28 PERFORATOR-TRANSMITTER BASE

LUBRICATION

CONTENTS PAGE

1. GENERAL

1.01 This 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 28 Perforator-Transmitter Base should be lubricated as directed in this section. The figures indicate points to be lubricated and the kind and quantity of lubricant to be used. Lubricate the keyboard just prior to placing it 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 hr or 1 yr*
75	2400 hr or 9 mo*
100	1500 hr or 6 mo*
150	1000 hr or 6 mo*

*Whichever occurs first.

Prepared for American Telephone and Telegraph Company by Teletype Corporation

1.03 Use TP88970 oil at all locations where the use of oil is indicated. Use TP88973 grease on all surfaces where grease is indicated.

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. Special care must be taken to prevent any oil or grease from getting between electrical contacts.

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:

O	Apply 1 drop of oil.
O2	Apply 2 drops of oil.
O3	Apply 3 drops of oil.
O20	Apply 20 drops of oil, etc.
G	Apply thin film of grease.
SAT	Saturate (felt oilers, washers, wicks) with oil.

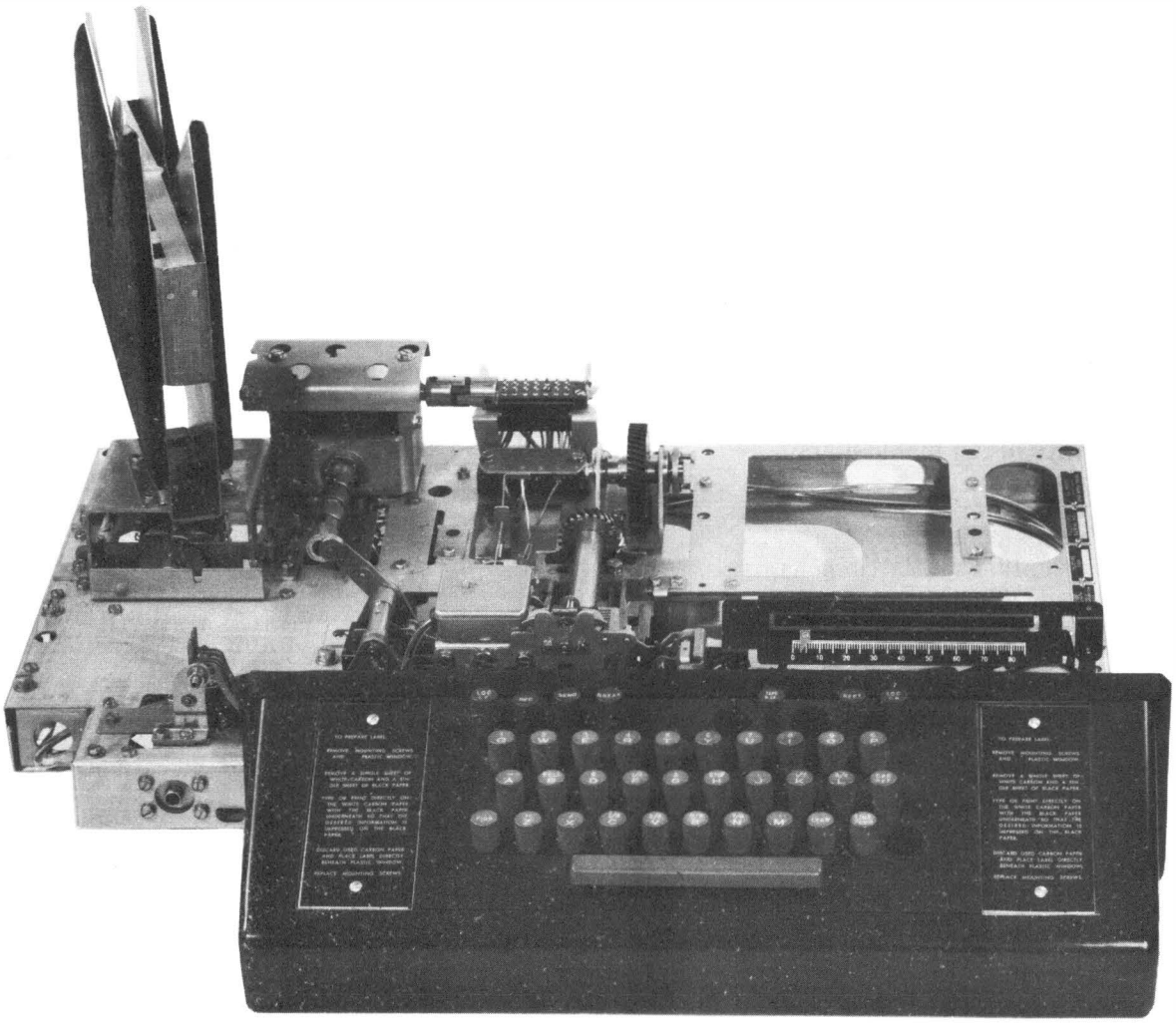
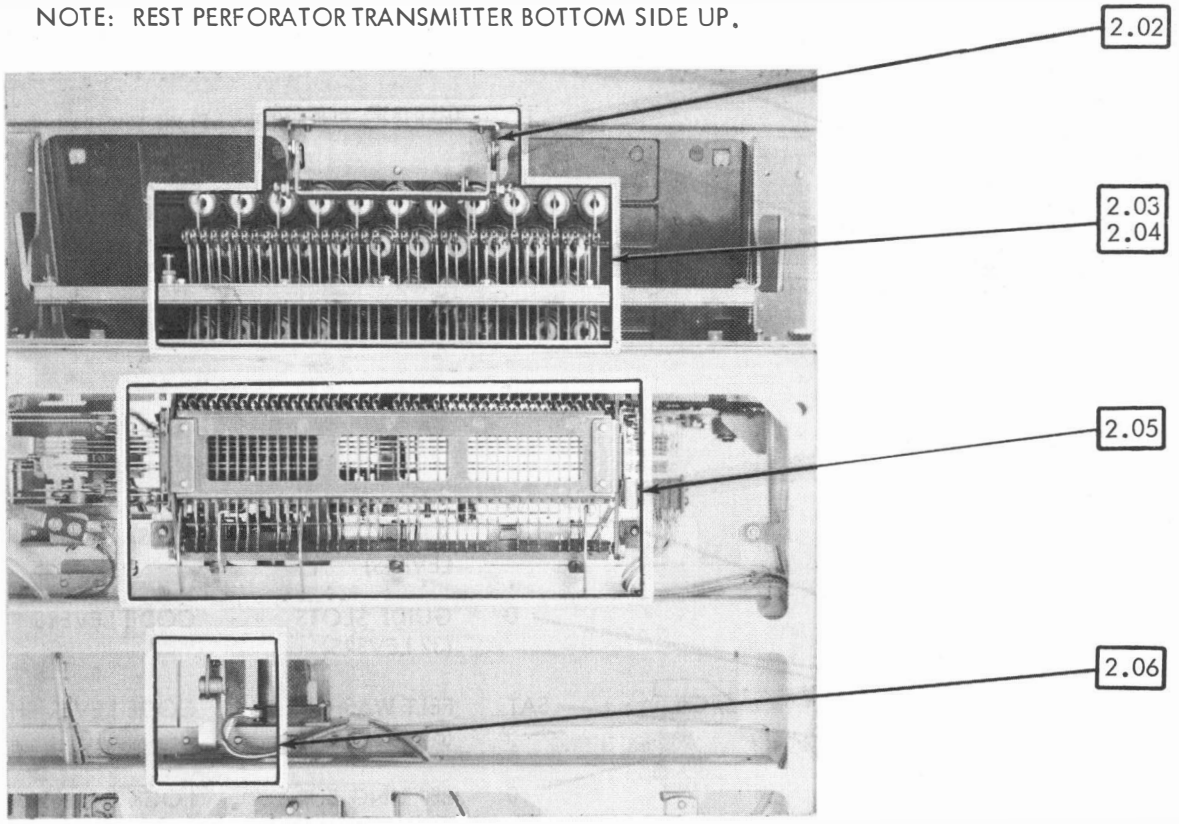


Figure 1 - 28 Perforator-Transmitter Base

2. LUBRICATION

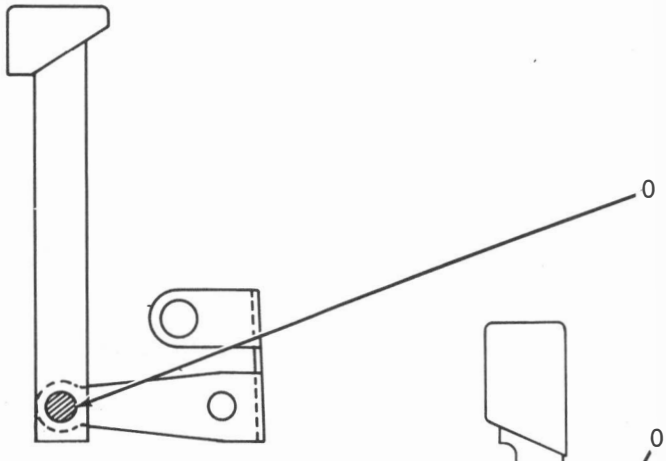
2.01 KEYBOARD

NOTE: REST PERFORATOR TRANSMITTER BOTTOM SIDE UP.

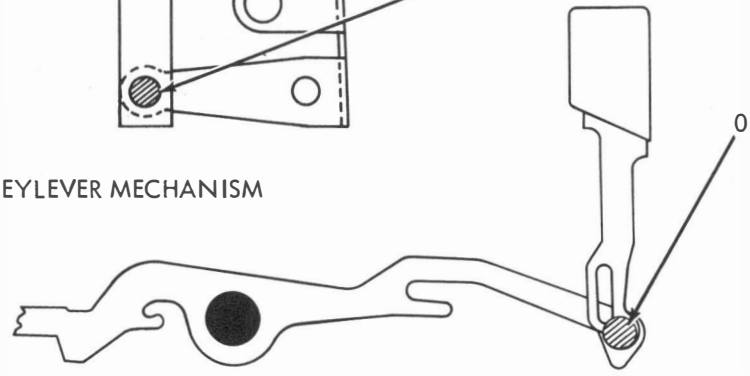


(BOTTOM VIEW)

