28 TYPING REPERFORATOR AND TAPE PRINTER

LUBRICATION

CONTENTS PAGE

1. GENERAL 1

2. BASIC UNITS 2

Axial positioning mechanism 13, 14
Detent assemblies 14
Function box mechanism 13
Function cam clutch trip mechanism . 17
Main shaft and jack shaft mechanisms (two shaft unit) 18
Main shaft mechanism 10
Printing mechanism 15
Punch mechanism (for chadless tape). 4, 5
Punch mechanism (for fully perforated tape) 6, 7
Push bars 11
Range finder mechanism 10
Ribbon feed mechanism (later design) 3
Rocker bail mechanism 16
Rotary positioning mechanism 9
Selector mechanism 9
Signal bell contact mechanism 17
Slack tape mechanism (for 28 tape printer unit) 19
Transfer mechanism 11
Typing reperforator unit 2, 8, 12

3. VARIABLE FEATURES 20

Automatic and remote control noninterfering BLANK tape feed-out mechanisms 28
Automatic and remote control noninterfering LTRS and BLANK tape feed-out mechanisms 24, 26, 27
Automatic and remote control noninterfering LTRS tape feed-out mechanisms 23
Backspace mechanism for chadless tape (manual) 37
Backspace mechanism for chadless tape (power drive) 37
Backspace mechanism for fully perforated tape (power drive) 38
Blank delete mechanism 32, 33
Code reading contacts 35
End of tape feed-out timing contacts for noninterfering LTRS and BLANK tape feed-out mechanisms . . 29
Letters-figures contact mechanism (later design) 34
Manual and power drive backspace mechanisms (for chadless tape) 36
Manual and solenoid operated interfering LTRS tape feed-out mechanisms 21, 22
Print suppression on functions 31
Remote control noninterfering LTRS and BLANK tape feed-out mechanisms 25
Signal bell contact mechanism 20, 21
Time delay motor stop mechanism . . 39
Timing contacts 35
Timing contact mechanism (operated by selector) 30
Unshift-on-space mechanism 20

4. EARLIER DESIGN MECHANISMS . . . 40

Remote control noninterfering BLANK tape feed-out mechanism . . 41-46
Ribbon feed mechanism 40
Timing contacts 46

1. GENERAL

1.01 This section contains the lubrication procedures for the 28 typing reperforator and tape printer units. The section has been revised to include recent engineering changes and additions and to rearrange the text, so as to bring the section generally up-to-date. Since this is an extensive revision, marginal arrows ordinarily used to indicate changes have been omitted.

1.02 The figures indicate points to be lubricated and the kind and quantity of lubricant to be used. Lubricate the units just prior to placing them in service. After a few weeks in service, relubricate to make certain that all points receive lubrication. The following lubrication schedule should be followed thereafter:

OPERATING SPEEDS IN WORDS PER MINUTE	LUBRICATION INTERVAL
60	3000 hours or 1 year*
75	2400 hours or 9 months*
100	1500 hours or 6 months*

*Whichever occurs first.

1.03 Use TP88970 (KS7470) oil at all locations where the use of oil is indicated. Use TP88973 (KS7471) grease on all surfaces where grease is indicated. If the function cam needle bearings are disassembled at any time, repack the bearings with TP195298 grease (Beacon 325 grease or its equivalent).

1.04 All spring wicks and felt oilers should be saturated. The friction surfaces of all moving parts should be thoroughly lubricated. Over lubrication, however, which will permit oil or grease to drip or be thrown on other parts, should be avoided. Take special care to prevent oil or grease from getting between armatures and pole faces or between electrical contact points. Pull a piece of "BOND" paper between the armature and the pole pieces to remove any oil or foreign matter that may be present. Make certain that no lint or pieces of paper remain between the pole pieces and armature.

1.05 Apply a thick film of grease to all gears.

1.06 Apply oil to all cams, including the camming surfaces of each clutch disc.

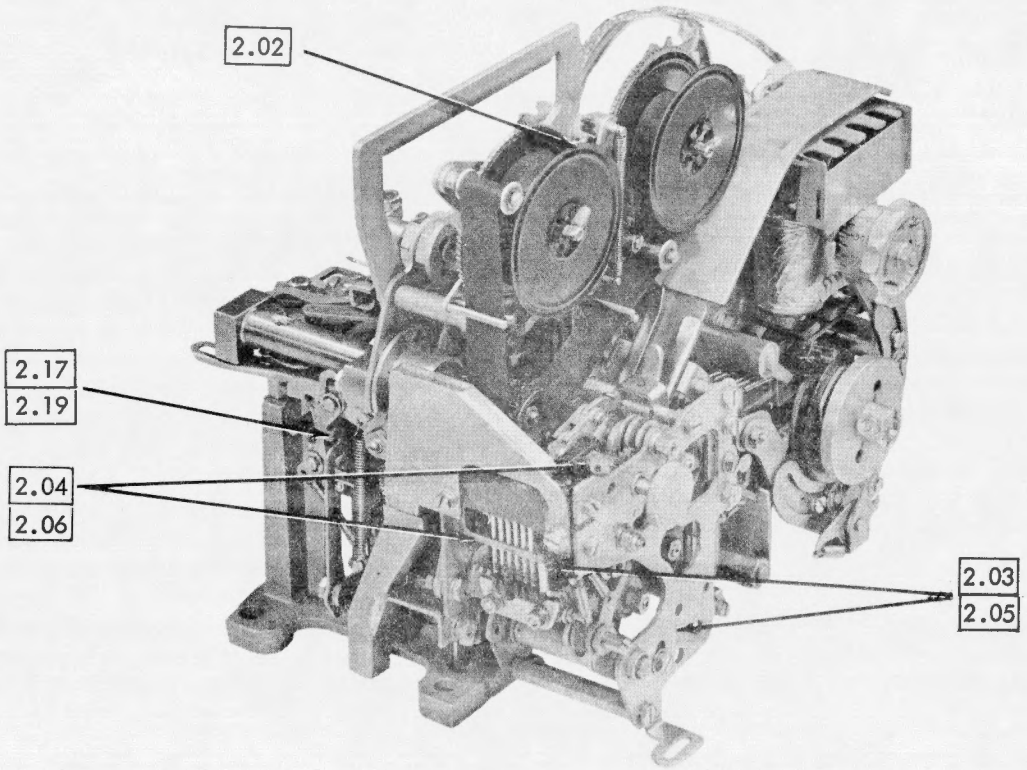
1.07 The photographs show the paragraph numbers referring to particular line drawings of mechanisms and where these mechanisms are located on the unit. Parts in the line drawings are shown in an upright position unless otherwise specified.

1.08 The illustration symbols indicate the following lubrication directions:

O1	Apply 1 drop of oil.
O2	Apply 2 drops of oil.
O3	Apply 3 drops of oil, etc.
G	Apply thin film of grease.
SAT	Saturate (felt oilers, washers, wicks) with oil.

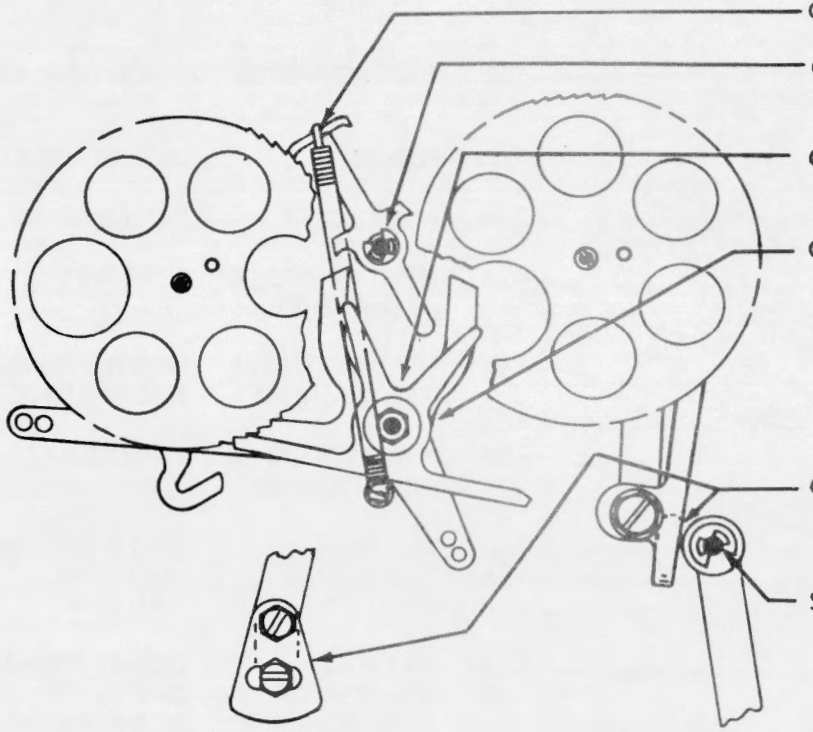
2. BASIC UNITS

2.01 Typing Reperforator Unit



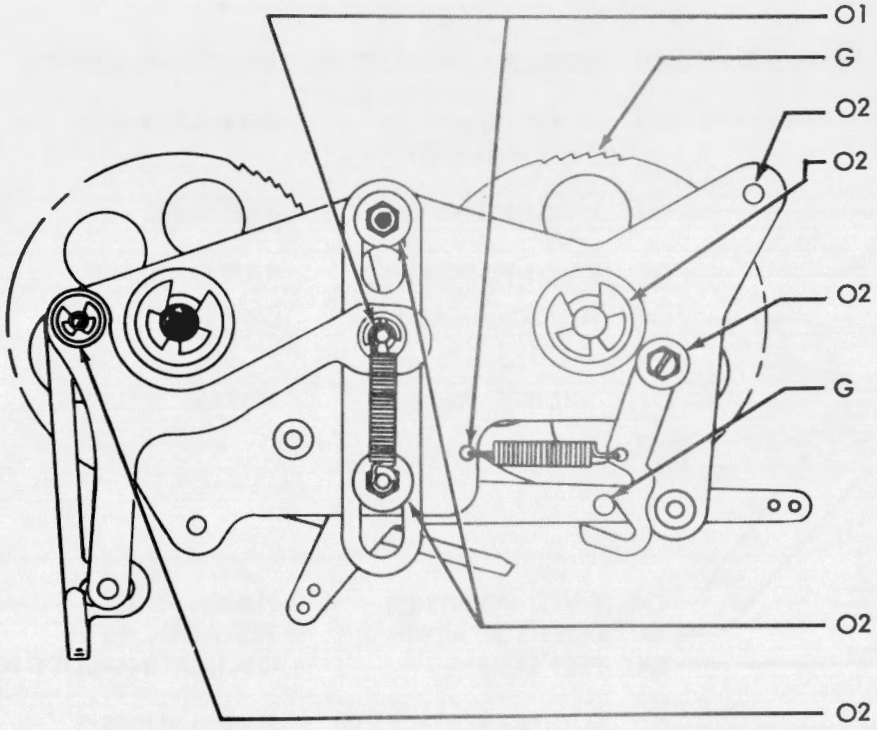
2.02 Ribbon Feed Mechanism (Later Design)

(For Earlier Design
See Part 4.)



O1	HOOKS (2)	SPRING
O2	PIVOT POINT	FEED PAWL
O2	PIVOT	CHECK PAWL
O2	PIVOT POINTS (2)	REVERSING ARM
G	CONTACTING SURFACE	DRIVE ARM ADJUSTABLE EXTENSION
SA1	FELT WASHER	DRIVE ARM ROLLER

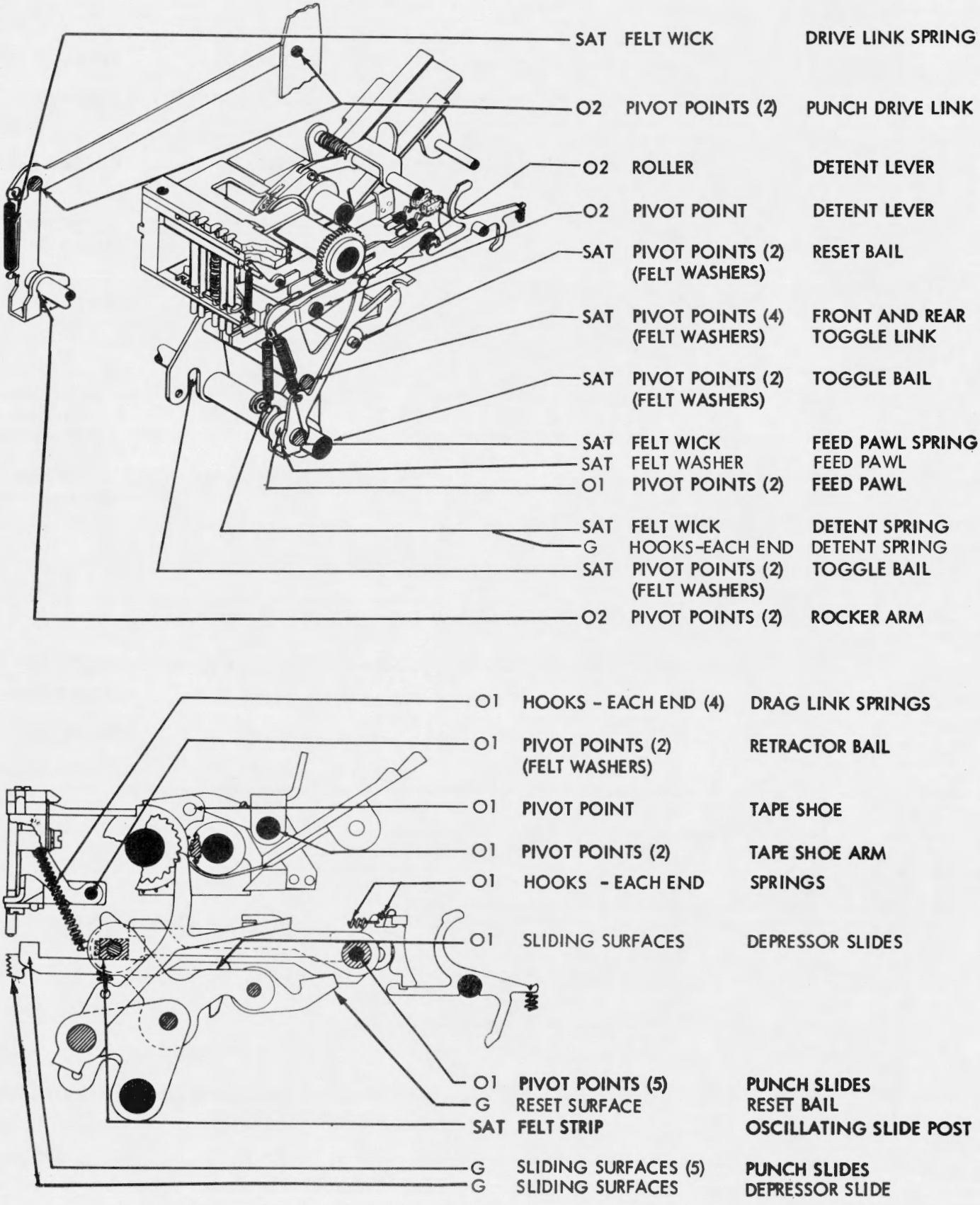
(FRONT VIEW)



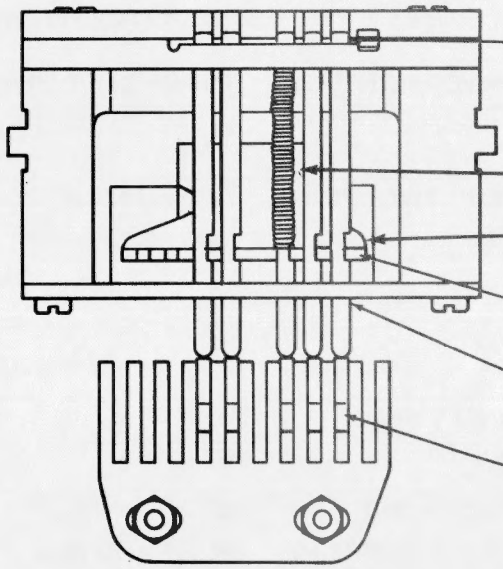
O1	HOOKS (2)	SPRINGS (2)
G	TEETH	RATCHET WHEEL
O2	SHAFT	ROLLERS (2)
O2	SHAFT, FELT WASHERS	RATCHET WHEEL (2)
O2	PIVOT	DETENT
G	CONTACTING SURFACES	DETENT
O2	UPPER AND LOWER BUSHING	SLIDE LEVER
O2	PIVOT	DRIVE ARM

(REAR VIEW)

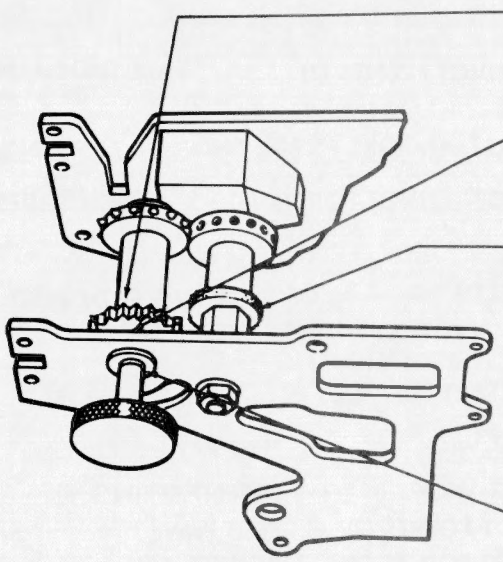
2.03 Punch Mechanism for Chadless Tape



2.04 Punch Mechanism for Chadless Tape continued

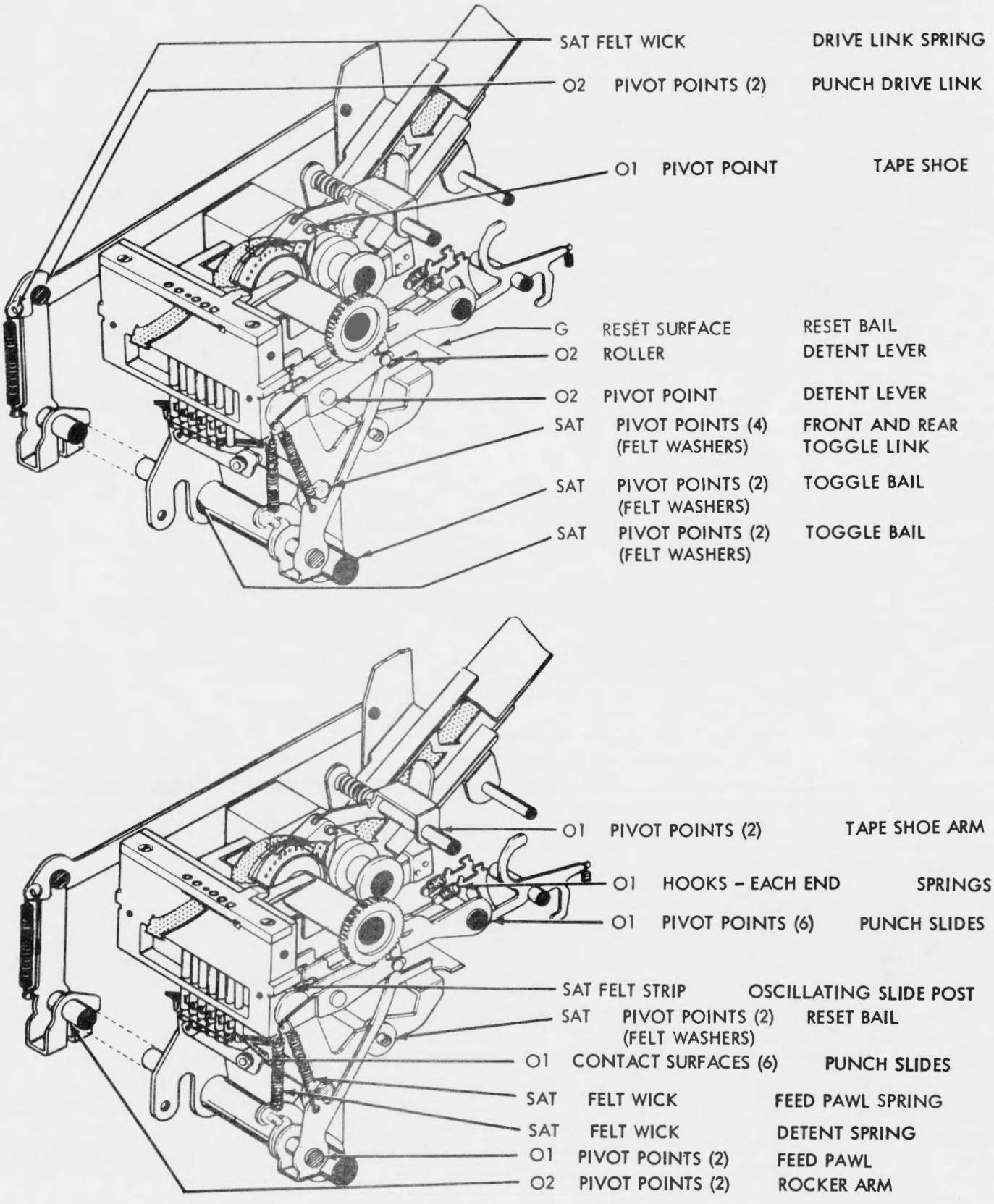


O1	SLIDING SURFACE (5) (UPPER GUIDE)	PUNCH PIN
O1	SPRING-EACH END	RETRACTOR
O1	PIVOT AND FELTS	RETRACTOR BAIL
G	SLIDING SURFACE (5) (RETRACTOR NOTCH)	PUNCH PIN
O1	SLIDING SURFACE (5) (LOWER GUIDE)	PUNCH PIN
O1	SLIDING SURFACE (5)	PUNCH SLIDE GUIDE

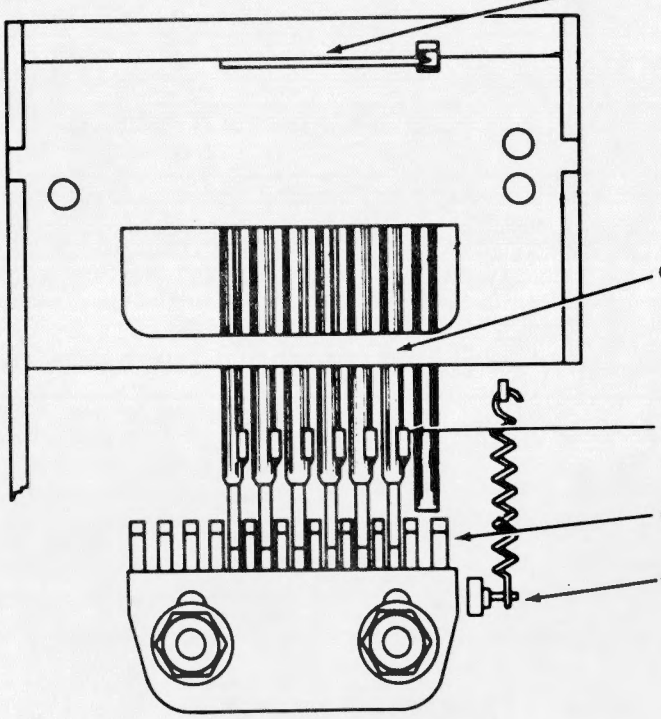


G	RATCHET TEETH	FEED WHEEL
O2	OIL HOLE	FEED WHEEL
SAT	PIVOT POINT (FELT WASHER)	FEED WHEEL
SAT	PIVOT POINT (FELT WASHER)	DIE WHEEL
O2	PIVOT POINTS (2)	HANDWHEEL BEARING

