7) under changer base plate and move post away from turntable.
16. With balance arm up, changer will shut off after every cycle.	1. Lever (46) that operates power switch fails to fall to its downward position. 2. Tone arm (4) does not leave rest post.	1. Clean shaft and bearing of switch lever of any foreign material. Wipe dry of any lubricant. Do not oil. 2. See procedure under 11.
17. Excessive low pitch noise (rumble) or thumping sound during record play.	1. Motor restrained from floating freely on rubber mounts. 2. Damaged turntable idler (49). 3. If power to changer is cut in mid-cycle and changer is left in this manner for any length of time, the rubber tires can develop a flat spot that will cause a thumping sound. 4. Turntable bearing and/or idler wheel bearing is dry and rubbing.	1. Check to see that motor is not touching any part of cabinet. Clear any power leads that may be restricting the floating action of the motor. 2. If surface of rubber tire is not smooth or shows signs of distortion, idler (49) should be replaced. 3. Run changer for at least 10 minutes. If thumping does not disappear, replace idler (49). 4. Lubricate with light oil, same procedure as 4-3 and 4-5.
18. Tone arm does not track in record grooves.	1. Worn stylus in cartridge. 2. Improper tracking pressure for cartridge used. 3. Changer not level. 4. Cartridge leads interfering with motion of tone arm.	1. Replace. 2. Check tracking pressure for cartridge used and adjust to recommended value. 3. Relevel changer. 4. Check to see that ample slack is provided in the tone arm leads so that the entire lateral travel of tone arm is not affected.
19. No sound during record play.	1. Defective cartridge. 2. Defective wiring. 3. Loose cartridge terminal clips. 4. Muting switch (39) out of adjustment.	1. Replace. 2. Check cartridge leads for shorted or open leads. 3. Remove clips from terminals squeeze slightly together and refasten to cartridge. 4. Check to see that switch contact points operated by main slide have approximately 1/32" clearance when cycle is completed. If necessary, bend blade (32) that cams against main slide until this clearance is obtained. Cycle the changer

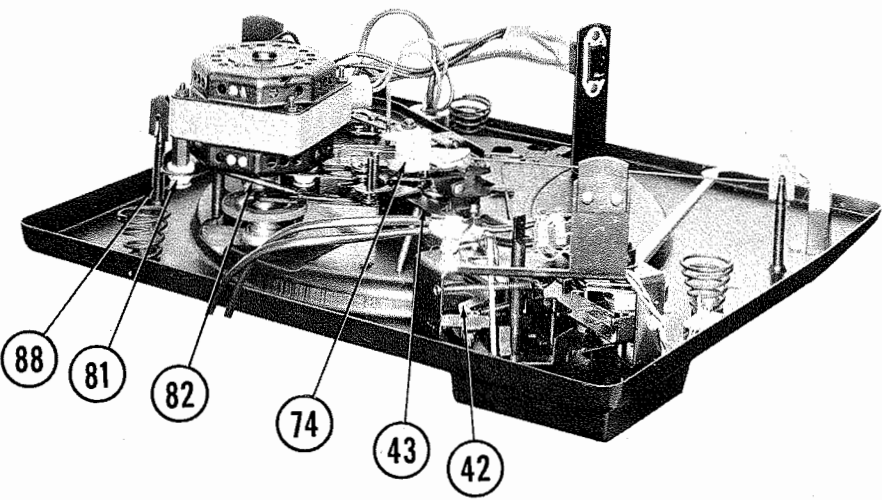


FIG.4 BOTTOM VIEW OF MECHANISM

turntable, the record either strikes or misses index finger (1), depending on the size of the record. In the case of a 7 inch record, the record completely misses the index finger (1). This causes pawl catch assembly (42) to be caught in the first notch, which in turn places index pawl (40) in the first notch of tone arm index cam (21). The tone arm will now move out to the 7 inch set-down position. In the case of a 10 inch record, the record strikes the index finger (1) just enough to move the index finger (1) to the next series of notches. The tone arm will now move out to the 10 inch set-down position. The 12 inch record acts the same as described above, except the third series of notches comes into contact. The tone arm will now move out to the 12 inch set-down position.

As the main slide (12) reverses direction of travel, the extension spring (ratchet spring) attached to tone arm index cam (21) will move the tone arm out over the record. About this time, tone arm index cam (21) moves up cam (12A). This action places the tone arm down on the lead-in groove of the record. Cycling gear (55) now rotates to its out of cycle position, allowing the tone arm to move freely across the record.