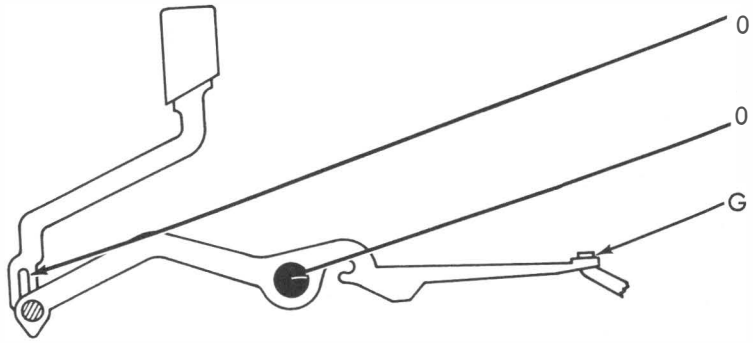
2.02 SPACE BAR MECHANISM



2.03 KEYLEVER MECHANISM

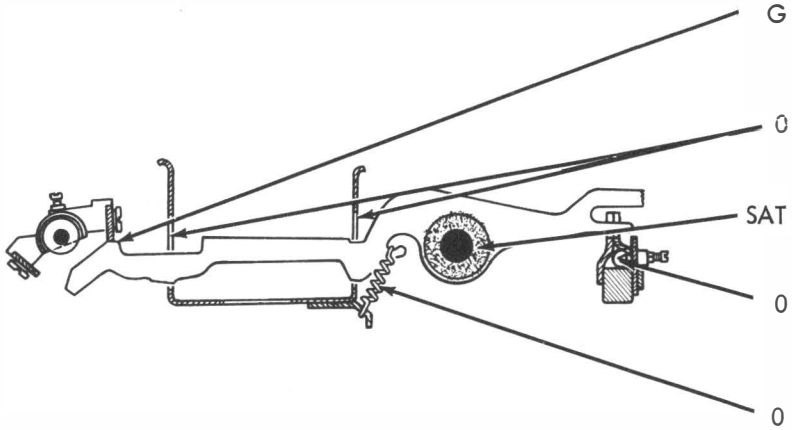


2.04 BREAK LEVER MECHANISM



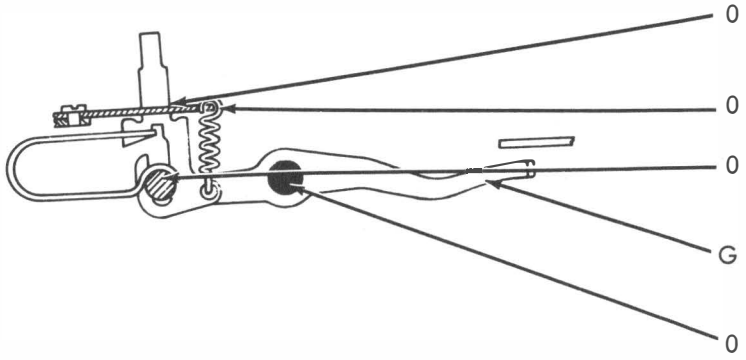
0	ENGAGING SURFACE	BREAK KEYLEVER
0	BEARING SURFACE	FUNCTION LEVER
G	CONTACT SURFACE	BREAK LEVER

2.05 CODE LEVER MECHANISM



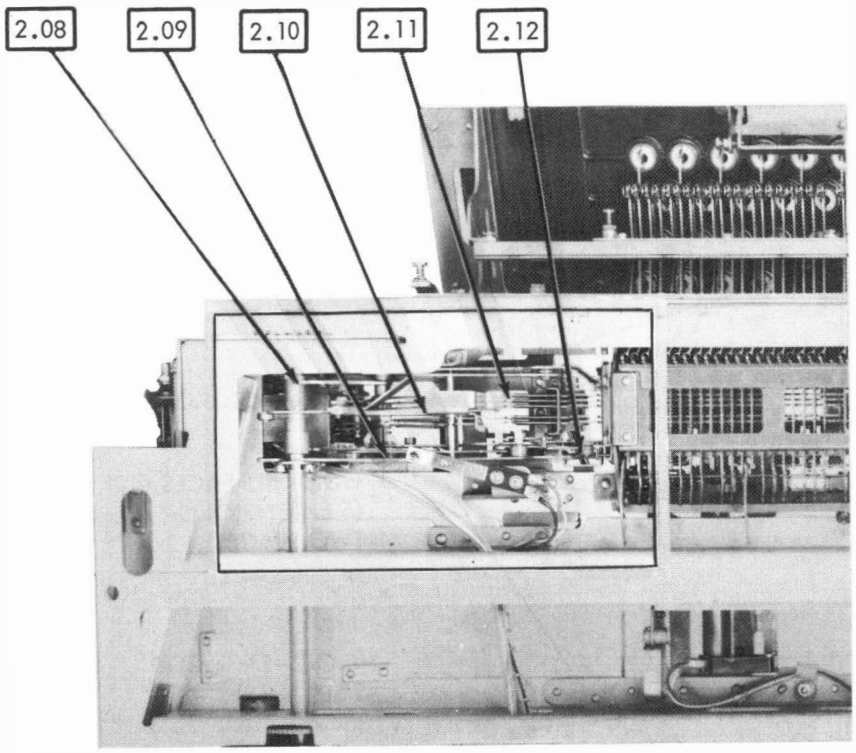
G	CONTACTING SURFACE (32 LEVERS)	CODE LEVER UNIVERSAL BAIL
0	GUIDE SLOTS (32 LEVERS)	CODE LEVERS
SAT	FELT WASHERS (6 WASHERS)	CODE LEVER SHAFT
0	BEARING SURFACES (32 WEDGES)	LOCK BALL TRACK
0	HOOKS-EACH END (40 SPRINGS)	SPRING

2.06 KEYBOARD LOCK MECHANISM



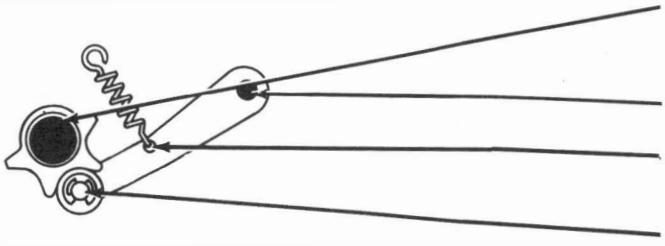
0	GUIDE SLOT	KEYBOARD LOCK PLUNGER
0	HOOKS-EACH END	SPRING
0	BEARING SURFACE	KEYBOARD LOCK LEVER
G	ENGAGING SURFACE	KEYBOARD LOCK FUNCTION LEVER
0	BEARING SURFACE	FUNCTION BAIL

2.07 EXTENSION BASKET MECHANISM
NOTE: REST PERFORATOR TRANSMITTER BOTTOM SIDE UP.



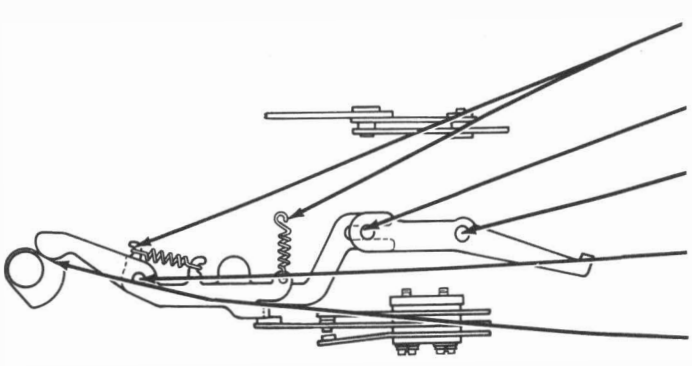
(BOTTOM VIEW)

2.08 DETENT LEVER MECHANISM



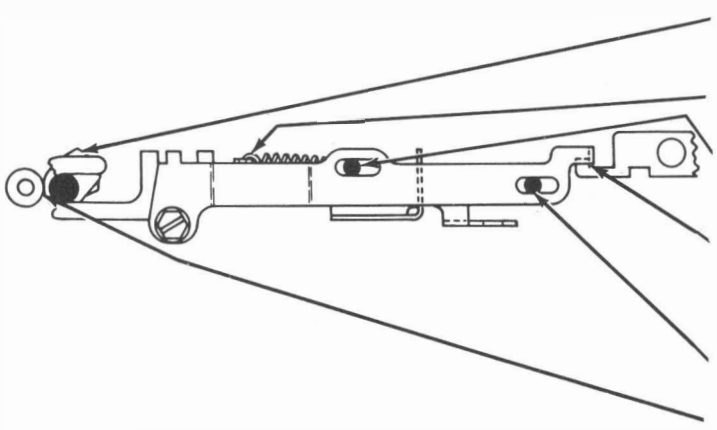
0	BEARING SURFACES (FRONT AND REAR)	CONTROL CAM
0	BEARING SURFACE	DETENT LEVER
0	HOOKS-EACH END	SPRING
0	BEARING SURFACE	ROLLER

2.09 SELECTOR LEVER MECHANISM



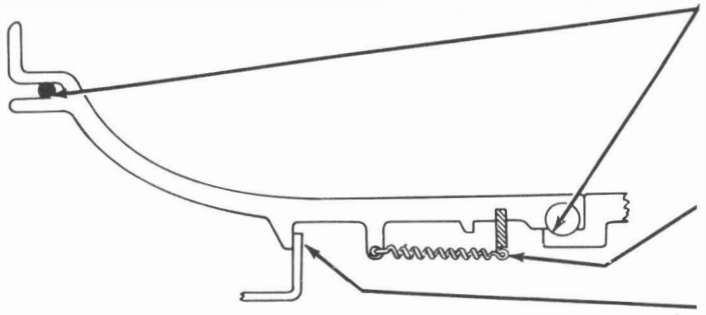
0	HOOKS-EACH END (2 SPRINGS)	SPRINGS
0	SLIDING SURFACE	RESET LEVER
0	BEARING SURFACE	KEYBOARD CONTROL SELECTION LEVER
0	BEARING SURFACE	RESET CAM FOLLOWER AND RESET LEVER
0	CAMMING SURFACE	RESET CAM FOLLOWER

2.10 CODE BAR EXTENSION BAIL MECHANISM



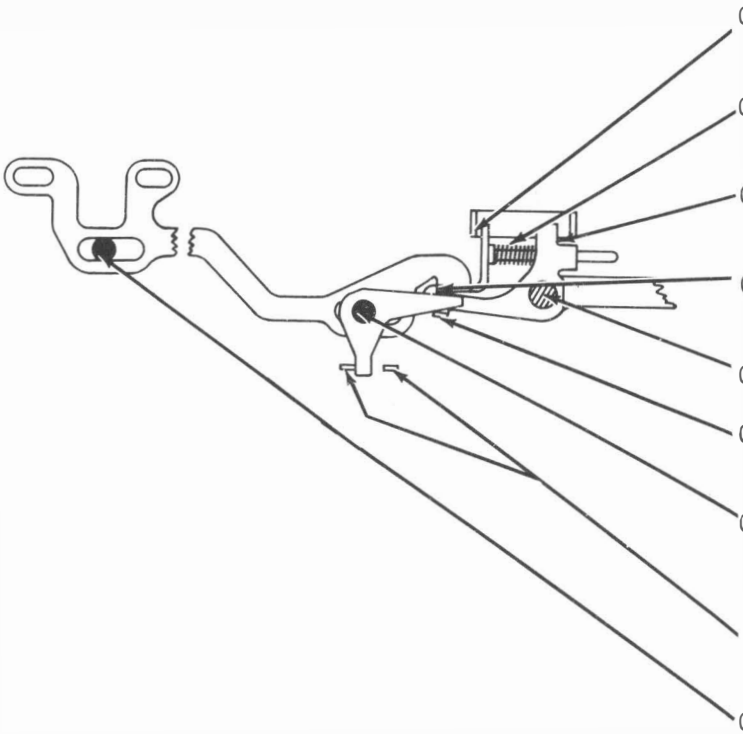
0	CAMMING SURFACE	SLIDE ROLLER
0	HOOKS-EACH END	SPRING
0	SLIDING SURFACE (2 PLACES)	LEVER AND EXTENSION
0	ENGAGING SURFACES (TWO PLACES)	LEVER
0	SLIDING SURFACE	LEVER
0	SLIDING SURFACE	CONTROL CAM