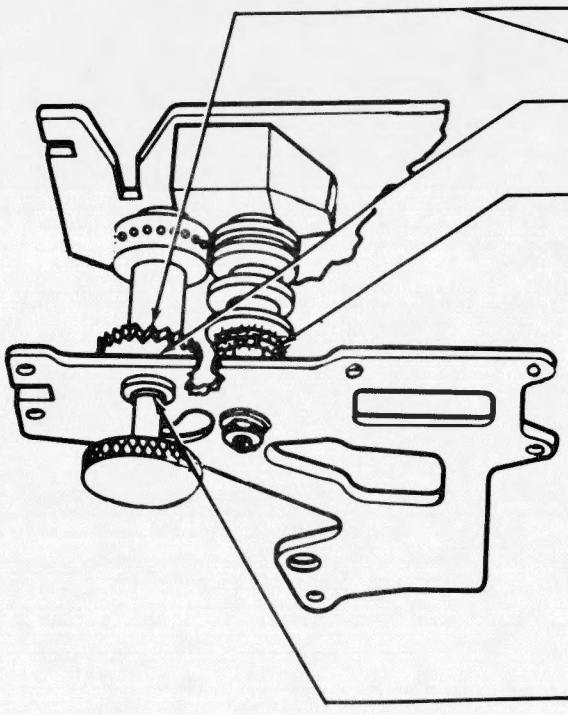
2.05 Punch Mechanism for Fully Perforated Tape



2.06 Punch Mechanism for Fully Perforated Tape continued

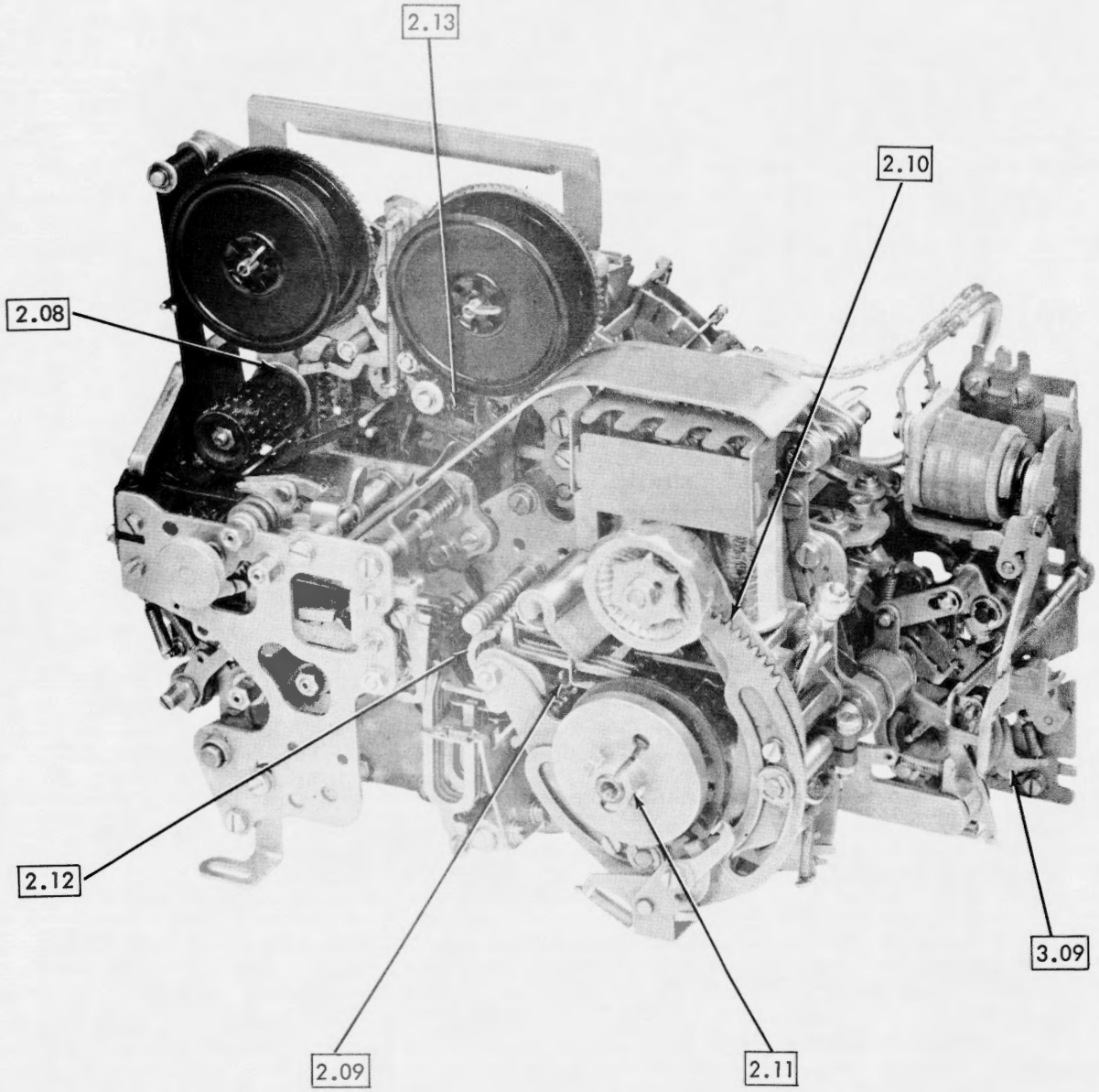


O1 SLIDING SURFACE (6) (UPPER GUIDE)		PUNCH PIN
O1 SLIDING SURFACE (6) (LOWER GUIDE)		PUNCH PIN
O1 SLIDING SURFACE (6)		PUNCH PIN
O1 SLIDING SURFACE (6)		PUNCH SLIDE GUIDE
O1 HOOKS-EACH END		SPRING

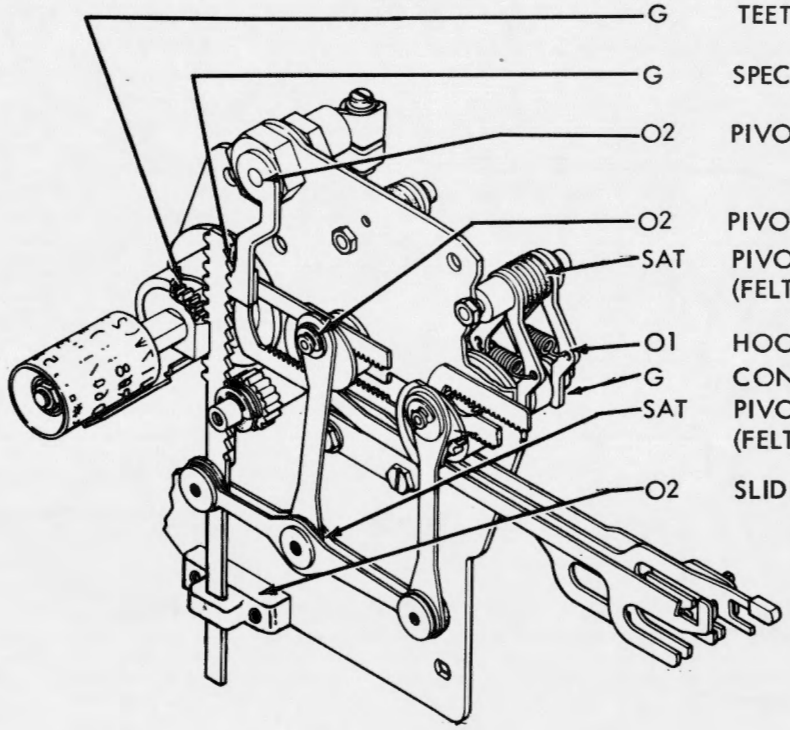


G	RATCHET TEETH	FEED WHEEL
O2	OIL HOLE	FEED WHEEL
SAT	PIVOT POINT (FELT WASHER)	FEED WHEEL
SAT	PIVOT POINT (FELT WASHER)	DIE WHEEL
O2	PIVOT POINTS (2)	HANDWHEEL BEARING

2.07 Typing Reperforator Unit

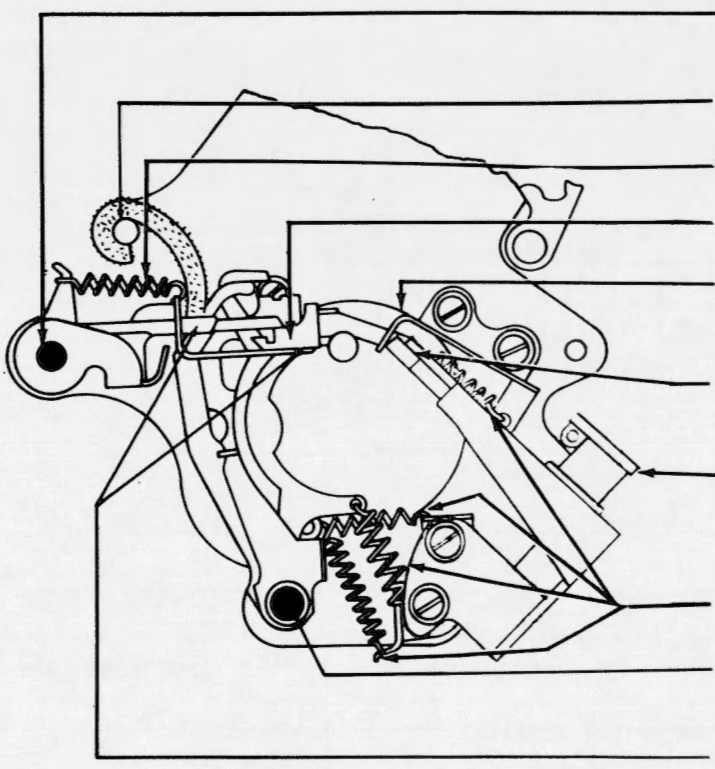


2.08 Rotary Positioning Mechanism



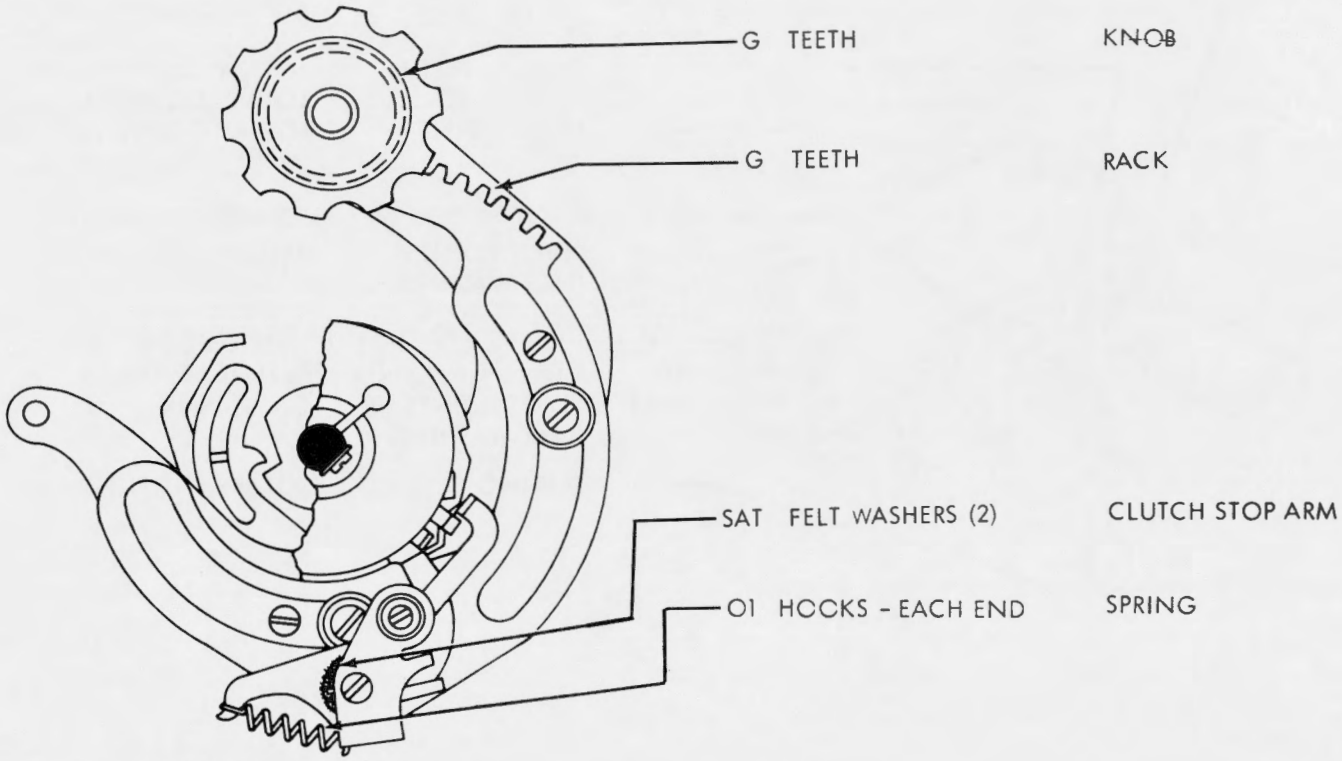
G	TEETH	ROTARY OUTPUT RACK	
G	SPECIAL TEETH	ROTARY OUTPUT RACK ROTARY CORRECTING LEVER	
O2	PIVOT POINT	ROTARY CORRECTING LEVER SHAFT	
O2	PIVOT POINTS (2)	CONNECTING RODS	
SAT	PIVOT POINTS (FELT WASHERS)	DETENT LEVERS (8)	
O1	HOOKS - EACH END	SPRINGS (4)	
G	CONTACT POINTS	DETENT LEVERS (8)	
SAT	PIVOT POINTS (3) (FELT WASHERS)	CROSS LINKS	
O2	SLIDING SURFACE	ROTARY OUTPUT RACK	

2.09 Selector Mechanism



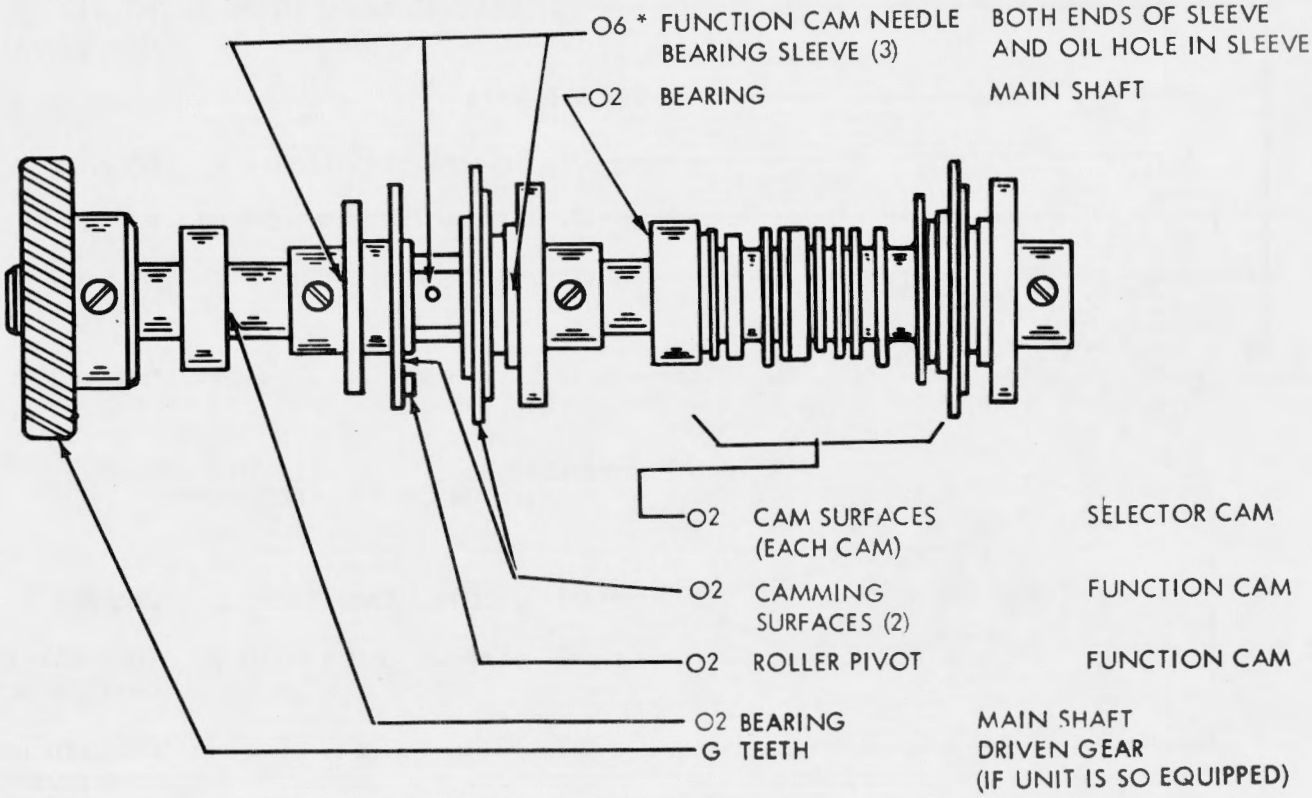
O2	BEARING GUIDE SLOTS (5)	PUSH LEVER GUIDE BEARING	
SAT	FELT WICK	SELECTOR WICK	
O1	HOOKS - EACH END (12)	SPRINGS	
O2	ENGAGING SURFACES (5)	PUSH LEVERS	
O2	GUIDE SLOT	MARKING LOCK LEVER	
O2	WICK	LUBRICATOR WICK	
FILL UP (AVOID AIRLOCK)		LUBRICATOR RESERVOIR	
O1	HOOKS - EACH END (12)	SPRINGS	
O2	BEARING GUIDE SLOTS (6)	SELECTOR LEVER GUIDE BEARING	
O2	GUIDE SLOTS	SELECTOR AND PUSH LEVER GUIDE	

2.10 Range Finder Mechanism

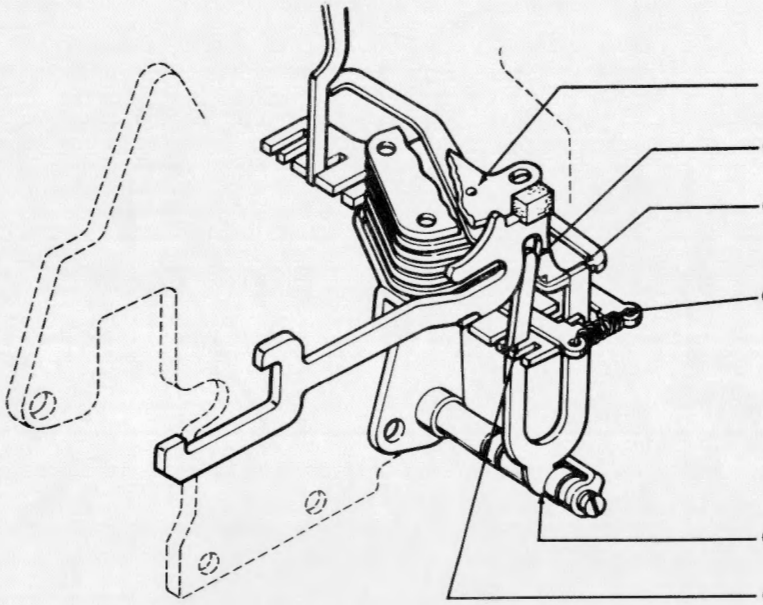


2.11 Main Shaft Mechanism

*IF FUNCTION CAM NEEDLE BEARINGS ARE DISASSEMBLED AT ANY TIME, REPACK BEARINGS WITH GREASE (BEACON 325) (TP195298) OR ITS EQUIVALENT.

