

# Adjustment Manual

## Remington Standard Typewriter Model 150

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THE OBJECTIVE OF THIS ADJUSTMENT MANUAL  
IS TO PERMIT A EASY TRAINING FOR THE  
FUTURE CUSTOMER TECHNICIANS.

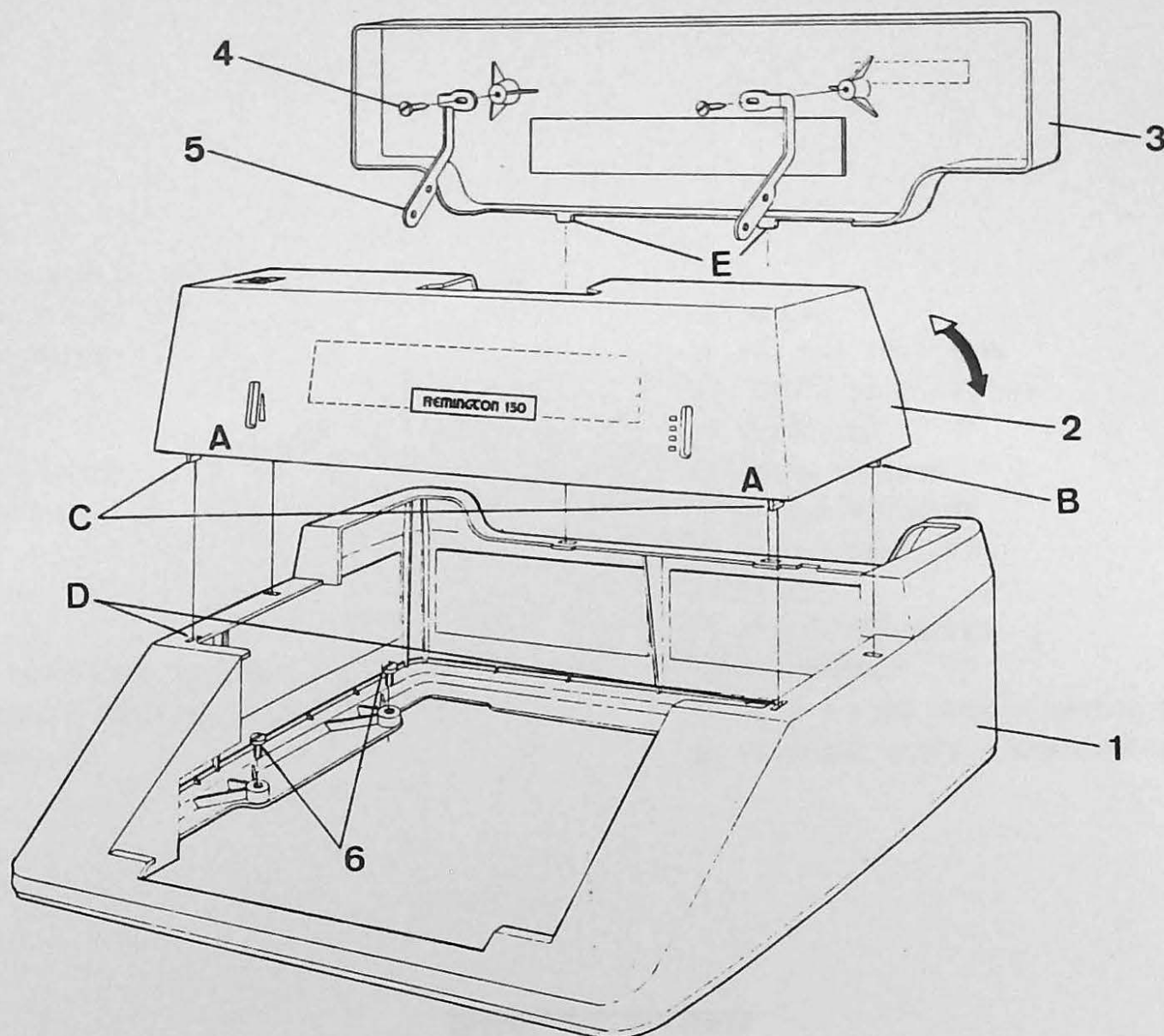
THIS MANUAL CONTAINS DETAILED PLATES OF  
MECHANISM OF THE MACHINE AND THEIR DES  
CRIPTIONS AND ADJUSTMENTS.

IN THE END OF THE MANUAL ARE SHOWN ALL  
THE SPECIAL TOOLS FOR ADJUSTMENT OF THE  
MACHINE.

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## I MACHINE COVERS

### MACHINE COVERS

**TOP COVER (2).** TO REMOVE TOP COVER, MOVE CARRIAGE TO EXTREME LEFT, MAINTAIN POINT "A" OF TOP COVER (2) IN CONTACT WITH INTERMEDIATE COVER (1) AT THE SAME TIME ROTATE UPPER PART OF TOP COVER TOWARDS YOU UNTIL LATCH "B" OF TOP COVER (2) UNLATCHES FROM INTERMEDIATE COVER (1) THEN LIFT STRAIGHT UP.

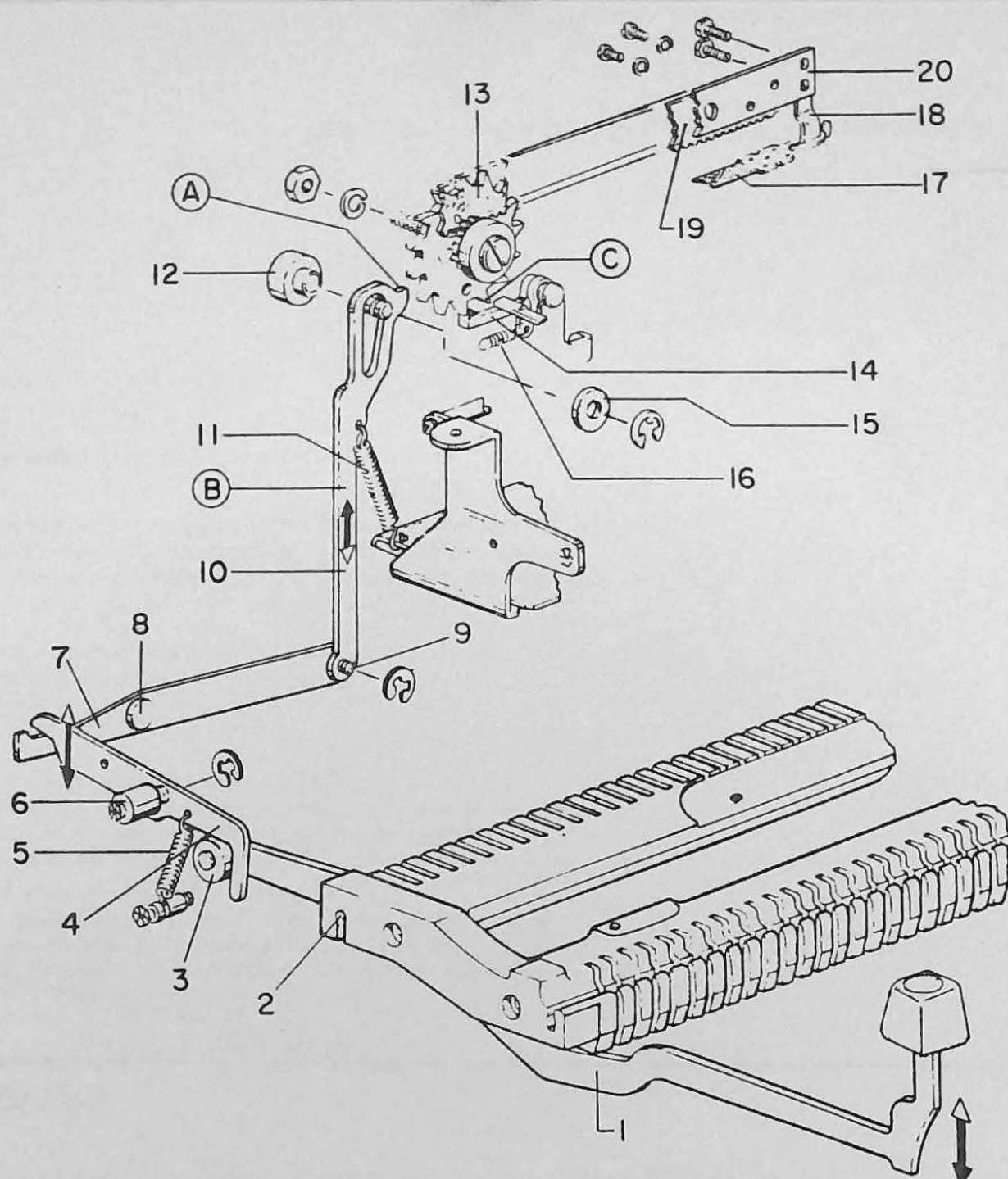
TO REPLACE, INSERT LUGS "C" OF TOP COVER (2) INTO SLOTS "D" OF INTERMEDIATE COVER (1). MAINTAIN POINT "A" OF TOP COVER (2) IN CONTACT WITH INTERMEDIATE COVER (1) AND ROTATE UPPER PART OF TOP COVER AWAY FROM YOU UNTIL LATCH "B" OF TOP COVER (2) LATCHES IN PLACE ON THE INTERMEDIATE COVER (1).

**REAR COVER (3).** MOVE CARRIAGE TO EXTREME LEFT SIDE OF MACHINE. REMOVE SCREW (4) THROUGH LARGE HOLE FOUND IN ESCAPEMENT ROCKER PLATE (5), PLATE 9. MOVE CARRIAGE TO EXTREME RIGHT SIDE OF MACHINE. REMOVE SCREW (4). RAISE UP UNTIL LUGS "E" OF REAR COVER (3) DESENGAGE FROM SLOTS IN INTERMEDIATE COVER (1) AND REMOVE REAR COVER (3).

**INTERMEDIATE COVER (1).** REMOVE FRONT AND REAR SCREWS (6) ON THE INSIDE RIGHT OF INTERMEDIATE COVER (1). REMOVE THE TWO SCREWS ON THE LEFT SIDE OF INTERMEDIATE COVER (1). HOLD MACHINE BY THE CARRIAGE AND LIFT IT OFF THE INTERMEDIATE COVER (1).

**NOTE :** THERE ARE FOUR INSERTS FIXED IN THE INTERMEDIATE COVER (1).





## 2 BACK SPACE CORRECTION KEY

### BACKSPACE CORRECTION KEY

THE PURPOSE OF THE BACKSPACE CORRECTION KEY IS TO MAKE POSSIBLE A NEAT, EASY CORRECTION WHEN IT IS NECESSARY TO ERASE A WORD OR INSERT A SHORTER OR LONGER WORD. IT IS ALSO USED FOR CORRECTING A SINGLE ERROR. BEFORE THE FUNCTION OF THE BACKSPACE KEY CAN FULLY UNDERSTOOD AN EXPLANATION AS TO THE "MODE" OF THE MACHINE KNOWN AS "NORMAL" WILL FOLLOW.

#### NORMAL MODE :

TAPE (17) IS UNDER CONSTANT TENSION, PULLING TO THE LEFT. TAPE (17) IS ATTACHED TO TAPE HOOK (18). TAPE HOOK (18) IS MOUNTED TO THE SUPPORT RAIL (20). THE TEETH ON THE FEED RACK (19) ARE ENGAGED WITH THE PINION WHEEL SO THERE IS TENSION TO MOVE THE CARRIAGE TO THE LEFT AT ALL TIMES. THE PINION WHEEL AND ESCAPEMENT WHEEL (13) ARE MANUFACTURED AS ONE UNIT. THEREFORE, WHEN MOVEMENT OF THE ESCAPEMENT WHEEL (13) IS PREVENTED BY LOOSE DOG (14), THE CARRIAGE IS HELD IN A STATIONARY POSITION.

THE MODE OF THE MACHINE IS "NORMAL". DEPRESS KEYLEVER (1). THE FORWARD PORTION OF KEYLEVER (1) WILL MOVE DOWN PIVOTING ON FULCRUM WIRE (2) RAISING THE REAR PORTION OF KEYLEVER (1). ROLL (3), ATTACHED TO KEYLEVER (1), WILL RISE / AND CONTACT ARM (4) RAISING THE FORWARD PORTION OF (4) PIVOTING ON STUD (6) AND YIELDING SPRING (5). THE REAR PORTION OF ARM (4) WILL MOVE DOWN. ARM (4) IS EXTENDED OVER ARM (7) SO THE LEFT SIDE OF (7) WILL LOWER PIVOTING AT POINT (8) RAISING THE RIGHT SIDE OF (7). STUD (9) IS PART OF (7) AND THE BACKSPACE PAWL (10) IS HELD ON THE STUD BY A RETAINER. AS THE RIGHT PORTION OF ARM (7) IS RAISED, THE BACKSPACE PAWL (10) WILL RISE. SPRING (11) WILL YIELD AND GUIDE BACKSPACE PAWL (10) TO THE RIGHT. THE BACKSPACE PAWL (10) HAS AN ELONGATED SLOT ALLOWING THIS UPWARD MOVEMENT. BUSHING (12) ALIGNS THE BACKSPACE PAWL (10) WITH ESCAPEMENT WHEEL TOOTH. POINT (A) ON THE BACKSPACE PAWL WILL CONTACT THE TOOTH OF THE ESCAPEMENT WHEEL (13) AND TURN THE ESCAPEMENT WHEEL CLOCKWISE WHICH MOVE THE CARRIAGE APPROXIMATELY 1 - 1/2 SPACES TO RIGHT. AS THE ESCAPEMENT WHEEL REMOVED CLOCKWISE, TOOTH (C) CAME DOWN THE LOOSE DOG (14), YIELDING SPRING (16). IMMEDIATELY AFTER ESCAPEMENT TOOTH (C) PASSED THE LOOSE DOG (14), THE LOOSE DOG (14) RESTORED TO NORMAL BY SPRING (16) AND IS NOW PREPARED TO ENGAGE ESCAPEMENT WHEEL TOOTH (C).

#### OPERATED MODE :

THE KEYLEVER (1) IS FULLY DEPRESSED; THE BACKSPACE PAWL IS AT MAXIMUM THROW AND HOLDING THE ESCAPEMENT WHEEL.

#### RESTORING ACTION :

RELEASE KEYLEVER (1). SPRING (5) WILL START TO RESTORE TO NORMAL. THE FORWARD

PORTION OF KEYLEVER (1) WILL RISE AND THE REAR PORTION OF KEYLEVER (1) WILL LOWER WITH ITS ATTACHED ROLL (3), PIVOTING AT FULCRUM WIRE (2). THE FORWARD PORTION OF (4) WILL RISE. THE LEFT SIDE OF (7) WILL RISE AND THE RIGHT SIDE OF (7) WILL LOWER. PIVOTING AT POINT (8). AS SPRING (11) RESTORES, THE BACKSPACE PAWL (10) WILL RETURN TO NORMAL. THE ESCAPEMENT WHEEL (13) WILL TURN APPROXIMATELY 1/2 SPACE COUNTERCLOCKWISE AND LOOSE DOG (14) WILL INTERCEPT AND HOLD / THE ESCAPEMENT WHEEL TOOTH (C) THUS RESTORING THE MACHINE TO NORMAL "MODE" / HAVING BACKSPACE ONE COMPLETE SPACE.

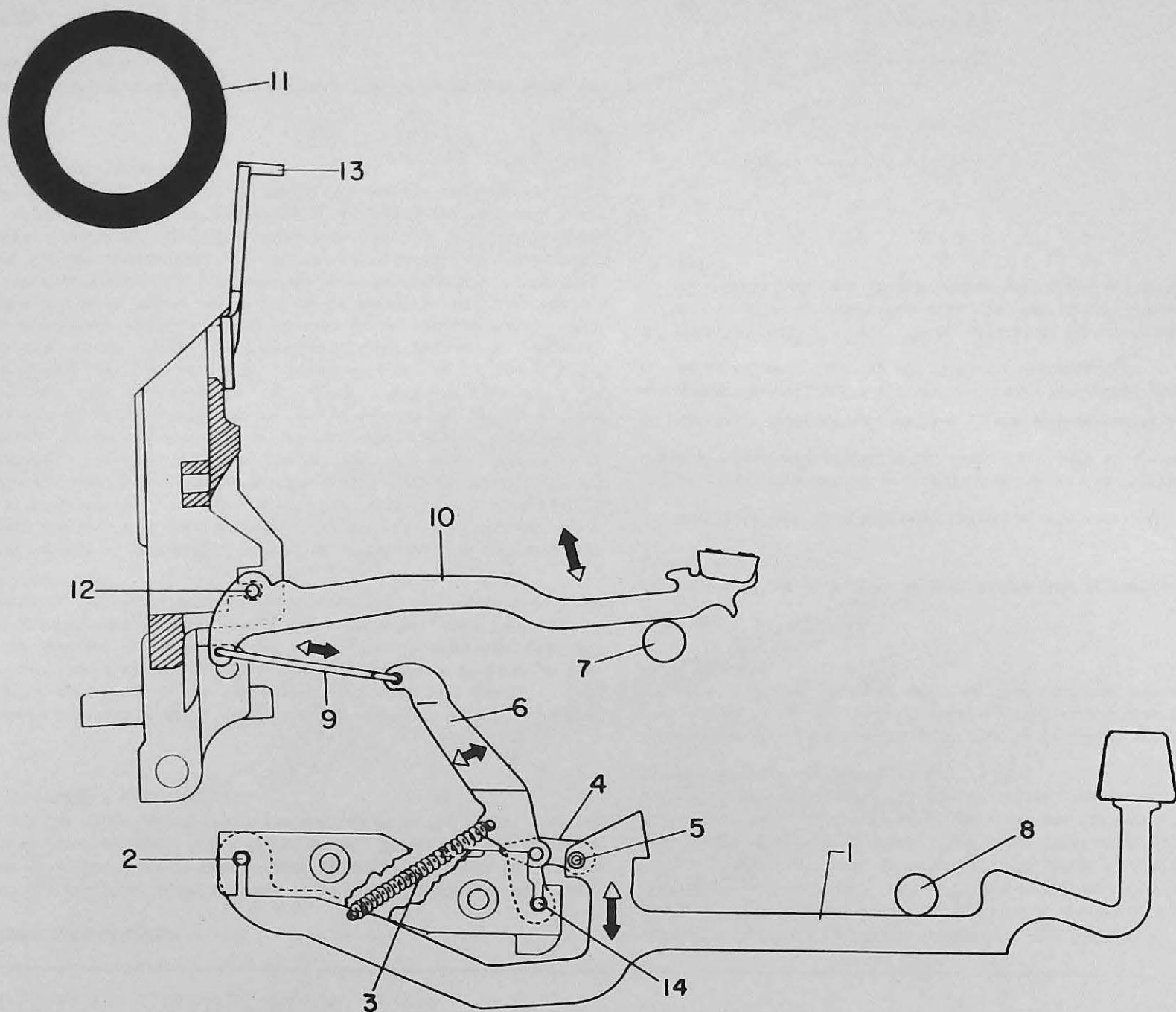
A DIFFERENT BACKSPACE PAWL IS USED FOR EACH DIFFERENT SPACE MACHINE. BACKSPACE PAWL FOR 8, 10, 12 AND 16 SPACE MACHINES ARE STAMPED WITH CORRESPONDING FIGURES FOR IDENTIFICATION AT POINT (B). THE BACKSPACE PAWL FOR 10 SPACE MACHINES IS NOT STAMPED.