2.11 CODE BAR EXTENSION MECHANISM



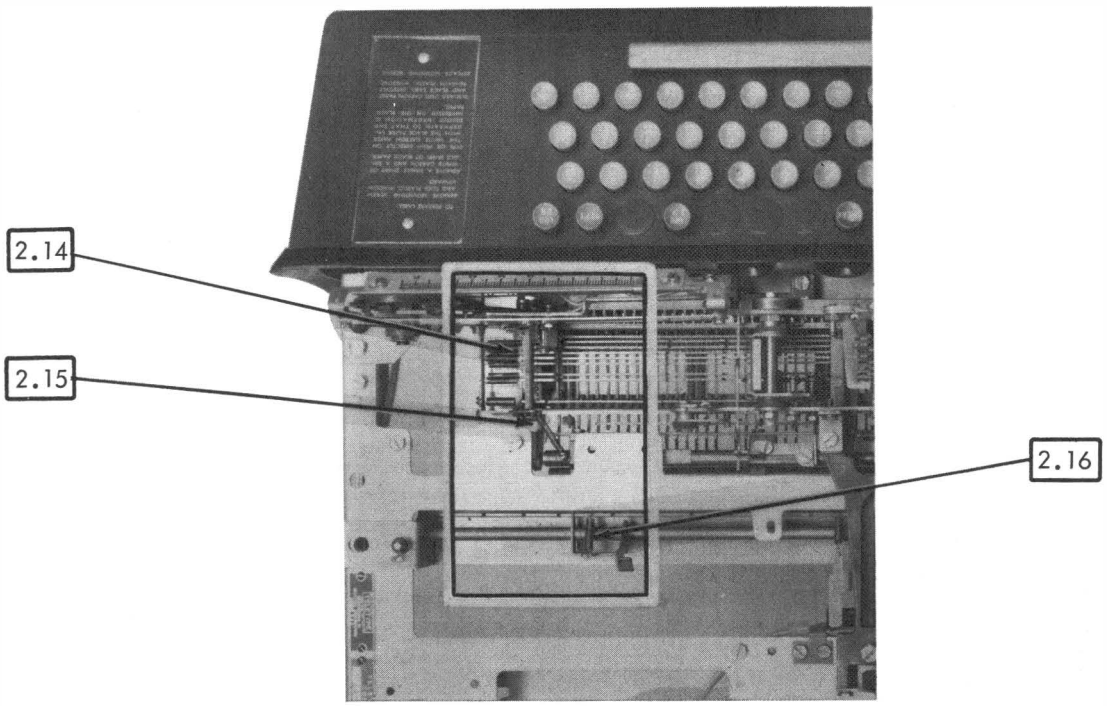
0	GUIDE SURFACES (5 EXTENSIONS-TWO PLACES)	CODE BAR EXTENSIONS
0	HOOKS-EACH END (5 SPRINGS)	SPRINGS
0	CONTACT SURFACE (5 EXTENSIONS)	CODE BAR EXTENSION

2.12 CLUTCH TRIP BAR LINK MECHANISM



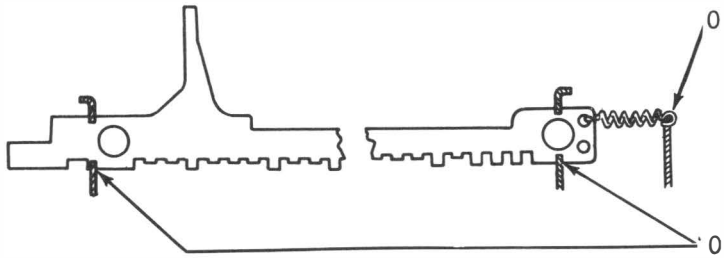
0	CONTACT SURFACE	CLUTCH TRIP BAR LINK EXTENSION
0	COMPRESSION SPRING-EACH END	LINK GUIDE PIN
0	CONTACT SURFACE	TRIP BAR LINK LATCH
0	ENGAGING SURFACE	CLUTCH TRIP BAR LINK
0	BEARING SURFACE	TRIP BAR LINK LATCH
0	CONTACT SURFACE	BELLCRANK
0	BEARING SURFACE AND SLIDING SURFACE	BELLCRANK AND CLUTCH TRIP BAR LINK
0	CONTACT SURFACE (BOTH SIDES)	BELLCRANK
0	SLIDING SURFACE	CLUTCH TRIP BAR LINK

2.13 CODE BAR AND LOCAL LINE FEED MECHANISM
NOTE: REST PERFORATOR IN UPRIGHT POSITION.



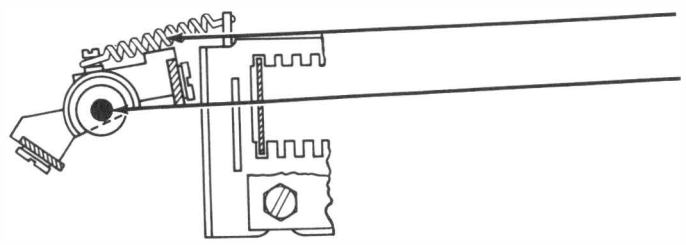
(TOP VIEW)

2.14 CODE BAR MECHANISM



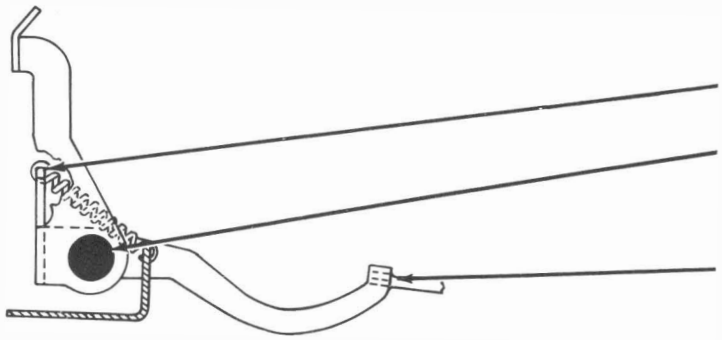
0	HOOKS-EACH END (8 SPRINGS)	SPRING
0	GUIDE SLOTS (LEFT AND RIGHT-TOP AND BOTTOM)	CODE BAR GUIDES

2.15 CODE LEVER UNIVERSAL BAIL MECHANISM



0	HOOKS-EACH END	SPRING
02	BEARING SURFACE	CODE LEVER UNIVERSAL BAIL

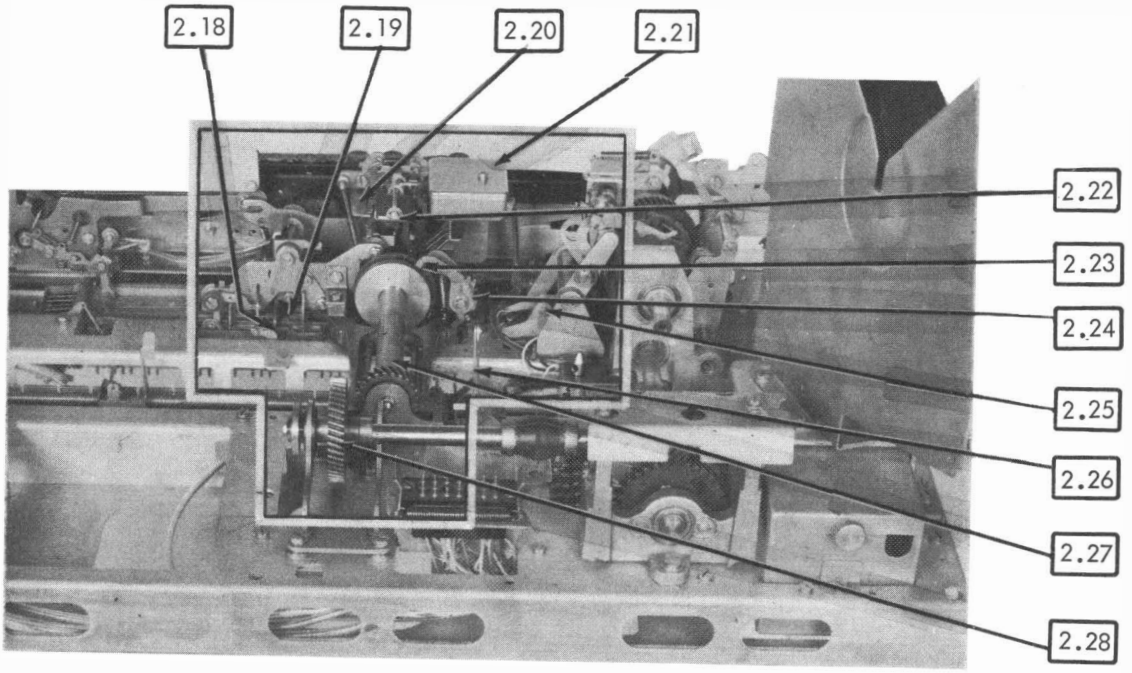
2.16 LOCAL CARRIAGE RETURN MECHANISM



0	HOOKS-EACH END	SPRING
0	BEARING SURFACE (2 PLACES)	LOCAL CARRIAGE RETURN FUNCTION BAIL
G	ENGAGING SURFACE	LOCAL CARRIAGE RETURN FUNCTION LEVER

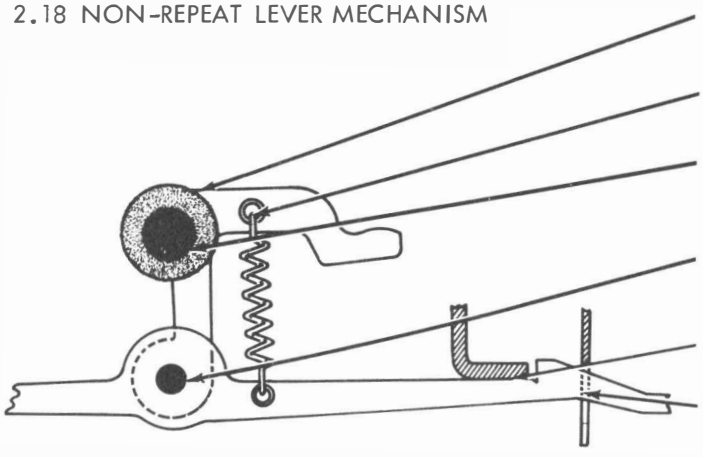
2.17 SIGNAL GENERATOR MECHANISM

NOTE: REST PERFORATOR IN UPRIGHT POSITION.



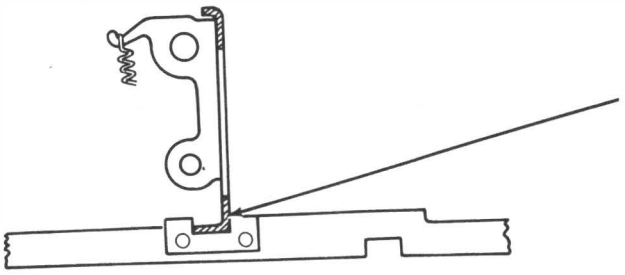
(REAR VIEW)

2.18 NON-REPEAT LEVER MECHANISM



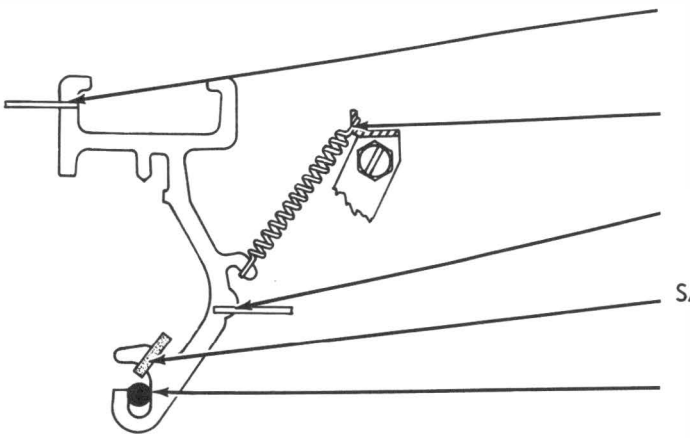
SAT	FELT WASHER	NON-REPEAT LEVER CRANK
0	HOOKS-EACH END	SPRING
02	BEARING SURFACE	NON-REPEAT LEVER CRANK
02	BEARING SURFACE	NON-REPEAT LEVER
G	ENGAGING SURFACE	NON-REPEAT LEVER
02	GUIDE SLOT	NON-REPEAT LEVER