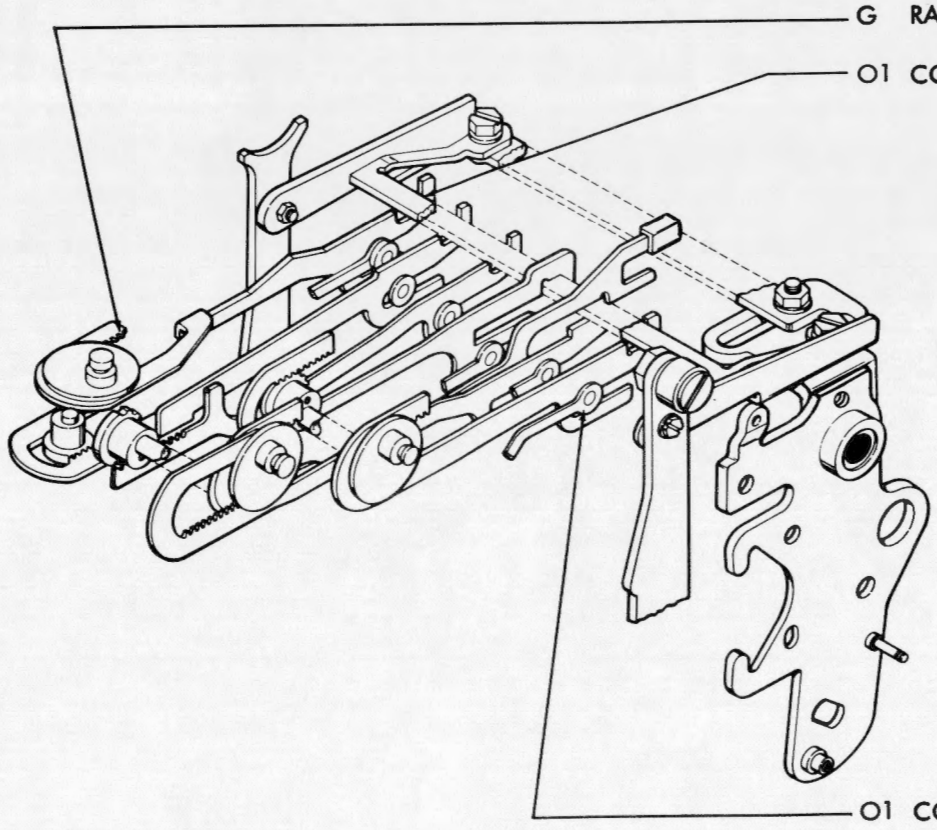


2.12 Transfer Mechanism



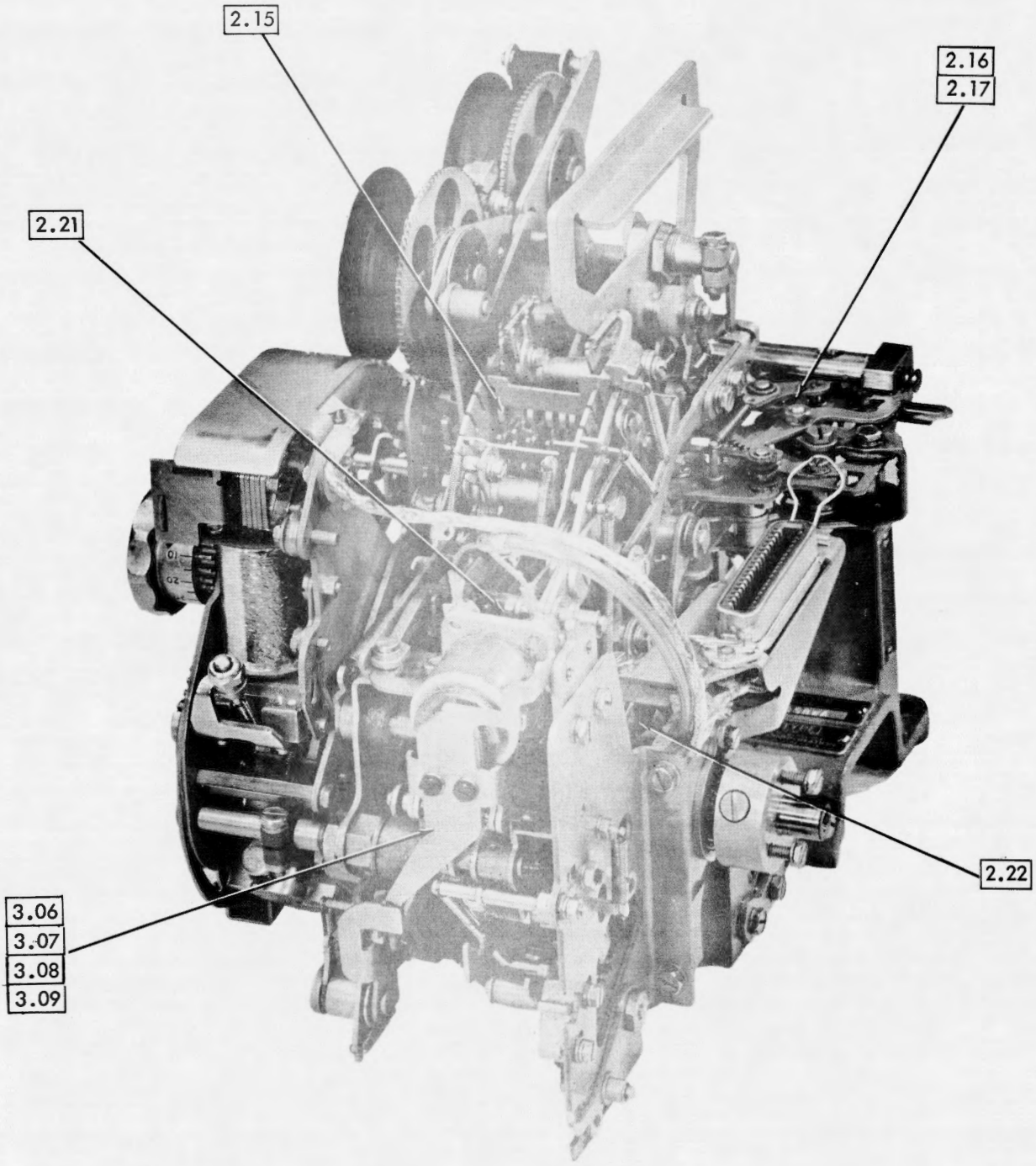
01	PIVOT POINTS (5)	PULSE BEAMS
01	CONTACT SURFACES (5)	TRANSFER LEVERS
01	CONTACT POINTS (5) (EACH END)	PULSE BEAMS
01	HOOKS - EACH END	SPRING
01	PIVOT POINTS (5)	TRANSFER LEVERS
01	SLIDING SURFACES (5) (EACH SIDE)	GUIDE BRACKET

2.13 Push Bars

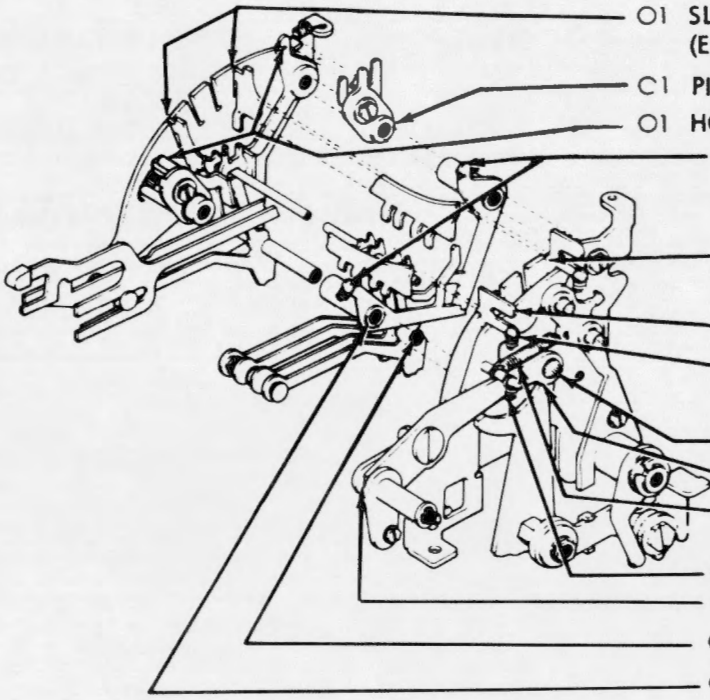


G	RACK TEETH (7)	PUSH BARS
01	CONTACT SURFACES (7)	PUSH BARS
01	CONTACT SURFACES (6)	PUSH BARS

2. 14 Typing Reperforator Unit

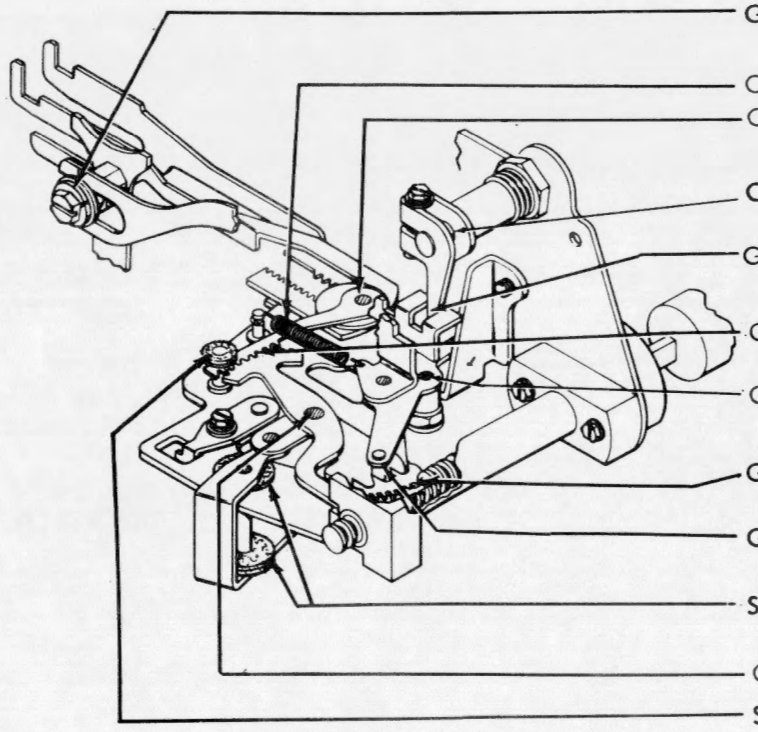


2. 15 Function Box Mechanism



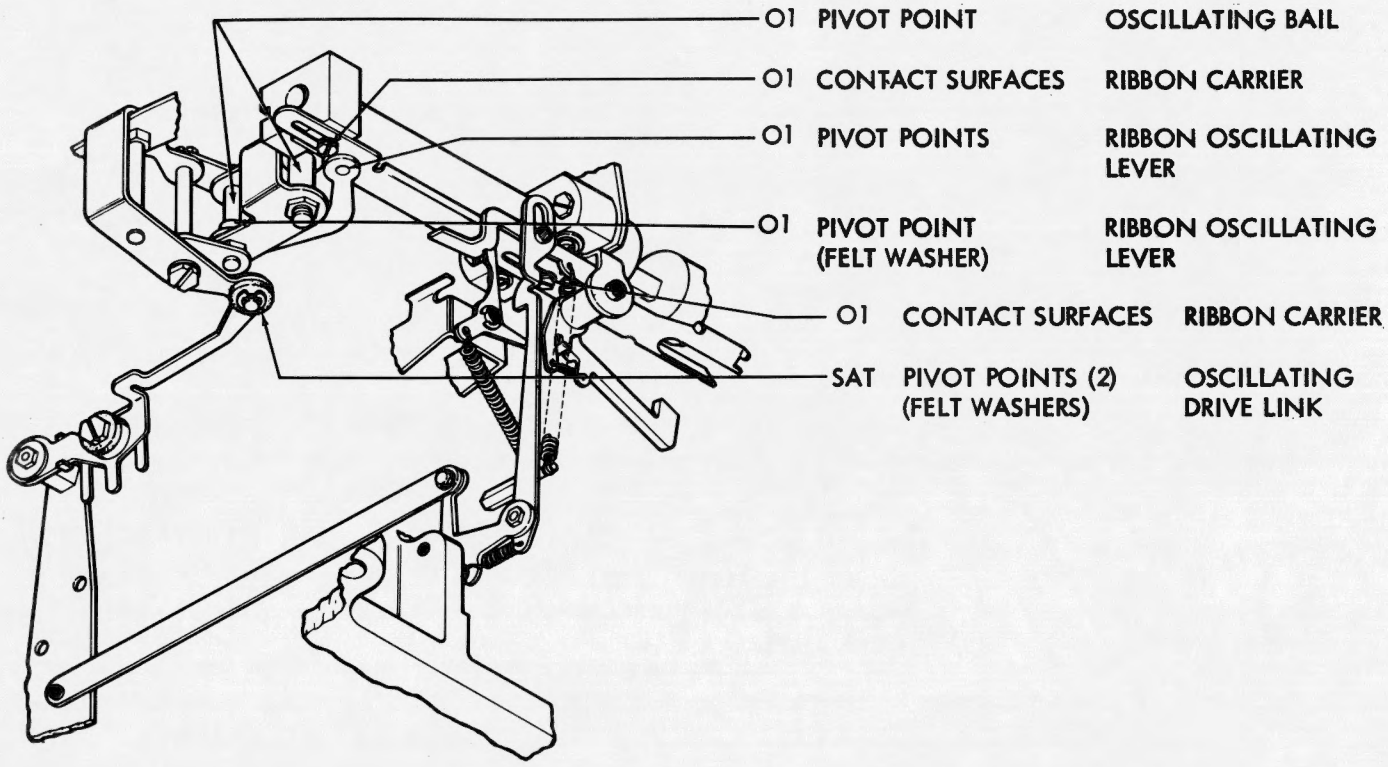
O1	SLIDING SURFACES (EACH SIDE)	FUNCTION BLADES
C1	PIVOT POINTS	FIGURES ARM ASSEMBLY
O1	HOOKS - EACH END (2)	EXTENSION ARM SPRINGS
C1	HOOKS - EACH END (2)	LETTERS AND FIGURES ARM ASSEMBLY SPRINGS
O1	SLIDING SURFACES (EACH SIDE)	FUNCTION BLADES
G	CONTACT POINTS (2)	FUNCTION BLADES
O1	HOOKS - EACH END	FUNCTION BLADE SPRINGS (2)
O1	PIVOT POINT	LIFTER ROLLER
G	ROLLER SURFACE	LIFTER ROLLER
O1	HOOKS - EACH END	LIFTER TOGGLE LINK SPRING
O1	HOOKS - EACH END	LIFTER SPRING
O1	PIVOT POINT	FUNCTION BLADE LIFTER
O1	PIVOT POINTS (6)	BELL CRANKS
O1	PIVOT POINTS	LETTERS ARM ASSEMBLY EXTENSION

2. 16 Axial Positioning Mechanism



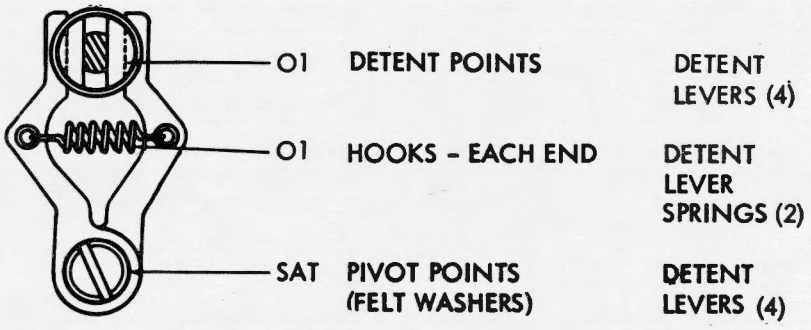
G	SLIDING GUIDE SURFACES	CORRECTING DRIVE LINK
O1	HOOKS - EACH END	SPRING
O1	PIVOT POINT	AXIAL OUTPUT RACK
O2	PIVOT POINT	ROTARY CORRECTING LEVER SHAFT
G	CONTACT POINTS	ROTARY CORRECTING CLAMP
G	TEETH	AXIAL SECTOR AXIAL OUTPUT RACK
O1	PIVOT POINT	AXIAL CORRECTING PLATE
G	TEETH	AXIAL SECTOR TYPEWHEEL SHAFT
G	CONTACT SURFACE	AXIAL CORRECTING PLATE ROLLER
SAT	PIVOT POINTS (FELT WASHERS)	OSCILLATING DRIVE BAIL
O1	PIVOT POINT	AXIAL SECTOR
SAT	PIVOT POINT (FELT WASHER)	GUIDE ROLLER

2.17 Axial Positioning Mechanism continued (Left Side View)

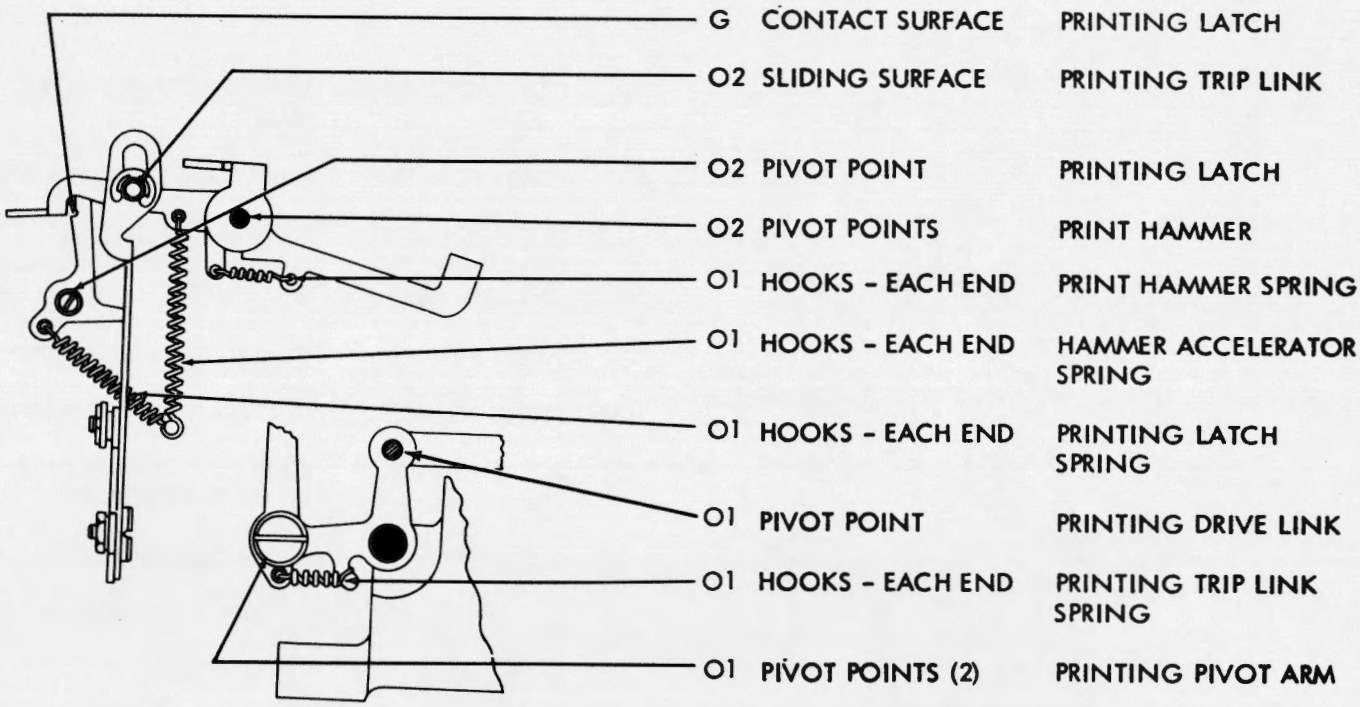


2.18 Detent Assemblies (Bottom View)

NOTE: THERE ARE TWO DETENT ASSEMBLIES ON THE AXIAL POSITIONING MECHANISM.

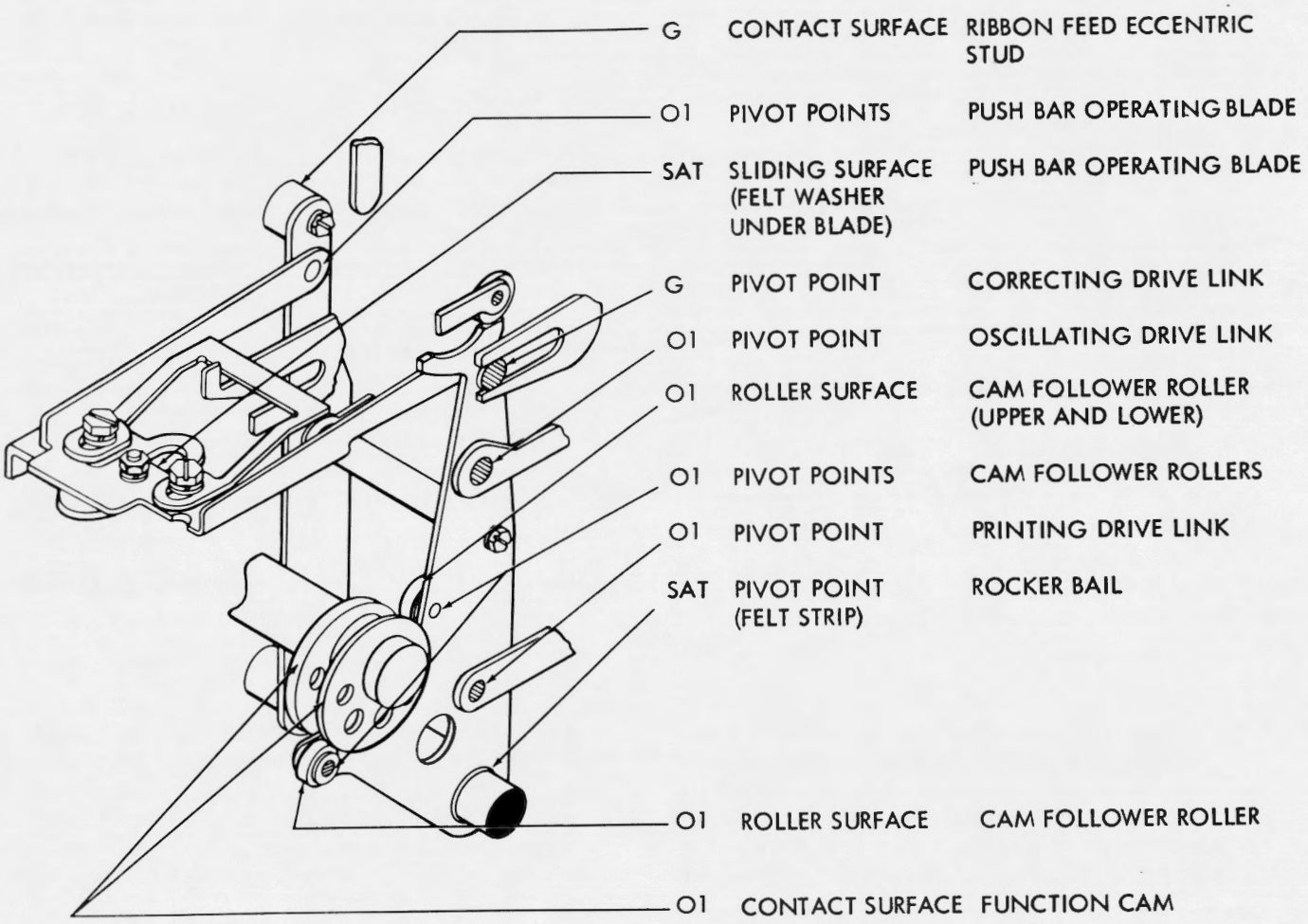


2.19 Printing Mechanism With Steel Print Hammer (Left Side View)

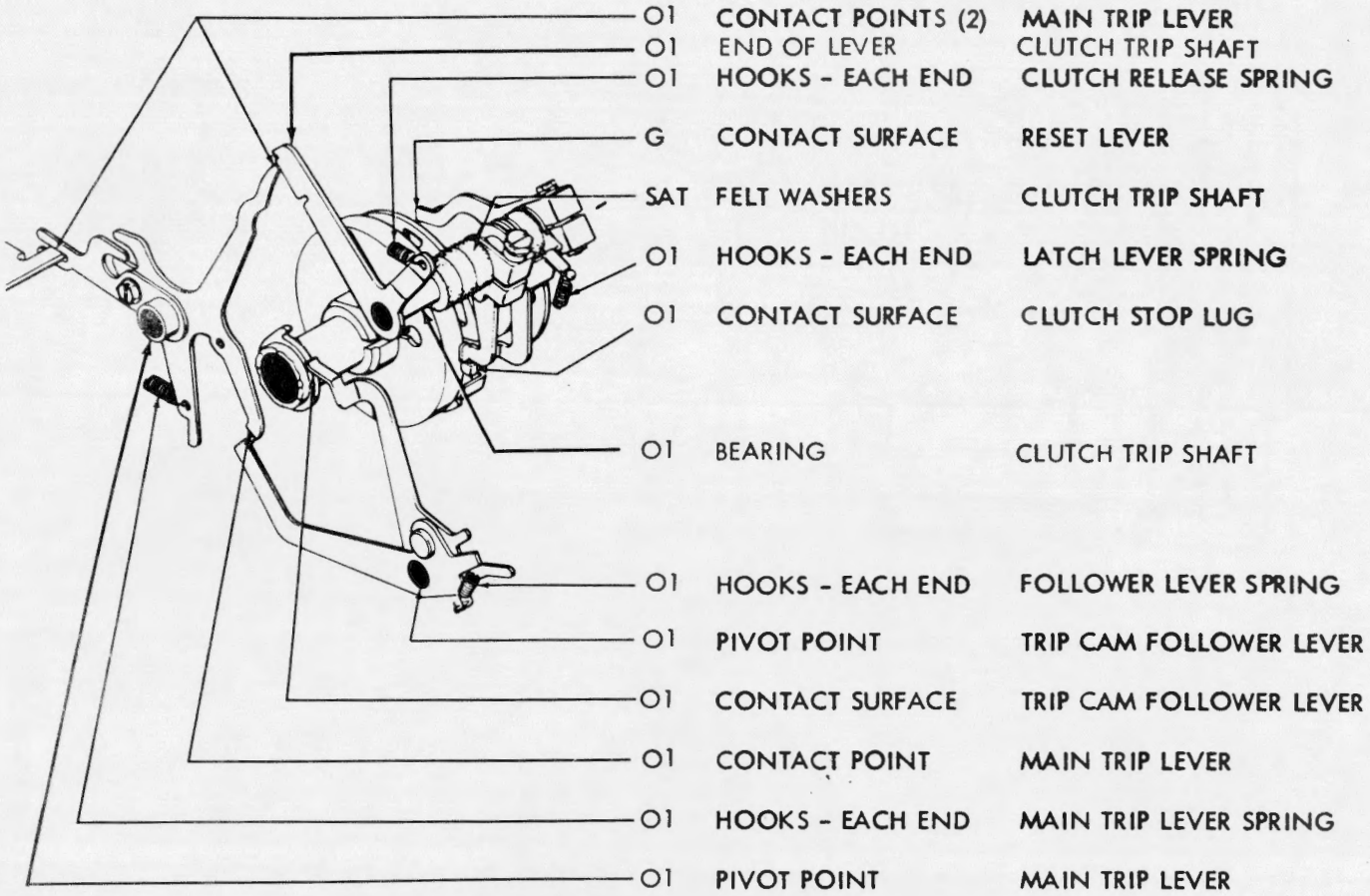


2.20 Printing Mechanism With Resilient Print Hammer (Left Side View): The printing mechanism with resilient print hammer (not illustrated) shall be lubricated in the same manner as the steel print hammer shown in 2.19 but in addition, the felt washer between the resilient print hammer accelerator and the frame shall be saturated with oil in accordance with general lubrication procedures. Where a mechanism is equipped with print suppression parts, a thin film of grease shall be applied on print hammer stop at the point of contact with the print hammer lever.