#### ADJUSTMENTS

"SIX-O'CLOCK" POSITION OF ESCAPEMENT ROCKER MUST BE PROPERLY ADJUSTED TO OBTAIN CORRECT BACKSPACING.

1. BACKSPACE PAWL (10) MUST MOVE FREELY ON BACKSPACE PAWL STUD BUSHING (12).
2. BACKSPACE PAWL SPRING (11) MUST HAVE SUFFICIENT TENSION TO HOLD BACKSPACE PAWL (10) CLEAR OF ESCAPEMENT WHEEL TEETH WHEN AT NORMAL (REST) POSITION.
3. BACKSPACE KEYLEVER ROLL (3) MUST ALIGN WITH BACKSPACE ARM LEVER (4).
4. BACKSPACE ARM LEVER SPRING (5) MUST HAVE SUFFICIENT TENSION TO FULLY RESTORE BACKSPACE ARM LEVER (4) AND BACKSPACE KEYLEVER (1).
5. WHEN BACKSPACE KEYLEVER (1) IS DEPRESSED, BACKSPACE PAWL (10) MUST FULLY ENGAGE TOOTH OF ESCAPEMENT WHEEL (13) AND TURN IT BACKWARD SUFFICIENTLY FOR ESCAPEMENT LOOSE DOG (14) TO ENGAGE NEXT TOOTH (C) OF THE ESCAPEMENT WHEEL (13).





### 3 TYPE BAR AND KEY LEVER ACTION

#### TYPE BAR KEYLEVER ACTION

THE PURPOSE OF THE TYPE BAR KEYLEVER IS TO OBTAIN A PRINTED CHARACTER. IT IS NECESSARY TO USE A SERIES OF LEVERS TO CONNECT TYPE BARS WITH THE KEYLEVERS TO RAISE THE TYPE TO PRINT.

#### NORMAL MODE :

KEYLEVER (1) IS RESTING AGAINST KEYLEVER UPSTOP (8) HELD IN POSITION BY SPRING (3). THE TYPE BAR (10) IS RESTING ON THE TYPE BAR CUSHION (7).

DEPRESS KEYLEVER (1). THE FORWARD PORTION OF KEYLEVER (1) WILL MOVE DOWN, PIVOTING ON FULCRUM WIRE (2), YIELDING SPRING (3). LINK (4) CONNECTED TO STUD (5) ON KEYLEVER (1) WILL PIVOT DOWNWARD, ROCKING BELLCRANK (6) CLOCKWISE, PIVOTING ON FULCRUM (14) PULLING SPRING (3) FORWARD. TYPE BAR LINK (9) WILL BE PULLED TO THE FRONT OPERATING THE TYPE BAR (10) COUNTERCLOCKWISE PIVOTING ON FULCRUM WIRE (12) RAISING THE TYPE TO THE PLATEN (11) TO PRINT. THE GUIDE (13) GUIDES THE / TYPE BAR (10) TO PRINTING POSITION.

#### OPERATED MODE :

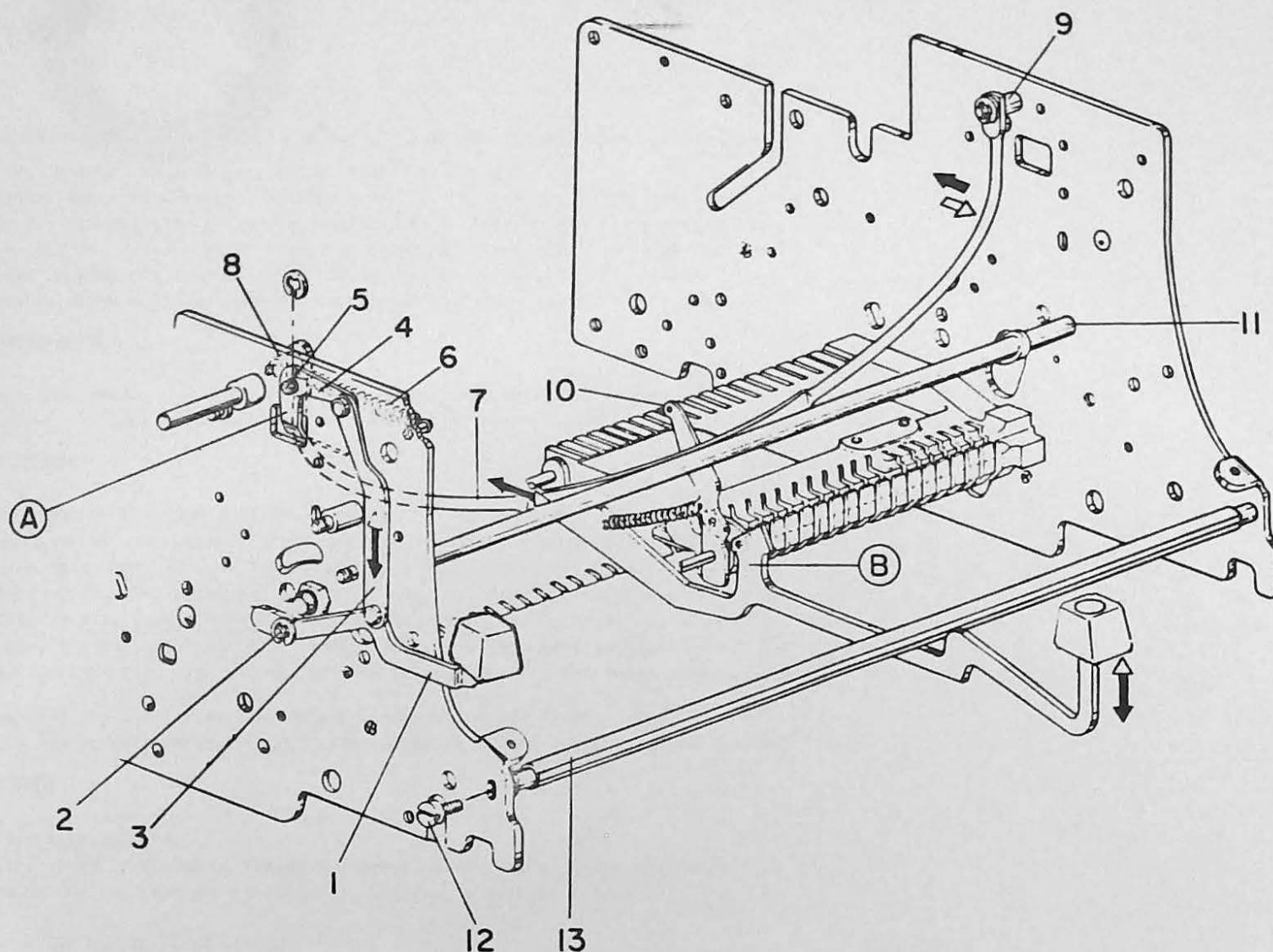
KEYLEVER (1) IS FULLY DEPRESSED; BELLCRANK (6) IS FORWARD; THE TYPE BAR (10) IS RAISED; TYPE, WHICH IS SOLDERED TO THE TYPE BAR (10) IS AT THE PLATEN (11).

#### RESTORING ACTION :

RELEASE KEYLEVER (1), THE FORWARD PORTION OF KEYLEVER (1) WILL MOVE UPWARD, / PIVOTING ON WIRE (2) THROUGH THE RESTORING ACTION OF SPRING (3). LINK (4), CONNECTED TO STUD (5) WILL PIVOT UPWARD ALLOWING BELLCRANK (6) TO ROCK COUNTERCLOCKWISE, PERMITTING SPRING (3) TO MOVE TO THE REAR OF THE MACHINE. AS THE BELLCRANK (6) ROCKED COUNTERCLOCKWISE, LINK (9) MOVED TO THE REAR, ALLOWING TYPE BAR (10) TO MOVE CLOCKWISE TO REST ON THE TYPE BAR CUSHION (7).

THE KEYLEVER ACTION HAS RESTORED TO "NORMAL" AND ONE CHARACTER HAS PRINTED.





## 4 KEY RELEASE

### KEYLEVER RELEASE

THE PURPOSE OF THE KEY LEVER RELEASE IS TO RESTORE JAMMED TYPE BARS TO REST POSITION IF TYPIST ACCIDENTALLY STRIKES TWO KEYS AT THE SAME TIME.

#### NORMAL MODE :

KEY RELEASE BAIL (7) IS TO THE REAR BUT NOT RESTING AGAINST THE RIBBON REVERSE SHAFT (11).

ASSUMING TWO TYPE BARS ARE JAMMED AT THE TYPE GUIDE AND THEIR RESPECTIVE BELL-CRANKS (10) ARE FORWARD. DEPRESS THE KEY RELEASE KEYLEVER (1) AND THE FRONT PORTION OF THE KEYLEVER WILL MOVE DOWN PIVOTING ON STUD (2), PULLING LINK (3) DOWN, ACTUATING BELLCRANK (4) CLOCKWISE, PIVOTING ON STUD (5), YIELDING SPRING (6), CAUSING EXTENSION (A) TO PIVOT BAIL (7) TO THE REAR ON STUDS (8) AND (9). CONTACTING AND RESTORING THE TYPE BAR BELLCRANK (10) THAT ARE FORWARD.

#### OPERATED MODE :

KEY RELEASE LEVER (1) IS FULLY DEPRESSED; BAIL (7) IS CONTACTING BELLCRANKS (10) HAVING RESTORED THEIR RESPECTIVE TYPE BARS TO NORMAL.

#### RESTORING ACTION :

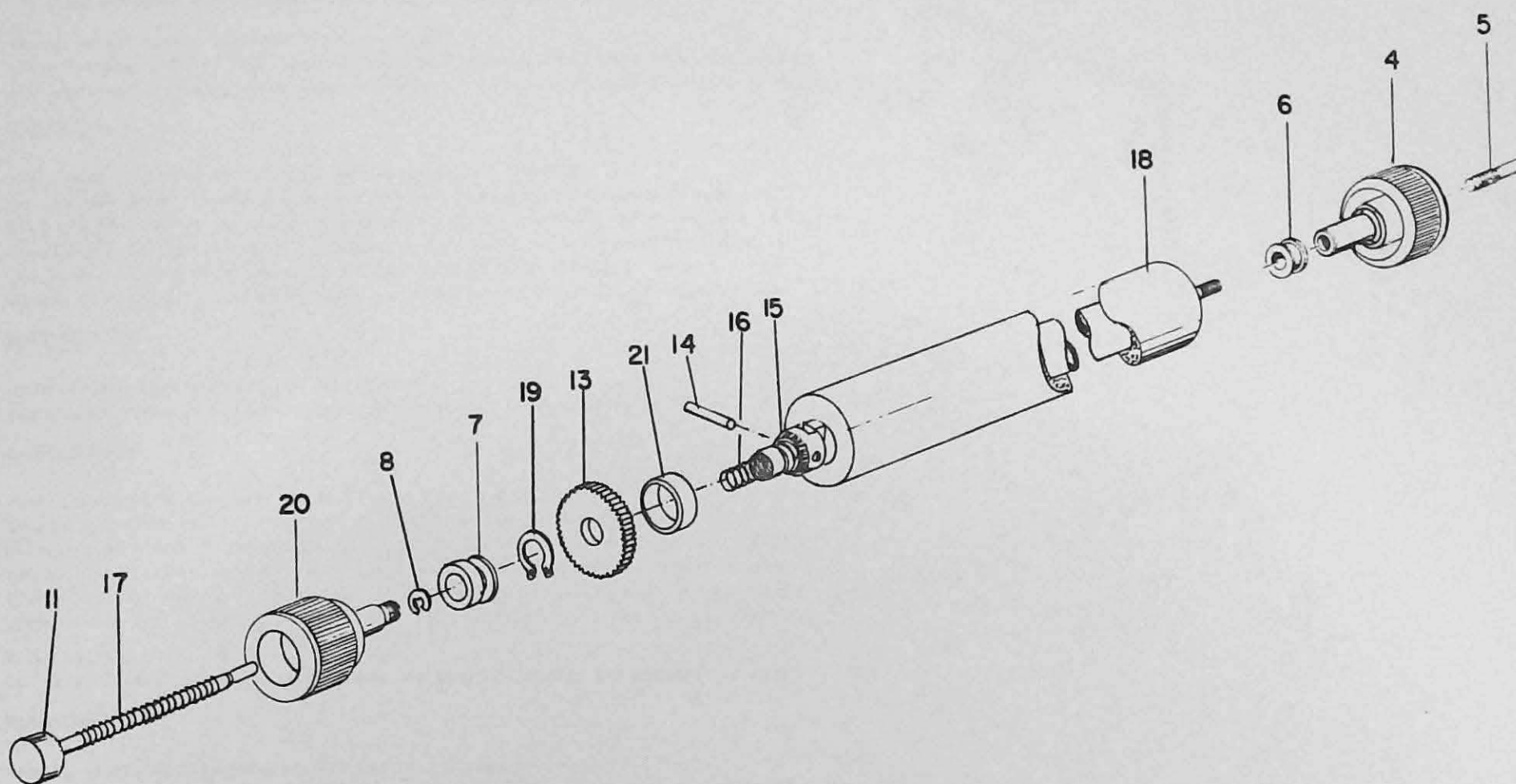
RELEASE THE KEYLEVER (1). THE FORWARD PORTION WILL MOVE UP PIVOTING ON STUD (2), ALLOWING LINK (3) TO RISE AS BELLCRANK (4) PIVOTS COUNTERCLOCKWISE ON STUD (5), THROUGH THE RESTORING ACTION OF SPRING (6). EXTENSION (A) MOVES TO THE FRONT, ALLOWING BAIL (7) TO SWING TO THE FRONT, PIVOTING ON STUDS (8) AND (9) UNTIL THE BAIL (7) RETURNS TO NORMAL. THE KEY RELEASE LEVER HAS RETURNED TO NORMAL MODE AFTER CLEARING JAMMED TYPE BARS WITHOUT SOILING THE TYPIST'S FINGERS.

#### ADJUSTMENTS :

TYPE BAR BAIL (7) MUST CLEAR TYPE BAR BELLCRANK (10) WHEN TYPE BARS ARE HELD AGAINST PLATEN AND MUST NOT CONTACT THE RIBBON REVERSE SHAFT (11) WHEN TYPE BARS ARE AT NORMAL (REST) POSITION.

FORM BELLCRANK (4) AT POINT (A) TO OBTAIN THIS CONDITION.





## 5 PLATEN

### PLATEN

TO OBTAIN GOOD LINE SPACING, THE PLATEN (18) MUST BE ACCEPTABLE. A GLAZED, SHINY PLATEN OR FEED ROLL WILL NOT FEED THE PAPER PROPERLY. TO REMOVE THE GLAZE, USE A LIQUID SUCH AS METHYL ALCOHOL OR DENATURED ALCOHOL.

### PLATEN DENSITY

THE PLATEN DENSITY IS DESIGNED TO IMPROVE PRINTWORK, A 2CX SOFT PLATEN IS FOR ONE TO SIX COPIES. ALL MACHINES SUPPLIED FROM THE PLANT HAVE 2CX PLATENS UNLESS SPECIFIED OTHERWISE. A 3C PLATEN IS MEDIUM HARD AND USED FOR UP TO TEN COPIES. 3C PLATENS ARE ESPECIALLY RECOMMENDED FOR CUTTING STENCILS, MASTERS AND PLATE WORK. 4C PLATENS ARE HIGH HARD AND NOT FREQUENTLY USED.