2.19 CLUTCH TRIP BAR MECHANISM



G SAT	SLOT	CLUTCH TRIP BAR WEAR PLATE

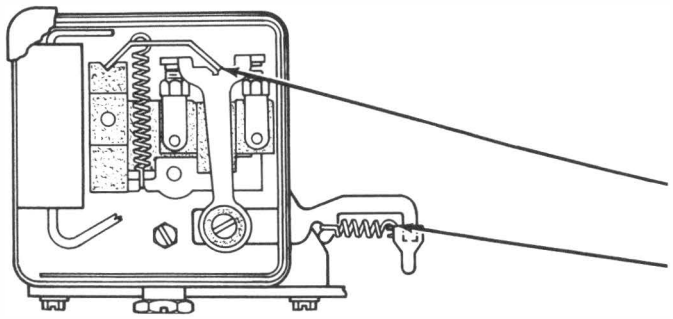
2.20 TRANSFER LEVER MECHANISM



0	GUIDE SLOTS	TRANSFER LEVERS (7 LEVERS)
0	HOOKS-EACH END (7 SPRINGS)	SPRING
0	GUIDE SLOTS	TRANSFER LEVERS (7 LEVERS)
SAT	FELT WASHERS (4 WASHERS)	CAMMING SURFACES
0	GUIDE SLOTS	TRANSFER LEVERS (7 LEVERS)

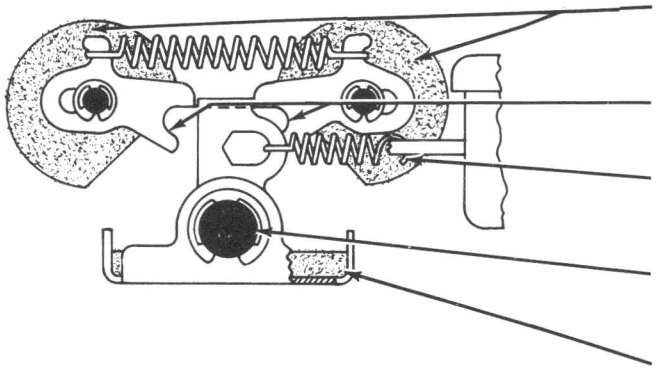
2.21 CONTACT BOX

DISASSEMBLY: REMOVE NUT AND LOCK WASHER SECURING CONTACT BOX COVER AND REMOVE COVER.



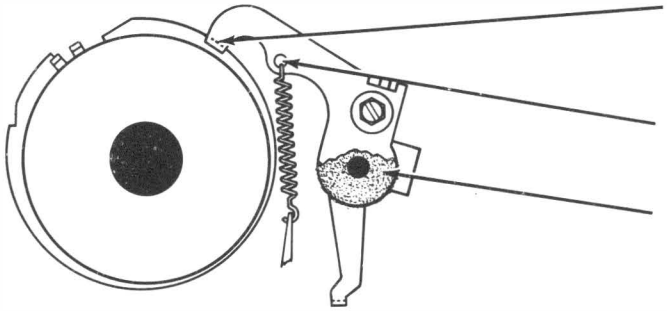
G	ENGAGING SURFACE	CONTACT TOGGLE
0	HOOKS-EACH END	SPRING

2.22 TRANSFER BAIL MECHANISM



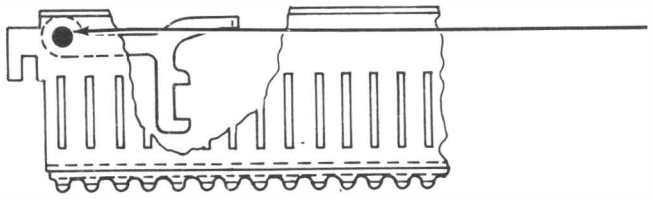
SAT	FELT WASHERS (2 WASHERS)	LATCHES
G	ENGAGING SURFACES	TRANSFER BAIL
0	HOOKS-EACH END (2 SPRINGS)	SPRING
02	BEARING SURFACE (EACH END)	TRANSFER BAIL
SAT	OIL WICK	TRANSFER BAIL

2.23 KEYBOARD CLUTCH MECHANISM



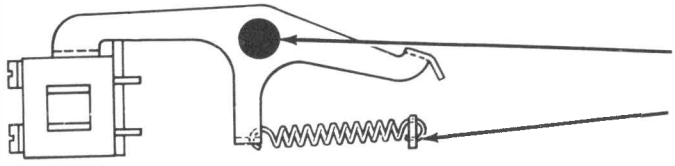
02	LATCHING SURFACE	CLUTCH STOP LEVER AND CLUTCH LATCH LEVER
0	HOOKS-EACH END (2 SPRINGS)	SPRING
SAT	FELT WASHERS (2 FRONT & REAR)	CLUTCH TRIP BAIL

2.24 LOCK BAR LATCH MECHANISM



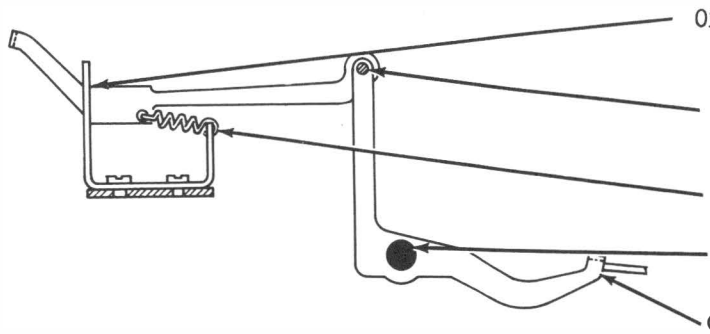
0	BEARING SURFACE	LOCK BAR LATCH

2.25 MARGIN INDICATING MECHANISM



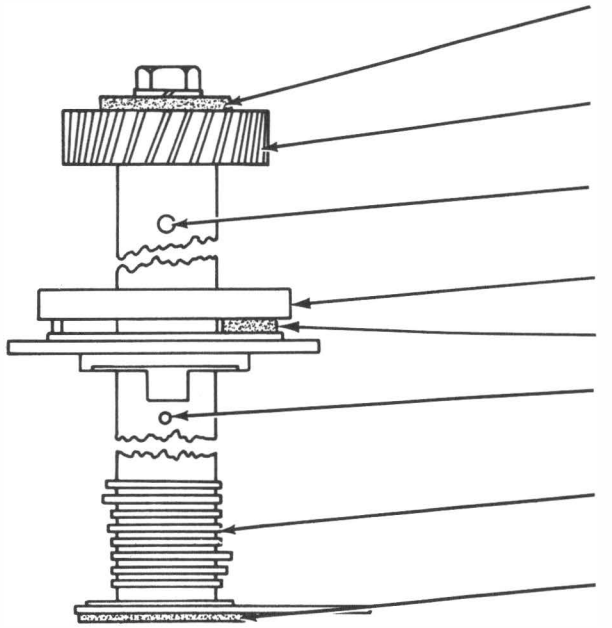
0	BEARING SURFACE	SWITCH LEVER
0	HOOKS-EACH END	SPRING

2.26 LOCAL LINE FEED MECHANISM



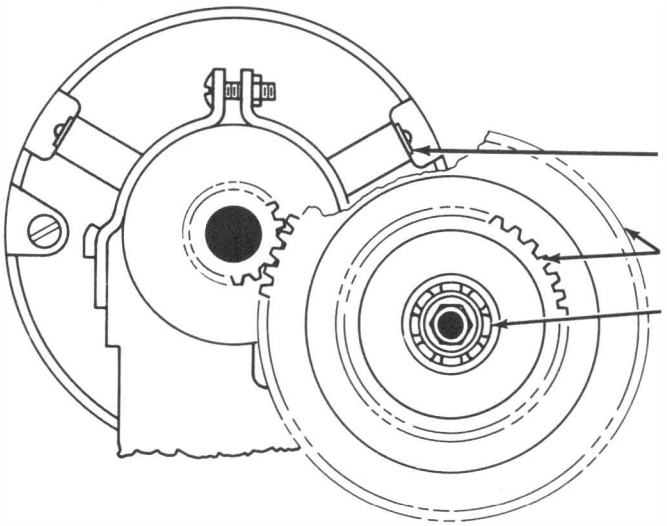
02	GUIDE SLOT	LOCAL LINE FEED TRIP LINK
0	BEARING SURFACE	LOCAL LINE FEED FUNCTION LEVER
0	HOOKS-EACH END	SPRING
0	BEARING SURFACE	FUNCTION BAIL
G	ENGAGING SURFACE	LOCAL LINE FEED FUNCTION LEVER

2.27 KEYBOARD SHAFT MECHANISM



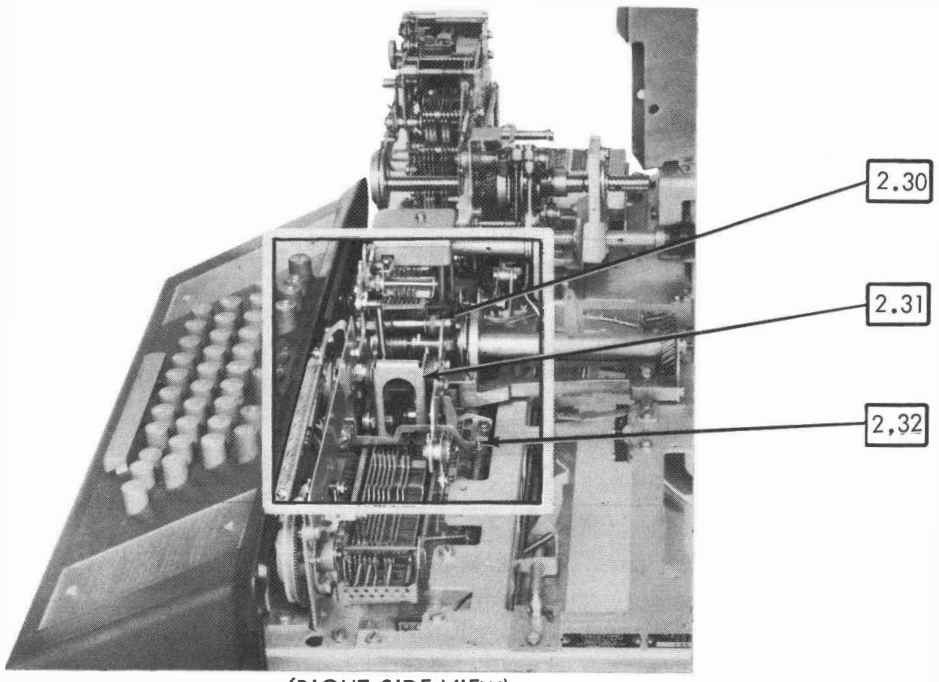
SAT	FELT WASHER	SIGNAL GENERATOR SHAFT
G	GEAR TEETH	SIGNAL GENERATOR SHAFT
020	OIL HOLE	SIGNAL GENERATOR SHAFT
04	INTERNAL MECHANISM	KEYBOARD CLUTCH
SAT	FELT WICK	
020	OIL HOLE	SIGNAL GENERATOR CAM
02	CAMMING SURFACE EACH CAM	SIGNAL GENERATOR CAM
SAT	FELT WASHER	SIGNAL GENERATOR SHAFT