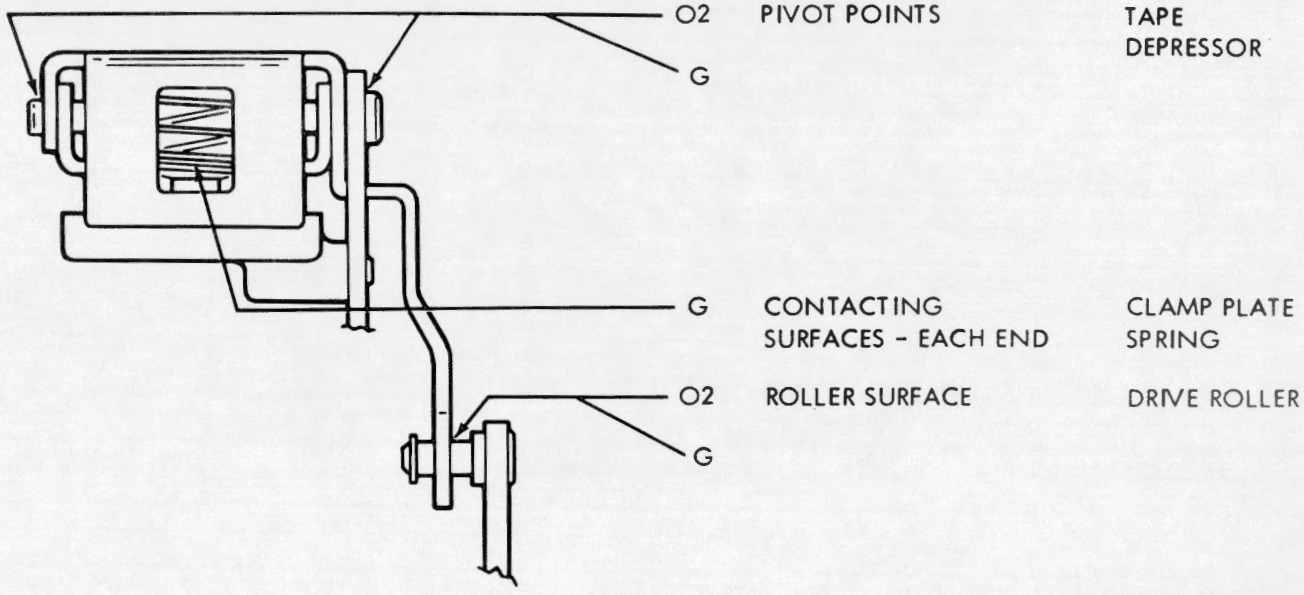
2.21 Rocker Bail Mechanism (Rear View)



2.22 Function Cam Clutch Trip Mechanism

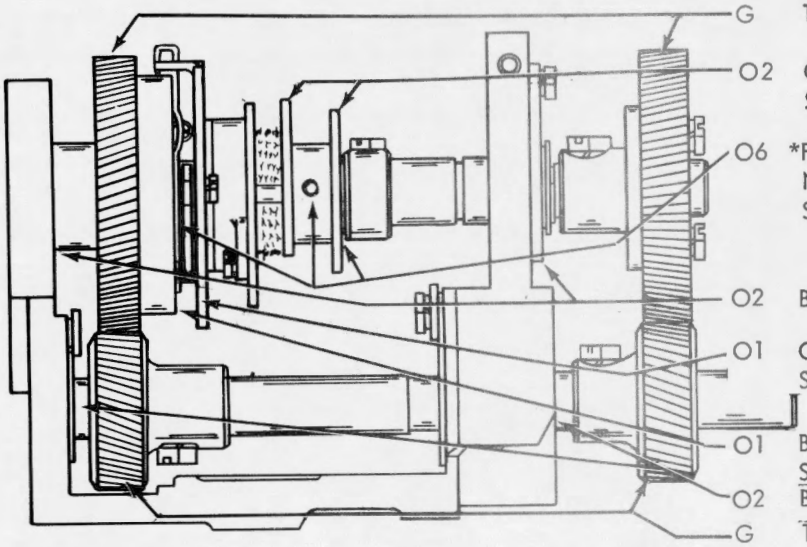


2.23 Slack Tape Mechanism

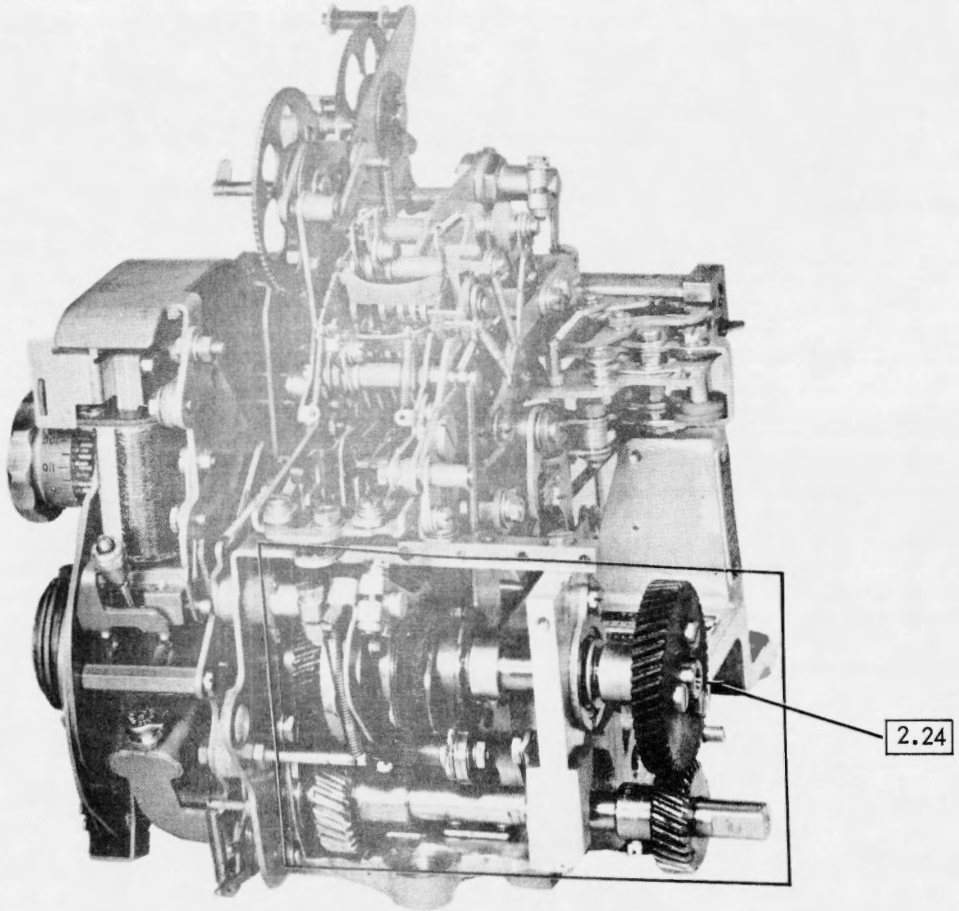


2.24 Main Shaft and Jack Shaft Mechanisms (Two Shaft Unit)

*IF FUNCTION CAM NEEDLE BEARINGS ARE DISASSEMBLED AT ANY TIME, REPACK BEARINGS WITH GREASE (BEACON 325) (TP195298) OR ITS EQUIVALENT.

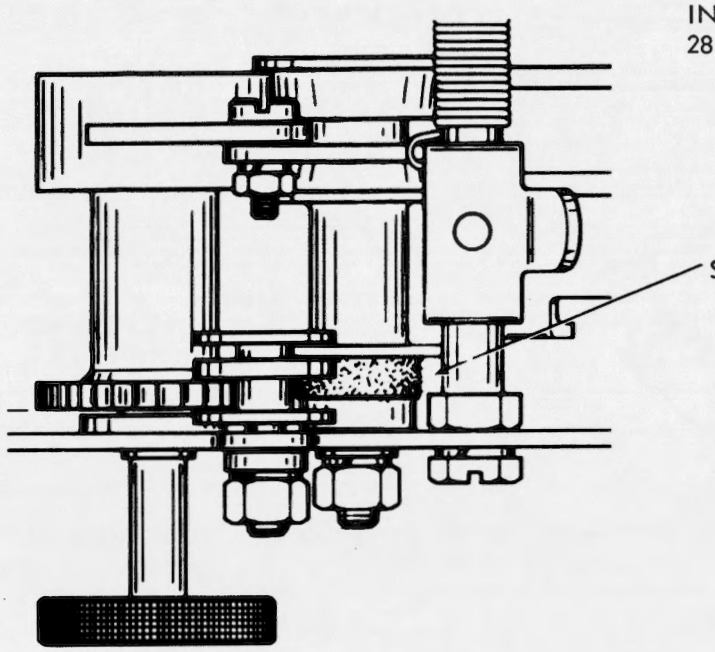


G	TEETH	GEARS (2)
O2	CAMMING SURFACES (2)	FUNCTION CAM
O6	*FUNCTION CAM NEEDLE BEARING SLEEVE (3)	BOTH ENDS OF SLEEVE AND OIL HOLE IN SLEEVE
O2	BEARING (2)	MAIN SHAFT
O1	CAMMING SURFACE	CLUTCH CAM DISK
O1	BEARING SURFACE	FUNCTION CLUTCH DRUM
O2	BEARING (2)	JACK SHAFT
G	TEETH	GEARS (2)



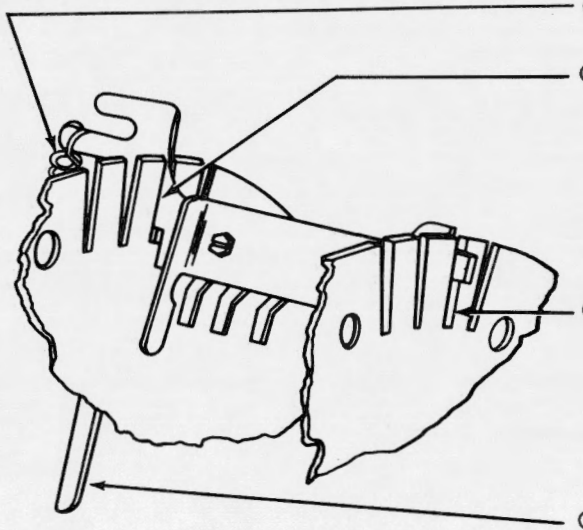
2. 25 Tape Mechanism for 28 Tape Printer Unit

(THIS LUBRICATION INSTRUCTION PLUS APPLICABLE 28 TYPING REPERFORATOR LUBRICATION INSTRUCTIONS ARE REQUIRED TO LUBRICATE THE 28 TAPE PRINTER UNIT)



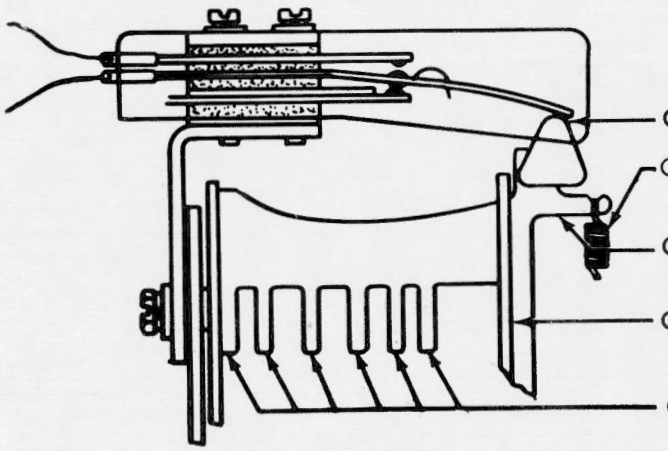
3. VARIABLE FEATURES

3.01 Unshift-On-Space Mechanism



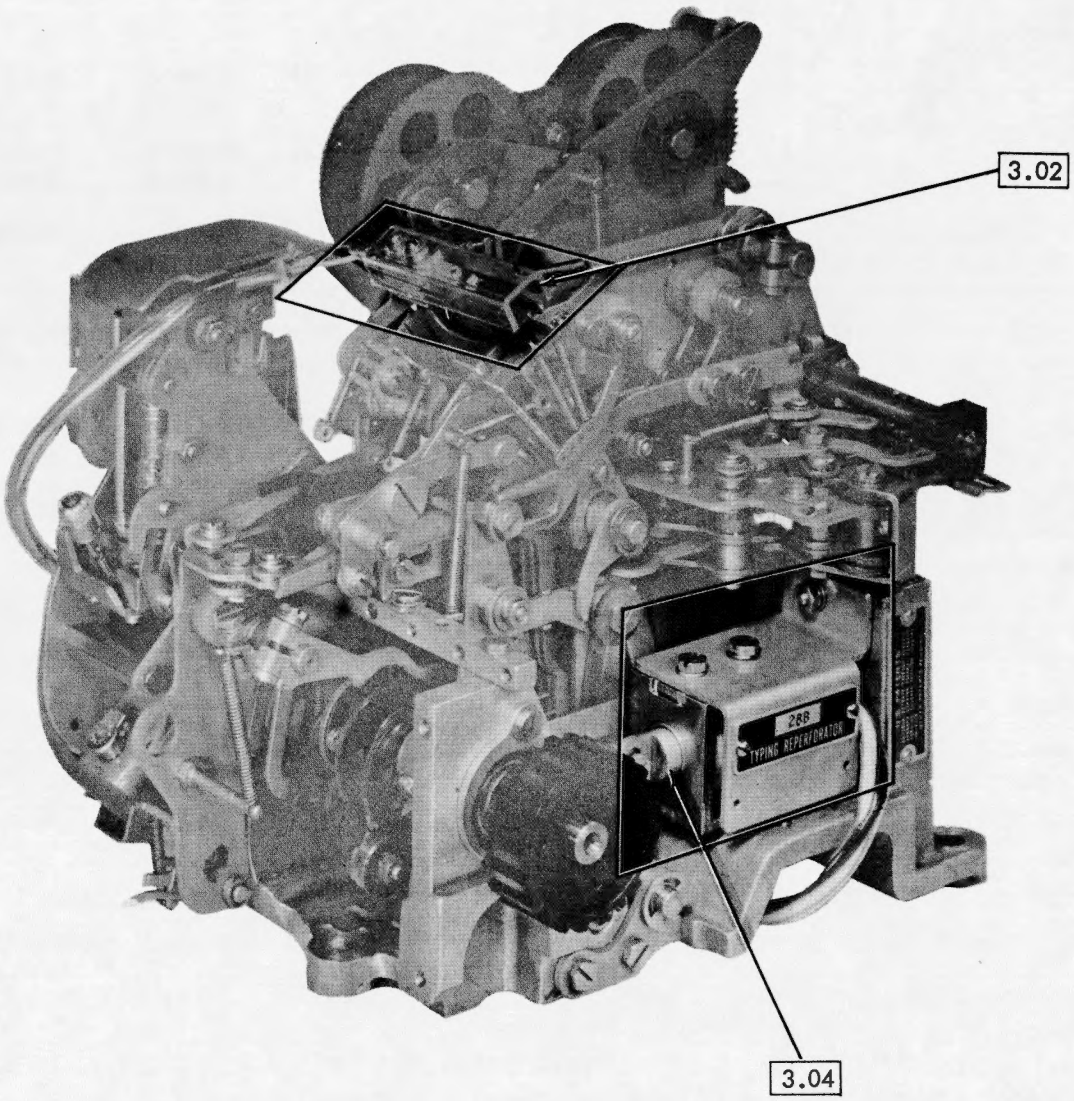
01	HOOKS-EACH END	SPRING
02	SLOT	FUNCTION BOX REAR PLATE
01	SLOT	FUNCTION BOX FRONT PLATE
01	GUIDE EXTENSION	FUNCTION BLADE

3.02 Signal Bell Contact Mechanism (Right Side View)

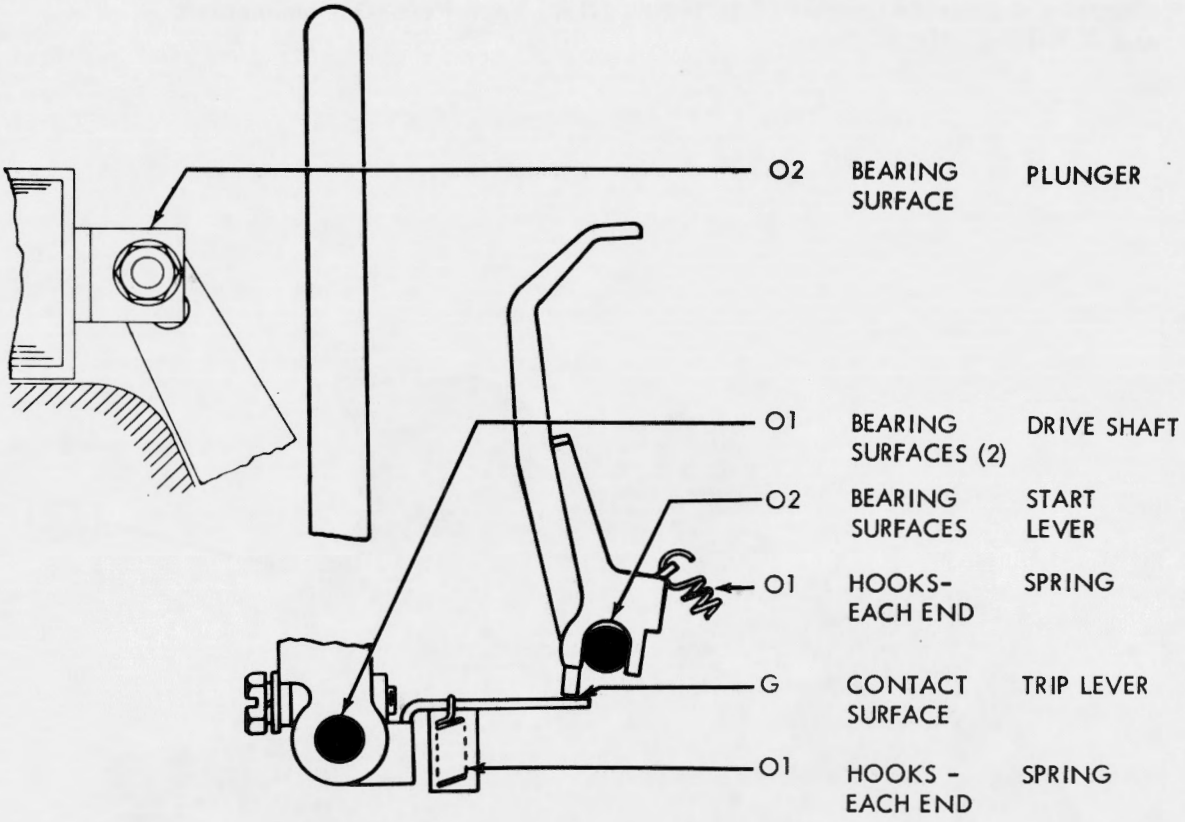


G	CONTACT SURFACE	FUNCTION BLADE
01	HOOKS-EACH END	SPRING
G	CONTACT SURFACE	FUNCTION BLADE
G	SLIDING SURFACES	FUNCTION BLADE
G	SENSING FINGERS	FUNCTION BLADE

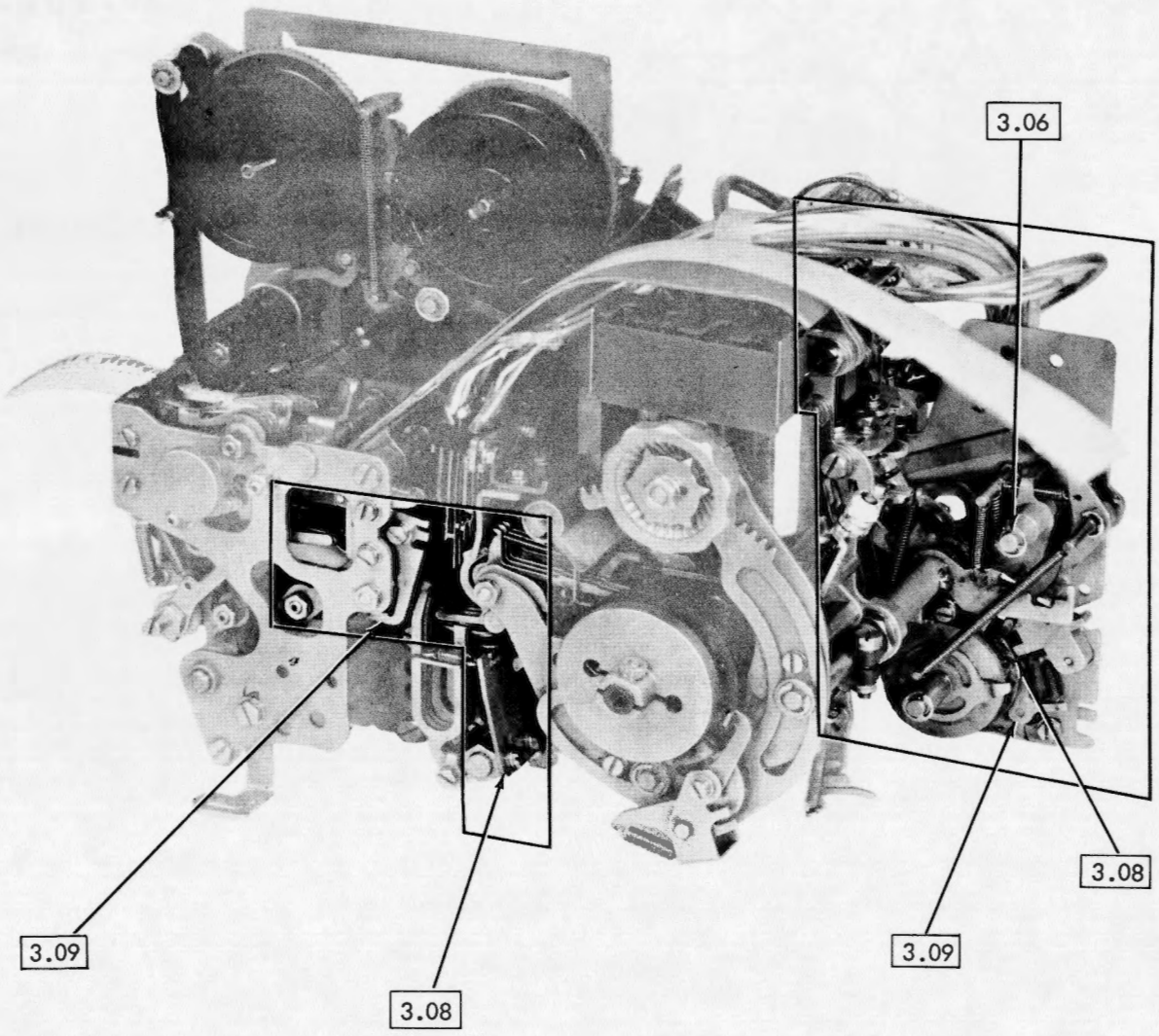
3.03 Manual and Solenoid Operated Interfering LTRS Tape Feed-Out Mechanism and Signal Bell Mechanism