### VARIABLE LINE SPACING

THE PURPOSE OF THE VARIABLE LINE SPACING PLUNGER IS TO CHANGE THE DISTANCE BETWEEN THE WRITING LINES. THE PLATEN RATCHET (13) HAS TEETH ON THE INSIDE AND THE OUTSIDE. THE LINE SPACE PAWL CONTACTS THE OUTSIDE TEETH AND THE CLUTCH PLATE (15) CONTACTS THE INSIDE TEETH. WHEN THE PLUNGER (11) IS USED, THE DISTANCE BETWEEN THE WRITING LINE WILL BE CHANGED.

### NORMAL MODE :

SPRING (16) APPLIES LOAD AGAINST CLUTCH PLATE PIN, (14) THAT IS ATTACHED TO CLUTCH PLATE (15) FORCING THE CLUTCH PLATE TEETH TO ENGAGE THE INSIDE TEETH OF THE PLATEN RATCHET (13). SPRING (17) IS HOLDING PLUNGER (11) AWAY FROM THE CLUTCH PLATE PIN.

WHEN PLUNGER (11) IS PUSHED IN, PLUNGER (11) WILL CONTACT THE CLUTCH PLATE (14), CONTACTING THE SPRING (16) AND PUSH THE CLUTCH PLATE (15) OUT OF ENGAGEMENT WITH THE PLATEN RATCHET (13). NOW THE PLATEN (18) CAN BE TURNED A PORTION OF A SPACE TO ADJUST THE WRITING LINE.

### OPERATION MODE :

PLUNGER (11) IS IN, CLUTCH PLATE TEETH (15) IS DISENGAGED FROM THE INTERNAL TEETH OF RATCHET (13).

### RESTORING ACTION :

RELEASE THE PLUNGER (11), SPRING (17) WILL RESTORE THE PLUNGER (11) TO NORMAL. SPRING (16) WILL RESTORE, FORCING CLUTCH PLATE (15) TO ENGAGE THE INSIDE TEETH OF THE PLATEN RATCHET (13).

### ADJUSTMENTS

1. LOOSEN RIGHT PLATEN KNOB (4). TURN LOCKING SCREW (5) OUT APPROXIMATELY THREE TURNS.
2. ADJUST KNOB (4) TO ELIMINATE END PLAY OF PLATEN. TIGHTEN LOCKING SCREW (5) TO RETAIN ADJUSTMENT. PLATEN MUST TURN FREELY IN BUSHING (6) AND (7).
3. CHECK UP AND DOWN PLAY IN THE PLATEN BY LIFTING ON THE RIGHT AND LEFT PLATEN KNOBS, LIFT HINGES (21) AND (9) AND LOOSEN SCREWS (31) AND THEN ADJUST ECCENTRIC (30) TO ELIMINATE ANY UP AND DOWN MOVEMENT OF PLATEN. (SEE PLATE 12).

THE PLATEN MUST STILL BE FREE TO TURN WITHIN THE BUSHING AND BUSHING MUST NOT TURN WITHIN THE CARRIAGE ENDS. TIGHTEN SCREWS (31).

**NOTE :** LOCKING LEVER LEFT (32) AND RIGHT (33) MUST BE AT REST AGAINST THE CARRIAGE END COVERS, (19) AND (8) WHEN DOING THIS ADJUSTMENT.

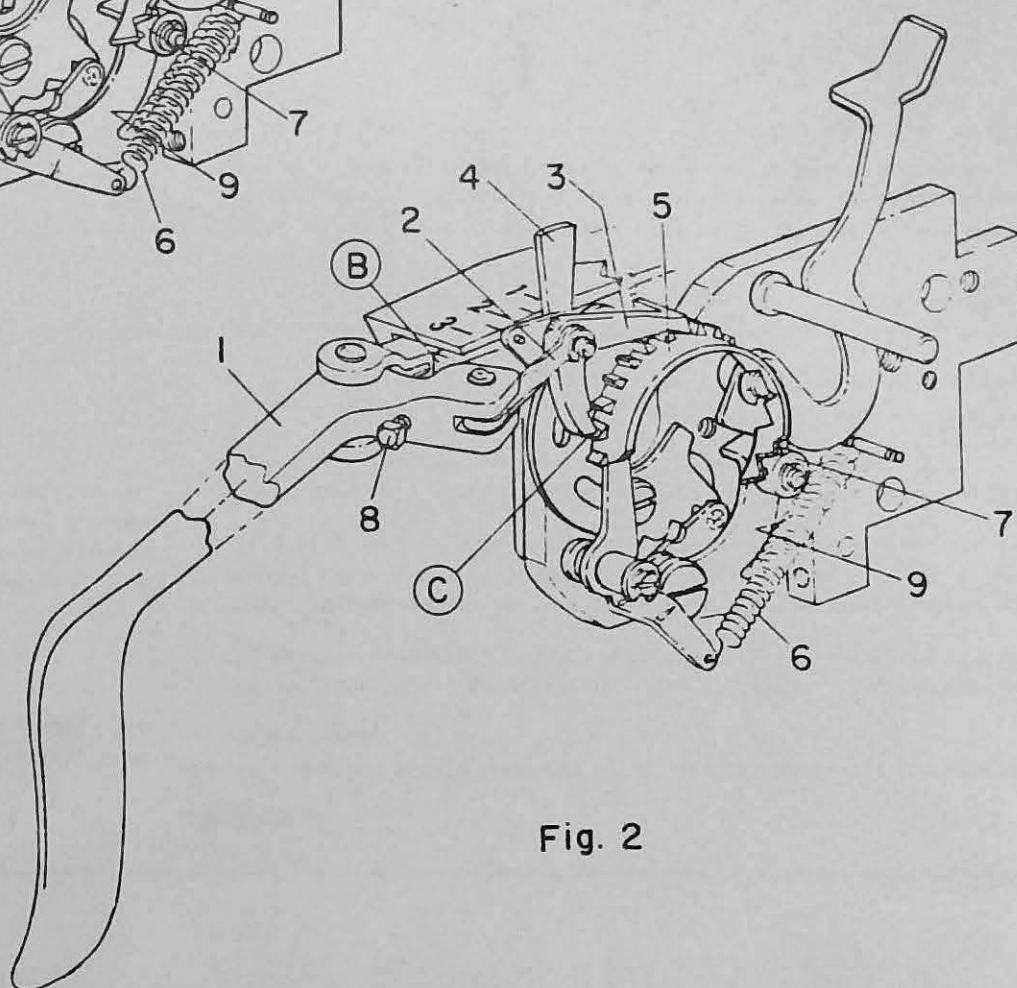
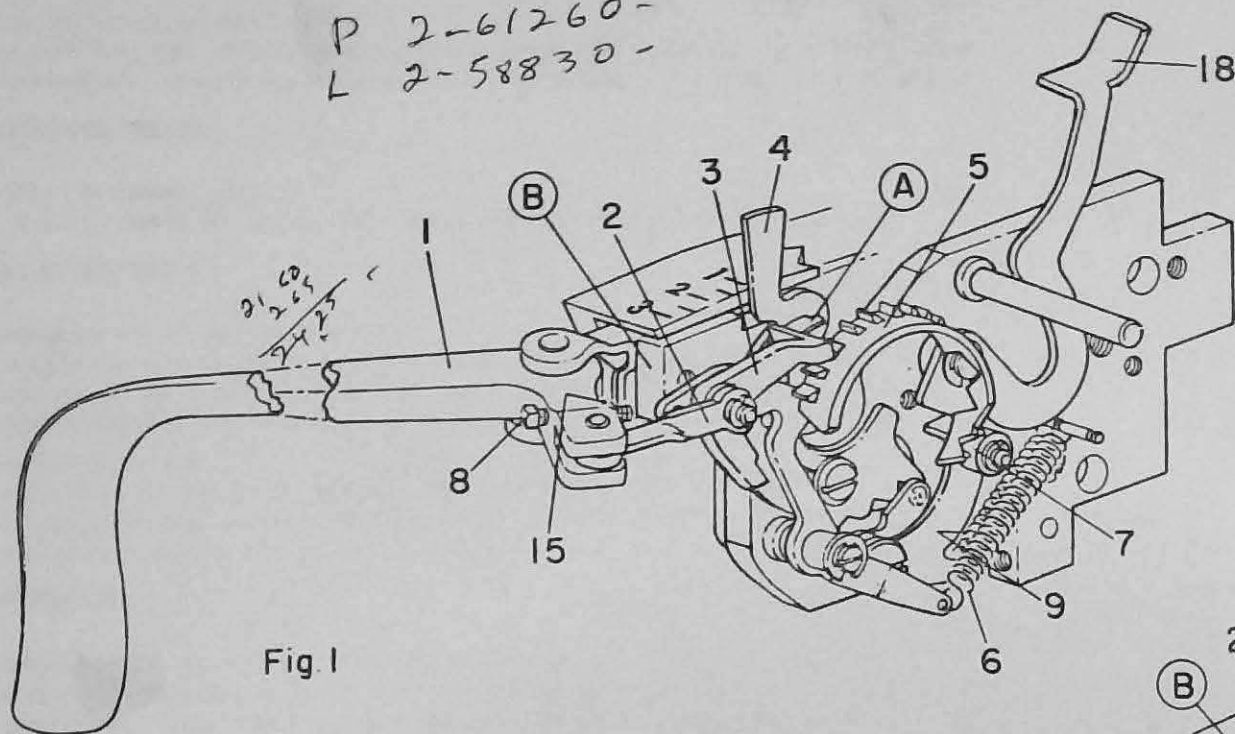
4. VARIABLE LINE SPACE PLUNGER (11) MUST HAVE A SLIGHT AMOUNT OF END PLAY WHEN AT NORMAL POSITION TO PERMIT CLUTCH PLATE (15) TO ENGAGE INTERNAL TEETH OF PLATEN RATCHET (13) SECURELY.

WHEN VARIABLE LINE SPACE PLUNGER (11) IS PRESSED IN, CLUTCH PLATE (15) MUST RELEASE PLATEN RATCHET (13), PERMITTING PLATEN TO BE TURNED TO ANY DESIRED POSITION. REPLACE PLUNGER (11) IF NECESSARY TO OBTAIN END PLAY.

PLATEN RATCHET MUST BE HELD SECURELY BY CLUTCH PLATE (15) TO OBTAIN CORRECT LINE SPACING.



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## 6 LINE SPACING

### LINE SPACING

THE PURPOSE OF THE LINE SPACING MECHANISM IS TO MOVE THE PLATEN AND PAPER TO A NEW WRITING LINE.

#### NORMAL MODE :

FIGURE (1) - THE LINE SPACE LEVER (1) IS HELD TO THE LEFT BY SPRING (6), PAWL (3) IS RESTING ON LEDGE (A) OF THE LINE SPACE REGULATOR (4), THEREFORE, PAWL (3) / DOES NOT ENGAGE THE OUTSIDE TEETH OF PLATEN RATCHET (5). DETENT ROLL (7) IS HOLDING THE RATCHET (5) FROM TURNING.

OPERATE LINE SPACE LEVER (1) TO THE RIGHT, CONNECTING LINK (2) WILL MOVE THE LINE SPACE PAWL (3) TO THE REAR ALLOWING THE PAWL TO DROP OFF LEDGE (A) OF THE REGULATOR (4) AND ENGAGE THE TOOTH OF RATCHET (5) YIELDING SPRING (6). RATCHET (5) WILL MOVE CLOCKWISE AND DETENT ROLL (7) WILL MOVE FROM BETWEEN ONE SET OF TEETH ON RATCHET (5) TO ANOTHER AND THE PLATEN WILL ROTATE ONE, TWO OR THREE / PLUS HALF SPACES DEPENDING UPON THE POSITION OF REGULATOR (4).

FIGURE (2) - TO PREVENT THE PLATEN FROM TURNING MORE THAN ONE SPACE WHEN THE REGULATOR (4) IS SET AT NUMBER ONE, THE FRONT PORTION (C) OF LINE SPACE PAWL (3) WILL LIMIT BETWEEN TWO LOWER TEETH OF THE RATCHET (5). LINE SPACE LEVER STOP SCREW (8) CONTACTING THE LEFT CARRIAGE END AT POINT (B) PREVENTS FURTHER MOVEMENT OF THE LINE SPACE LEVER (1).

#### OPERATED MODE :

THE LINE SPACE LEVER (1) IS OPERATED TO THE RIGHT; STOP SCREW (8) IS CONTACTING THE CARRIAGE END AT (B) LINE SPACE PAWL (3) HAS ENGAGED THE TEETH AND MOVED RATCHET (5) CLOCKWISE FROM ONE SET OF TEETH TO ANOTHER WITH PORTION (C) PREVENTING FURTHER MOVEMENT. DETENT ROLL (7) HAS BEEN CAMMED DOWN BY A TOOTH OF THE PLATEN RATCHET (5) AND IS NOW BETWEEN TWO TEETH OF THE RATCHET HOLDING THE PLATEN IN A STATIONARY POSITION BY THE TENSION OF DETENT ROLL SPRING (9).

#### RESTORING ACTION :

FIGURE (1) - RELEASE LINE SPACE LEVER (1) AND SPRING (6) WILL RESTORE PAWL (3) TO LEDGE (A) OF REGULATOR (4), AT THE SAME TIME, LINK (2) WILL RESTORE LINE SPACE LEVER (1) TO NORMAL MODE WITH ROLL (7) HOLDING THE PLATEN IN A STATIONARY POSITION.

PLATE 7, FIGURE (1).

WHEN THE LINE SPACE REGULATOR (4) IS SET AT NUMBER THREE POSITION (D), THE PAWL

(3) WILL DROP OFF THE LEDGE OF THE REGULATOR (4) SOONER AND WILL ROTATE THE PLATEN RATCHET (5) THREE SPACES PLUS HALF SPACE, CAUSING SIX TEETH TO PASS THE DETENT ROLL (7). THE REGULATOR (4) IS HELD AT NUMBER THREE POSITION BY DETENT (10). THE LINE SPACE REGULATOR (4) DETERMINES THE NUMBER OF SPACES THE PLATEN WILL MOVE.

#### ADJUSTMENTS :

(FIGURE 1). LOOSEN LOCK NUT (15) AND TURN LINE SPACE LEVER STOP SCREW (8) OUT UNTIL IT DOES NOT CONTACT CARRIAGE ENDS AT POINT (B), WHEN LEVER (1) IS OPERATED TO THE RIGHT.

(PLATE 7). RAISE PAPER BAIL (1). PULL FEED ROLL RELEASE LEVER (6) FORWARD.

(PLATE 6). MOVE LINE SPACE REGULATOR (4) TO SINGLE SPACE POSITION.

(FIGURE 2). MOVE LINE SPACE LEVER (1) TO RIGHT SLOWLY. OBSERVE IF LINE SPACE PAWL (3) ENGAGES TOOTH OF PLATEN RATCHET (5) AND, AS LINE SPACE LEVER CONTINUES TO RIGHT, LOWER FRONT PORTION (C) OF LINE SPACE PAWL (3) ALSO ENGAGES A TOOTH OF RATCHET (5).

1. (PLATE 7). (FIGURE 2). LOOSEN NUT (16). ADJUST LINE SPACE RATCHET DETENT ARM ECCENTRIC SCREW (13) UNTIL ROLL (7) ON LINE SPACE RATCHET DETENT ARM (11) WILL BE RESTING BETWEEN TWO TEETH OF PLATEN RATCHET (5). TIGHTEN NUT (16). PLATEN MUST NOT MOVE WHEN LINE SPACE LEVER (1) IS RELEASED.

HOLD LINE SPACE LEVER TO RIGHT AS FAR AS POSSIBLE AND TRY TURNING PLATEN TO FRONT OR REAR. OBSERVE THAT RATCHET IS LOCKED SECURITY IN PLACE.

2. (FIGURE 1). MOVE LINE LEVER (1) TO RIGHT UNTIL PLATEN RATCHET (5) IS LOCKED IN POSITION BY LINE SPACE PAWL (3) AND LINE SPACE RATCHET ROLL (7) ON DETENT ARM (11), IS SEATED BETWEEN TWO TEETH OF THE PLATEN RATCHET (5). ADJUST LINE SPACE LEVER STOP SCREW (8) TO JUST TOUCH LEFT CARRIAGE END AT (B). TIGHTEN NUT (15).

3. OPERATE LINE SPACE LEVER TO ITS LIMIT AND RELEASE SLOWLY, OBSERVING IF / PLATEN "CREEPS" TO FRONT OR REAR. IF IT DOES, RE-ADJUST LINE SPACE RATCHET DETENT ARM ECCENTRIC SCREW (13), (FIGURE 2).