2.28 INTERMEDIATE GEAR MECHANISM



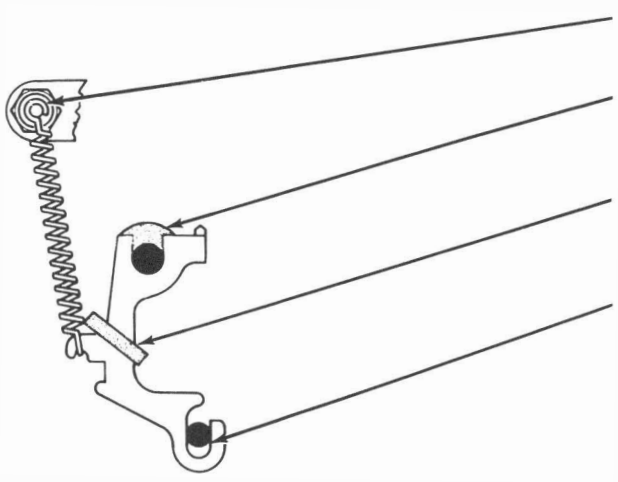
02	OILER-EACH END (RIGHT AND LEFT)	MOTOR SHAFT
G	TEETH (2 GEARS)	INTERMEDIATE GEARS
02	BALL BEARING (2 BEARINGS)	INTERMEDIATE GEAR SHAFT

2.29 SIGNAL GENERATOR MECHANISM continued
NOTE: REST PERFORATOR TRANSMITTER IN UPRIGHT POSITION.



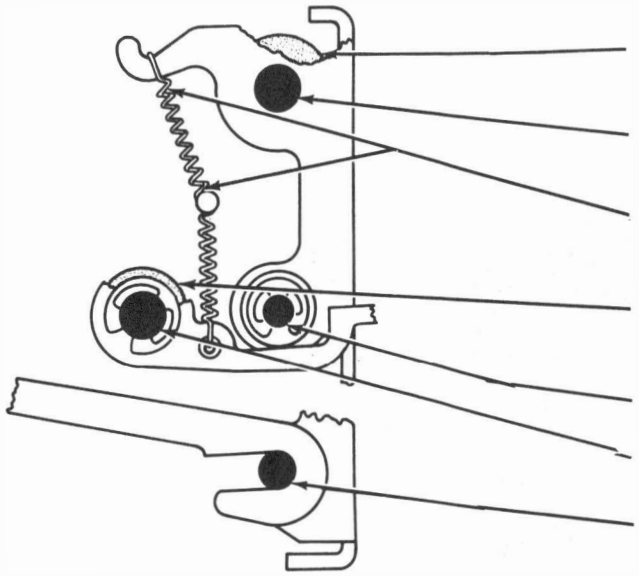
(RIGHT SIDE VIEW)

2.30 LOCKING BAIL MECHANISM



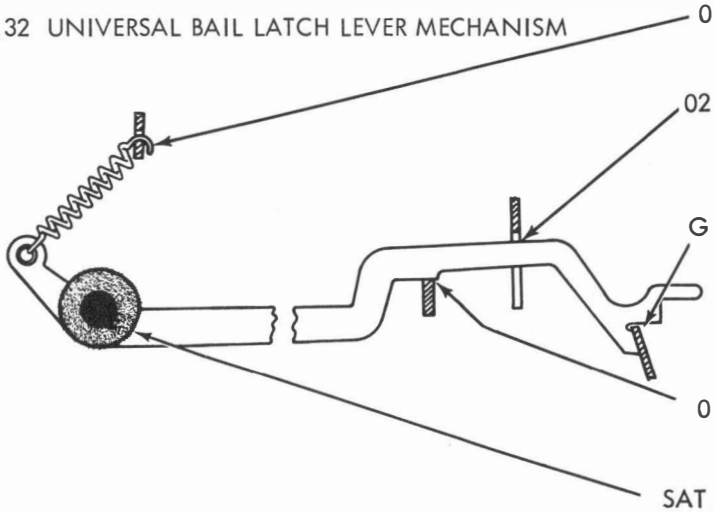
0	HOOKS-EACH END	SPRING
SAT	FELT WASHERS (2 WASHERS - FRONT AND REAR)	LOCKING BAIL POST
SAT	FELT WICK	CAMMING SURFACES
0	GUIDE SLOTS (3 SLOTS)	LOCKING BAIL

2.31 CODE BAR BAIL MECHANISM



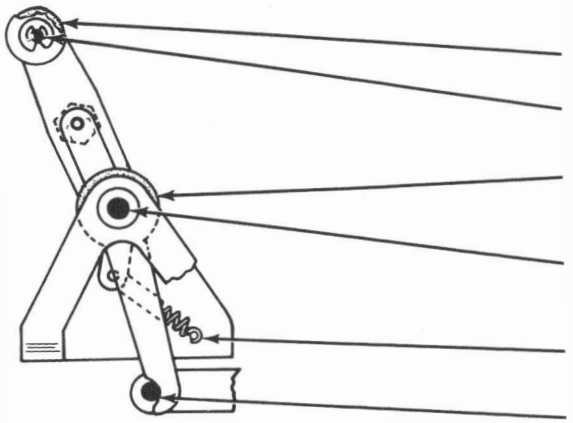
SAT	FELT WASHERS (TWO WASHERS)	CODE BAR BAIL
0	BEARING SURFACE (2 PLACES)	CODE BAR BAIL
0	HOOKS-EACH END (2 SPRINGS)	SPRING
SAT	FELT WASHER	CODE BAR BAIL LATCH
04	BEARING	CODE BAR BAIL
02	BEARING SURFACE	CODE BAR BAIL LATCH
02	ENGAGING SURFACE	ECCENTRIC FOLLOWER

2.32 UNIVERSAL BAIL LATCH LEVER MECHANISM



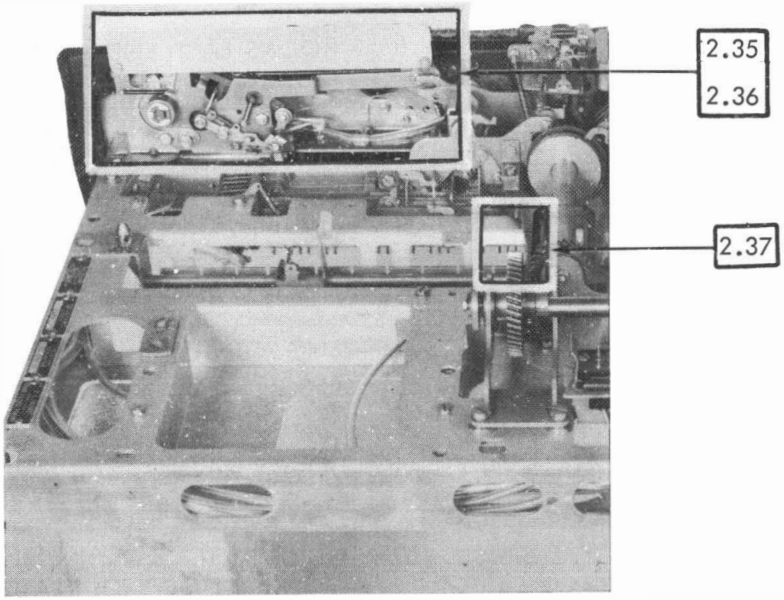
0	HOOKS (EACH END)	SPRING
02	GUIDE SLOT (EACH SIDE OF SLOT)	UNIVERSAL BAIL LATCH LEVER
G	ENGAGING SURFACE	CODE BAR BAIL EXTENSION
0	ENGAGING SURFACE	RESET BAIL LATCH
SAT	FELT WASHER	UNIVERSAL BAIL LATCH LEVER

2.33 RESET CAM FOLLOWER MECHANISM



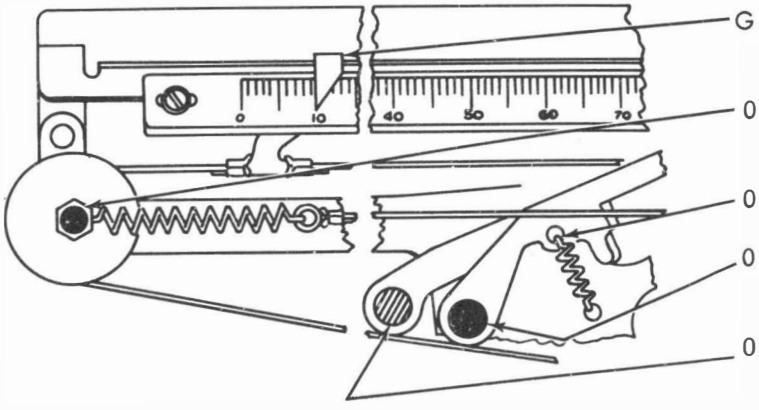
SAT	FELT WASHER	ROLLER
0	BEARING SURFACE	RETAINING RING
SAT	FELT WASHERS (FRONT & REAR)	RESET CAM FOLLOWER SHAFT
05	OIL HOLE	RESET CAM FOLLOWER SHAFT
0	HOOKS-EACH END	SPRING
0	ENGAGING SURFACE	RESET LEVER

2.34 CHARACTER COUNTER AND ELECTRICAL LINE BREAK MECHANISMS
NOTE: REST PERFORATOR TRANSMITTER IN UPRIGHT POSITION



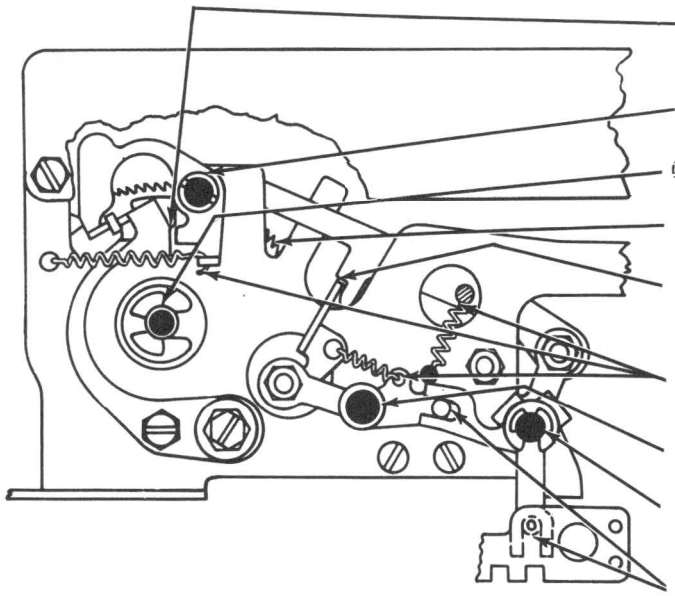
(REAR VIEW)

2.35 CHARACTER COUNTER MECHANISM continued



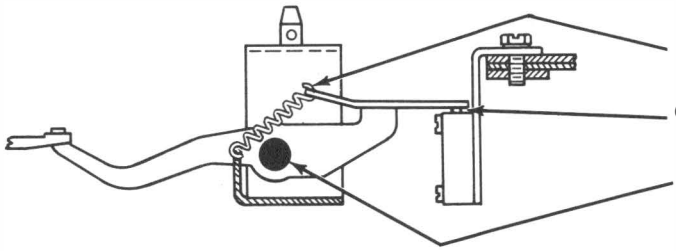
ENGAGING SURFACE	COUNTER SCALE BRACKET
BEARING SURFACE	INDICATOR CORD PULLEY
HOOKS-EACH END	SPRING
BEARING SURFACE	RATCHET LATCH LEVER
BEARING SURFACE	RATCHET DRIVE LEVER