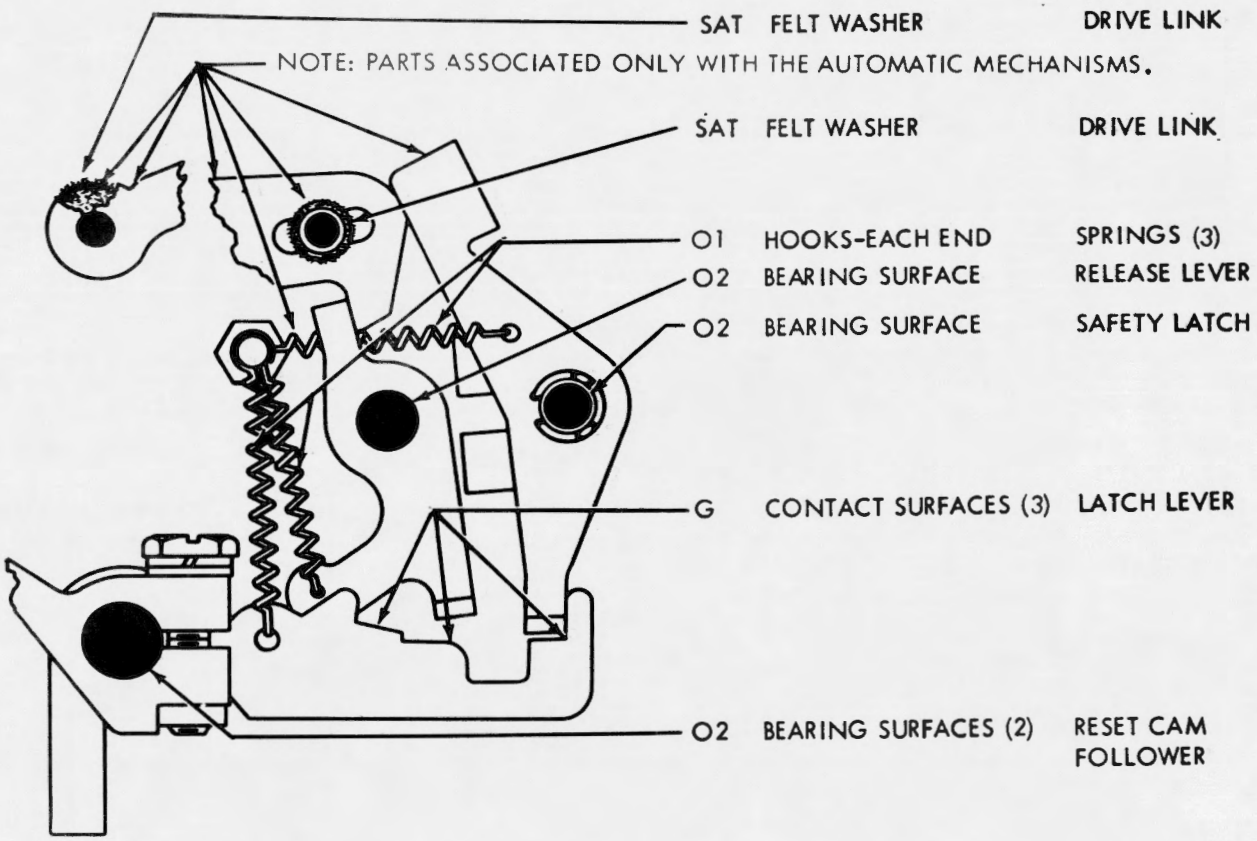
3.04 Manual and Solenoid Operated Interfering LTRS Tape Feed-Out Mechanism



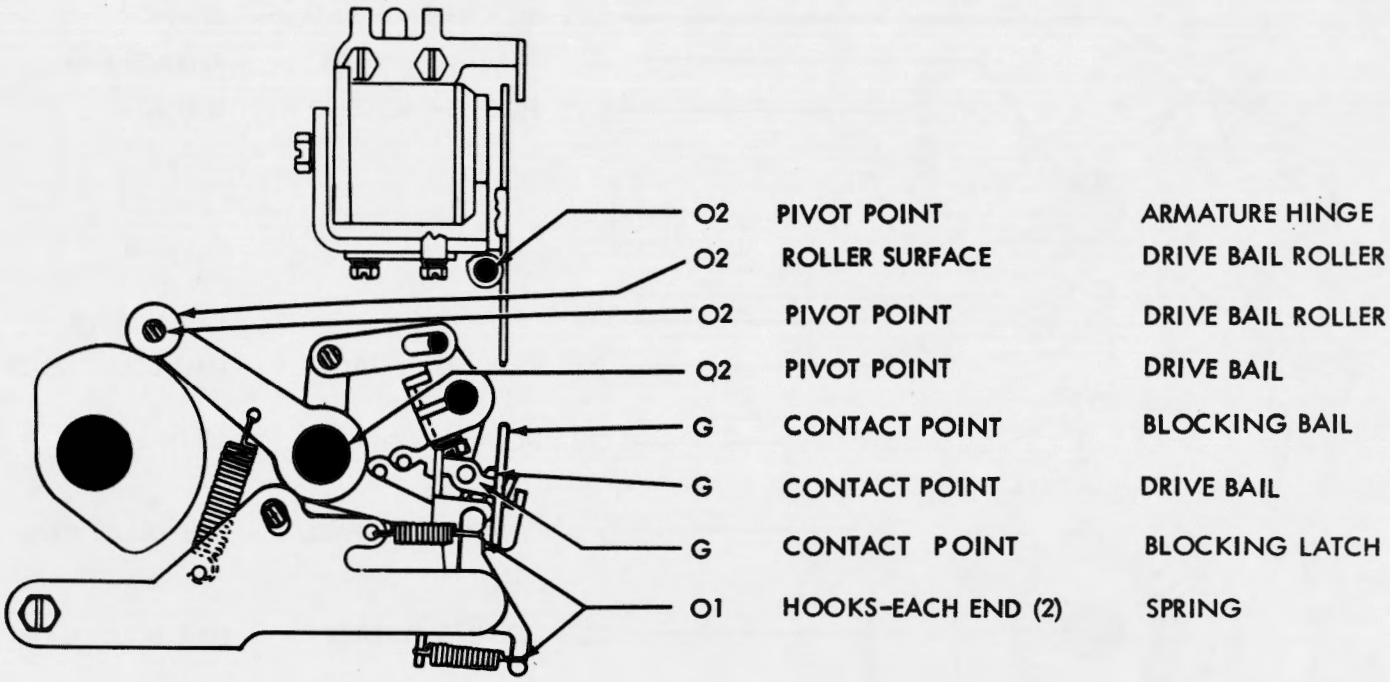
3.05 Automatic and Remote Control Noninterfering LTRS Tape Feed-Out Mechanisms

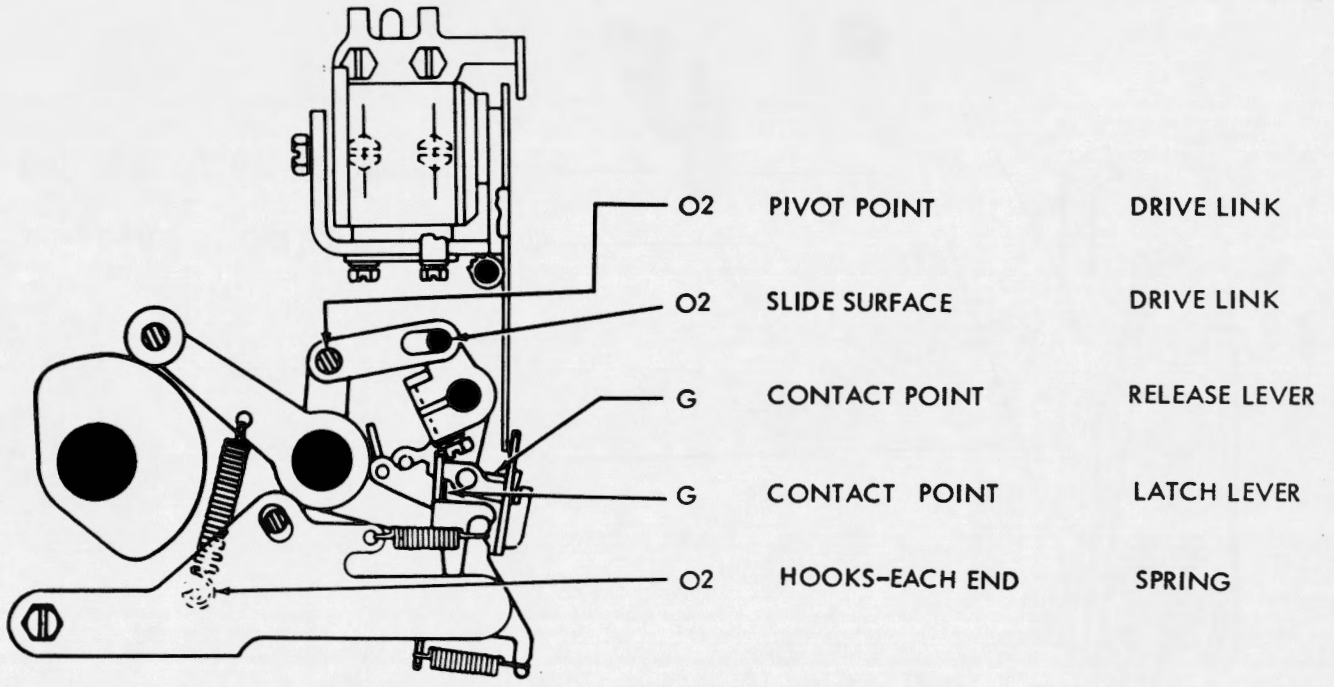


3.06 Automatic and Remote Control Noninterfering LTRS and BLANK Tape Feed-Out Mechanisms

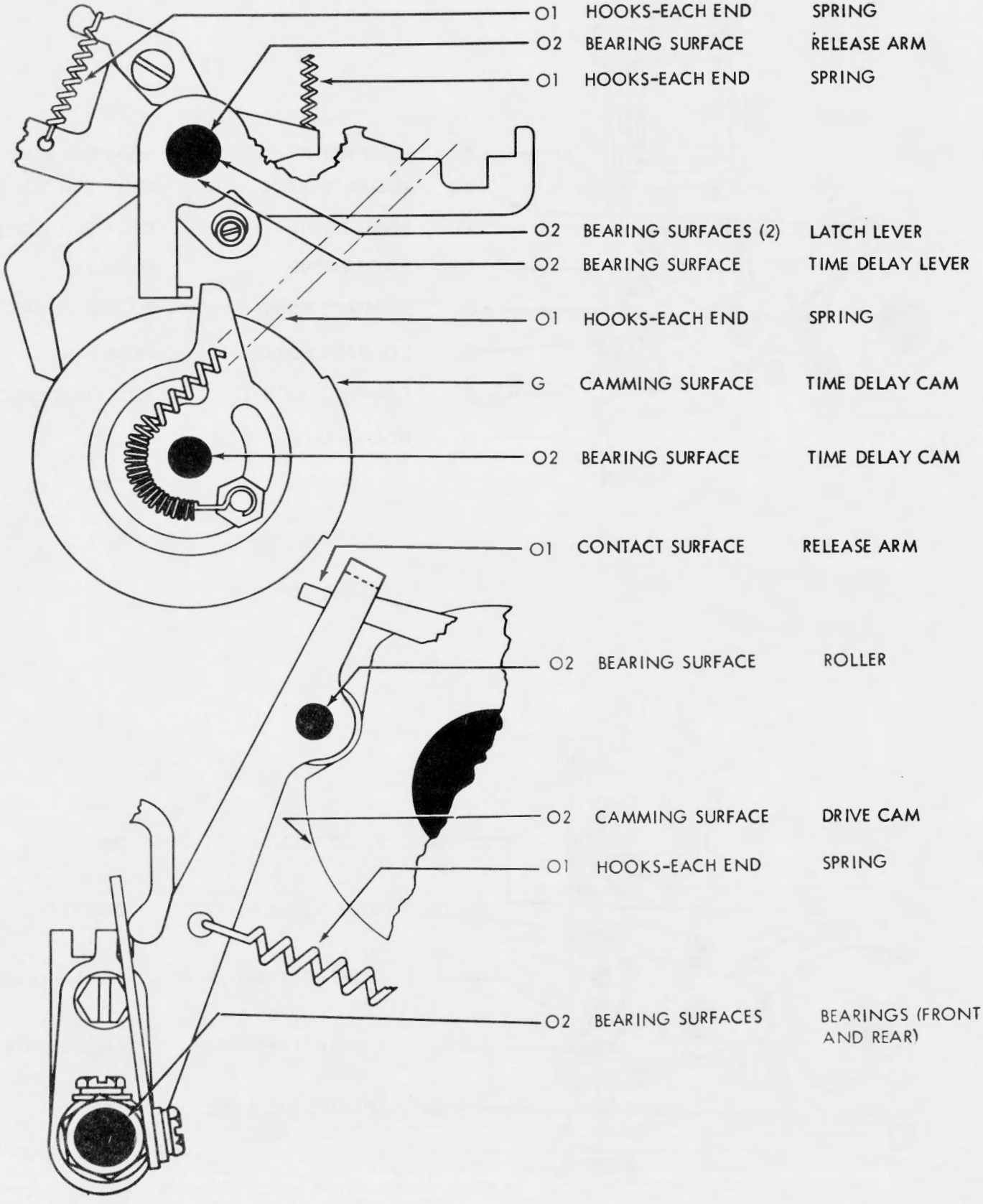


3.07 Remote Control Noninterfering LTRS and BLANK Tape Feed-Out Mechanism

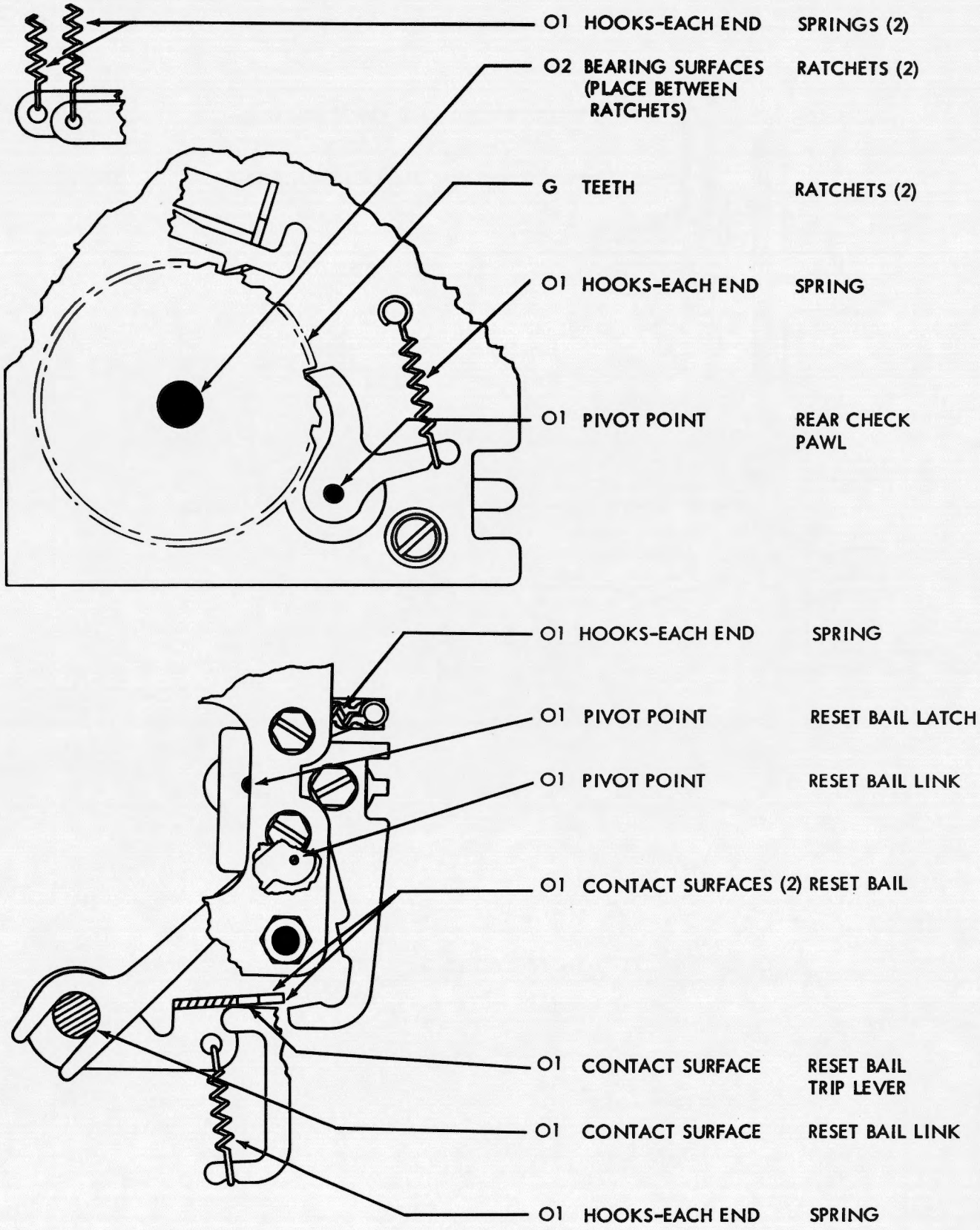




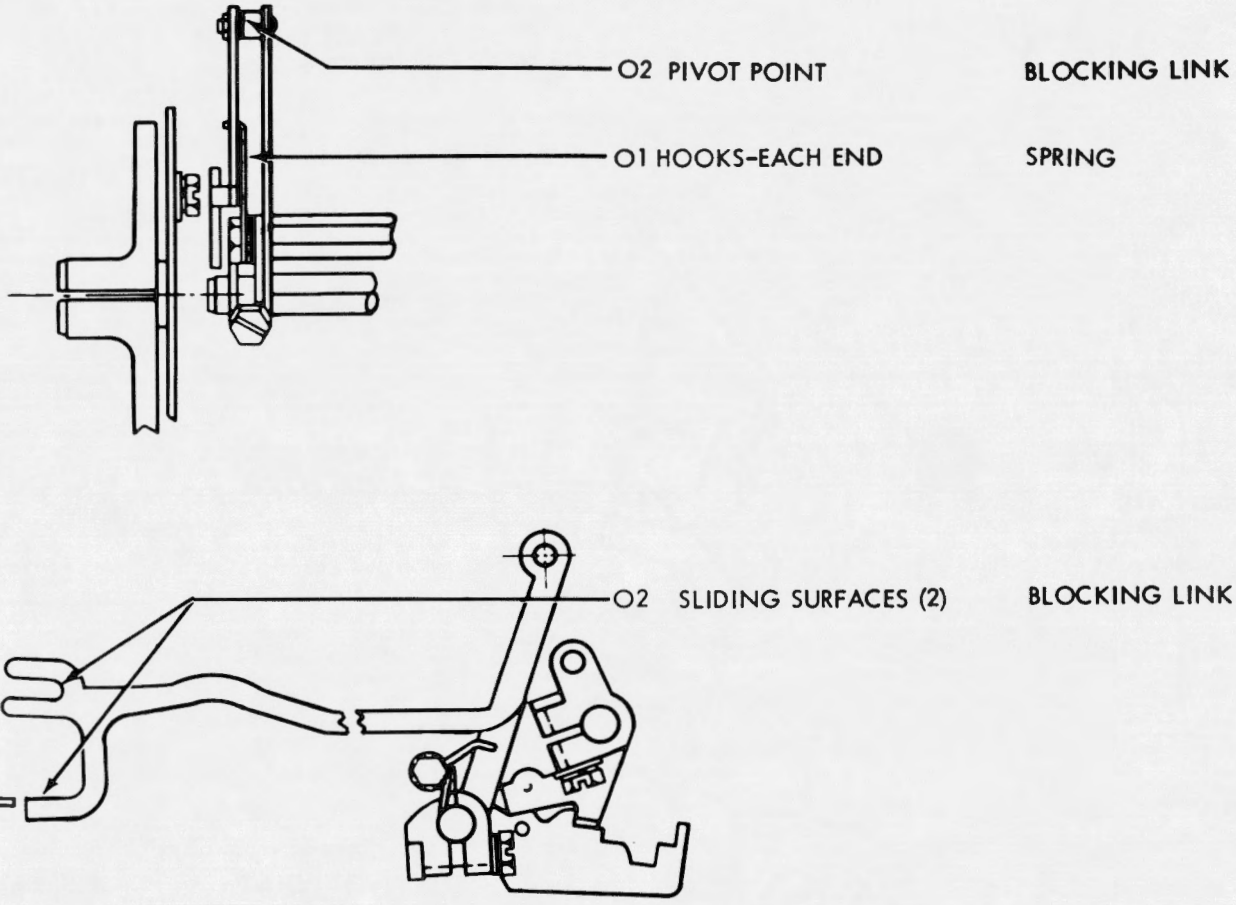
3.08 Automatic and Remote Control Noninterfering LTRS and BLANK Tape Feed-Out Mechanisms continued