After the mechanism has been tripped, it again

follows the proceeding sequence of cycling and playing the records, until the last record of the stack has been played.

As the last record of the stack drops to the turntable, balance arm (2) drops below the off-set shelf on spindle assembly (86). Lower end of balance arm (2) drops below the offset shelf on spindle assembly (86). Lower end of balance arm (2) contacts shut-off wire (36), forcing it downward. The shut-off wire (36) holds stop catch pawl (41) up; stop catch pawl (41) drops, thus blocking pawl catch assembly (42) and causing index pawl assembly (40) to move inward to catch the last notch on tone arm index cam (21). This action will allow the tone arm to come to the rest post and remain there. The tone arm is held from moving in by action of index cam (21). Being in the last notch, control slide assembly (43), attached to index cam (21), is stopped from moving towards the right. When control slide assembly (43) fails to move, shut-off pivot (67) remains in the up position, holding switch lever assembly (46) up and in contact with the projection on the bottom of cycling gear (55). As the projection on the cycling gear (55) strikes switch lever assembly (46), power is removed from the motor and the mechanism stops.

TROUBLE CHART

Symptom	Cause	Remedy
1. Changer does not function when control is turned to "On-Reject" position.	1. No power to motor.	1. Check to see that AC current is reaching motor. Check wiring connection at switch and motor.

TROUBLE CHART (CON'T.)

Symptom	Cause	Remedy
	2. Line voltage too low.	2. Line voltage must be at least 105V.
	3. Cycle of mechanism not complete.	3. Remove snap ring that secures turntable on record spindle. Remove turntable by lifting it straight up. Turn cycling gear (55) with crank pin in counter-clockwise direction till crank pin is in line with notch in main slide.
	4. Foreign lubricant on rubber tire (single tire wheel) that cycles changer.	4. Remove turntable and clean tire (56) with lint free cloth moistened with alcohol. Also clean motor shaft (49), wheel with 2 rubber tires, and inside of turntable rim.
	5. Bent switch lever assembly (46).	5. Both legs of switch lever (46) that project upward through base plate should be straight up and down and parallel to the center shaft of piece. Bend legs to correct position if necessary.
2. "On-Off" control cannot be turned to "On-Reject" position.	1. Cycle of mechanism not complete.	1. Follow same procedure as given in 1-3.
3. Changer will cycle and tone arm will come in to playing position but turntable will not rotate.	1. Turntable idler wheel (49) not engaging motor shaft and turntable. 2. (When switching speeds manually only). Excessive friction between cam (74) and pin that raises and lowers idler arm (53).	1. Check spring (82) on idler arm (53) to be certain that idler is being pulled toward the direction of motor shaft. 2. Lubricate top surfaces of steps on cam (74) that raises and lowers idler arm (53).
4. Turntable speed too slow or large variations in turntable speed.	1. Improper line voltage. 2. Oil or grease on turntable idler, motor shaft, or turntable. 3. Binding in turntable.	1. Line voltage should be between 105 and 130 volts. 2. Wash all surfaces that contact each other with alcohol. Be sure to wash all diameters on motor shaft. 3. With changer shut off, check freedom of turntable rotation by spinning it by hand. Turntable must coast freely for a considerable length of time. If binding or roughness occurs, remove the turntable, clean bushing and spindle surfaces and relubricate with light oil. Check turntable thrust bearing for any foreign matter, clean and relubricate with light oil.
	4. Misalignment between turn-	4. Check alignment of turntable

TROUBLE CHART (CON'T.)

Symptom	Cause	Remedy
will not leave rest post during cycle and upon completion changer shuts off.	ment.	
12. Changer does not index for 10" records.	1. Improper interference between 10" record and index finger (1).	1. If tone arm comes into 7" position instead of 10", this indicates insufficient interference between record and finger. Turn changer off and place a 10" record on the turntable. Bring the index finger by hand toward the spindle until completely forward. Raise the record along the spindle, keeping it parallel to the turntable. The record should interfere with nose of the index finger by approximately 3/32". The finger can be adjusted to this dimension by bending forward in the direction of the record. Do not overbend so as to exceed the 3/32" interference required. If tone arm comes in to 12" position instead of 10", interference between record and index finger is too great. Use same procedure as given above however bend the index finger in the opposite direction away from the record until proper interference is achieved.
13. Changer repeatedly indexes for a 12" record.	1. Index finger (1) is not coming forward during cycle. Spring (1B) on finger below disengaged.	1. Refasten spring if disengaged.
14. Changer drops 2 records at once.	1. Center hole in record too large. 2. Small blade in upper portion of spindle (86) not fully down.	1. Oversize holes will cause 2 records to fall at once. 2. Straighten blade if bent so that it falls freely of its own weight. If not bent, clean slot and blade of any foreign matter and lubricant that may be present. Do not oil. Blade must fall freely by gravity.
15. Changer will not shut off automatically after playing last record.	1. Balance arm (2) does not move to its full downward position. 2. Balance arm (2) does not push shut-off wire (36) down when it falls.	1. Clean balance arm shaft and bearing holes of any foreign matter and lubricate with light oil. Arm must be free enough to fall downward by gravity. Clear any lead wires that may be interfering with the lower end of the balance arm shaft. 2. Look under changer at lower end of balance arm shaft. Large retaining ring (2A) must be in place and wire (36) must be below ring and contacting side of shaft.