2.36 CHARACTER COUNTER MECHANISM continued



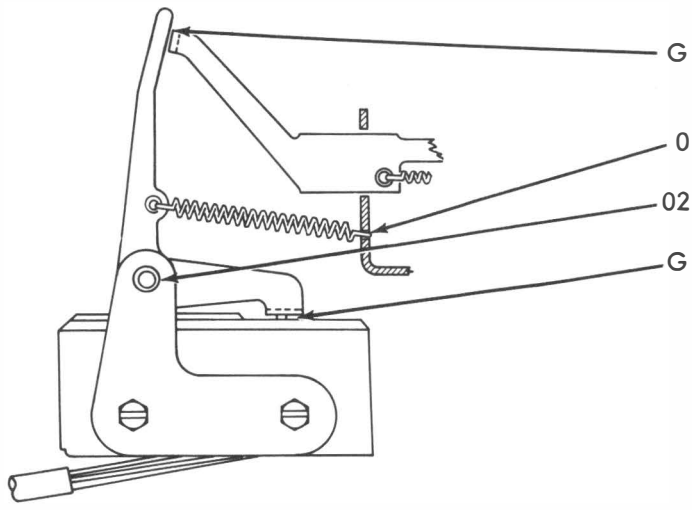
0	CONTACT SURFACE	ANTI-BOUNCE LATCH
0	BEARING SURFACE	ANTI-BOUNCE LATCH
02	BEARING SURFACE	RATCHET DRUM
G	TEETH	RATCHET
0	ENGAGING SURFACES (2 PLACES)	RESET LEVER EXTENSION
0	HOOKS-EACH END (3 SPRINGS)	SPRING
0	BEARING SURFACE	RESET BAIL
0	BEARING SURFACE	DRIVE LEVER FEED BAIL
0	ENGAGING SURFACES (3 SURFACES)	DRIVE LEVER FEED BAIL & RESET BAIL

2.37 ELECTRICAL LINE BREAK MECHANISM



0	HOOKS-EACH END	SPRING
G	CONTACT SURFACE	SENSITIVE SWITCH
0	BEARING SURFACE	BREAK LEVER

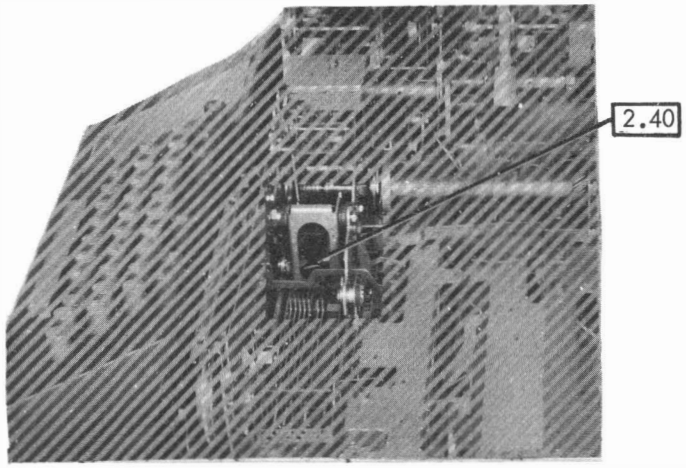
2.38 LOCAL PAPER FEED-OUT MECHANISM



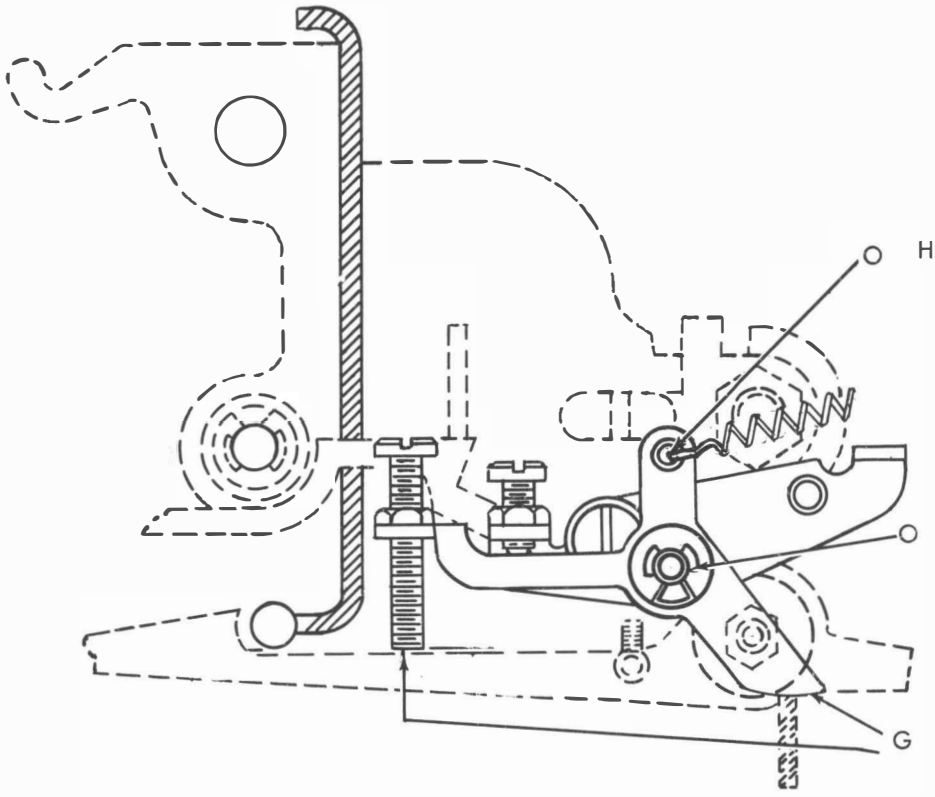
G	ENGAGING SURFACE	LOCAL LINE FEED TRIP LINK
0	HOOKS-EACH END	SPRING
02	BEARING SURFACE	LEVER
G	ENGAGING SURFACE	MAGNETIC BLOWOUT SWITCH

2.39 REPEAT-ON-SPACE MECHANISM

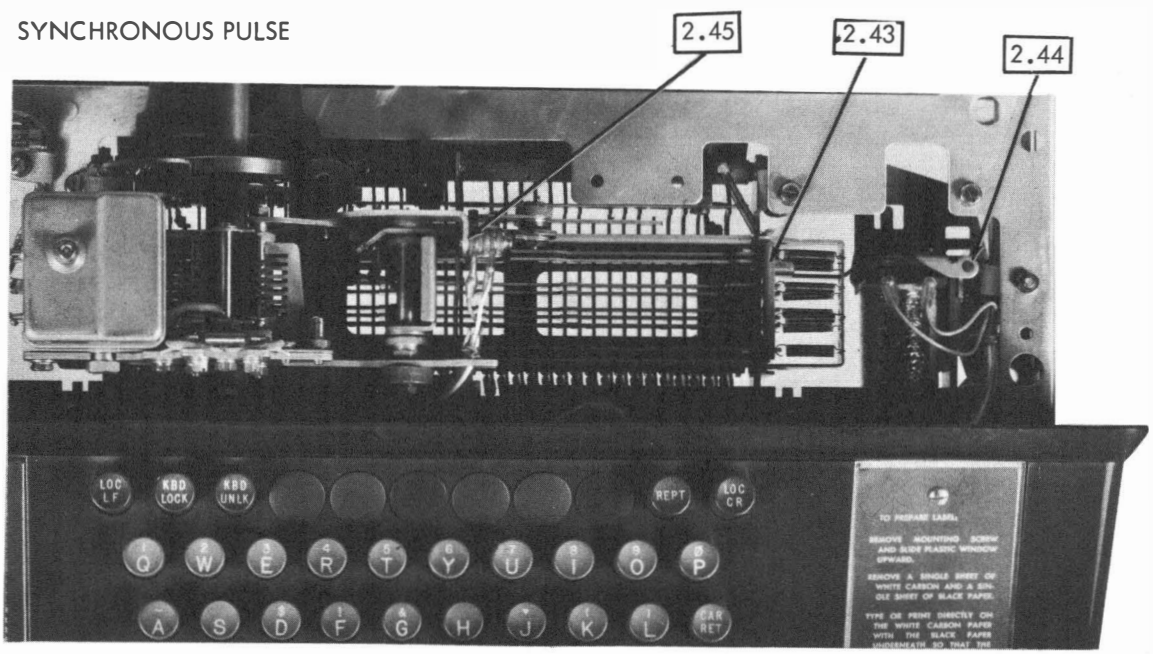
NOTE:
REST PERFORATOR TRANSMITTER IN UPRIGHT POSITION.



2.40 REPEAT-ON-SPACE

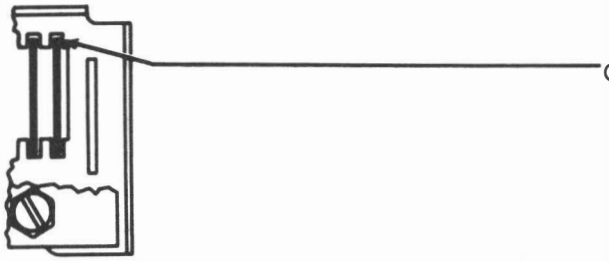


2.41 SYNCHRONOUS PULSE



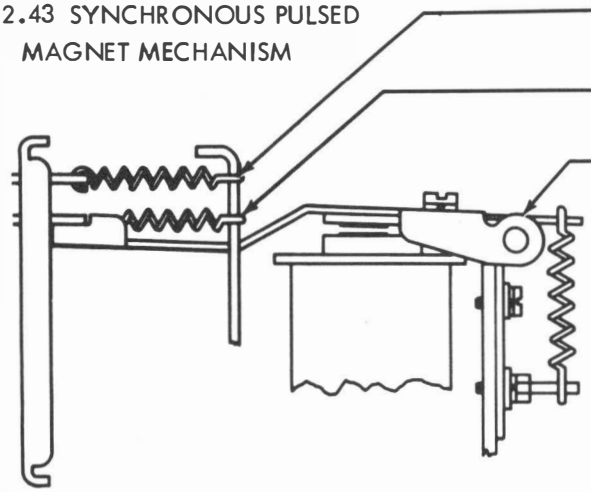
FRONT

2.42 CODE BAR GUIDE



O GUIDE SLOTS (LEFT, RIGHT, TOP AND BOTTOM)