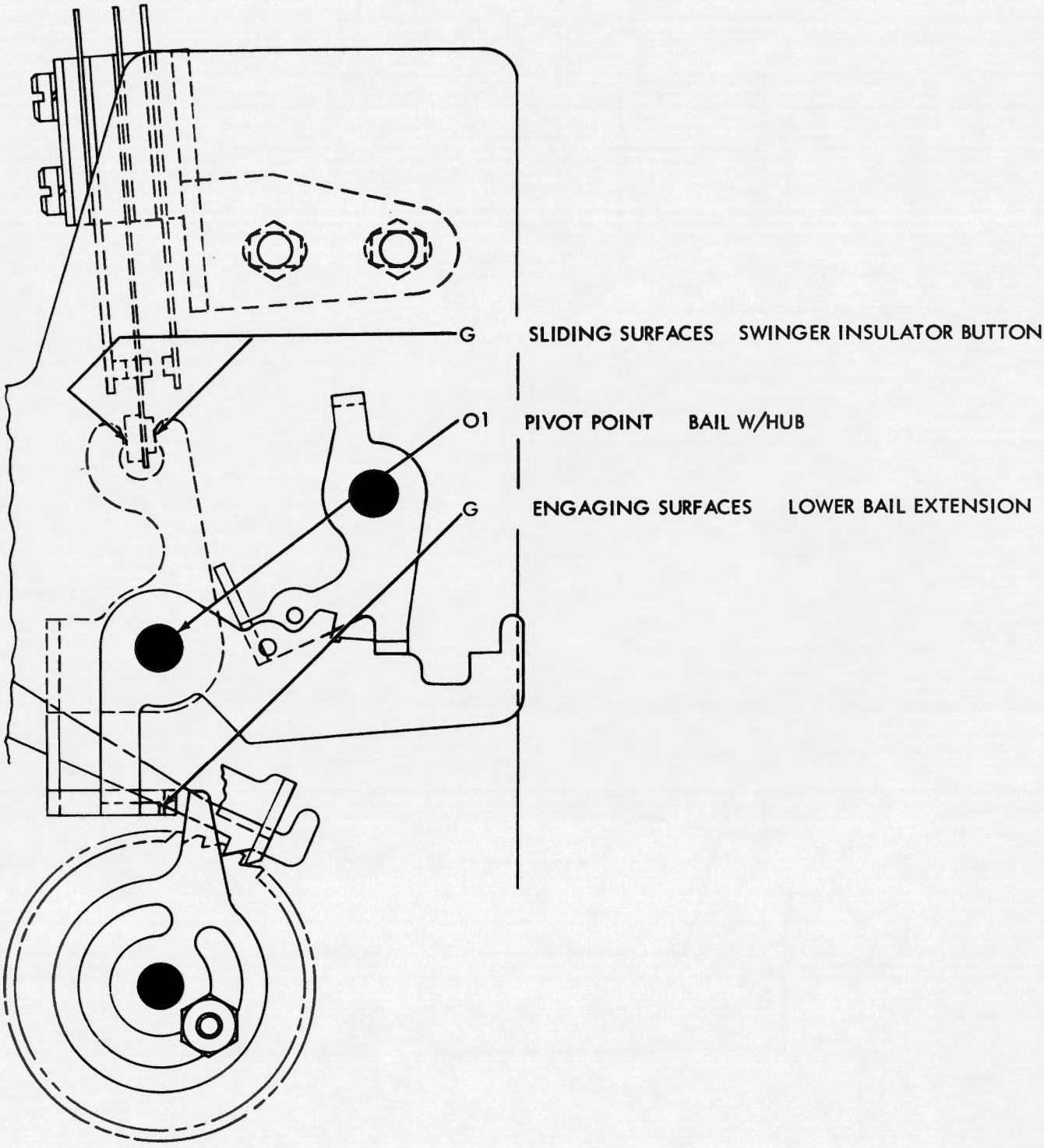
3.09 Automatic and Remote Control Noninterfering LTRS and BLANK Tape Feed-Out Mechanisms continued



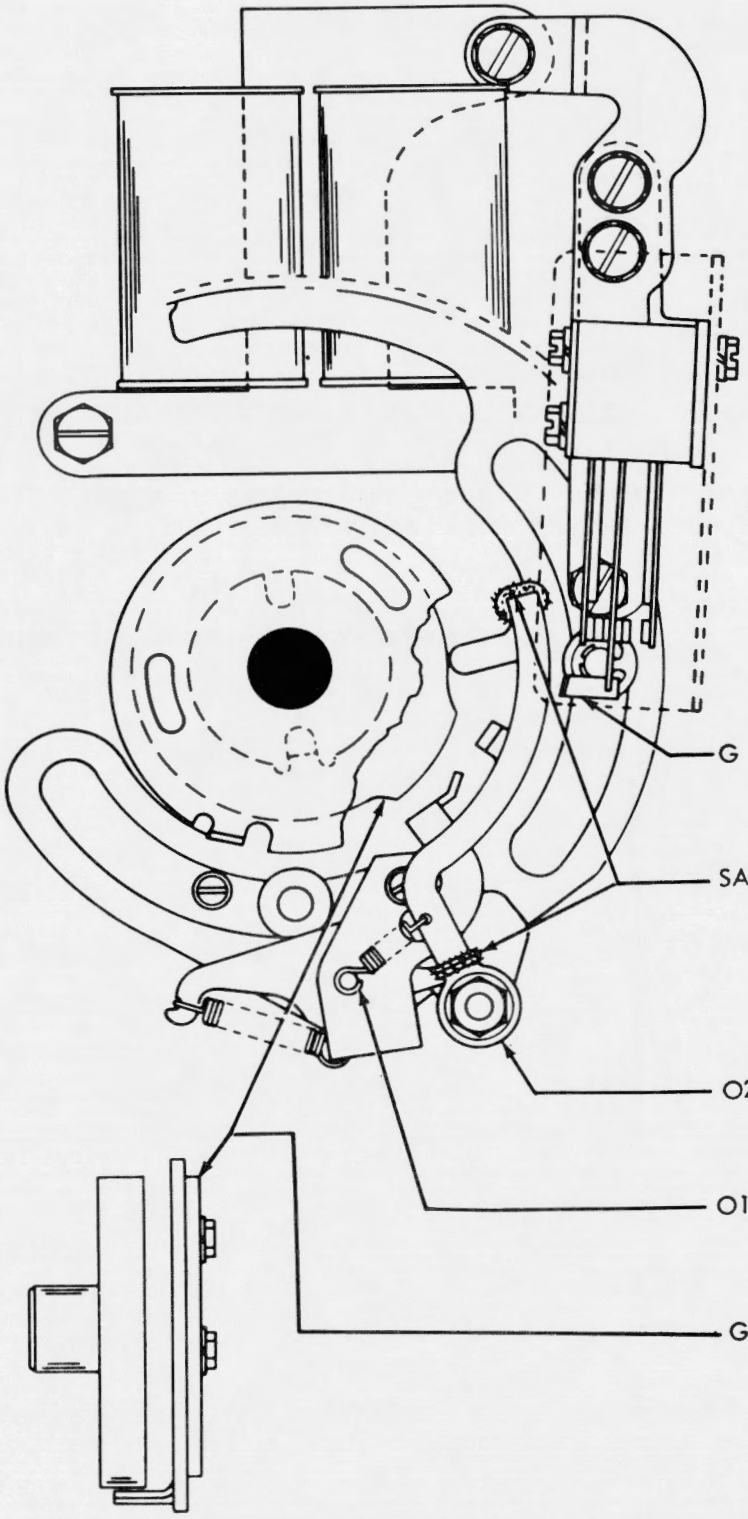
3.10 Automatic and Remote Control Noninterfering BLANK Tape Feed-Out Mechanisms



3.11 End of Tape Feed-Out Timing Contacts for Noninterfering LTRS and BLANK Tape Feed-Out Mechanisms

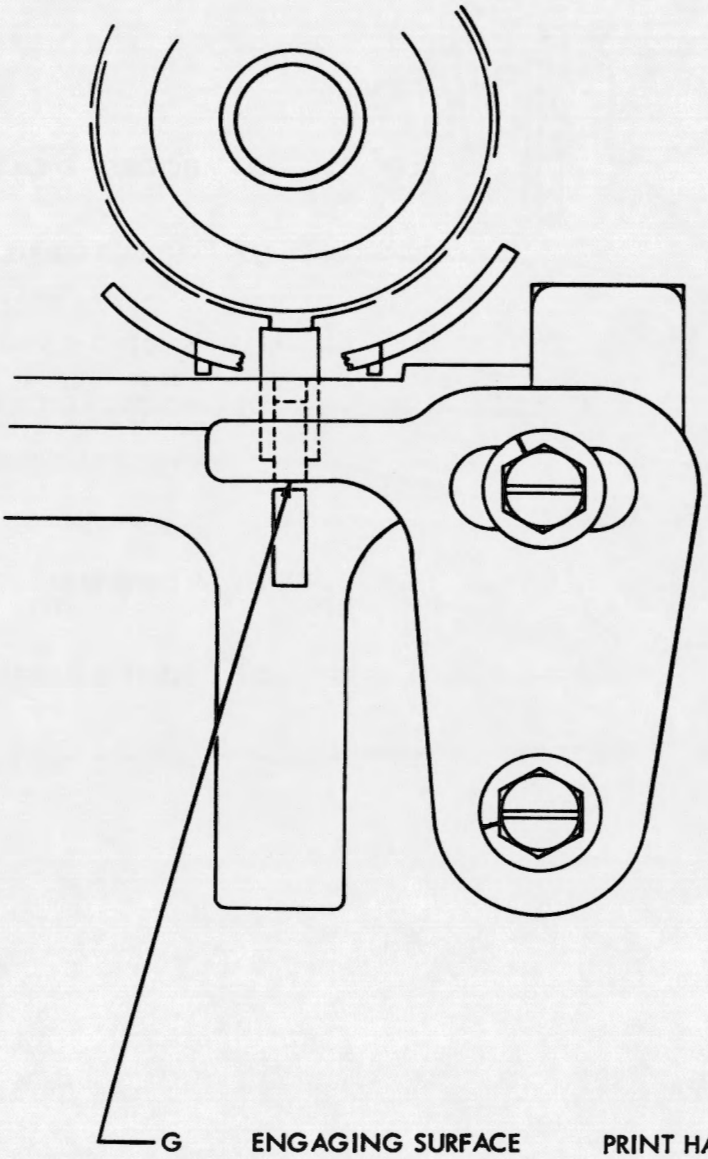


3. 12 Timing Contact Mechanism (Operated by Selector)

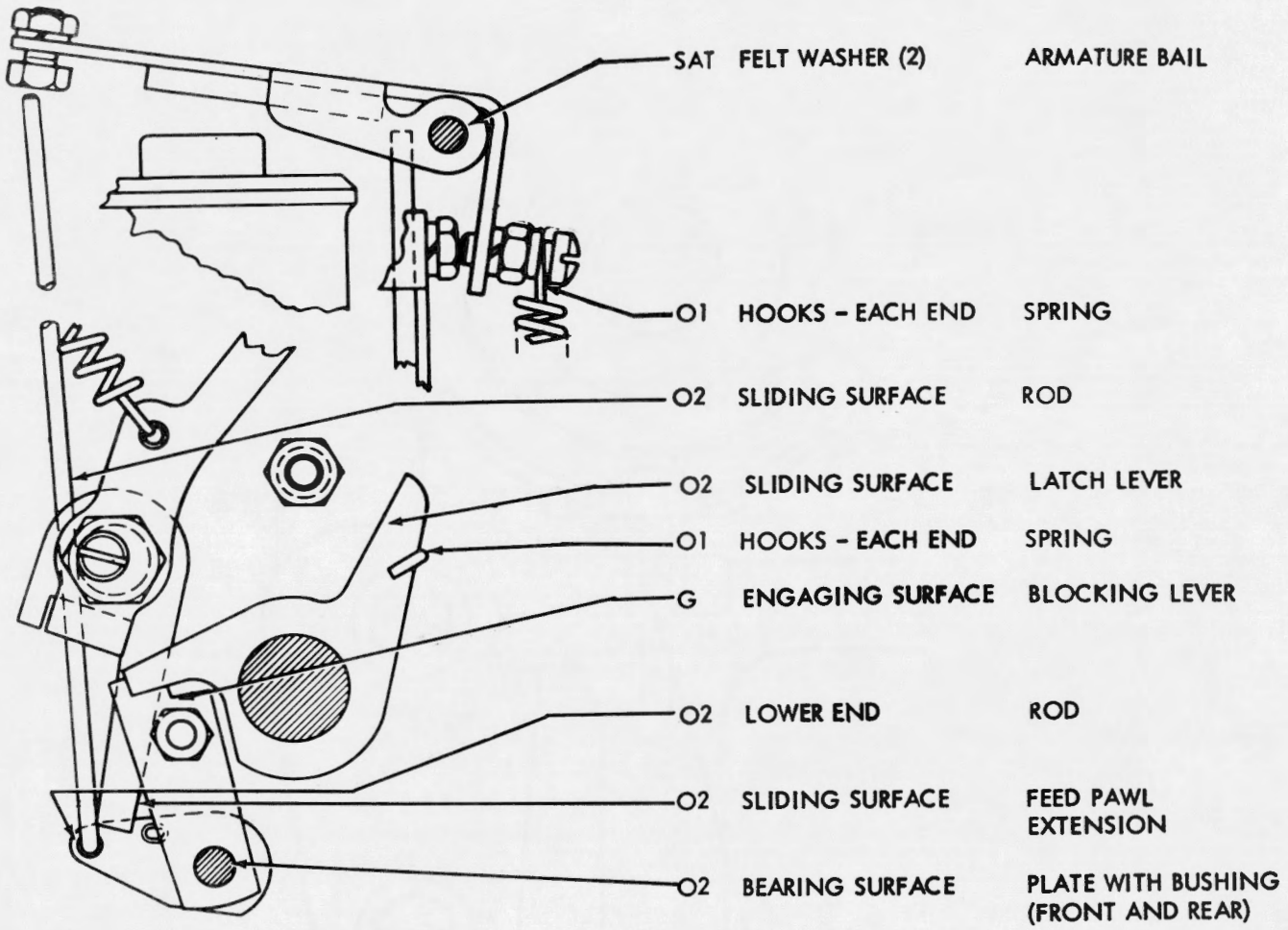


G	METAL FACE TOWARD OPERATING ARM	SWINGER SPRING INSULATOR
SAT	FELT WASHERS (3)	OPERATING LEVER
O2	BEARING-EACH END	OPERATING LEVER
O1	HOOKS-EACH END	OPERATING LEVER COILED SPRINGS
G	OPERATING SURFACE	CAM

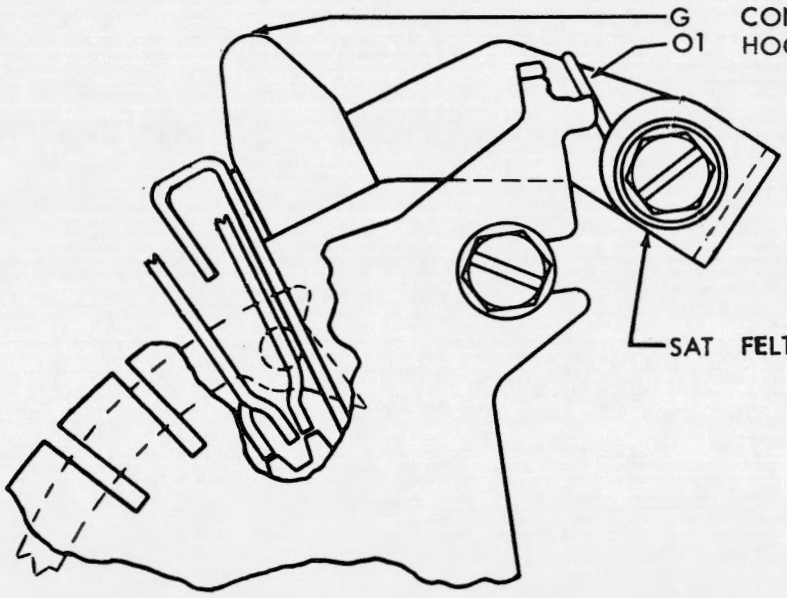
3.13 Print Suppression on Functions

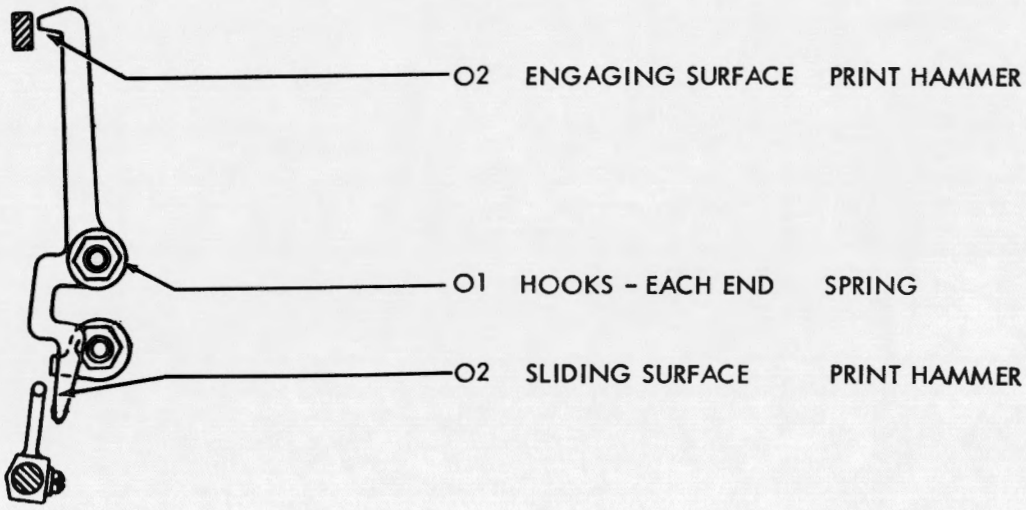


3. 14 Blank Delete Mechanism

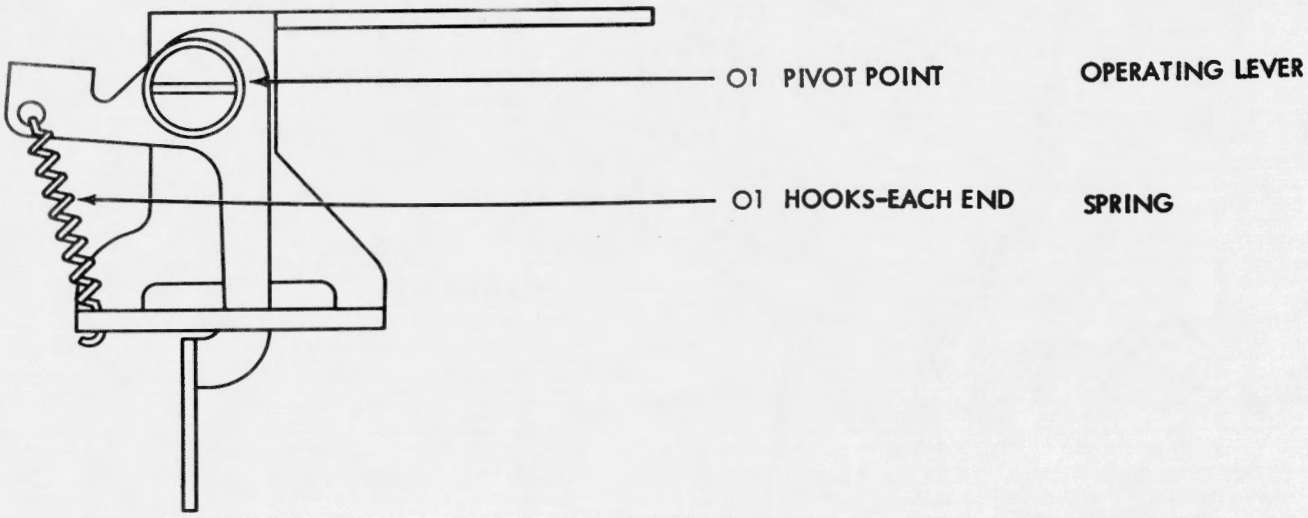


3.15 Blank Delete Mechanism continued

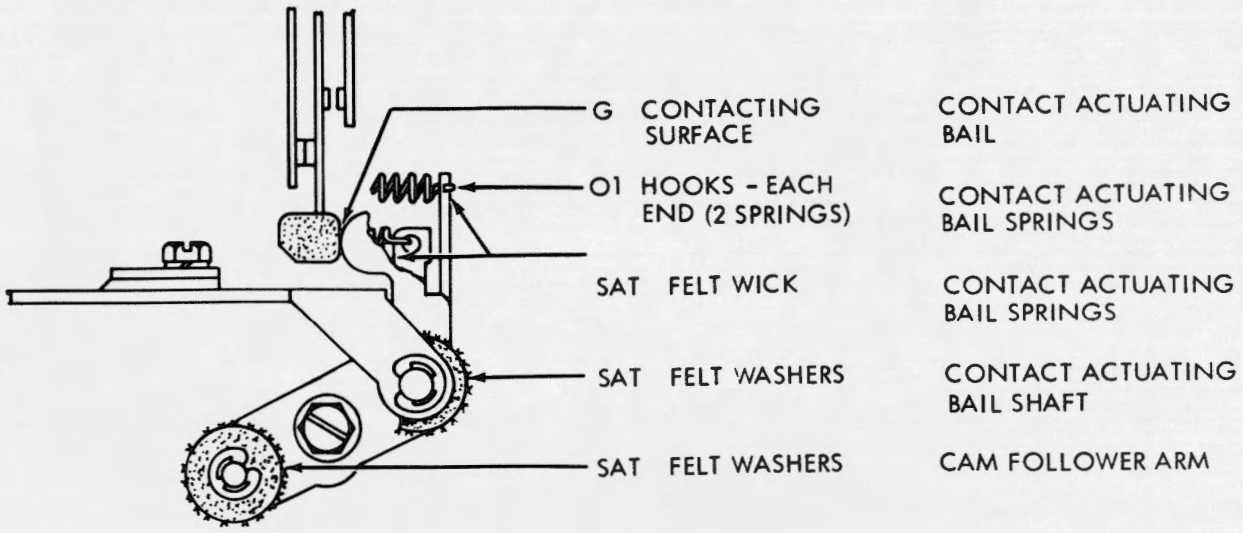




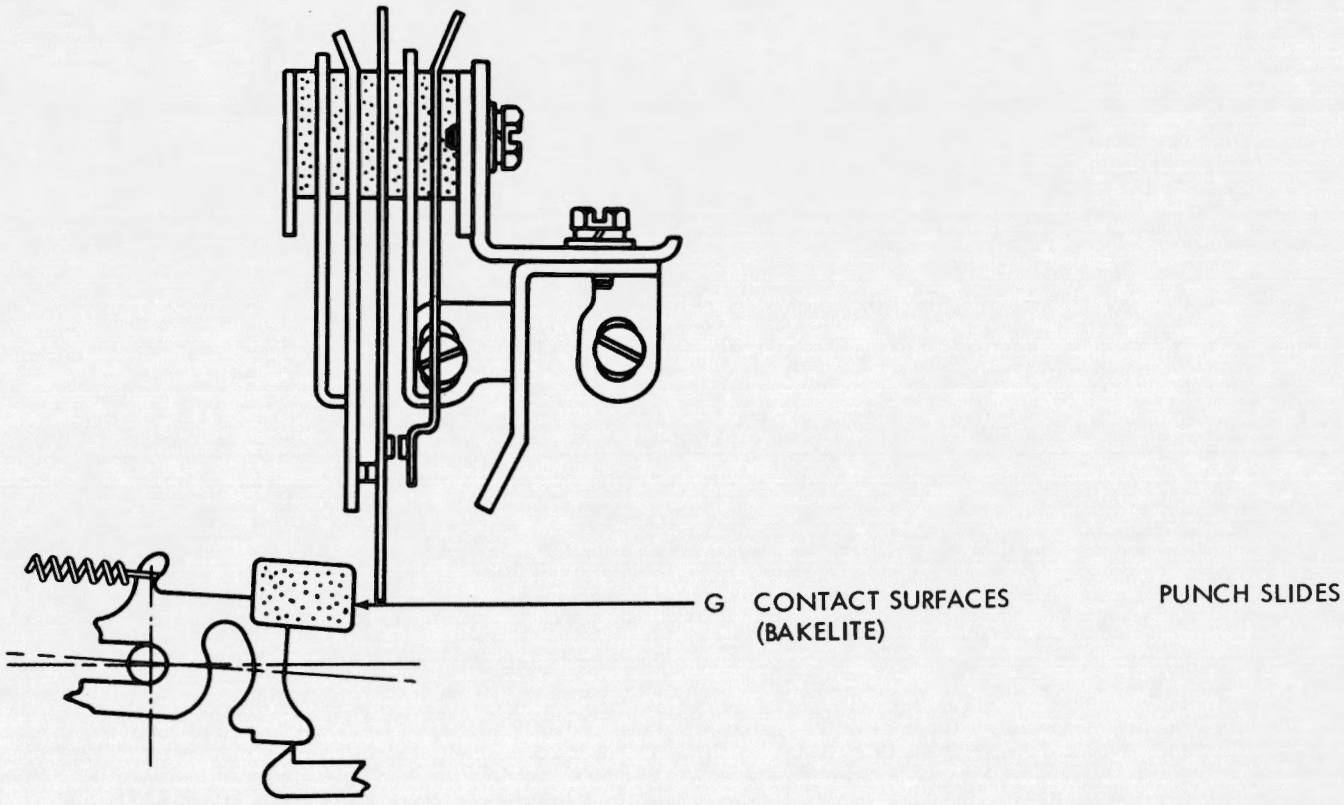
3.16 Letters-Figures Contact Mechanism (Later Design)