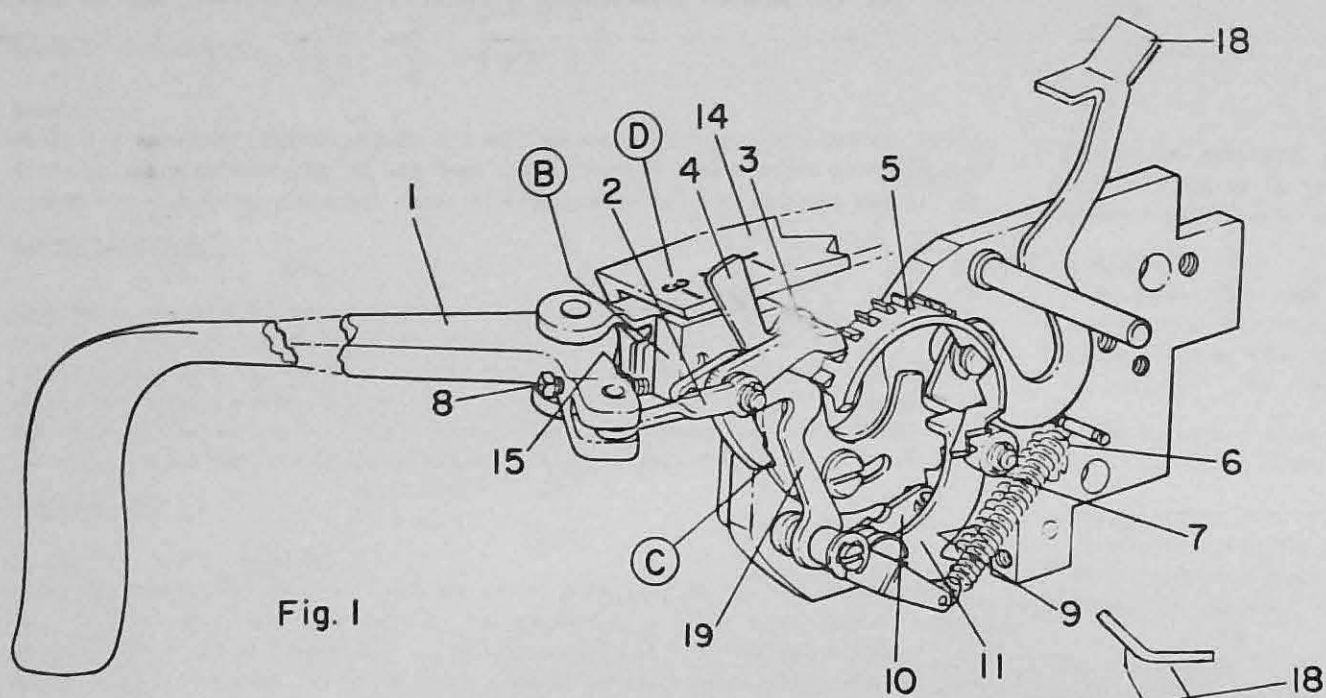


Fig. 1

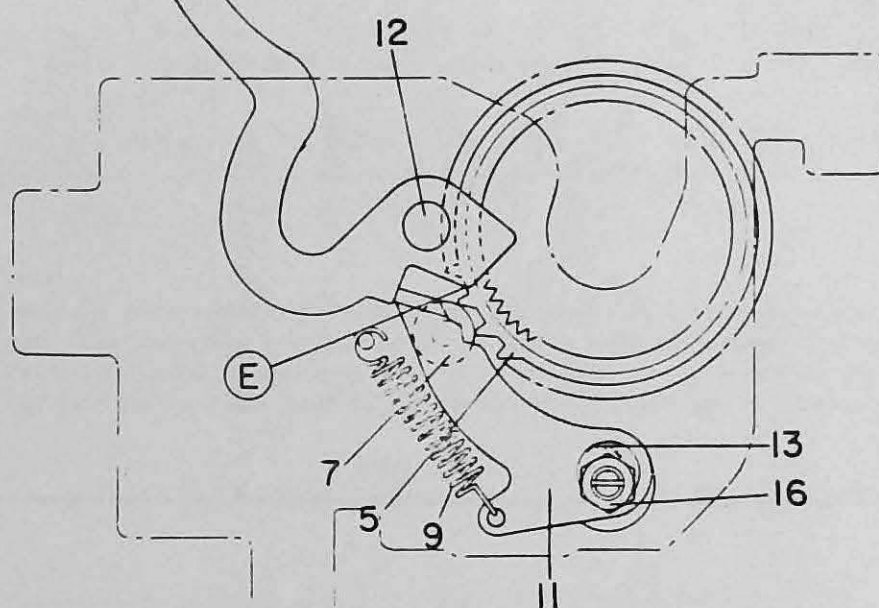


Fig. 2  
LEFT SIDE VIEW

## 7 LINE SPACE RELEASE

### LINE SPACE DETENT RELEASE LEVER

THE PURPOSE OF THE LINE SPACE DETENT RELEASE LEVER (18) IS FOR SMOOTH, QUIET PAPER INSERTION AND IS ALSO USED AS A LINE FINDER. THIS WILL ALLOW THE TYPIST TO TYPE BETWEEN LINES AND THEN RETURN TO THE ORIGINAL TYPING POSITION LINE.

#### NORMAL MODE :

RELEASE LEVER (18) IS TO THE LEFT, DETENT ROLL (7) IS HELD IN THE DWELL BETWEEN TWO TEETH OF RATCHET (5) BY SPRING (9).

MOVE DETENT RELEASE LEVER (18) TO THE RIGHT. IT PIVOTS ON STUD (12) SO THE LOWER PORTION (E) WILL CONTACT AND MOVE ARM (11) DOWN, YIELDING SPRING (9) TO DISENGAGE ROLL (7) FROM BETWEEN THE TWO TEETH OF RATCHET (5), ALLOWING THE PLATEN TO TURN FREELY.

#### OPERATED MODE :

LEVER (18) IS FORWARD HOLDING ROLL (7) AWAY FROM RATCHET (5).

#### RESTORING ACTION :

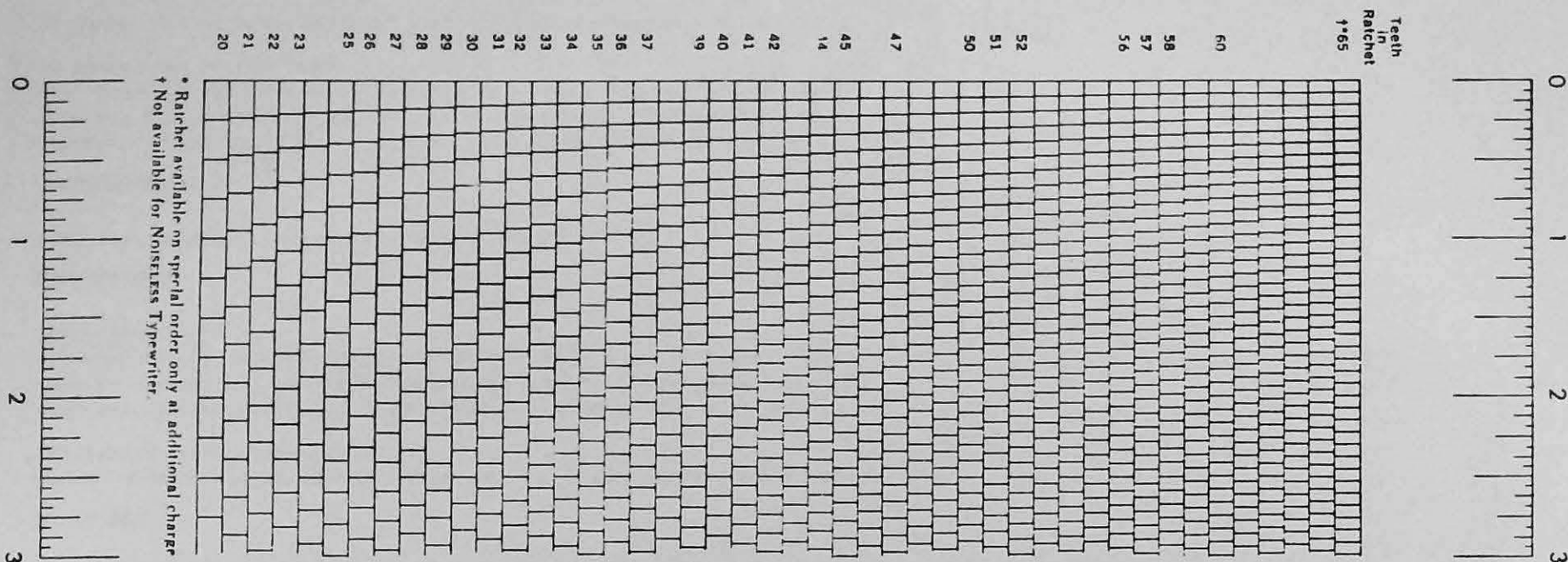
RETURN LEVER (18) TO THE LEFT. THE LOWER CAMMING PORTION (E) OF LEVER (18) WILL ALLOW ARM (11) TO MOVE, FORCING ROLL (7) TO RETURN BETWEEN TWO TEETH OF RATCHET (5) THROUGH THE RESTORING ACTION OF SPRING (9). THE PLATEN CAN NOW BE TURNED TO THE ORIGINAL WRITING LINE.

TO SUM UP THE LINE SPACE OPERATION, THERE ARE THREE WAYS OF TURN IN THE PLATEN:

1. WITH THE VARIABLE LINE SPACE PLUNGER, WHEREBY THE PLATEN TURNS BUT THE RATCHET REMAINS STATIONARY. THIS WILL ALLOW THE OPERATOR TO CHANGE THE DISTANCE BETWEEN LINES TO LOCATE THE PLATEN TO ANY LINE DESIRED.
2. THE LINE SPACE DETENT RELEASE LEVER WILL ALLOW THE OPERATOR TO TYPE BETWEEN THE LINES AND THEN RETURN TO THE ORIGINAL WRITING LINE.
3. THE ORDINARY METHOD OF MOVING THE PLATEN IS BY THE LINE SPACE LEVER AS ONE UNIT FOR SINGLE, DOUBLE OR TRIPLE SPACING PLUS HALF SPACING AS DESIRED.



PLACE RULED FORM ON THE TOP OF THE CHART AND MOVE THE FORM TO THE RIGHT UNTIL THE LINES ON THE FORM MATCH LINES ON THE CHART. THE NUMBER AT TOP OF COLUMN WILL INDICATE THE NUMBER OF TEETH IN THE RATCHET FOR DESIRED SPACING. FOR NECESSARY CONVERSION PARTS REFER TO THEORY INDEX. COLUMNS WITH BLANK SPACES ARE NOT AVAILABLE.



## 8 SPECIAL LINE SPACING

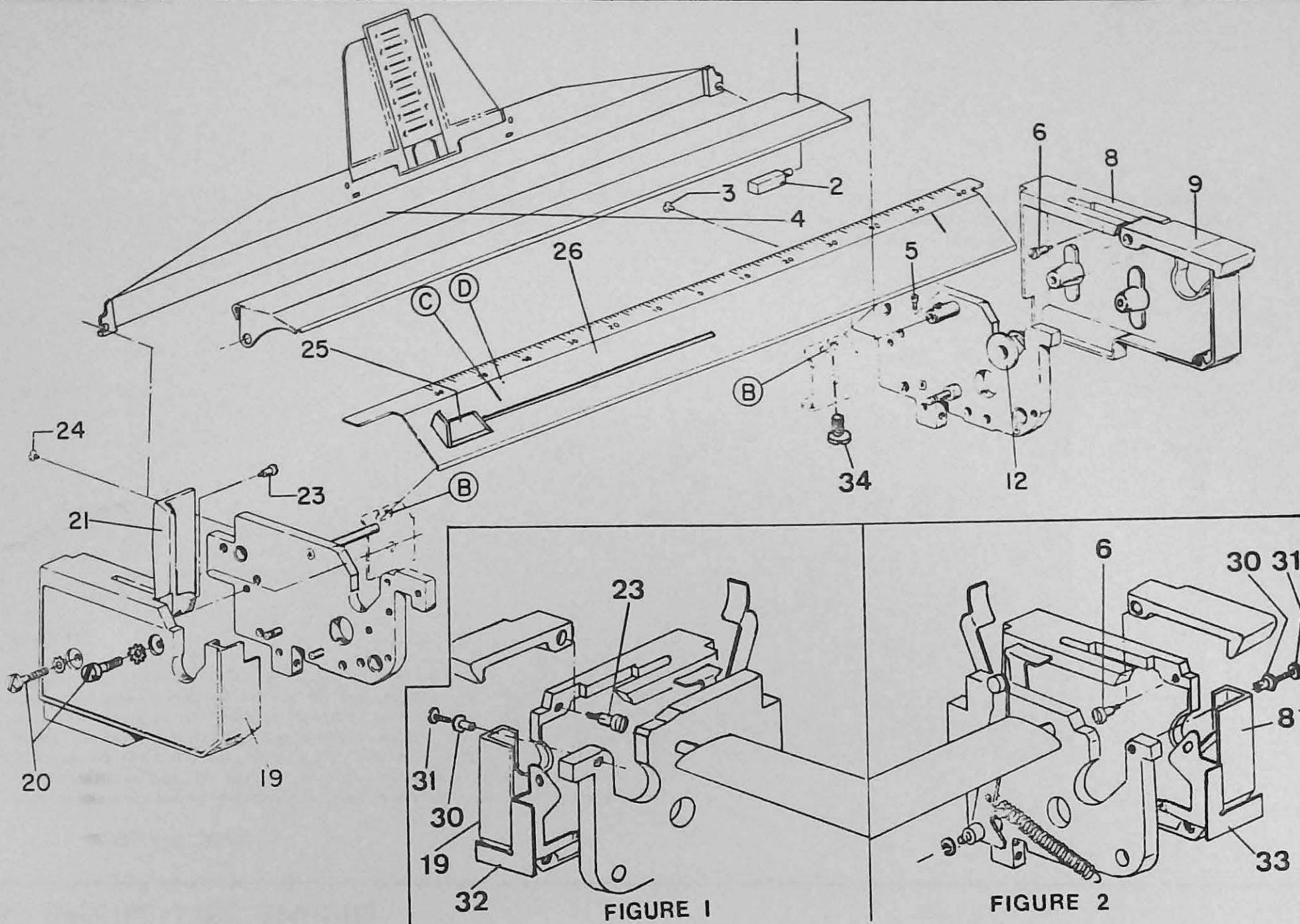
### SPECIAL LINE SPACING

PROCURE A RULED FORM THE CUSTOMER IS USING. PLACE THE FORM ON THE EXTREME LEFT OF THE CHART AND MOVE THE FORM TO THE RIGHT. AS FORM IS MOVED TO THE RIGHT, THE LINES ON THE CHART WILL LINE UP WITH THE LINES ON THE FORM. THE NUMBER AT THE / TOP OF THE CHART WILL INDICATE THE NUMBER OF OUTSIDE TEETH IN THE PLATEN RATCHET. A 30 TOOTH RATCHET WILL PRODUCE 6 VERTICAL LINES PER INCH. WE CAN SUPPLY PRACTI CALLY ANY TYPE OF LINE SPACING THE CUSTOMER DESIRES. TO CHANGE VERTICAL LINE SPACING ON A STANDARD TYPEWRITER, IT IS NECESSARY TO CHANGE FIVE PARTS:

PLATE 5B

1. PLATEN RATCHET (5)
2. LINE SPACE PAWL ARM (19) COMPLETE
3. LINE SPACE REGULATOR (4)
4. LINE SPACE RATCHET DETENT ARM (11) AND ROLL (7)
5. LINE SPACE GAUGE (14).





## 9 CARRIAGE

### CARRIAGE

STANDARD TYPEWRITERS ARE MANUFACTURED IN FIVE CARRIAGE LENGTHS. 11", 13", 15", 20" AND 27", THE MOST COMMON OF THESE BEING THE 11", 13" AND 15". MACHINES WITH 20" AND 27" CARRIAGES ARE PRIMARILY USED FOR TYPING STATISTICAL OR OTHER LARGE FORMS.

### ERASING PLATE

THE CARRIAGE IS EQUIPPED WITH A CONVENIENT ERASING PLATE (1) RUNNING THE FULL LENGTH OF THE PLATEN, PROVIDING A FIRM SUPPORT FOR MAKING ERASURES. THE ERASING PLATE ALSO PREVENTS TISSUE SHEETS AND CARBON PAPER FROM WRAPPING AROUND PLATEN WHEN THE CARBON PACK IS ROLLED BACK AND FORTH WHEN MAKING CORRECTIONS. THIS FEATURE IS AVAILABLE ON ALL CARRIAGE LENGTH.

### ADJUSTMENT

LOOSEN SCREW (5) AND POSITION FRONT EDGE OF ERASING PLATE (1) TO CLEAR THE PLATEN BY .020. TIGHTEN SCREW (5). THIS IS TO PREVENT ERASING PLATE FROM CONTACTING PLATEN AS PLATEN IS BEING TURNED

### PAPER TABLE

PAPER TABLE (26) IS REQUIRED WITH A PERFECT POSITIONING ZERO CENTER SCALE TO ASSIST IN CENTERING HEADINGS. THEY ARE ALSO USED IN SETTING MARGIN STOPS. FOR PERFECT MARGIN SETTING, MOVE THE TWO MARGIN STOPS TO THE SAME NUMBER ON EITHER SIDE OF ZERO. THE PAPER TABLE IS ALSO EQUIPPED WITH PAPER SLIDE GUIDE (25) TO CORRECTLY POSITION THE PAPER IN THE TYPEWRITER.

THE TWO VERTICAL WHITE LINES (C) ON THE PAPER TABLE (26) ARE TO POSITION 8-1/2" TYPING PAPER. THE WHITE DOTS (D) ARE TO ALIGN AN 8" SHEET OF PAPER.