TROUBLE CHART (CON'T.)

Symptom	Cause	Remedy
set at "78" or Std. play, turntable does not turn at 78 R. P. M.	post (7) far enough to set the mechanism for 78 speed.	lever projects at least 3/16 inch beyond the tone arm. Make sure the lever can enter the hole in the rest post without any interference.
	2. Cartridge incorrect type to provide this feature.	2. Use cartridge with turn-over arm that locates as in 6-1 or use 78 R. P. M. wand on cartridge bracket (see cartridge mounting instruction sheet received with changer.)
7. With record balance arm over spindle, changer will not cycle when a record is finished playing.	1. Velocity trip arm (27), long narrow lever below changer that moves with the tone arm, is not reaching velocity trip washer (50).	1. Check to see that none of the power or cartridge leads are restricting the motion of the trip lever. The trip arm (27) is bent either too high or too low. The correct level of the free end should be in a range from 1/8 to 1/4 inch above the motor plate.
8. Changer cycles by tripping through tone arm when operating in "Manual" position.	1. Velocity trip is not being blocked by triplock (38) located near the lower bearing hole of the balance arm shaft. This triplock (38) should bear under spring pressure against the balance arm shaft (2).	1. Refasten spring (42) between triplock (38) and vertical side of large bracket (22).
9. Tone arm does not land at the beginning (lead-in grooves) of 7, 10, 12 inch records. (Set-down adjustment).	1. Improper adjustment.	1. The set-down adjustment screw (4J) is located at the front end of the tone arm bracket. It can be readily identified by the coil spring that surrounds it. Turning the screw head 1/2 turn in a clockwise direction moves the tone arm approximately 1/8 inch to the right (measured at the stylus). Adjust so that stylus lands approximately midway in the margin found at the beginning of all records.
10. Tone arm does not drop sufficiently to play first record or tone arm interferes with records on spindle shelf during cycling.	1. Improper height adjustment.	1. The height adjustment screw (4K) is located in the bracket that mounts the tone arm. It is located midway between the 2 screws that secure the arm. One complete turn in a clockwise direction lowers the tone arm approximately 1/8 inch. Tone arm height should be set so that the bottom edge of tone arm clears the highest point of the rest post shelf by approximately 1/8 inch.
11. With balance arm (2) raised, turning control lever to "On-Reject" position, tone arm	1. Improper height adjustment. 2. Improper set-down adjust-	1. See procedure under 10. 2. See procedure under 9.

TROUBLE CHART (CON'T.)

Symptom	Cause	Remedy
	table idler (49) and diameters on motor shaft pulley.	idler (49) and pulley diameters on motor shaft. Starting with the 78 R.P.M. position (largest diameter on motor pulley) and switching speeds from 78 to 16 R. P. M. the idler must raise and contact the respective diameters on the motor without touching any of the diameters below. If idler arm is bent (should be parallel to motor plate 70), straighten arm till alignment above is achieved. Fiber spacer washer on idler shaft can also be relocated above or below idler wheel to vary height of idler as needed.
	5. Idler wheel assembly (49) binding on its shaft (53) and not rotating freely.	5. Place a drop of light oil at top and bottom of idler wheel shaft. Check that there are not too many fiber spacers on idler wheel shaft (53) causing binding between idler wheel and retaining ring on shaft. If so, remove one at a time until free.
	6. Pinion-driver wheel (56) does not fully withdraw from motor shaft at end of change cycle, causing drag on motor.	6. Check cycling gear (55) to see that crank pin is fully in notch of main slide (12). If not, due to excessive friction of main slide, relubricate moving contact points of main slide and main gear. Check that notch on main slide (12) does not have burr holding back crank pin of cycling gear (55) from locking in final position. Remove burr by filing carefully.
	7. Anti-skate wire (90) (silver wire running along side of main slide (12) from area near spindle (86) back to area of index-tone arm bracket (22) binding and continuing to be hit by spring (5A) on turntable hub after initial two revolutions of turntable.	7. Anti-skate wire (90) (silver wire) should be loose and easily moved clear of spring (5A) after turntable rotates twice. Adjust wire to loosen or clean off any lubricant causing sluggishness or tightness.
5. Difficulty in changing speeds manually.	1. Motor and switch wiring interfering with speed change cam rod (75). 2. Idler arm (53) badly bent. 3. Crank on arm shaft (84) interfering with motor board.	1. Move all wires so that cam rod (75) is not restricted by them in any speed position. 2. See procedure outlined under symptom 4, cause 4. 3. Check mounting of changer on motor board, making certain that the mounting springs are properly seated in the holes provided.
6. With speed control in "Speed Minder" position and stylus	1. Needle turnover lever is not moving pivot blade in rest	1. Adjust the cartridge in the tone arm so that the needle turnover