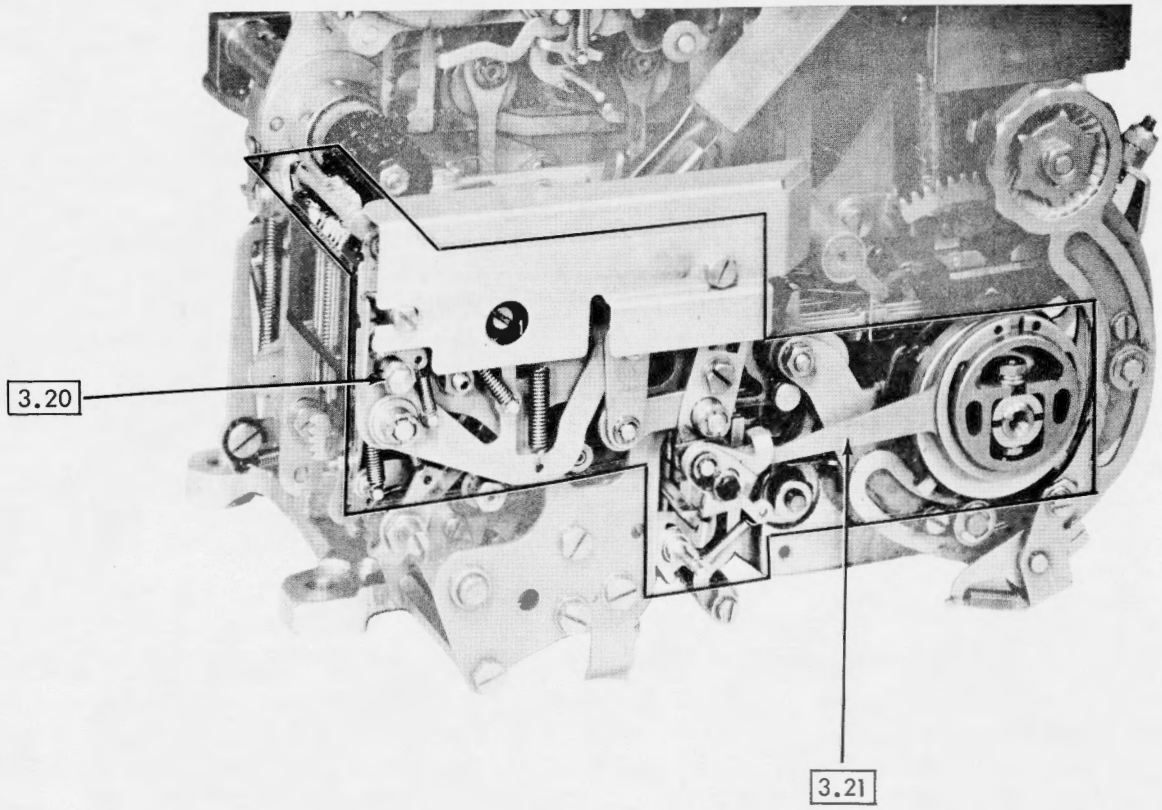
3. 17 Timing Contacts



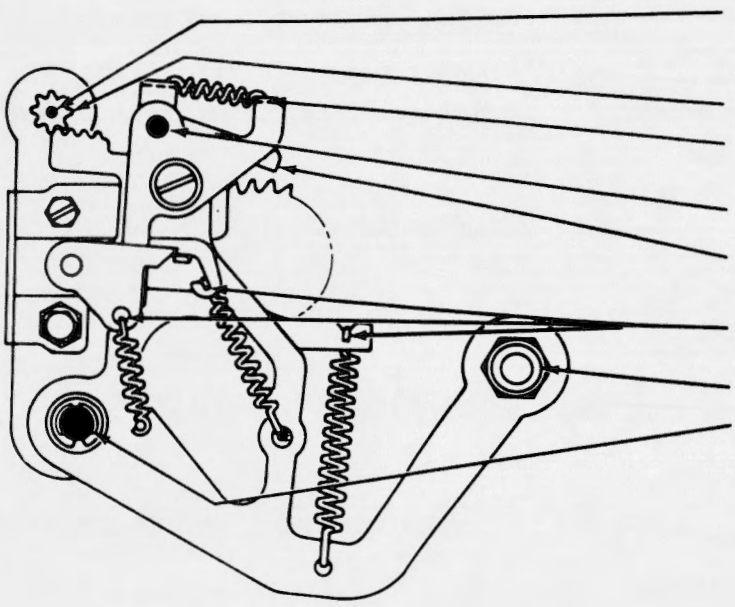
3. 18 Code Reading Contacts



3. 19 Manual and Power Drive Backspace Mechanisms (for Chadless Tape)

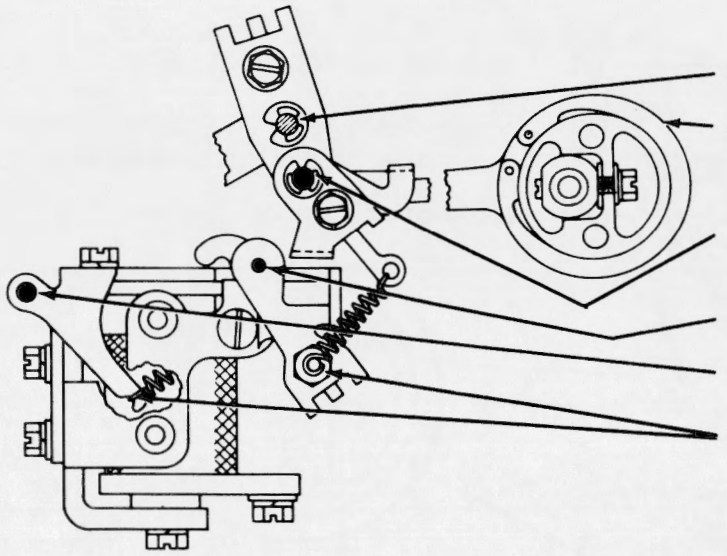


3.20 Backspace Mechanism for Chadless Tape (Manual)



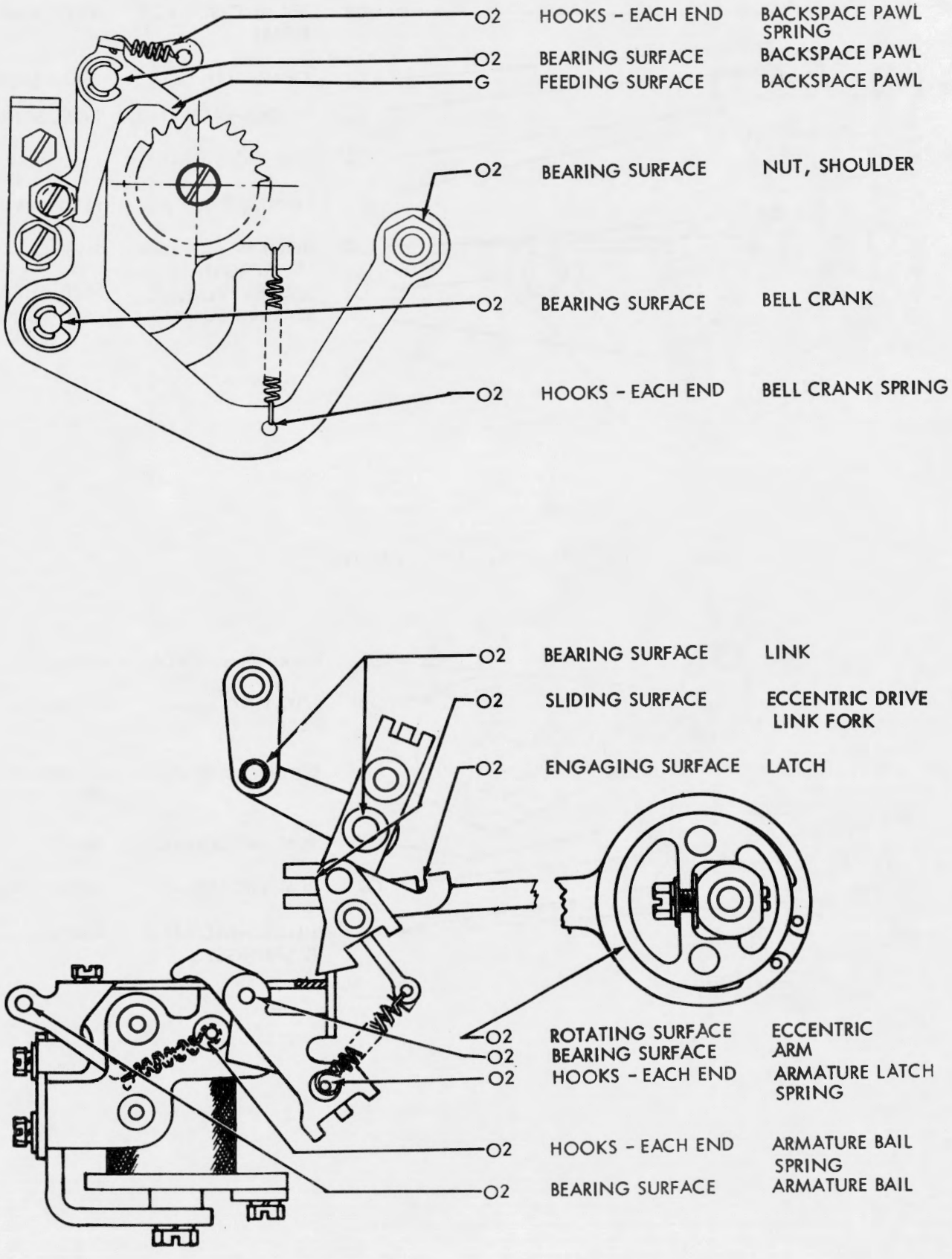
O2	BEARING SURFACE (REAR)	RAKE SHAFT
G	GEAR TEETH	GEAR SEGMENT
O2	HOOKS-EACH END	PAWL SPRING
O2	BEARING SURFACE	FEED PAWL
G	CONTACT SURFACE	FEED PAWL
O2	HOOKS-EACH END (3 SPRINGS)	SPRING
O2	BEARING SURFACE	NUT, SHOULDER
O2	BEARING SURFACE	BELL CRANK

3.21 Backspace Mechanism for Chadless Tape (Power Drive)

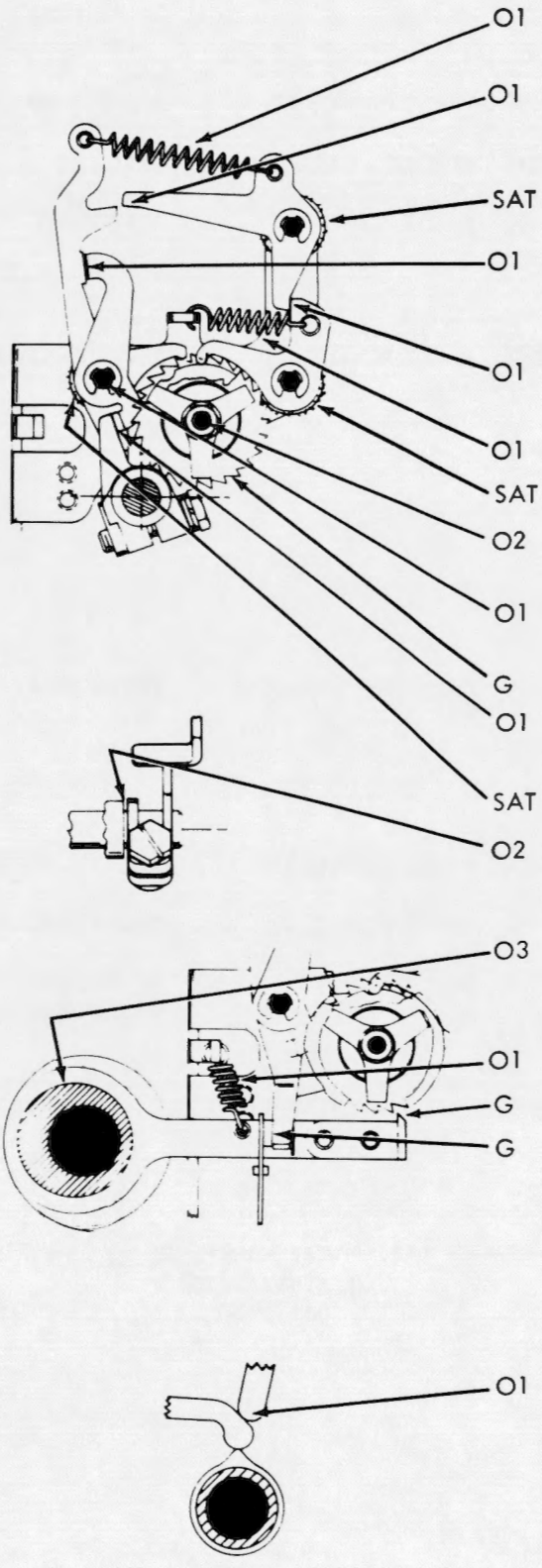


O2	BEARING SURFACE	LINK
O2	ROTATING SURFACE	ECCENTRIC
O2	SLIDING SURFACE	ECCENTRIC DRIVE ARM FORK
O2	BEARING SURFACE	ARM
O2	BEARING SURFACE	ARMATURE BAIL
O2	HOOKS-EACH END (2 SPRINGS)	SPRINGS

3.22 Backspace Mechanism for Fully Perforated Tape (Power Drive)



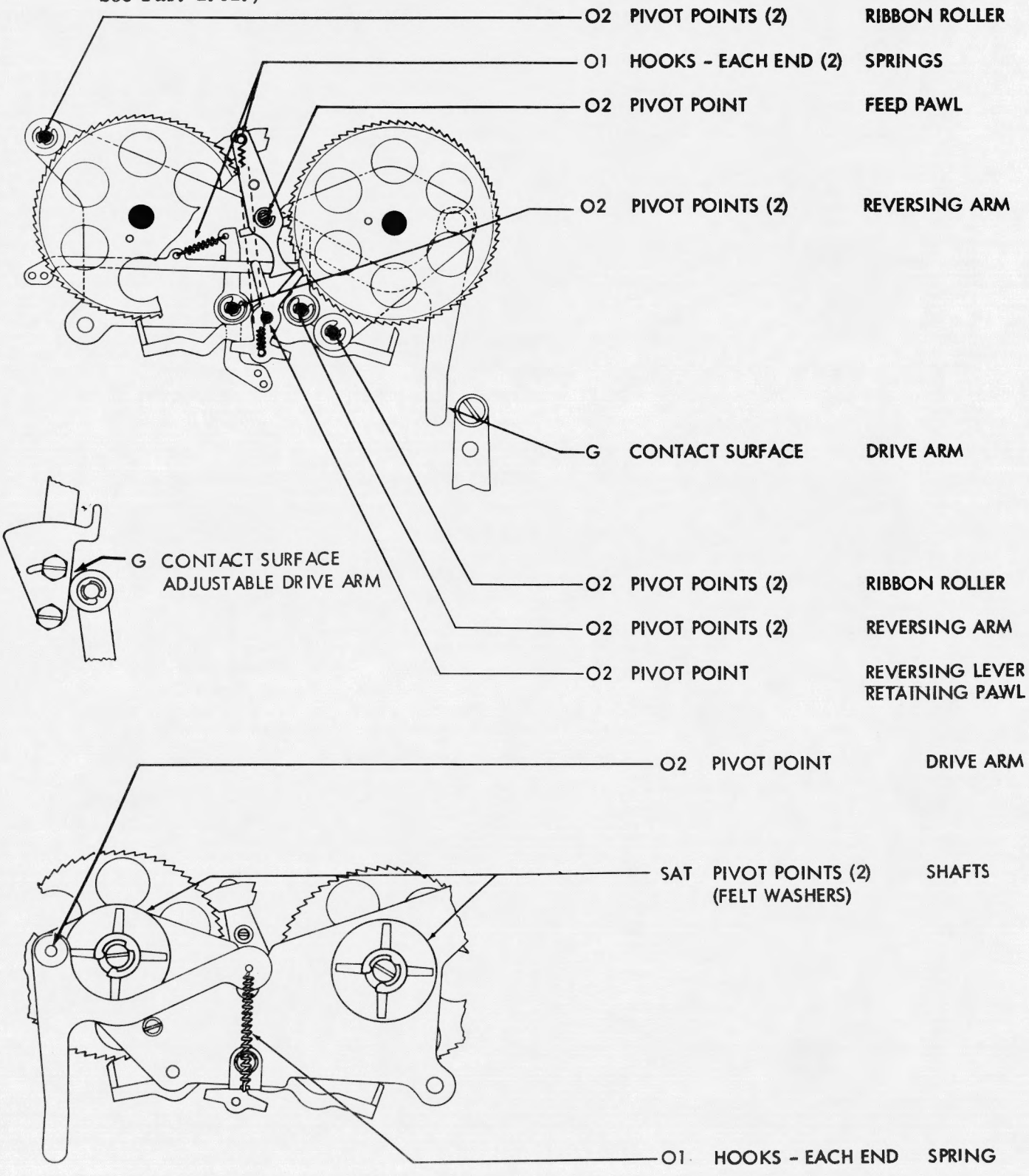
3.23 Time Delay Motor Stop Mechanism



O1	HOOKS-EACH END	SPRING
O1	ENGAGING SURFACE	CONTACT OPERATING PAWL AND LATCH LEVER
SAT	FELT WASHERS	LATCH LEVER
O1	ENGAGING SURFACE	BELL CRANK AND CONTACT OPERATING PAWL
O1	ENGAGING SURFACE	LATCH PAWL AND LATCH LEVER
O1	HOOKS-EACH END	SPRING
SAT	FELT WASHERS	LATCH PAWL
O2	BEARING SURFACE EACH END	RATCHET WHEEL SHAFT
O1	BEARING SURFACE EACH END	BELLCRANK AND SUPPORTING STUD
G	TEETH AND FLANGES	RATCHET WHEELS
O1	ENGAGING SURFACE	CLAMP ARM AND BELLCRANK
SAT	FELT WASHERS	CONTACT PAWL
O2	BEARING SURFACE (2)	TIME DELAY RESET SHAFT BUSHING
O3	BEARING SURFACE	ECCENTRIC FOLLOWER DRIVE ARM AND ECCENTRIC
O1	HOOKS-EACH END	SPRING
G	ENGAGING SURFACE	DRIVE ARM
G	ENGAGING SURFACE	CONTACT OPERATING PAWL AND CONTACT INSULATOR
O1	ENGAGING SURFACE	SELECTOR RESET BAIL TIME DELAY RESET LEVER