### ADJUSTMENTS :

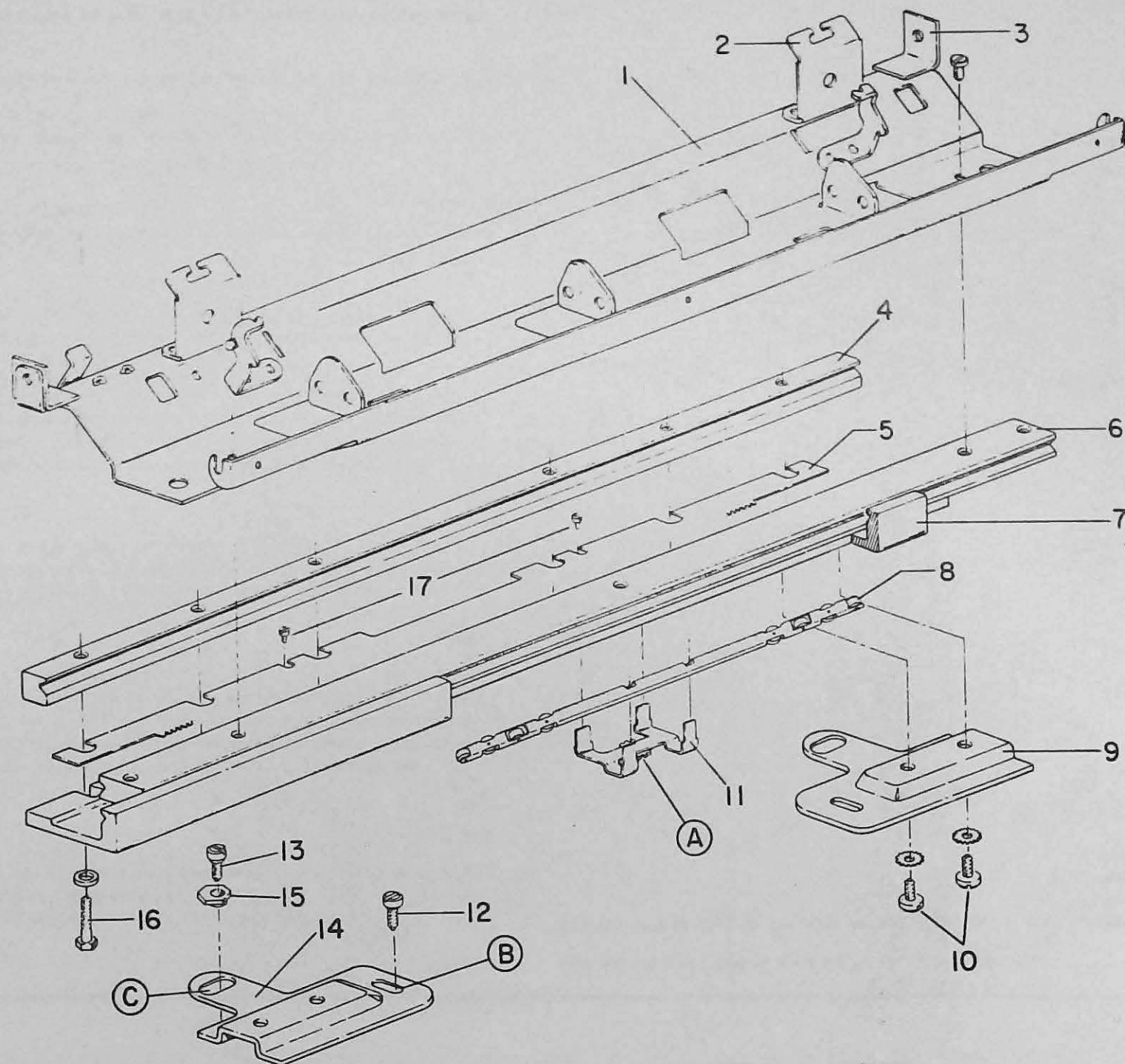
NOTE. MARGIN RACK AND CARRIAGE SCALE ADJUSTMENTS MUST BE COMPLETED BEFORE PROCEEDING WITH THIS ADJUSTMENT.

1. LOOSEN TWO SCREWS (34) ON THE BACK OF THE PAPER TABLE (26).
2. MOVE THE CARRIAGE TO THE CENTER, SO CARRIAGE SCALE ZERO ON SCALE (A) IS IN LINE WITH THE POINTER IN THE TYPE GUIDE, (PLATE 11).
3. SET LEFT MARGIN STOP (23) IN CONTACT WITH MARGIN STOP AND RELEASE BLADE (5) (PLATE 15).
4. ADJUST PAPER TABLE SCALE (26) SO ZERO CALIBRATION ALIGNS WITH VERTICAL WHITE

LINE ON THE LEFT MARGIN STOP (23). (PLATES 15 AND 9).

5. TIGHTEN SCREWS (34) ON THE BACK OF THE PAPER TABLE (26), (PLATE 9).





## 10 CARRIAGE RAILS

### CARRIAGE RAILS

CARRIAGE RAIL (6) IS MOUNTED BETWEEN CARRIAGE RAIL ASSEMBLY (7) AND REAR ADJUSTABLE RAIL (4) AND TRAVELS ON CARRIAGE ROLL RETAINERS (8), WHICH ARE EQUIPPED WITH ROLLER BEARING TO ASSURE A SMOOTH TRAVEL OF THE CARRIAGE WHEN TYPING OR RETURNING THE CARRIAGE.

GEAR (A) OF CARRIAGE ROLL RETAINER BRACKET (11) MESHES BETWEEN CARRIAGE ROLL RETAINER ADJUSTABLE RACK (5) AND CARRIAGE ROLL RETAINER FIXED RACK, ATTACHED TO UNDERSIDE OF CARRIAGE ROLL RAIL (6) TO OBTAIN CARRIAGE ROLL RETAINER (8) IN PROPER RELATION WITH CARRIAGE RAILS DURING ITS TRAVEL.

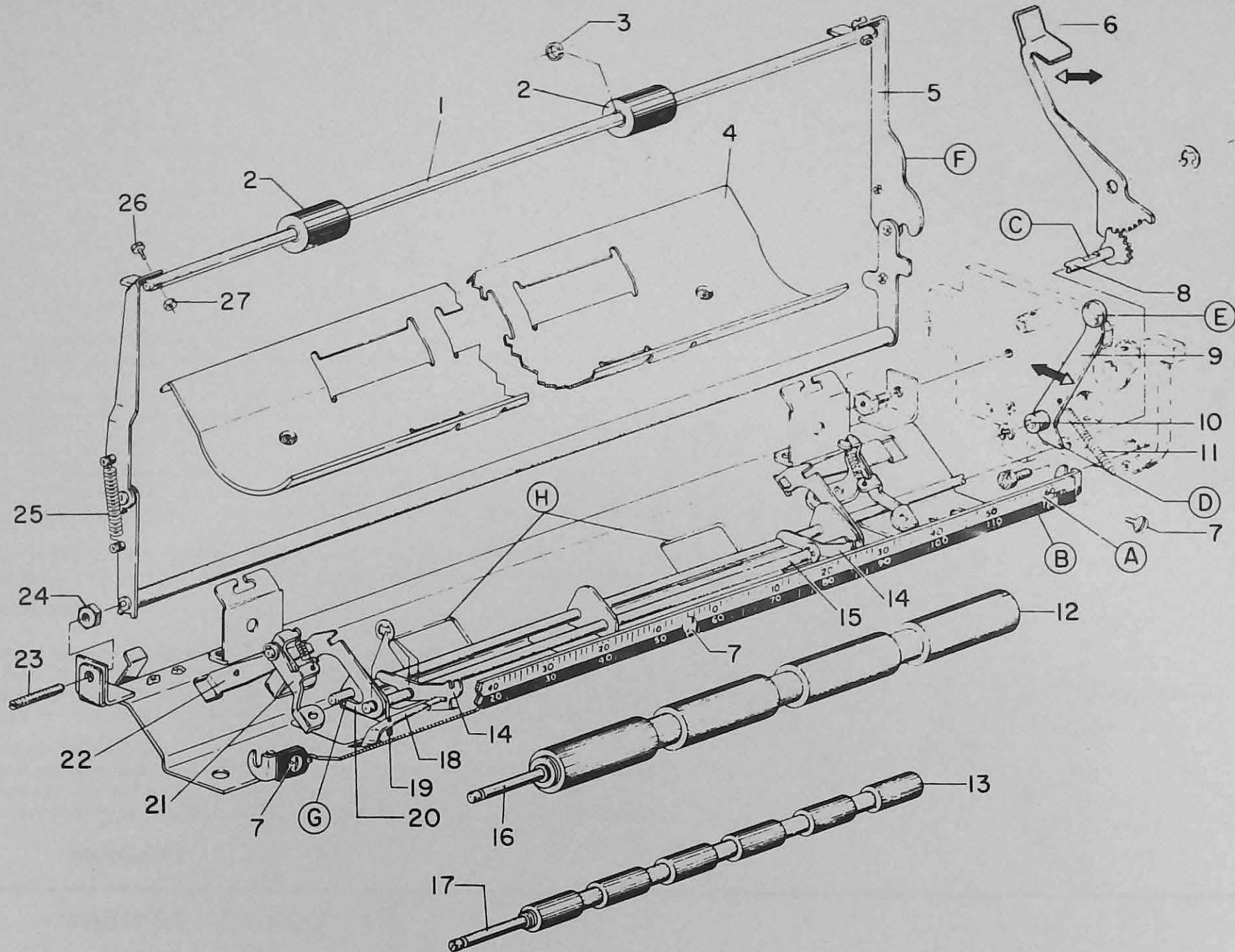
### ADJUSTMENTS

TO PERFORM THE CARRIAGE RAIL ADJUSTMENT, THE CARRIAGE SHOULD BE REMOVED FROM THE MACHINE, (REFER TO CARRIAGE REMOVAL AND INSTALLATION PROCEDURE).

1. LOOSEN SIX CARRIAGE RAIL CLAMP SCREWS (16). POSITION CARRIAGE ROLL RETAINERS (8) AND BRACKET (11) SO THEY ARE CENTERED IN CARRIAGE RAIL ASSEMBLY (7) AND ARE SAFELY WITHIN CARRIAGE RAILS WHEN CARRIAGE IS MOVED TO THE EXTREME RIGHT OR LEFT.
2. ADJUST REAR CARRIAGE RAIL (4) TO ELIMINATE PLAY OF CARRIAGE ROLL RAIL (6) WITHIN CARRIAGE RAIL ASSEMBLY (7). TIGHTEN SCREWS (16).

CARRIAGE MUST BE FREE FULL LENGTH OF WRITING LINE YET MUST HAVE NO NOTICEABLE PLAY IN CARRIAGE RAIL ASSEMBLY (7).





## II CARRIAGE FEED ROLLS

### PAPER BAIL

THE PAPER BAIL (1) IS THE KEY TO PERFECTLY BALANCED LETTERS AND HEADINGS. IT IS EQUIPPED WITH A PERFECT POSITIONING ZERO CENTER SCALE. THE PAPER BAIL ROLLS (2) ROTATE ON PAPER BAIL (1), PAPER BAIL SPRING (3) LOCATED IN A RECESS ON THE INSIDE DIAMETER OF PAPER BAIL ROLLS (2) HOLD THE BAIL ROLLS (2) IN POSITION ON THE BAIL SCALE (1). BAIL ROLLS (2) HOLD THE PAPER TO THE CURVATURE OF THE PLATEN ALLOWING PRINTED CHARACTERS TO BECOME MORE READABLE.

### ADJUSTMENTS

1. MOVE THE CARRIAGE TO THE CENTER SO ZERO (WHITE AND RED) OF THE CARRIAGE SCALE (A) IS IN LINE WITH THE POINTER IN THE TYPE GUIDE. LOOSEN NUTS (27) AND SCREWS (26) AND ADJUST THE PAPER BAIL SCALE (1) SO THAT ZERO WILL ALIGN WITH THE ZERO ON CARRIAGE SCALE (A).
2. FORM PAPER BAIL ARMS (5) RIGHT AND LEFT IF NECESSARY TO OBTAIN EQUAL PRESSURE OF BAIL ROLLS (2) AGAINST THE PLATEN.

**NOTE:** TO CHECK ALIGNMENT OF ZEROS OF CARRIAGE SCALE WITH PAPER BAIL INSERT A SHEET OF PAPER IN MACHINE, TYPE A CAPITAL LETTER "I" WHEN CARRIAGE IS AT ZERO ADVANCE PAPER AND CHECK THE PRINTED LETTER "I" WITH ZERO ON PAPER BAIL SCALE.

### PAPER TROUGH

THE PAPER TROUGH (4) SERVES TO GUIDE THE PAPER FROM THE REAR FEED ROLLS (13). THE PAPER PAN IS SUPPORTED IN THE CARRIAGE BY BRACKETS (21) RIGHT AND LEFT.

### CARRIAGE SCALES

THE CARRIAGE SCALE IS EQUIPPED WITH BOTH A ZERO CENTER SCALE, WHITE OR RED (A) AND A SCALE BEGINNING WITH ZERO ON THE LEFT, BLACK & WHITE (B). THEREFORE, IT IS POSSIBLE TO COUNT SPACES FROM THE CENTER IN EITHER DIRECTION OF THE TYPING PAGE OR FROM LEFT TO RIGHT, AS DESIRED.

### ADJUSTMENTS

1. MOVE THE CARRIAGE TO EXTREME RIGHT. LOOSEN THREE SCREWS (7) AND ADJUST SCALE (B) SO ZERO WILL ALIGN WITH POINTER IN THE TYPE GUIDE. TIGHTEN SCREWS (7).

### FEED ROLL RELEASE LEVER

THE PURPOSE OF THE RELEASE LEVER (6) IS TO DISENGAGE FRONT AND REAR FEED ROLLS AND AT THE SAME TIME, RELEASE THE PAPER BAIL (1). THIS PERMIT THE OPERATOR TO

STRAIGHTEN OR REMOVE THE PAPER EASILY.

### NORMAL MODE :

LEVER (6) IS TO THE REAR; BAIL ROLLS (2) ARE AGAINST THE PLATEN, FEED ROLLS (12) AND (13) ARE HELD AGAINST THE PLATEN BY TENSION SPRINGS (18) AND (22).

MOVE THE UPPER PORTION OF THE FEED ROLL RELEASE LEVER, (6) TO THE FRONT OF THE MACHINE AND THE LOWER PORTION, WITH TEETH, WILL MOVE CLOCKWISE TO ROTATE SHAFT (8) COUNTERCLOCKWISE BY ITS ATTACHED GEAR. FLAT (C) WILL CONTACT POINT (D) MOVING ARM (9) COUNTERCLOCKWISE, PIVOTING ON STUD (10) YIELDING SPRING (11). AS ARM, (9) MOVED COUNTERCLOCKWISE, ROLL (E) MOVED TO THE HIGH POINT (F) OF ARM (5) RAISING ROLLS (2) AWAY FROM THE PLATEN. AS SHAFT (8) TURNED COUNTERCLOCKWISE, THE REAR PORTION OF ARMS (14) RAISED, PIVOTING OF SHAFT (15), LOWERING / THE FRONT PORTION TO DISENGAGE THE FRONT FEED ROLL FROM THE PLATEN, YIELDING FRONT SPRINGS (18) RIGHT AND LEFT. THE REAR FEED ROLL IS DISENGAGED FROM THE PLATEN THROUGH THE ROTATION OF SHAFT (8) AS FLAT ROCKED ARMS (20) RIGHT AND / LEFT COUNTERCLOCKWISE ON SHAFT (15) YIELDING REAR SPRING (22) RIGHT AND LEFT.

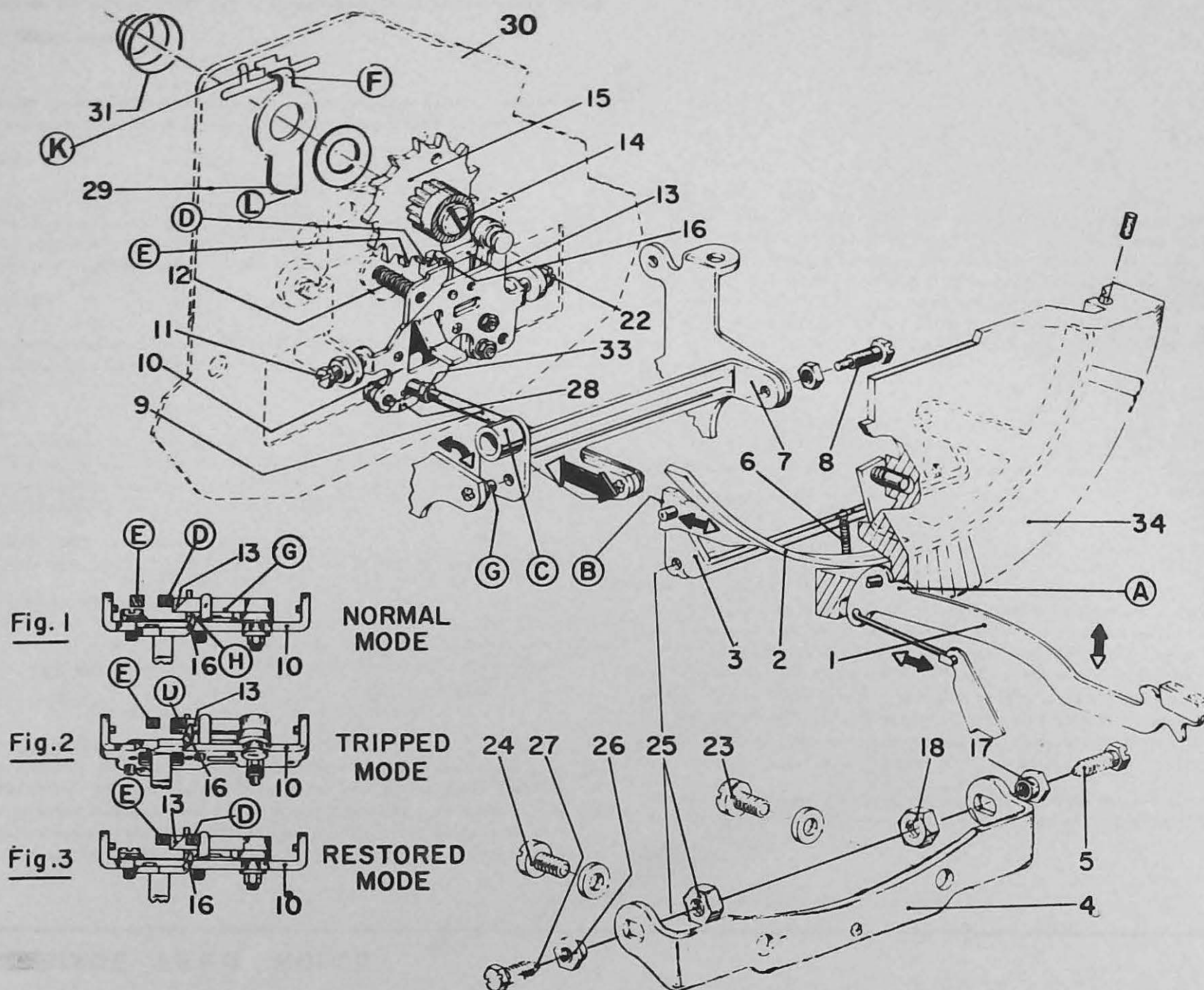
### OPERATED MODE :

FEED ROLL RELEASE LEVER (6) IS FORWARD; THE PAPER BAIL ROLL (2) HAVE RAISED AND POINT (F) OF ARM (5) IS RESTING ON ROLL (E) OF ARM (9); FEED ROLLS (12) AND (13) HAVE LOWERED AND DISENGAGED FROM THE PLATEN.