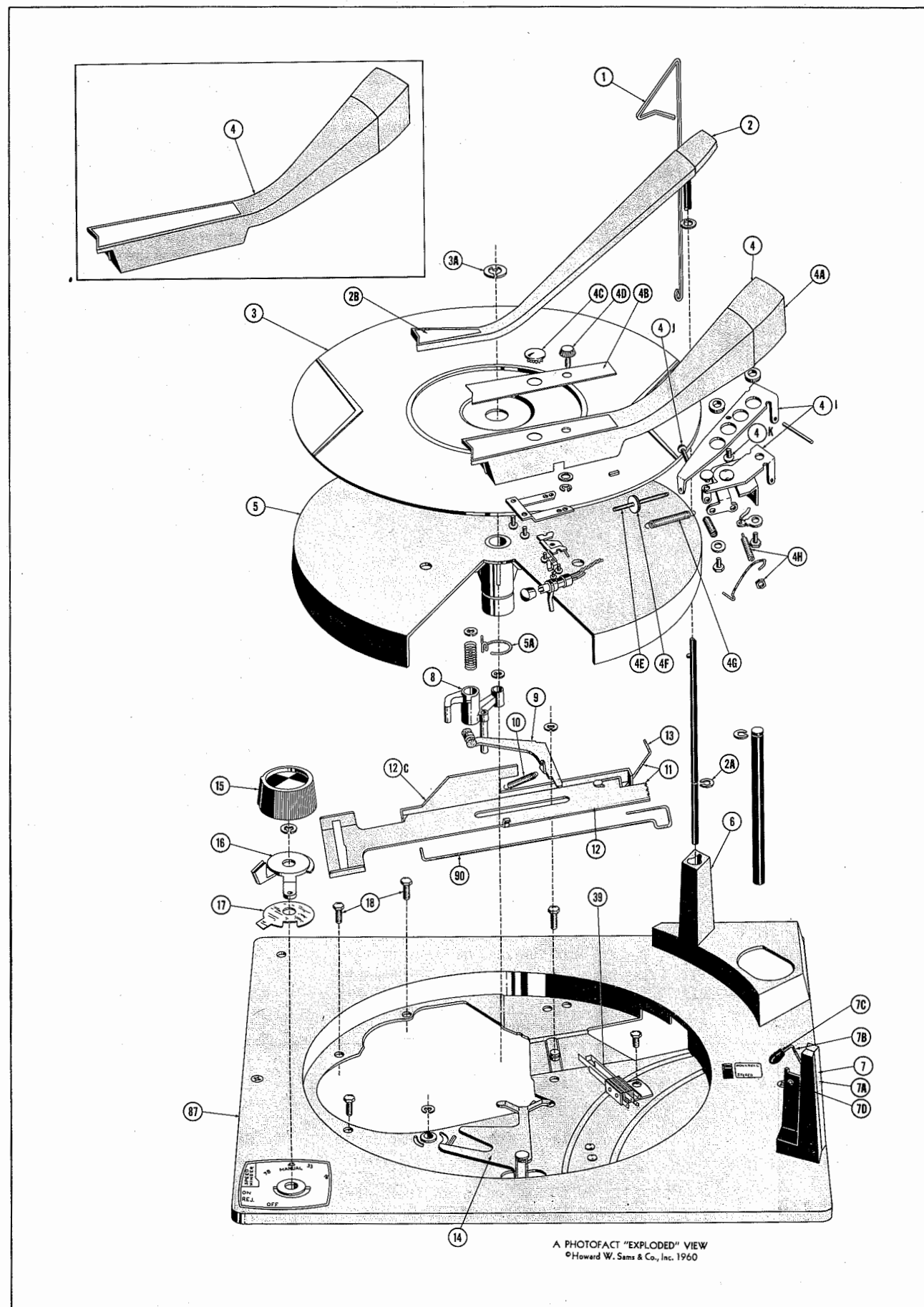


FIG.5A EXPLODED VIEW OF PARTS ABOVE BASEPLATE