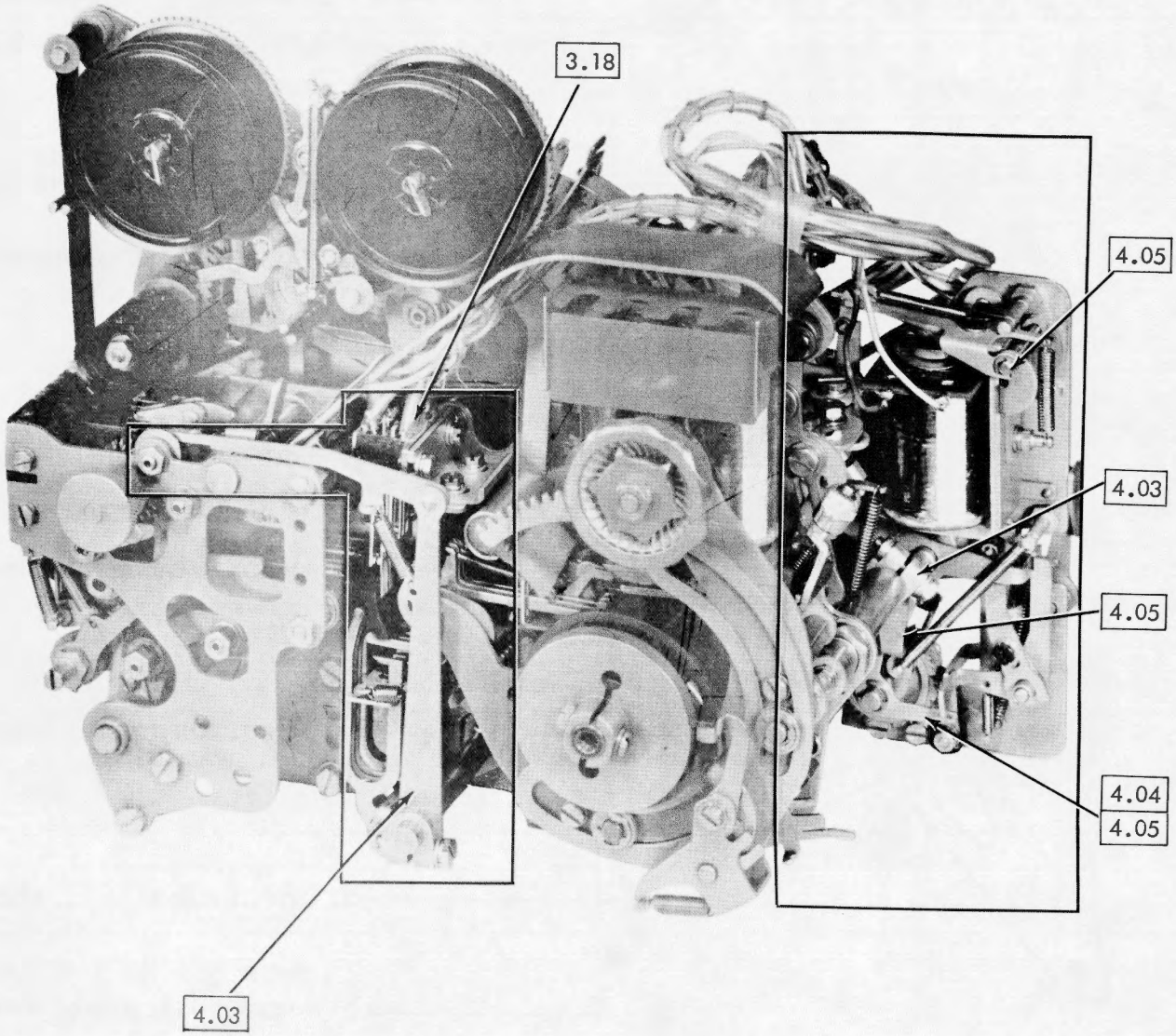
4. EARLIER DESIGN MECHANISMS

4.01 Ribbon Feed Mechanism (For Later Design See Par. 2.02.)

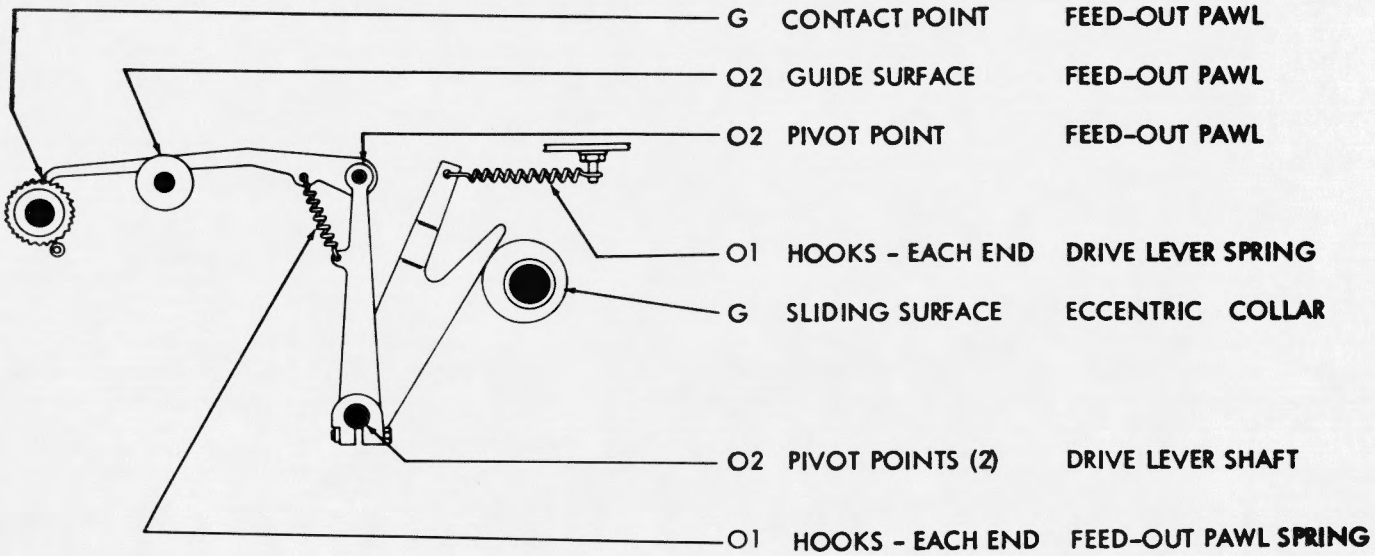


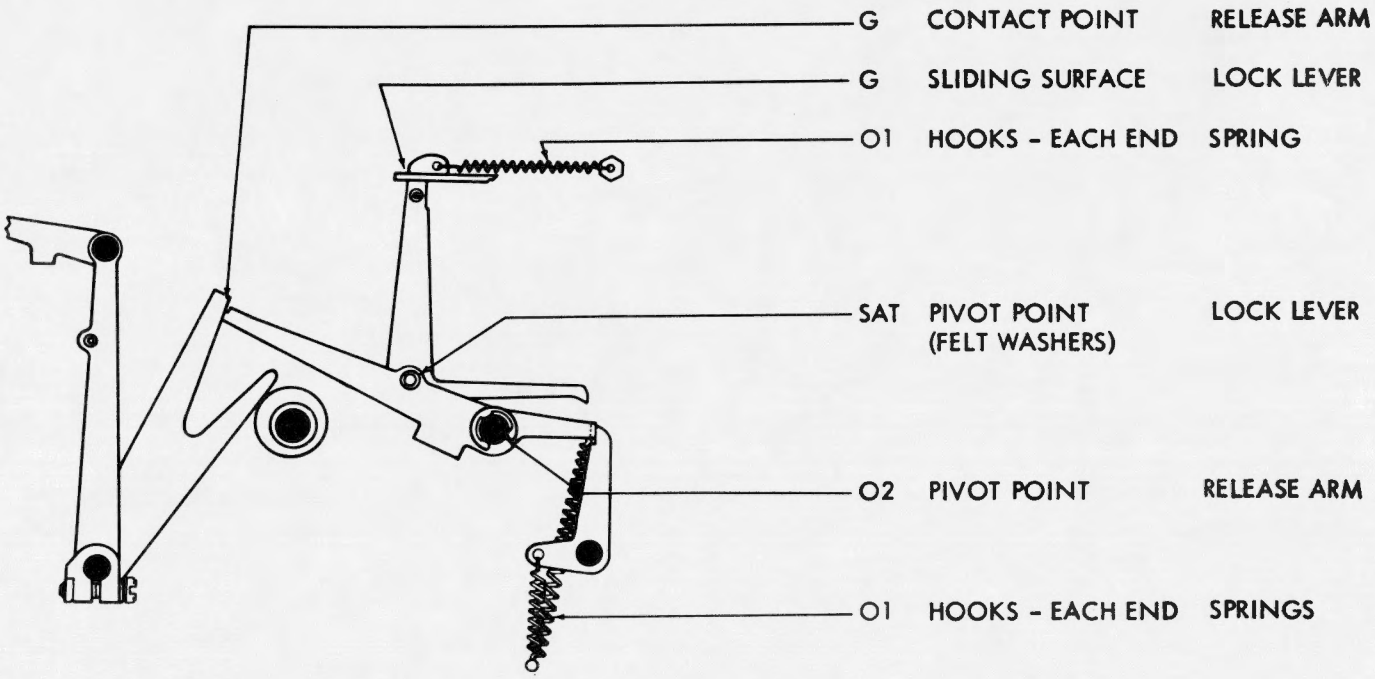
4.02 Remote Control Noninterfering BLANK Tape Feed-Out Mechanism

(For Later Design
See Part 3 Variable Features)

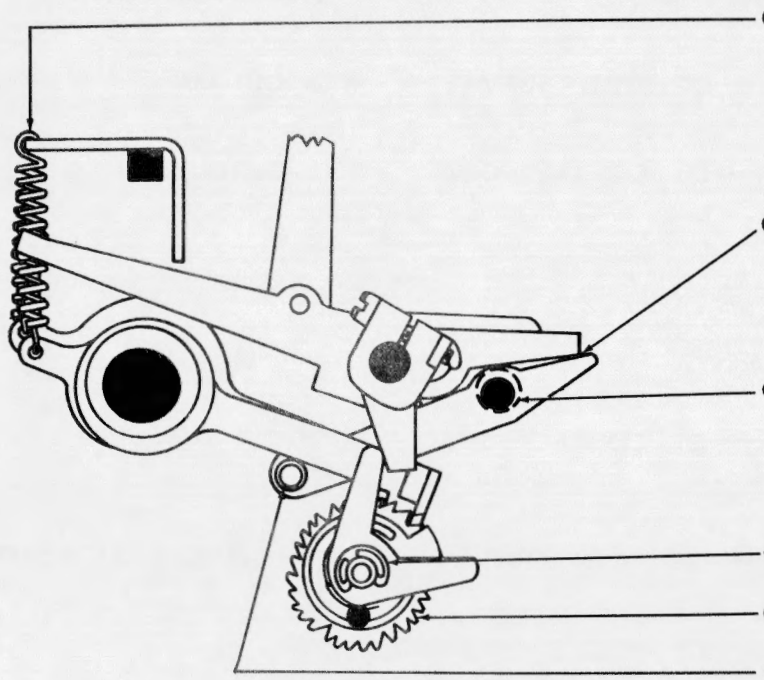


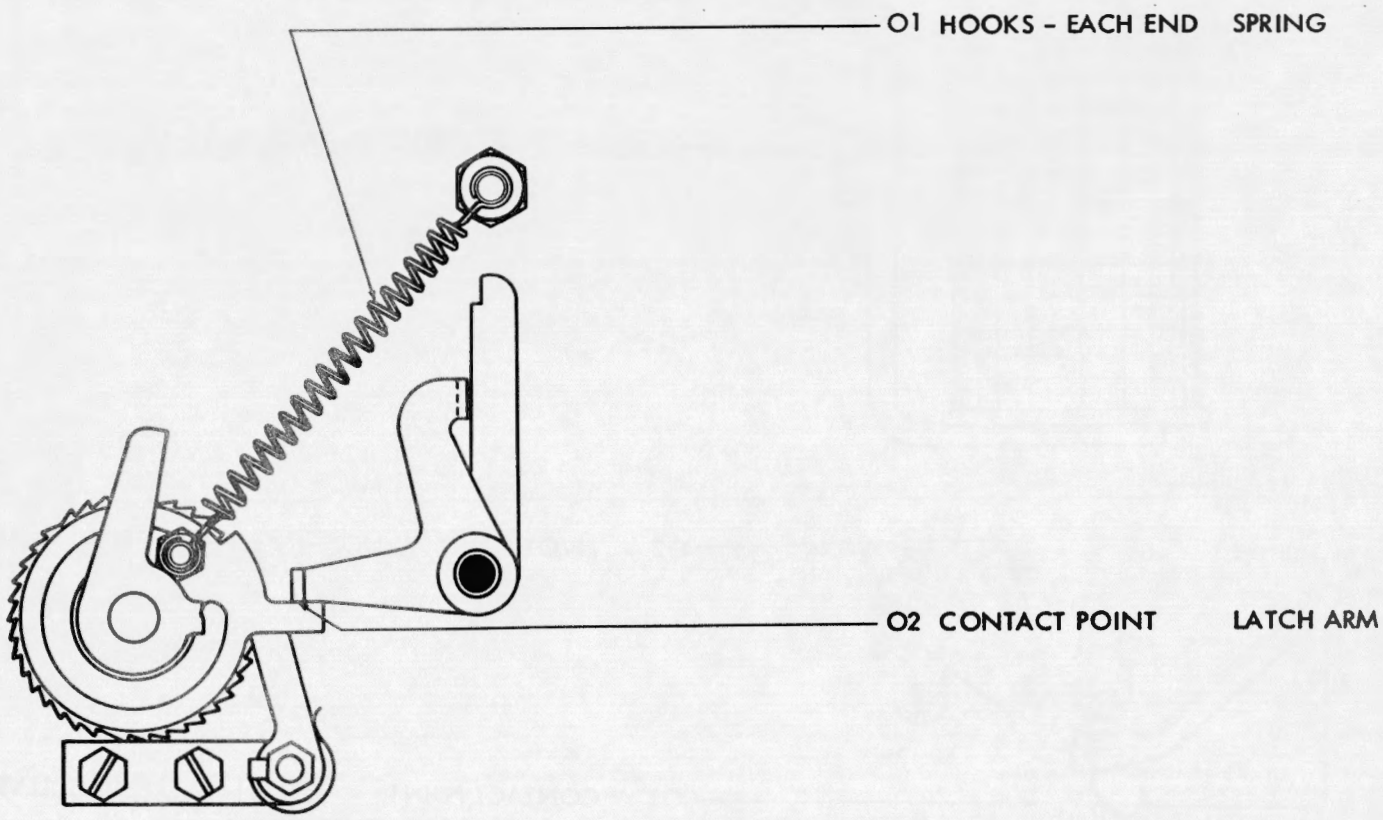
4.03 Remote Control Noninterfering BLANK Tape Feed-Out Mechanism continued
(For Later Design See Part 3 Variable Features)



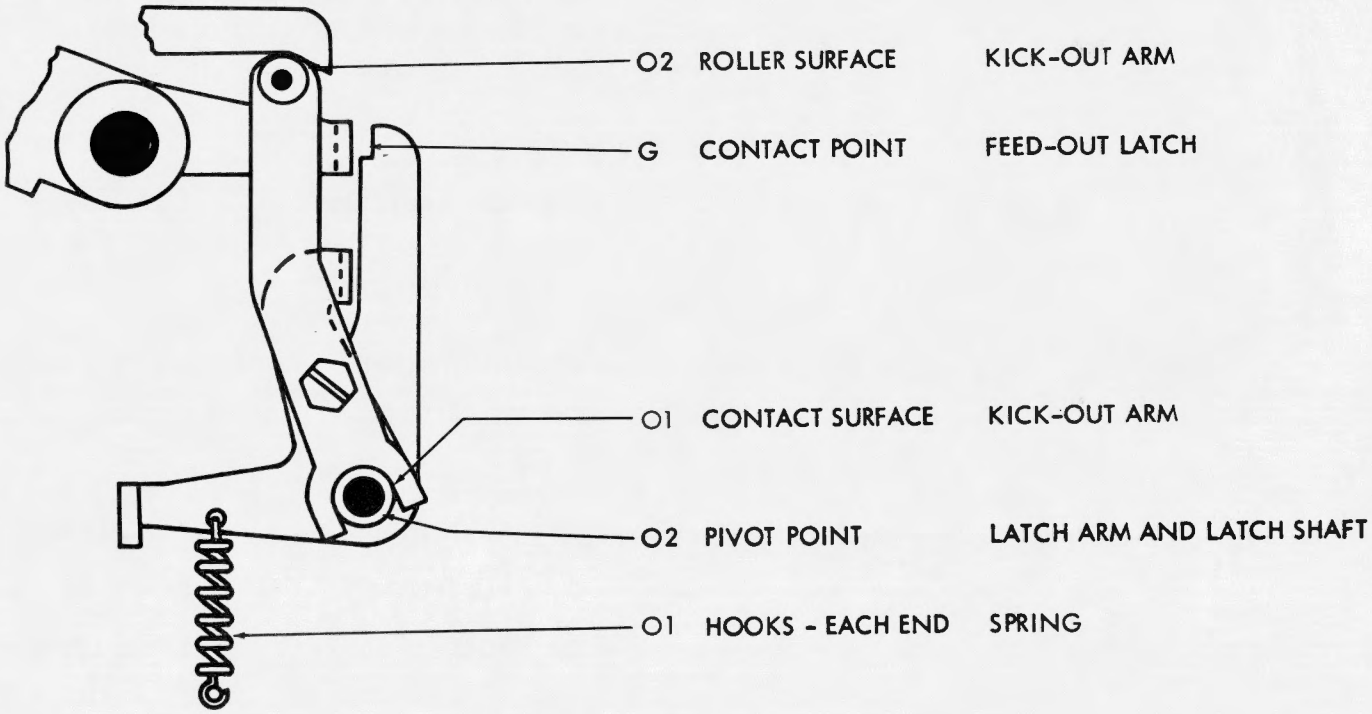


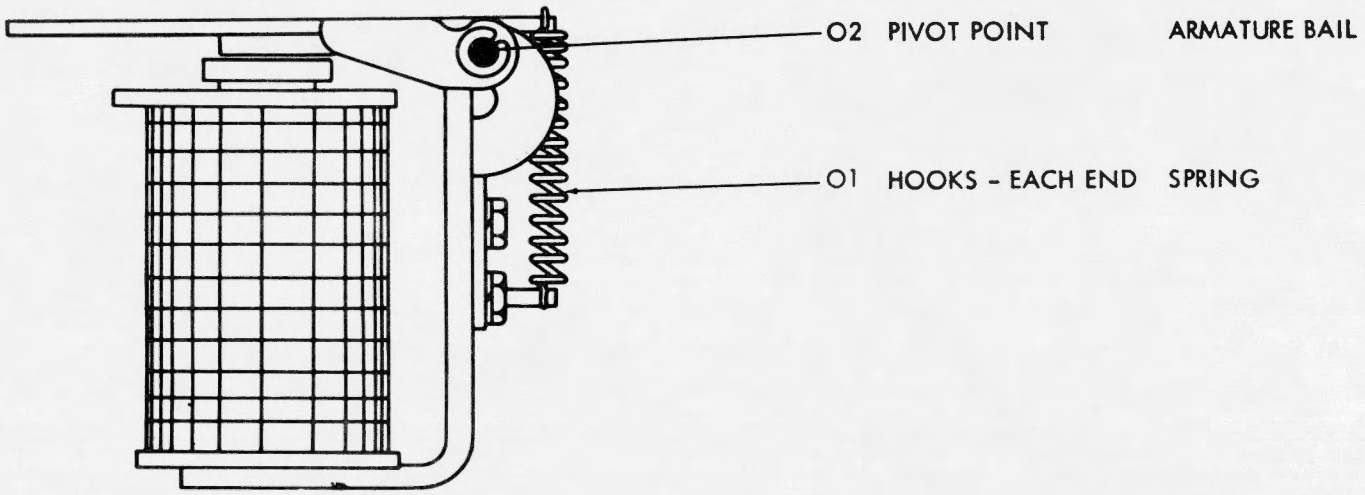
4.04 Remote Control Noninterfering **BLANK Tape Feed-Out Mechanism continued**
(For Later Design
See Part 3 Variable Features)

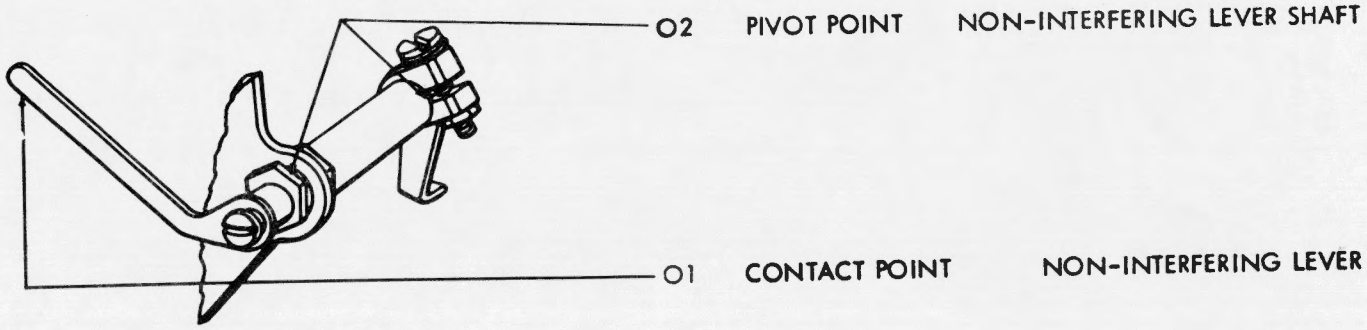




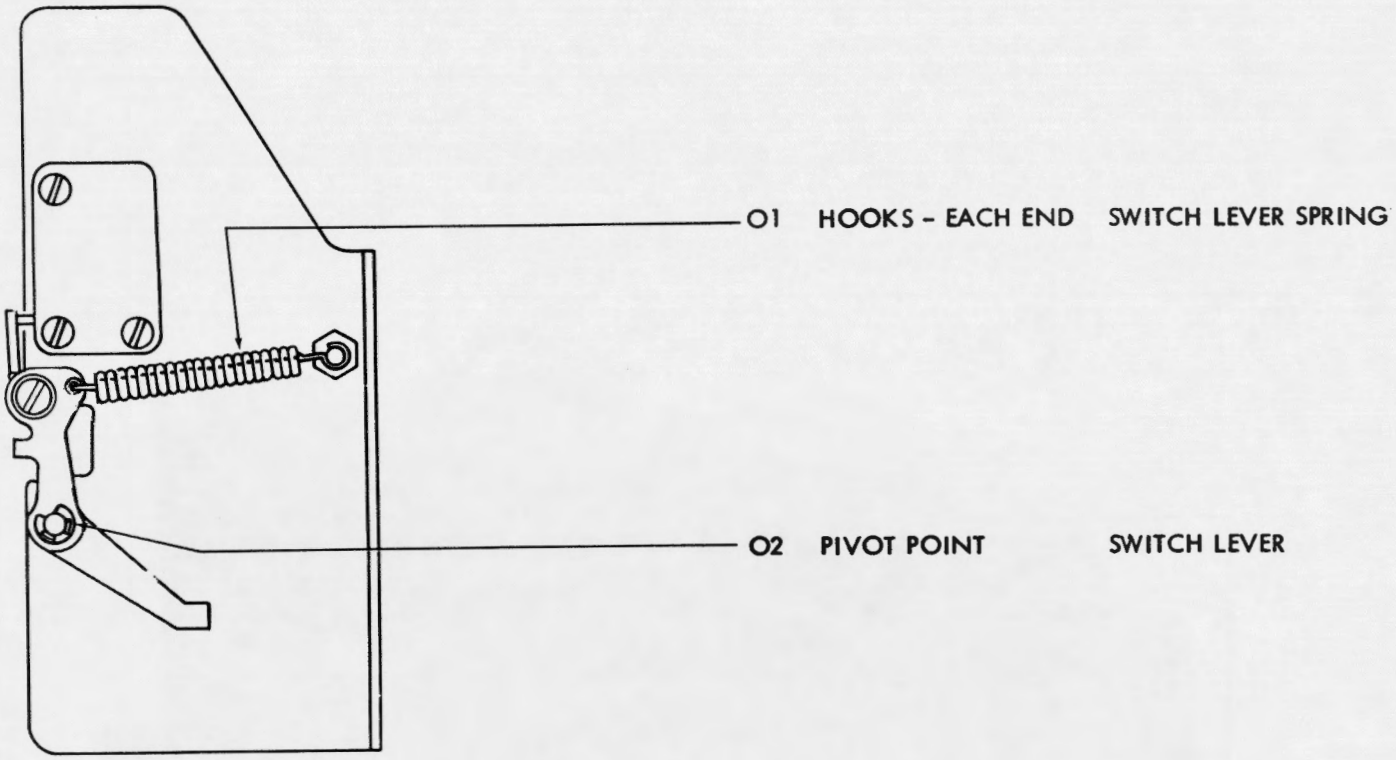
4.05 Remote Control Noninterfering BLANK Tape Feed-Out Mechanism continued
(For Later Design See Part 3 Variable Features)







4.06 Remote Control Noninterfering **BLANK** Tape Feed-Out Mechanism continued
(For Later Design See Part 3 Variable Features)



4.07 Remote Control Noninterfering Tape Feed-Out Mechanism continued and Timing Contacts