### RESTORING ACTION :

MOVE RELEASE LEVER (6) TO THE REAR AND SHAFT (8) WILL MOVE CLOCKWISE. FLAT (C) WILL ALLOW POINT (D) OF ARM (9) TO MOVE CLOCKWISE AS SPRING (11) RESTORES AND THE PAPER BAIL ROLLS (2) WILL ENGAGE THE PLATEN AS ROLL (E) RETURNS TO THE / LOWER DWELL OF ARM (5). AS SHAFT (8) ROTATES CLOCKWISE, THE REAR PORTION OF ARM (14) WILL LOWER, RETURNING FRONT FEED ROLL (13) TO THE PLATEN BY THE TENSION OF FRONT SPRINGS (18) RIGHT AND LEFT. AT THE SAME TIME, ARMS (20) RIGHT AND LEFT, WILL MOVE CLOCKWISE UNDER THE TENSION OF SPRINGS (22) SO THE REAR FEED ROLL (12) WILL ENGAGE THE PLATEN.





## 12 ESCAPEMENT - UNIVERSAL BAR

### ESCAPEMENT AND TYPE BAR UNIVERSAL BAR

THE PURPOSE OF THE ESCAPEMENT AND TYPE BAR UNIVERSAL BAR IS TO MOVE THE CARRIAGE TO THE LEFT FROM ONE TYPING POSITION TO THE NEXT IN CONJUNCTION WITH THE MAIN SPRING.

#### NORMAL MODE :

TYPE BAR (1) IS AT REST POSITION; (FIGURE 1). LOOSE DOG (13) IS ENGAGED WITH ESCAPEMENT TOOTH (D), PREVENTING THE ESCAPEMENT WHEEL FROM TURNING, THUS HOLDING THE CARRIAGE IN A STATIONARY POSITION.

AS A KEYLEVER IS DEPRESSED, TYPE BAR (1) WILL RISE. AS TYPE BAR (1) NEARS THE PLATEN, POINT (A) WILL CONTACT THE TYPE BAR UNIVERSAL BAR (2). THE UNIVERSAL BAR (2) IS ATTACHED TO OSCILLATOR (3) WHICH PIVOTS WITHIN BRACKET (4) ON PIVOT SCREWS (5) AND (27), ROCKING THE OSCILLATOR (3) COUNTERCLOCKWISE, YIELDING / SPRING (6), ALLOWING POINT (B) TO MOVE TO THE REAR AND CONTACT ROLL (C), ROCKING BAIL (7) COUNTERCLOCKWISE, PIVOTING ON SCREW (8) AND STUD (G) PULLWIRE (9), MOUNTED TO THE OPERATING BAIL (7) WILL MOVE TO THE FRONT OF THE MACHINE. PULL WIRE (9) IS ATTACHED THROUGH THE LOWER PORTION OF THE ESCAPEMENT ROCKER BODY (10) AND FASTENED ON THE REAR SIDE BY LOCKING ARM (28). THE LOWER PORTION OF THE ESCAPEMENT ROCKER BODY (10) WILL MOVE TO THE FRONT OF THE MACHINE AND THE UPPER PORTION WILL MOVE TO THE REAR, PIVOTING ON SCREWS (11) AND (22), COMPRESSING SPRING (12). LOOSE DOG (13) WILL RELEASE ESCAPEMENT WHEEL (15). CONSTANT TENSIONS IS APPLIED TO THE CARRIAGE AT ALL TIMES SO ESCAPEMENT WHEEL (15) WILL TURN COUNTERCLOCKWISE. (FIGURE 2, TRIPPED MODE). AS THE ESCAPEMENT BODY (10) ROCKED, THE LOOSE DOG (13) RELEASED ESCAPEMENT TOOTH (D), WHICH POSITIONED FIXED DOG (16) TO INTERCEPT TOOTH (D). THE ESCAPEMENT WHEEL TURNED COUNTERCLOCKWISE UNTIL TOOTH (D) CONTACTED THE FIXED DOG (16) WHICH PREVENTED FURTHER MOVEMENT OF THE ESCAPEMENT WHEEL.

#### TRIPPED MODE :

THE TYPE BAR IS AT THE PLATEN; THE ESCAPEMENT (10) IS ROCKED AND FIXED DOG (16) IS HOLDING TOOTH (D).

#### RESTORING ACTION :

TYPE BAR (1) MOVE DOWNWARD. SPRING (6) WILL START TO RESTORE TO NORMAL, MOVING OSCILLATOR (3) CLOCKWISE, MOVING THE UNIVERSAL BAR (2) TO THE FRONT OF THE MACHINE AND POINT (B) WILL MOVE AWAY FROM ROLL (C). COMPRESSION SPRING (12) WILL APPLY PRESSURE TO THE UPPER PORTION OF THE ESCAPEMENT ROCKER BODY (10), CAUSING ROCKER (10) TO PIVOT ON SCREWS (11) AND (22), MOVING THE POWER PORTION OF ROCKER (10) TO THE REAR, PULLING ATTACHED PULLWIRE (9) TO THE REAR, ROCKING BAIL (7) CLOCKWISE, PIVOTING ON SCREW (8) AND STUD (G).

(FIGURE 3). AS THE ESCAPEMENT BODY (10) ROCKED CLOCKWISE, FIXED DOG (16) RELEASED ESCAPEMENT WHEEL TOOTH (D) AND LOOSE DOG (13) CAME INTO POSITION AND INTERCEPTED ESCAPEMENT WHEEL TOOTH (E), AS THE ESCAPEMENT WHEEL ROTATE COUNTERCLOCKWISE. TOOTH (E) IS HELD BY THE LOOSE DOG (13) AND THE CARRIAGE WAS MOVED ONE COMPLETE SPACE. THIS WOULD COMPLETE THE ESCAPEMENT FUNCTION AND THE MACHINE IS AGAIN IN NORMAL MODE WITH TOOTH (E) ENGAGED WITH THE LOOSE DOG (13) AND THE CARRIAGE HELD IN A STATIONARY POSITION.

#### LOOSE DOG SILENCER EXTENSION STOP

THE PURPOSE OF THE EXTENSION STOP (K) IS TO HOLD THE SILENCER (29) IN A POSITION SO THE LOOSE DOG (13) WILL BE PUSHED DOWN AND AWAY FROM THE TEETH OF THE ESCAPEMENT WHEEL (15). EXTENSION (F) OF THE LOOSE DOG SILENCER (29) WILL CONTACT EXTENSION (K) TO PREVENT THE SILENCER FROM MAKING A COMPLETE REVOLUTION WITH THE ESCAPEMENT WHEEL.

#### ESCAPEMENT LOOSE DOG SILENCER

THE PURPOSE OF THE ESCAPEMENT LOOSE DOG SILENCER (29) IS TO HOLD LOOSE DOG DOWN AND AWAY FROM THE TEETH OF ESCAPEMENT WHEEL (15) DURING CARRIAGE RETURN. WHEN CARRIAGE IS RETURNED TO THE LEFT MARGIN POSITION, THE LOOSE DOG SILENCER (29), THROUGH TENSION OF LOOSE DOG IS SILENCER FRICTION SPRING (31), MOVES WITH THE / ESCAPEMENT WHEEL (15) HOLDING IT DISINGAGED UNTIL THE CARRIAGE RETURN OPERATION IS COMPLETE.

#### TYPE BAR UNIVERSAL BAR

THE PURPOSE OF THE BAR UNIVERSAL BAR (2) IS TO CAUSE THE ESCAPEMENT TO TRIP AT THE SAME POSITION REGARDLESS OF THE TYPE BAR BEING OPERATED. IF A TYPE BAR ON THE LEFT SIDE OF THE MACHINE IS OPERATED, THE TYPE BAR UNIVERSAL BAR (2) WHICH PIVOTS ON SCREWS (5) AND (27) CAUSES EXTENSION (B) TO CONTACT ROLL (C) JUST THE SAME AS WHEN A TYPE BAR (1) FROM THE CENTER OR RIGHT SIDE OF THE SEGMENT IS OPERATED.

#### SAFETY ZONE

THE SAFETY ZONE IS A TERM TO DESCRIBE THE POSITION OF A TYPE BAR BETWEEN THE FIRST TRIP OF ESCAPEMENT (FIGURE 2) AND SECOND TRIP OF ESCAPEMENT (FIGURE 3). THE SAFETY ZONE IS ENTIRELY CONTROLLED BY THE DISTANCE BETWEEN THE SIDE FACE (G) OF THE LOOSE DOG (13) AND EXTREME POINT (H) OF THE FIXED DOG (16). THIS CLEARANCE IS NOT ADJUSTABLE. THIS ZONE IS TO PREVENT THE CARRIAGE FROM MOVING MORE THAN ONE SPACE AS ONE CHARACTER IS PRINTED.

(FIGURE 1). SAFETY ZONE IS CONTROLLED ENTIRELY BY THE DISTANCE BETWEEN ESCAPEMENT LOOSE DOG (13) AND ESCAPEMENT FIXED DOG (16). THIS DISTANCE IS NOT ADJUSTABLE. REPLACE ESCAPEMENT ROCKER IF NECESSARY.

(FIGURE 2). RAISE H TYPE BAR SLOWLY PLATEN UNTIL ESCAPEMENT "TRIP" OCCURS AS FACE OF TYPE IS .078 TO .25 OF AN INCH (2 TO 6.5MM) FROM PLATEN. ALLOW TYPE BAR TO RESTORE SLOWLY. THE SECOND "TRIP" (FIGURE 3) OF ESCAPEMENT SHOULD OCCUR WHEN FACE OF TYPE IS 1/2" TO 9/16" FROM WHERE FIRST TRIP OCCURRED.



## 12 ESCAPEMENT-UNIVERSAL BAR

IF THE DISTANCE BETWEEN FIRST "TRIP" AND SECOND "TRIP" IS MORE THAN  $9/16"$ , THERE IS DANGER OF LETTERS PILING ONE ON TOP OF ANOTHER. IF LESS THAN  $1/2"$ , THERE IS DANGER OF SKIPPING BETWEEN LETTERS.

IF THE ESCAPEMENT LOOSE DOG CARRYING ARM BINDS, IT WILL PREVENT LOOSE DOG FROM STEPPING TO LEFT, THEREBY CAUSING MACHINE TO PILE CHARACTERS OCCASIONALLY.

### ADJUSTMENTS :

#### 1. "SIX-O'CLOCK"

CHECK ESCAPEMENT ROCKER (10) FOR "SIX-O'CLOCK" POSITION (THE FACE OF ESCAPEMENT LOOSE DOG (13) MUST BE FLUSH AND PERPENDICULAR WITH FACE OF ESCAPEMENT WHEEL TOOTH (D).

LOOSEN ESCAPEMENT ROCKER PIVOT SCREW NUTS. ADJUST SCREW (22) AND (11) AS REQUIRED TO OBTAIN "SIX-O'CLOCK" POSITION OF ROCKER AS DESCRIBED AND TIGHTEN NUTS.

ESCAPEMENT ROCKER (10) MUST BE FREE WITHOUT END PLAY.

#### 2. FORM EXTENSION (K) OF ESCAPEMENT ROCKER BRACKET (30) SO EXTENSION (F) OF LOOSE DOG SILENCER (29) IS TOUCHING (K) OF ESCAPEMENT ROCKER BRACKET (30) AND EXTENSION (L) OF LOOSE DOG SILENCER (29) WILL HOLD LOOSE DOG (13) CLEAR OF ESCAPEMENT WHEEL (15) / TEETH DURING CARRIAGE RETURN OPERATION.

#### 3. LOOSE DOG SILENCER (29)

TENSION OF FRICTION SPRING (31) IS SUFFICIENT SO EXTENSION (F) OF LOOSE DOG SILENCER (29) WILL HOLD LOOSE DOG (13), CLEAR OF ESCAPEMENT WHEEL (15) TEETH DURING CARRIAGE RETURN OPERATIONS.

#### 4. ESCAPEMENT TRIP

LOOSEN LOCK NUT AND ADJUST ESCAPEMENT LINK SLEEVE (33) SO ESCAPEMENT "TRIP" WILL OCCUR AS FACE OF TYPE TOUCHES RIBBON WHEN TYPE BAR IS RAISED TOWARD PLATEN. HOLD SLEEVE (33) AND TIGHTEN NUT.

#### 5. IT WILL BE NECESSARY TO APPLY "FOLD-A-MATIC" TO MAKE TYPE BAR UNIVERSAL BAR ADJUSTMENTS.

FASTEN PIECE OF SOFT METAL (PAPER CLIP) UNDER HEAD OF LEFT SIDE PLATE SUPPORT TRUSS SCREW (22) TO BE USED AS A GAUGE TO MEASURE DISTANCE EXTENSION SURFACE (B) OF TYPE BAR UNIVERSAL BAR (2) MOVES WHEN TYPE BAR IS RAISED TO ANVIL POSITION.

TYPE BAR AT LEFT, CENTER AND RIGHT OF TYPE BAR SEGMENT SHOULD MOVE TYPE BAR UNIVERSAL BAR (2) THE SAME DISTANCE WHEN RAISED TO ANVIL. TO OBTAIN THIS CONDITION, ADJUST TO POSITION THAT IS FARTHEST OUT OF ADJUSTMENT.

TO DETERMINE WHICH POSITION REQUIRES ADJUSTMENT, RAISE FOLLOWING TYPE BARS: NUMBER ONE, H AND NUMBER FORTY TWO AND FORM "GAUGE" SO TO CONTACTS EXTENSION (B) FOR POSITION THAT MOVES THE TYPE BAR UNIVERSAL BAR (2) GREATEST DISTANCE.

#### 6. RAISE NUMBER ONE TYPE BAR. IF EXTENSION (B) OF TYPE BAR UNIVERSAL BAR CONTACTS "GAUGE" TOO SOON, LEFT END OF TYPE BAR UNIVERSAL BAR (2) WILL HAVE TO BE MOVED SLIGHTLY TOWARD THE REAR.

LOOSEN LOCK NUT (25) LEFT. TURN PIVOT SCREW (27) OUT SLIGHTLY AND MOVE BUSHING (26) SO EXTENSION (B) WILL JUST CONTACT "GAUGE" WHEN TYPE BAR NUMBER LIMITS AGAINST ANVIL.

ADJUST PIVOT SCREW (27) TO ELIMINATE END PLAY OF TYPE BAR UNIVERSAL BAR OSCILLATOR (3). TIGHTEN NUT (25).

#### 7. RAISE NUMBER FORTY-TWO TYPE BAR. IF EXTENSION (B) OF TYPE BAR UNIVERSAL BAR DOES NOT CONTACT "GAUGE" RIGHT END OF TYPE BAR UNIVERSAL BAR (2) WILL HAVE TO BE MOVED FORWARD.