2.43 SYNCHRONOUS PULSED MAGNET MECHANISM

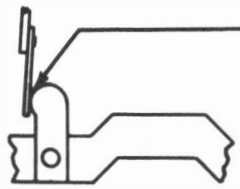


O HOOKS-EACH END UNIVERSAL CODE BAR SPRING

O HOOKS-EACH END CLUTCH TRIP BAR SPRING

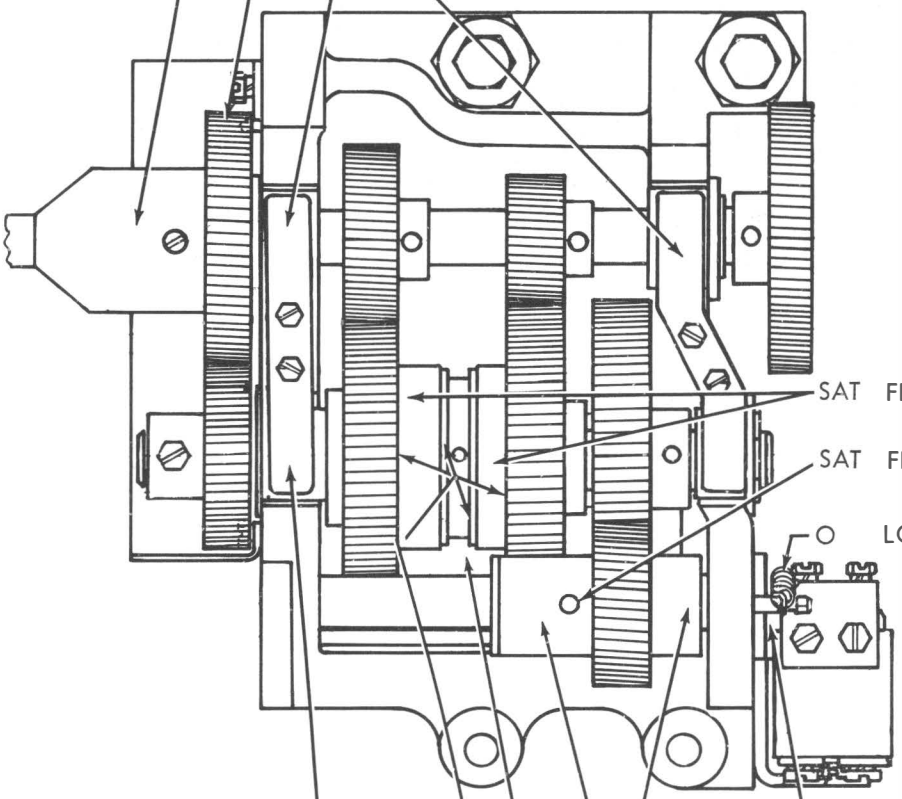
SAT FELT WASHERS ARMATURE-PIVOT

2.44 CONTACT SWINGER



G ENGAGING SURFACE

2.45 REMOTE CONTROL GEAR SHIFT



SAT FELT WICK — TRANSMITTER POWER TAKE-OFF

G GEAR TEETH — TEN GEARS (ASR KEYBOARD) INCLUDING MOTOR PINION

O2 OILITE BEARINGS (2) (OIL EACH SIDE OF BEARINGS) — TRANSMITTER POWER TAKE-OFF DRIVEN GEAR BEARINGS

SAT FELT WICKS(2) — SPRING CLUTCHES

SAT FELT WICK — IDLER GEAR

O LOOPS - EACH END ARMATURE SPRING

O2 BEARING POINTS — ARMATURE SHAFT

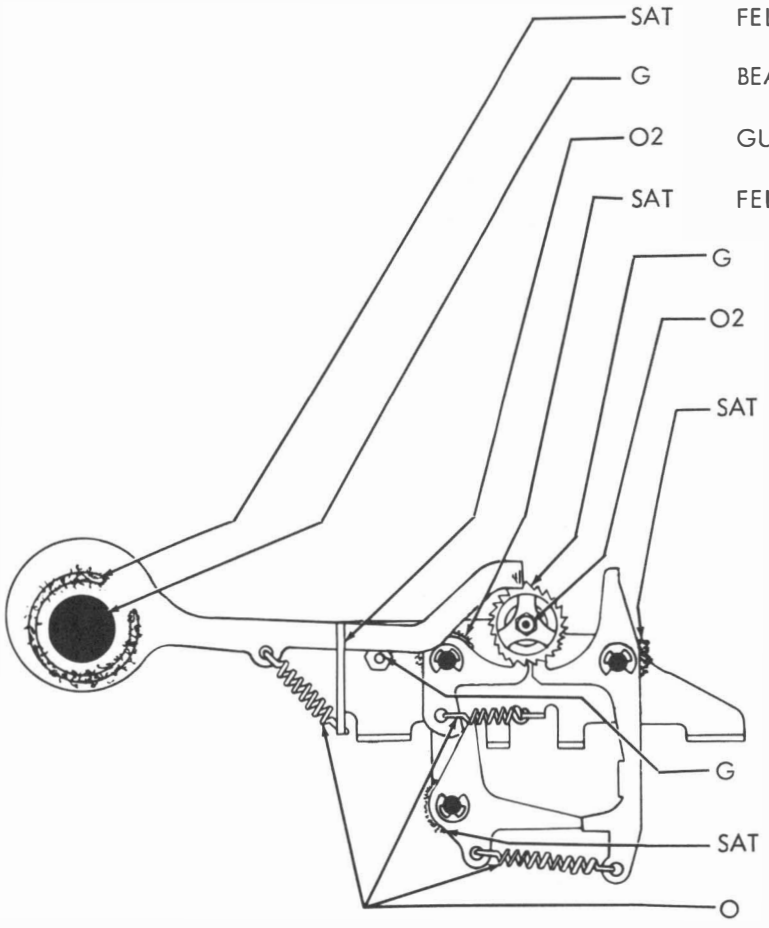
O2 OILITE BEARINGS (2) (OIL EACH SIDE OF BEARINGS) — IDLER GEAR BEARINGS

O CLUTCH SPRINGS AND HUBS (APPLY LIGHT FILM DURING REASSEMBLY) — SPRING CLUTCHES

O2 OILITE BEARING WASHERS (4) — SPRING CLUTCHES

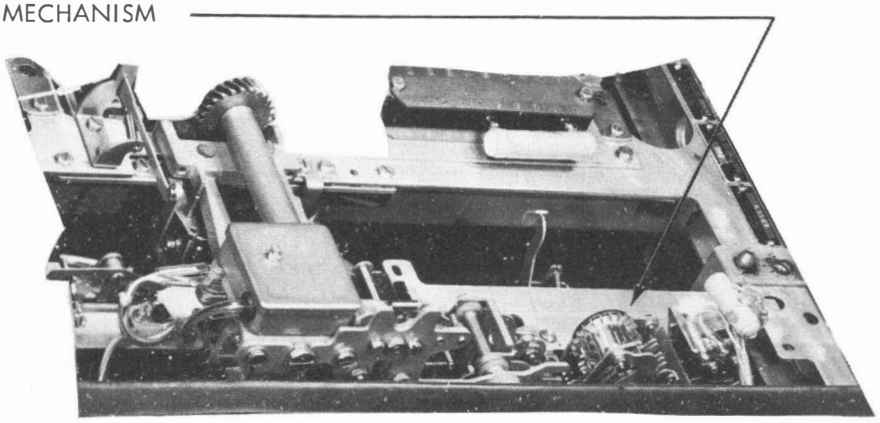
O2 OILITE BEARINGS (2) (OIL EACH SIDE OF BEARINGS) — 60 AND 100 WPM DRIVER GEAR BEARINGS

2.46 TIME DELAY MECHANISM

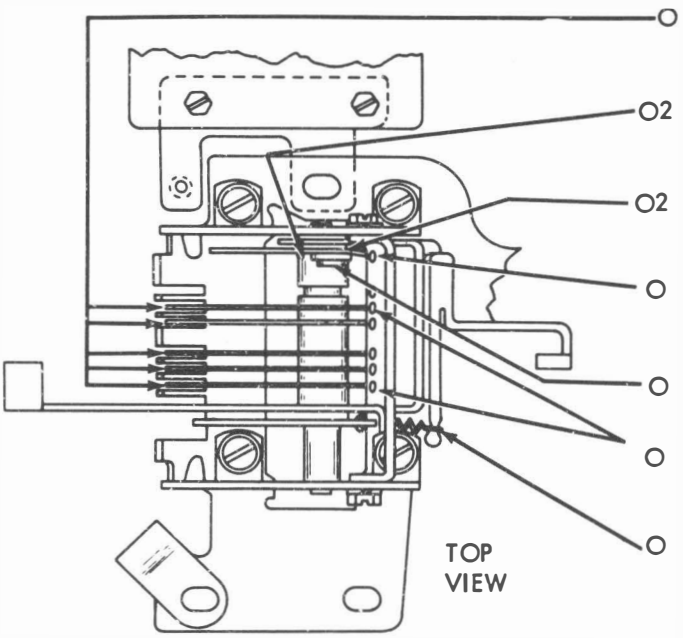


SAT	FELT WASHER	ECCENTRIC FOLLOWER PAWL
G	BEARING SURFACE	ECCENTRIC FOLLOWER PAWL
O2	GUIDE SLOT	ECCENTRIC FOLLOWER PAWL
SAT	FELT WASHER	LATCH PAWL
G	TEETH (2 WHEELS)	RATCHET WHEELS
O2	BEARING SURFACE EACH END	RATCHET WHEEL SHAFT
SAT	FELT WASHER	CONTACT PAWL
G	ENGAGING SURFACE	ECCENTRIC FOLLOWER PAWL
SAT	FELT WASHER	LATCH LEVER
O	HOOKS - EACH END (3 SPRINGS)	SPRING

2.47 ANSWER-BACK MECHANISM

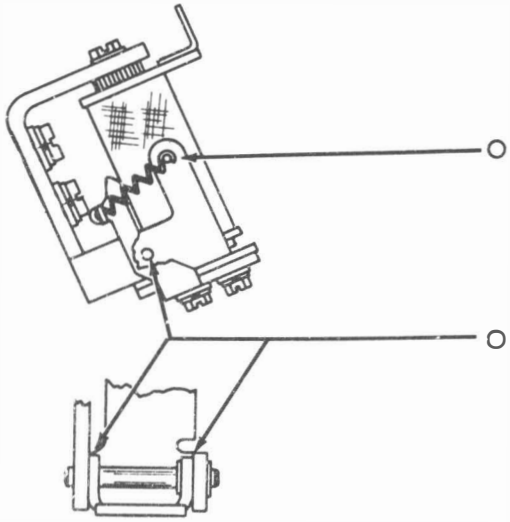


2.48 ANSWER-BACK — SENSING LEVER MECHANISM



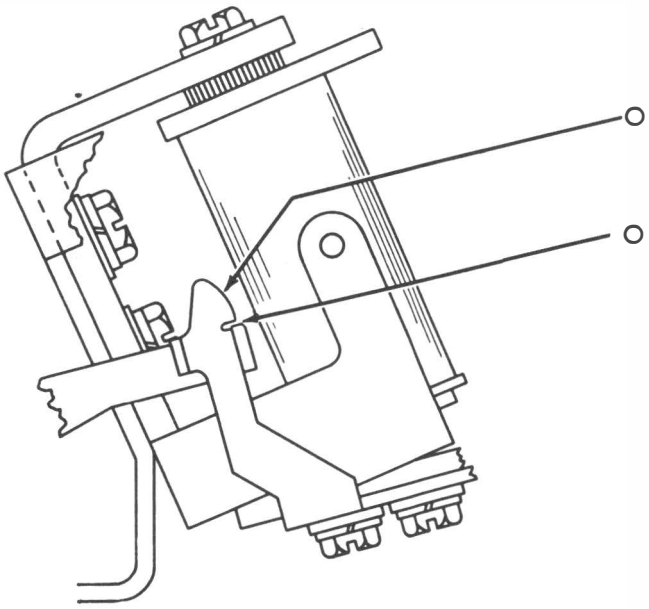
CAMMING SURFACES (5 PLACES)	SENSING LEVERS
BEARING SURFACE	DETENT LEVER
BEARING SURFACE	DETENT LEVER AND ROLLER
HOOK - EACH END	SPRING
BEARING SURFACE	DETENT LEVER ROLLER
HOOKS - EACH END (5 SPRINGS)	SPRINGS
HOOK - EACH END	SPRING