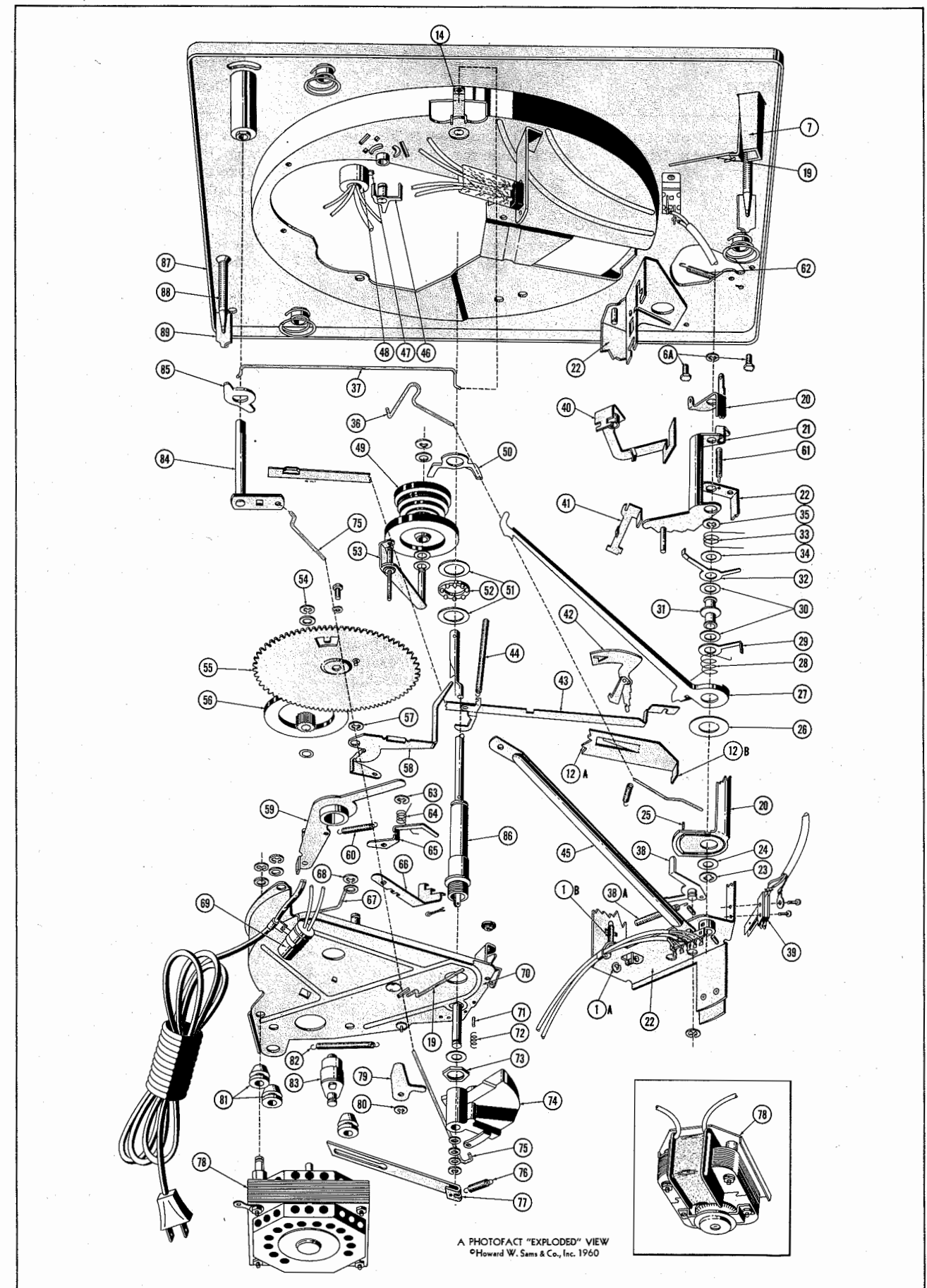


FIG.5B EXPLODED VIEW OF PARTS BELOW BASEPLATE