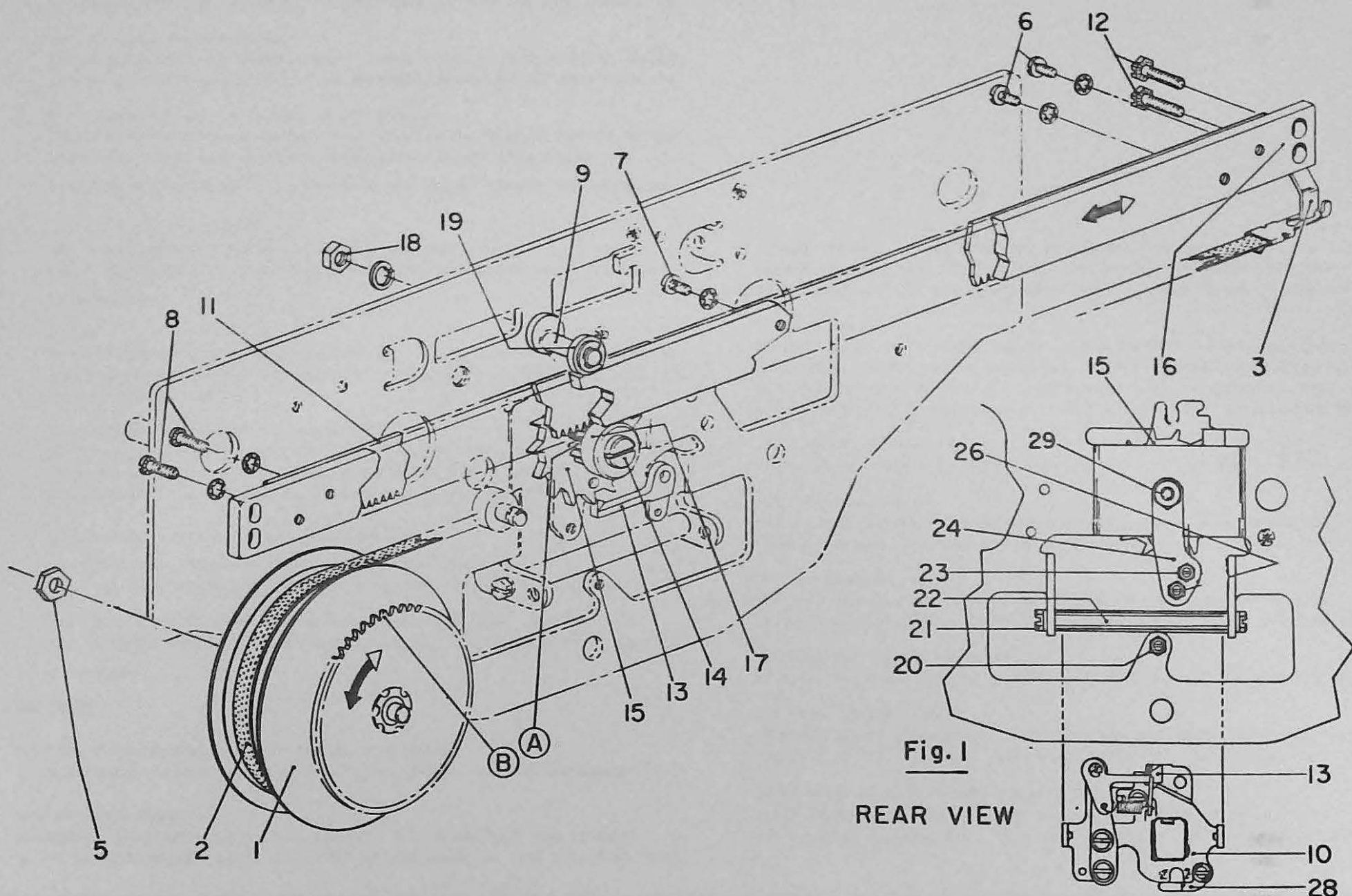
LOOSEN LOCK NUT (18) RIGHT. TURN PIVOT SCREW (5) OUT SLIGHTLY. MOVE BUSHING (17) SO EXTENSION (B) WILL JUST CONTACT "GAUGE" WHEN NUMBER FORTY-TWO LIMITS AGAINST ANVIL.

ADJUST PIVOT SCREW (18) TO ELIMINATE END PLAY OF TYPE BAR UNIVERSAL BAR OSCILLATOR (3). TIGHTEN NUT.

#### 8. RAISE NUMBER ONE, H AND NUMBER 42 TYPE BARS TO ANVIL. IF EXTENSION (B) OF TYPE BAR UNIVERSAL BAR CONTACT "GAUGE" WHEN 1 AND 42 ARE RAISED AND DOES NOT CONTACT "GAUGE" WHEN H TYPE BAR IS RAISED, LOOSEN SCREWS (23) AND (24) AND MOVE TYPE BAR UNIVERSAL BAR OSCILLATOR BRACKET (4) DOWNWARD SLIGHTLY. TIGHTEN SCREWS.

#### 9. IF EXTENSION (B) OF TYPE BAR CONTACTS "GAUGE" TOO SOON WHEN H TYPE BAR IS RAISED, LOOSEN SCREWS (23) AND (24) MOVE BRACKET (4) UPWARD SLIGHTLY. TIGHTEN SCREWS. RESTORE MACHINE TO TYPING POSITION.





## 13 ESCAPEMENT SINCRONIZATION

### ESCAPEMENT CYNCHRONIZATION

SYNCHRONIZATION IS A WORD USED TO DESCRIBE THE TIMING RELATION OF THE TEETH OF ESCAPEMENT WHEEL (15) AND TEETH OF PINION WHEEL (A) IN RELATION TO FEED RACK (11) AND POSITION OF CARRIAGE. THE MAIN PURPOSE OF SYNCHRONIZING THE ESCAPEMENT IS SO THE CARRIAGE SCALE, TABULATION AND LEFT MARGIN RELATIONSHIP IS NOT DISTURBED WHEN FEED RACK (11) IS SEPARATED FROM ESCAPEMENT PINION WHEEL (A). THE RELATIONSHIP BETWEEN TEETH ON ESCAPEMENT WHEEL (15) AND TEETH OF THE PINION (A) OF 10 AND 12 SPACE MACHINES REMAINS CONTACT BECAUSE THEY HAVE THE SAME NUMBER OF TEETH IN ESCAPEMENT WHEEL (15) AND PINION WHEEL (A). THIS MEANS ESCAPEMENT PINION (A) IS DISENGAGED FROM RACK (11) AND REPLACED, NO SYNCHRONIZATION OF THE ESCAPEMENT AND FEED RACK IS NECESSARY. ALL OTHER ESCAPEMENT MUST BE SYNCHRONIZED. FOR INSTANCE, ON A 8 SPACE PER INCH MACHINE, THERE ARE 12 TEETH ON ESCAPEMENT WHEEL AND 15 TEETH ON PINION WHEEL (A) SO ONLY A FEW TEETH ARE IN LINE WHICH MAKES IT NECESSARY TO TIME THE ESCAPEMENT. THERE ARE FOUR DIFFERENT SPACE MACHINES MANUFACTURED; 8 PER INCH, 10 PER INCH, 12 PER INCH AND 16 PER INCH. THE MOST COMMON OF THESE BEING THE 10 AND 12. THE FEED RACK IS MANUFACTURED IN ONLY TWO SPACINGS, 10 AND 12, SO ESCAPEMENT PINIONS ARE MADE ONLY IN 10 AND 12 SPACE.

THE CHART ON THE FOLLOWING PAGE LISTS THE NUMBER OF TEETH ON ESCAPEMENT WHEEL, ESCAPEMENT PINION AND FEED RACK FOR DIFFERENT MACHINE SPACINGS PER INCH.

SPACING PER INCH	FEED RACK	ESCAPEMENT WHEEL	ESCAPEMENT PINION
8	10 SPACE	12	15
10	10 SPACE	15	15
12	12 SPACE	18	18
16	10 SPACE	24	15

### CARRIAGE TENSION

THE SPRING WITHIN THE SPRING DRUM (1) APPLIES TENSION TO THE CARRIAGE BY USE OF TAPE (2) WITH ONE END CONNECTED TO THE SPRING DRUM (1) AND THE OTHER TO HOOK (3) WHICH WILL SUPPLY TENSION TO MOVE THE CARRIAGE TO THE LEFT.

### SIX O'CLOCK POSITION

THE SIX O'CLOCK POSITION, IS A TERM USED TO DESCRIBE THE POSITION OF THE LOOSE DOG (13) IN RELATION TO THE ESCAPEMENT WHEEL (15). REFERRING TO THE HANDS OF THE CLOCK, WHEN AT 6 O'CLOCK, THE HANDS WOULD BE STRAIGHT UP AND DOWN. WHEN THE LOOSE DOG (13) IS STRAIGHT UP AND DOWN IN RELATION TO THE TOOTH OF THE ESCAPEMENT WHEEL (15), THE MACHINE IS IN SIX O'CLOCK POSITION. LOOSE DOG (13) MUST BE FLUSH WITH THE FACE OF THE ESCAPEMENT WHEEL (15), WHEN UNDER MAIN / SPRING TENSION.

### ESCAPEMENT LOWER LIMIT SCREW

THE PURPOSE OF THE ESCAPEMENT LOWER SCREW LIMIT (20) IS TO LOCATE LOOSE DOG (13) TO HAVE A GOOD HOLD ON ESCAPEMENT (15) AT REST POSITION. ESCAPEMENT LOOSE DOG (13) WILL BE IN LINE WITH THE LOOSE DOG SILENCER SO WHEN SILENCER MOVES WITH THE ESCAPEMENT WHEEL (15) THE SILENCER WILL CONTACT LOOSE DOG (13) AND PUSH IT OUT OF THE ESCAPEMENT WHEEL.


### CARRIAGE SUPPORT RAIL, FEED RACK AND ESCAPEMENT SYNCHRONIZATION

DISCONNECT CARRIAGE TAPE (2) FROM TAPE HOOK (3) AND PLACE ON STUD ON BACK PLATE.

1. REMOVE FEED RACK SCREWS (6), (7) AND (8) WITH LOCK WASHERS AND REMOVE FEED RACK (11) FROM THE CARRIAGE TO PREVENT INTERFERENCE OF FEED RACK (11) WITH ESCAPEMENT PINION (A).

CARRIAGE SUPPORT RAIL, FEED RACK AND ESCAPEMENT SYNCHRONIZATION (CONTINUED).

2. LOOSEN CARRIAGE SUPPORT RAIL SCREWS (12) RIGHT AND LEFT AND ADJUST CARRIAGE SUPPORT RAIL (16) TO JUST TOUCH CARRIAGE SUPPORT RAIL ROLLER, LOWER (17), THE FULL LENGTH OF SUPPORT RAIL (16). TIGHTEN SCREWS (12). THIS CAN BE TESTED BY PLACING INDEX FINGER ON CARRIAGE SUPPORT RAIL ROLLER, LOWER (17). ROLLER SHOULD STOP WITH A VERY LIGHT PRESSURE BUT MUST TURN AS CARRIAGE IS MOVED WITHOUT APPLYING PRESSURE. CARRIAGE SUPPORT RAIL (16) IS MOUNTED ON SLOTTED HOLES WITH BOTH ENDS ADJUSTABLE. CHECK SUPPORT RAIL AT BOTH ENDS / OF CARRIAGE.
3. LOOSEN NUT (18). ADJUST CARRIAGE SUPPORT RAIL ROLLER STUD, UPPER (9) TO OBTAIN ABOUT .002 CLEARANCE BETWEEN ROLLER (19) AND SUPPORT RAIL (16). STUD (9) IS ECCENTRIC TO PERMIT THIS ADJUSTMENT. TIGHTEN NUT (18).
4. REPLACE FEED RACK (11) AND SCREWS (6), (7) AND (8) WITH LOCK WASHERS. ON 10 AND 12 PITCH MACHINES, SYNCHRONIZATION OF THE FEED RACK AND ESCAPEMENT PINION IS UNNECESSARY, THEREFORE, THE FOLLOWING ADJUST CAN BE OVERLOOKED.
5. TO MOVE THE ESCAPEMENT PINION IN RELATION TO THE FEED RACK ON 8 AND 16 / SPACE MACHINES, USE THE FOLLOWING METHODS: WITH SCREWS (6), (7) AND (8) REMOVED THE FEED RACK CAN BE POSITIONED FREE OF ESCAPEMENT WHEEL PINION (A). PLACE CARRIAGE AT EXTREME RIGHT. TURN THE ESCAPEMENT WHEEL (15) UNTIL THE SMALL HOLE OF ESCAPEMENT WHEEL (15) IS DIRECTLY ABOVE THE PINION SHAFT (14). ALLOW THE FEED RACK (11) TO MESH WITH ESCAPEMENT WHEEL PINION (A). REPLACE SCREWS (6), (7) AND (8). MOVE THE CARRIAGE TO ZERO POSITION ON THE SCALE AT THE EXTREME LEFT. THE ZERO ON THE BLACK AND WHITE CARRIAGE SCALE SHOULD ALIGN WITH THE POINTER IN THE TYPE GUIDE. IF NOT, RESET THE ESCAPEMENT / WHEEL AS PREVIOUSLY DESCRIBED. THIS WILL PLACE THE ESCAPEMENT WHEEL (15) IN TIME WITH THE FEED RACK (11).



## 13 ESCAPEMENT SINCRONIZATION

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6. ADJUST FEED RACK (11) TO MESH AS DEEPLY AS POSSIBLE WITH THE TEETH OF ESCAPEMENT WHEEL PINION (A) FULL LENGTH OF CARRIAGE WITHOUT BINDING. CHECK MESH OF FEED RACK (11) AT BOTH ENDS OF CARRIAGE. TEST BY HOLDING THE ESCAPEMENT WHEEL AND MOVING CARRIAGE. PLAY SHOULD BE EQUAL AT BOTH ENDS AND CENTER / AND NOT EXCEED .003 MOVEMENT BUT MUST HAVE ENOUGH MOVEMENT TO BE FREE. TIGHTEN SCREWS (6), (7) AND (8). CONNECT CARRIAGE TAPE (2) TO CARRIAGE / TAPE HOOK (3).

### SPRING DRUM

ACTUATE SPRING DRUM DETENT PAWL (4) RELEASING TENSION UNTIL CHARACTERS PILE AT THE RIGHT MARGIN WHEN TYPING RAPIDLY.

1. LOOSEN NUT (5) AND TURN THE SCREW SLOT PORTION OF SPRING DRUM ARBOR (4) / CLOCKWISE (FACING REAR OF MACHINE) UNTIL CHARACTERS DO NOT PILE WHEN TYPING RAPIDLY INTO THE RIGHT MARGIN. TIGHTEN NUT (5).

NOTE : LINE LOCK MUST ALSO FUNCTION.



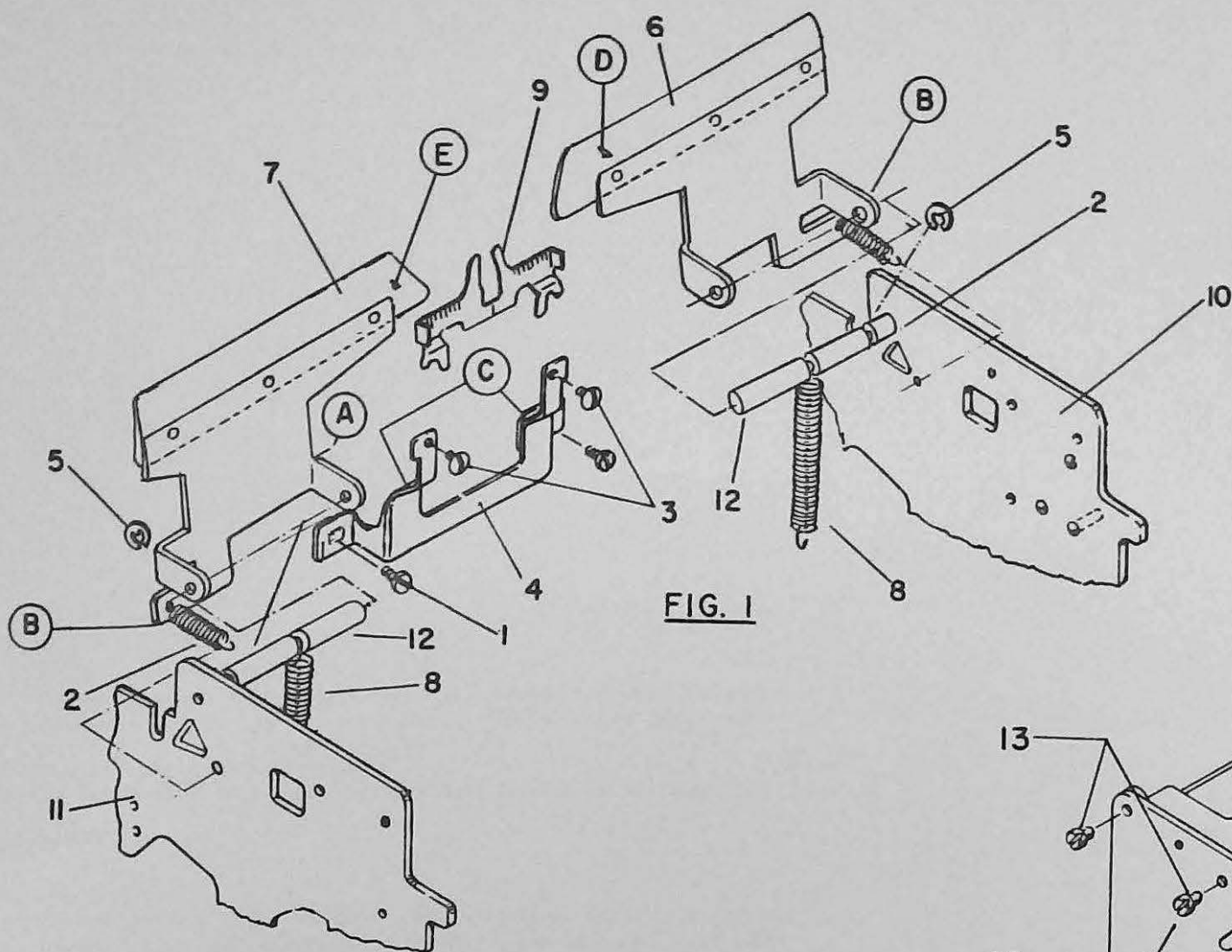


FIG. 1

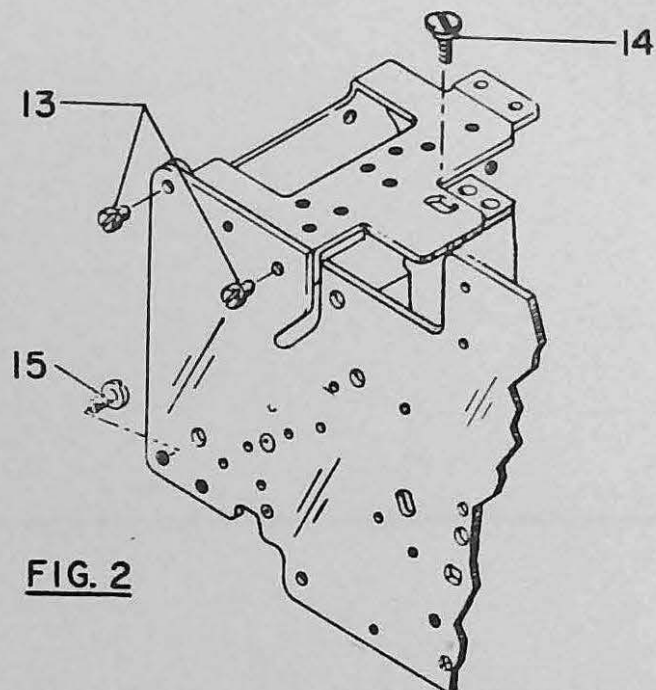


FIG. 2

## 14 ALIGNING SCALE - CARD HOLDERS - FOLD-A-MATIC

### ALIGNING SCALE

THE ALIGNING SCALE (9) IS A GUIDE TO ALIGN THE PAPER VERTICALLY AND HORIZONTALLY, THAT HAS BEEN REMOVED FROM THE MACHINE AND IT ASSISTS IN FEEDING THE PAPER UNDER THE PAPER BAIL ROLLS.