2.49 ANSWER-BACK — ARMATURE MECHANISM

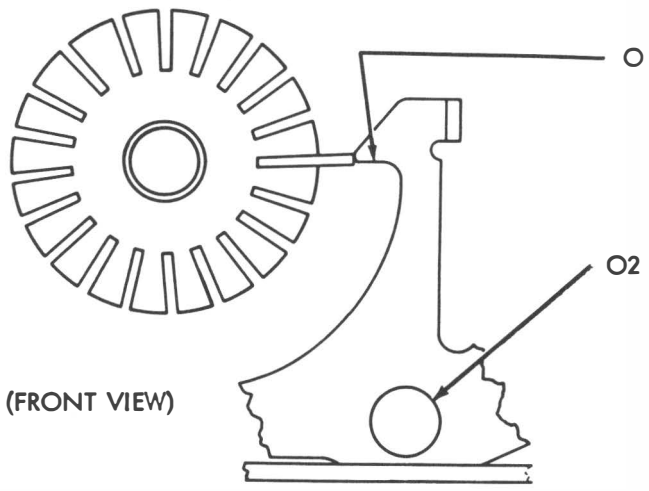


HOOK - EACH END	SPRING
BEARING SURFACES (2 PLACES)	ARMATURE AND SHAFT

2.50 ANSWER-BACK — STOP LEVER



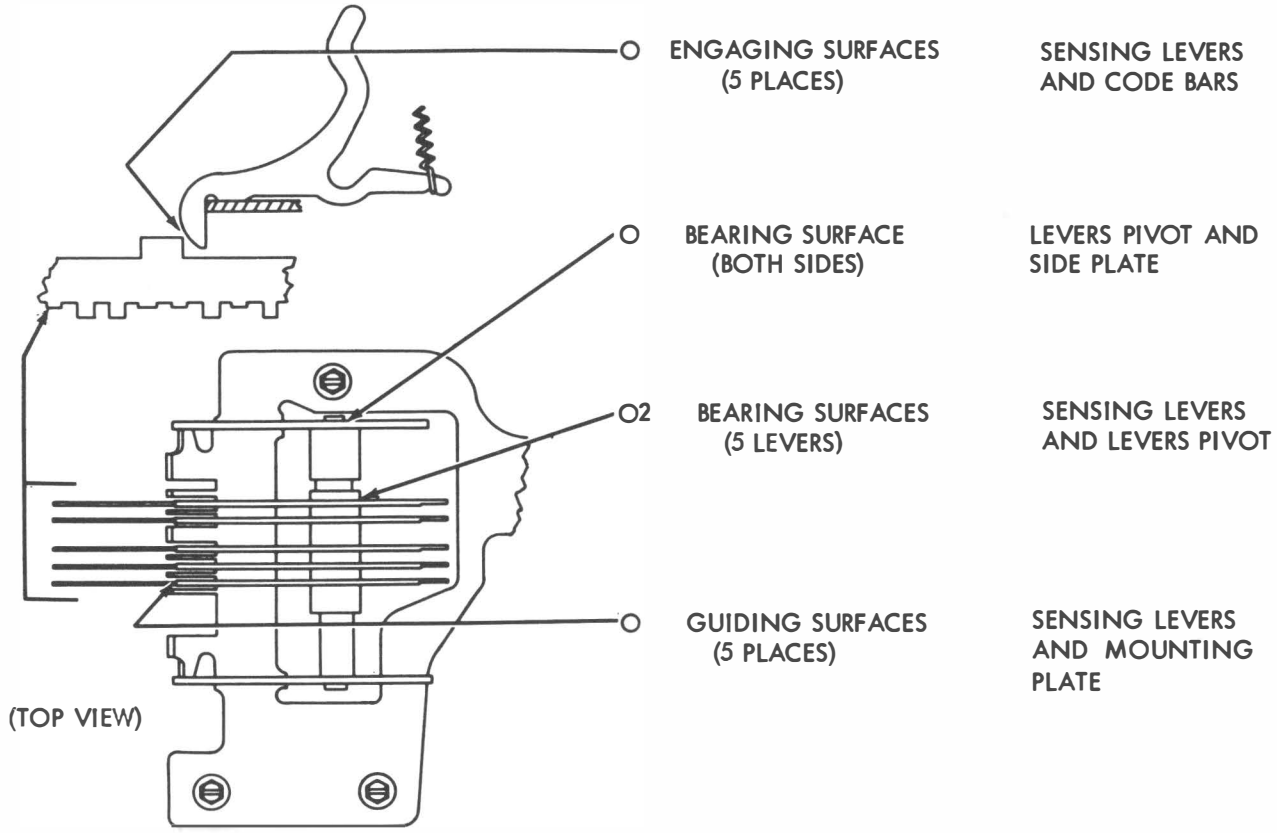
O	CONTACTING SURFACE	LATCH AND STOP LEVER
O	LATCHING SURFACE	LATCH AND STOP LEVER



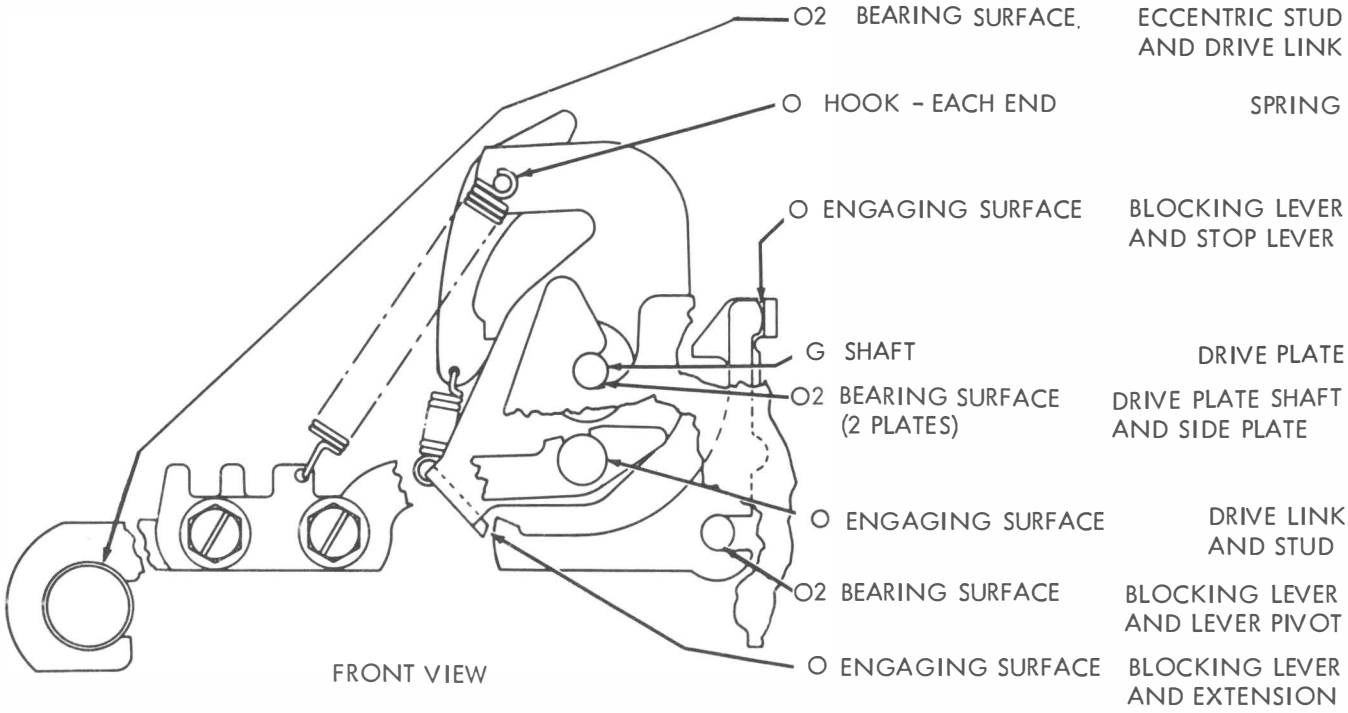
O	CAMMING SURFACE	STOP LEVER
O2	BEARING SURFACE (2 PLACES)	STOP LEVER AND LEVER PIVOT

(FRONT VIEW)

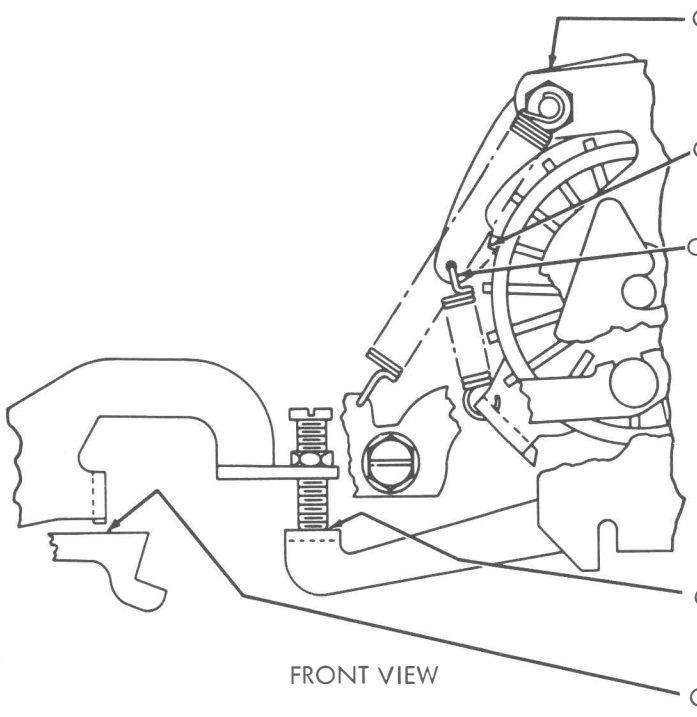
2.51 ANSWER-BACK — CODE BARS AND SENSING LEVERS



2.52 ANSWER-BACK — DRIVING MECHANISM

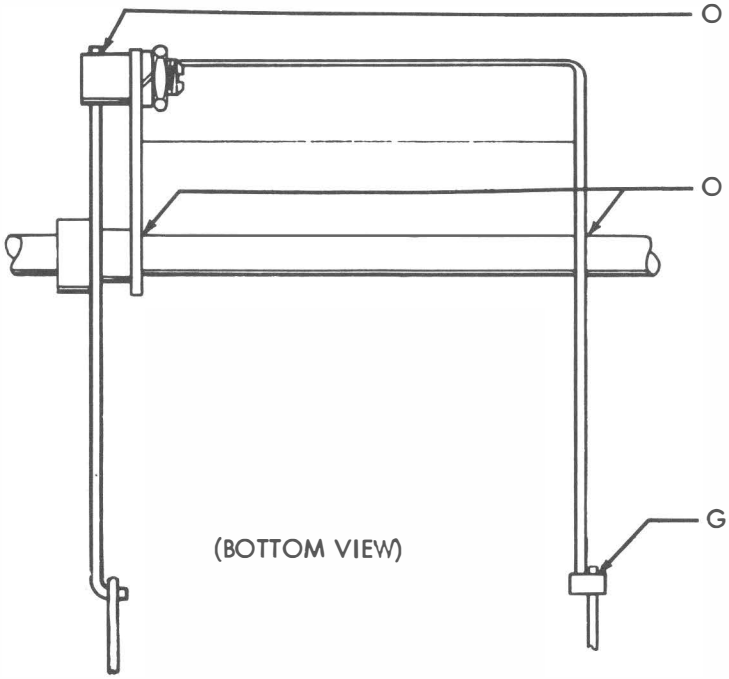


2.53 ANSWER-BACK — STEPPING PAWL



O2	BEARING SURFACE	STEPPING PAWL AND ECCENTRIC STUD
O	CONTACTING SURFACES	STEPPING PAWL AND CODE BLADES
O	HOOK - EACH END	SPRING
O	CONTACTING SURFACE	ADJUSTING SCREW
O	CONTACTING SURFACE	LEVER AND LATCH

2.54 ANSWER-BACK — KEYBOARD LOCK BAIL MECHANISM



O	ENGAGING SURFACES	ECCENTRIC AND LOCK LEVER
O	BEARING SURFACES	FUNCTION LEVER AND BAIL
G	CONTACTING SURFACE	"HERE IS" LEVER AND BAIL