### ADJUSTEMENTS :

1. FORM BRACKET (4) AT POINT (C) WHERE THE BRACKET STEPS TOWARD THE FRONT OF MACHINE. WHEN THE CARRIAGE IS AT THE EXTREME RIGHT, PLACE T-BENDER ON THIS STOP PORTION (C) OF THE BRACKET (4) AND FORM IT TO FRONT OR REAR AND MOVE THE CARRIAGE TO THE EXTREME LEFT. PLACE T-BENDER ALONG THE FRONT OF THE CARRIAGE SCALE INTO THE STOP (C) OF THE ALIGNING SCALE BRACKET (4) AND FORM THE BRACKET FOR APROXIMATELY SIX SHEETS OF PAPER BETWEEN THE ALIGNING SCALE (9) AND THE PLATEN.
2. TYPE A LINE OF SMALL CHARACTERS VIVIVIVI AND UNDER SCORE.
3. LOOSEN SCREWS (3) AND ADJUST ALIGNING SCALE (9) SO TOP EDGE WILL COVER ONE HALF OF THE PRINTED LINE OF UNDERSCORE. VERTICAL LINES OF THE SCALE WILL ALIGN WITH THE PRINTED I'S. THE POINT OF V'S SHOULD POINT TO UP RIGHT LINE. THE UP RIGHT PORTION OF I SHOULD BE IN LINE WITH THE WHITE LINE ON THE ALIGNING SCALE (9).

### CARD HOLDERS

CARD HOLDERS (6) AND (7) ARE TRANSPARENT SO PRINTED COPY IS VISIBLE. THEY ALSO GUIDE THE PAPER UNDER THE BAIL ROLLS. THE CUT-OUT (D) IN THE CARD HOLDER IS FOR RULING, STENCILLING OR MARKING EITHER VERTICAL OR HORIZONTAL LINES WITH A STYLUS. HOLE (E) IS USED FOR RULING WITH A PENCIL OR BALL POINT PEN. WHEN CARD HOLDERS (6) AND (7) AND ALIGNING SCALE (9) ARE PROPERLY ADJUSTED, THE PAPER WILL FEED UNDER THE BAIL ROLLS WITHOUT LIFTING THE PAPER BAIL.

### ADJUSTMENTS :

TYPE A LINE OF UNDERSCORE THE FULL LENGTH OF CARRIAGE. TURN THE PLATEN UP TWO SPACES; THIS WOULD BE TWO TEETH ON THE PLATEN RATCHET.

1. DEFORM CARD HOLDER STUD (12) AT POINT (A) TO OBTAIN PARALLELISM BETWEEN THE PLASTIC PORTION OF THE CARD HOLDER (6) AND (7) AND THE PLATEN ROLL AND ALSO TO ALIGN THE TOP EDGE OF THE CARD ROLDER (6) AND (7) WITH A WRITTEN LINE
2. DEFORM EXTENSION (B) OF THE CARD HOLDER (6) AND (7) TO OBTAIN .020 TO .35 OF AN INCH PLAY BETWEEN THE PLATEN AND CARD HOLDER (6) AND (7).

NOTE : WHEN DEFORMING CARD HOLDER STUD (12) TAKE CARE NOT LOOSEN STUD INSIDE PLATE.

### FOLD-A-MATIC

THE PURPOSE OF THE FOLD-A-MATIC PRINCIPLE IS TO ALLOW THE MACHINE TO BE OPENED FOR INSPECTION OF THE INTERNAL PARTS, FOR CLEANING AND LUBRICATION.

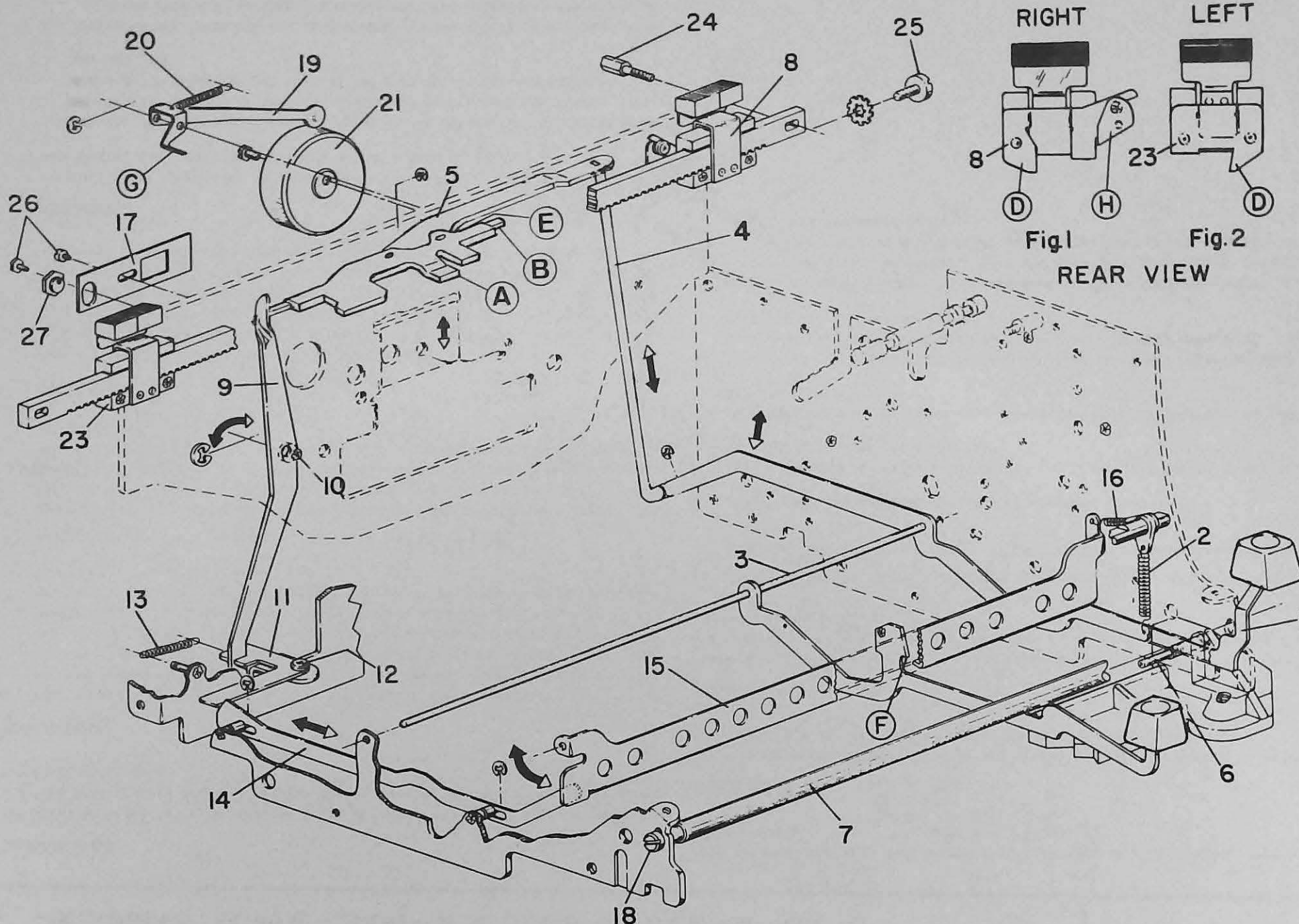
### ADJUSTMENTS :

ASSUMING THAT MACHINE COVERS HAVE BEEN REMOVED MOVE THE LEFT MARGIN STOP TO THE EXTREME LEFT OF THE CARRIAGE; MOVE THE RIGHT MARGIN TO THE EXTREME RIGHT END OF THE CARRIAGE.

1. MOVE THE CARRIAGE TO RIGHT. REMOVE LEFT CARRIAGE SUPPORT BRACKET SCREW (14).
2. MOVE THE CARRIAGE TO THE LEFT. REMOVE CARRIAGE SUPPORT BRACKET (14) ON THE RIGHT.
3. REMOVE FRAME BACK SCREWS (13) ON THE LEFT AND RIGHT SIDE.
4. LOOSEN FRAME BACK SCREWS (15) ON LEFT AND RIGHT JUST ENOUGH TO ALLOW THE FRAME BACK TO HINGE ON SCREW (15).
5. FOLD THE CARRIAGE AND FRAME BACK DOWN TO OPEN THE TYPEWRITER. BE CAUTIOUS. DO THIS SLOWLY.
6. (PLATE 15). AS YOU RESTORE THE MACHINE BACK TO TYPING POSITION, MAKE SURE BELLCRANK (11) IS IN LINE WITH PUSH BAR (14). RESTORE MACHINE TO TYPING POSITION WILL ALL SCREWS TIGHT.

NOTE : AFTER THE MACHINE IS CLOSED BACK IN TYPING POSITION, CHECK CYLINDER AND ANVIL ADJUSTMENT. THIS WAY HAVE BEEN DISTURBED BY CHANGING / THE POSITION OF THE FRAME BACK SCREWS (13) OR THE CARRIAGE SUPPORT BRACKET SCREW (14).





## 15 BELL - LINE LOCK-MARGIN RELEASE

### BELL

AS THE CARRIAGE APPROACHES THE RIGHT MARGIN POSITION, ARM (H) (FIGURE 1) OF RIGHT MARGIN STOP (8) CONTACTS EXTENSION (G) DOWNWARD CAUSING THE RIGHT END OF ARM (19) TO RAISE, YIELDING SPRING (20), UNTIL THE RIGHT MARGIN STOP (8) BY / PASSES EXTENSION (G) ALLOWING ARM (19) TO DROP AND RING THE BELL (21) AS SPRING (20) RESTORES.

### ADJUSTMENTS :

1. FORM EXTENSION (G) OF BELL RINGER ARM (19), (FIG. 1) EXTENSION (H) SHOULD OPERATE ARM (19) WITHOUT THE ARM CONTACTING SPRING (20) ANCHOR STUD.
2. ADJUST ECCENTRIC BELL (21) SO THAT BELL RINGER ARM (19) WILL CLEAR BELL (21) ABOUT .020.

### LINE LOCK

THE PURPOSE OF THE LINE LOCK BAIL (15) IS TO LOCK THE ALPHABET, NUMERAL AND / SPACE KEY KEYLEVERS WHEN TYPING INTO THE RIGHT MARGIN STOP OR RIGHT CARRIAGE END.

### NORMAL MODE :

BAIL (15) IS FORWARD. MARGIN STOP AND RELEASE BLADE (5) IS IN POSITION TO INTERCEPT THE MARGIN STOPS (8) AND (23).

THE MARGIN STOP AND RELEASE BLADE (5) IS MOVED TO THE LEFT BY STOP PORTION (D) (FIGURE 1) OF THE RIGHT MARGIN STOP (8). AS THE MARGIN STOP AND RELEASE BLADE (5) MOVES TO THE LEFT, IT CONTACTS THE UPPER PORTION OF THE LINE LOCK OPERATING LEVER (9) WHICH PIVOTS ON STUD (10) MOVING THE LOWER PORTION TO THE RIGHT, / CAUSING BELLCRANK (11) TO MOVE CLOCKWISE PIVOTING ON STUD (12) YIELDING SPRING (13) ALLOWING PUSH BAR (14) TO MOVE TO THE REAR. SPRING (16) WILL ROCK BAIL (15) CLOCKWISE UNDER KEYLEVER EXTENSIONS (F) AND SPACE BAR KEYLEVER 2, EXTENSION (G), PLATE 10 TO LOCK ALPHABET KEYLEVERS AND SPACE KEY.

### OPERATED MODE :

THE RIGHT MARGIN STOP (8) HAS MOVED BLADE (5) TO THE LEFT, LINE LOCK BAIL (15) IS UNDER EXTENSIONS (F) AND (G).

### RESTORING ACTION :

AS THE RIGHT MARGIN STOP (8) IS MOVED AWAY FROM BLADE (5) BY BACKSPACING OR RETURNING THE CARRIAGE, THE UPPER PORTION OF LEVER (9) WILL MOVE TO THE RIGHT AND THE LOWER PORTION WILL MOVE TO THE LEFT PIVOTING ON STUD (10) AND BELLCRANK (11) WILL MOVE COUNTERCLOCKWISE AS SPRING (13) RESTORES. AS BELLCRANK (11) MOVES

COUNTERCLOCKWISE THE LEFT END CONTACTS AND PUSHES BAR (14) TO THE FRONT ROTATING BAIL (15) COUNTERCLOCKWISE, YIELDING SPRING (16) AS BAIL (15) ROTATES FROM BE- NEATH EXTENSIONS (F), (G) THE LINE LOCK HAS NOW RETURNED TO NORMAL MODE.

### ADJUSTMENTS :

1. TYPE INTO THE RIGHT MARGIN AND FORM BELLCRANK (11) UP OR DOWN ON CAMMING AN- GLE OF LINK (14) TO LOCK THE KEYBOARD BY LINE LOCK BAIL (15). FORM DOWN TO LOCK EARLIER OR UP TO LOCK LATER. TEST BY BACKSPACING ONE / SPACE THEN TYPE ONE CHARACTER. KEYBOARD SHOULD BE LOCKED.

### MARGIN RELEASE

THE PURPOSE OF THE MARGIN RELEASE MECHANISM IS TO ALLOW THE TYPIST TO BY-PASS MARGIN STOPS (8) AND (23).

### NORMAL MODE :

THE FORWARD PORTION OF THE KEYLEVER (1) IS AT REST AGAINST THE KEYLEVER UPSTOP (7). THE MARGIN STOP AND RELEASE BLADE (5) IS AT REST AGAINST EXTENSION (E).

DEPRESS THE MARGIN RELEASE KEYLEVER (1), THE FORWARD PORTION WILL MOVE DOWN YIELDING SPRING (2) PIVOTING ON FULCRUM WIRE (3) RAISING THE REAR PORTION OF KEYLEVER (1) LIFTING BAIL LINK (4) WHICH IS ATTACHED TO THE EXTENSION PORTION OF MARGIN STOP AND RELEASE BLADE (5). THE REAR PORTION OF (5) WILL RAISE PIVOT- ING AT POINTS (B) AND (C) LOWERING THE FORWARD PORTION (A) ALLOWING TYPIST TO BY-PASS MARGINS. THE DOWNWARD MOVEMENT OF THE MARGIN RELEASE KEYLEVER (1) IS LIMITED BY STUD (6) TO PREVENT THE KEYLEVER FROM BEING FORCED OUT OF THE KEY- LEVER COMB.

### OPERATED MODE :

FRONT PORTION OF THE MARGIN RELEASE KEYLEVER (1) IS LIMITING ON STUD (6); BLADE (5) IS ROCKED DOWNWARD ENOUGH TO ALLOW EXTENSION (A) TO PASS UNDER THE STOP POR- TION (D) OF MARGIN STOPS (8) AND LEFT MARGIN STOP (23).

### RESTORING ACTION :

RELEASE KEYLEVER (1), THE FORWARD PORTION WILL RAISE THRU THE RESTORING ACTION OF SPRING (2) AND THE REAR PORTION OF KEYLEVER (1) WILL LOWER, PIVOTING ON WIRE (3) ALLOWING BAIL LINK (4) TO LOWER, ROCKING BLADE (5) COUNTERCLOCKWISE RAISING EXTENSION (A) PIVOTING AT POINTS (B) AND (C). EXTENSION (A) IS IN POSITION TO INTERCEPT STOP PORTION (D) OF MARGIN STOPS (8) AND (23). MARGIN RELEASE / MECHANISM HAS RETURNED TO NORMAL MODE.



## 15 BELL-LINE LOCK-MARGIN RELEASE

### ADJUSTMENTS

1. FORM EXTENSION OF THE ESCAPEMENT ROCKER BRACKET SO THE MARGIN STOP AND RELEASE BLADE (5) WILL JUST CLEAR THE BODY OF BOTH MARGIN STOPS (8) AND (23) BUT HAVE A GOOD HOLD ON THE STOP PORTION (D) OF BOTH MARGIN STOPS.

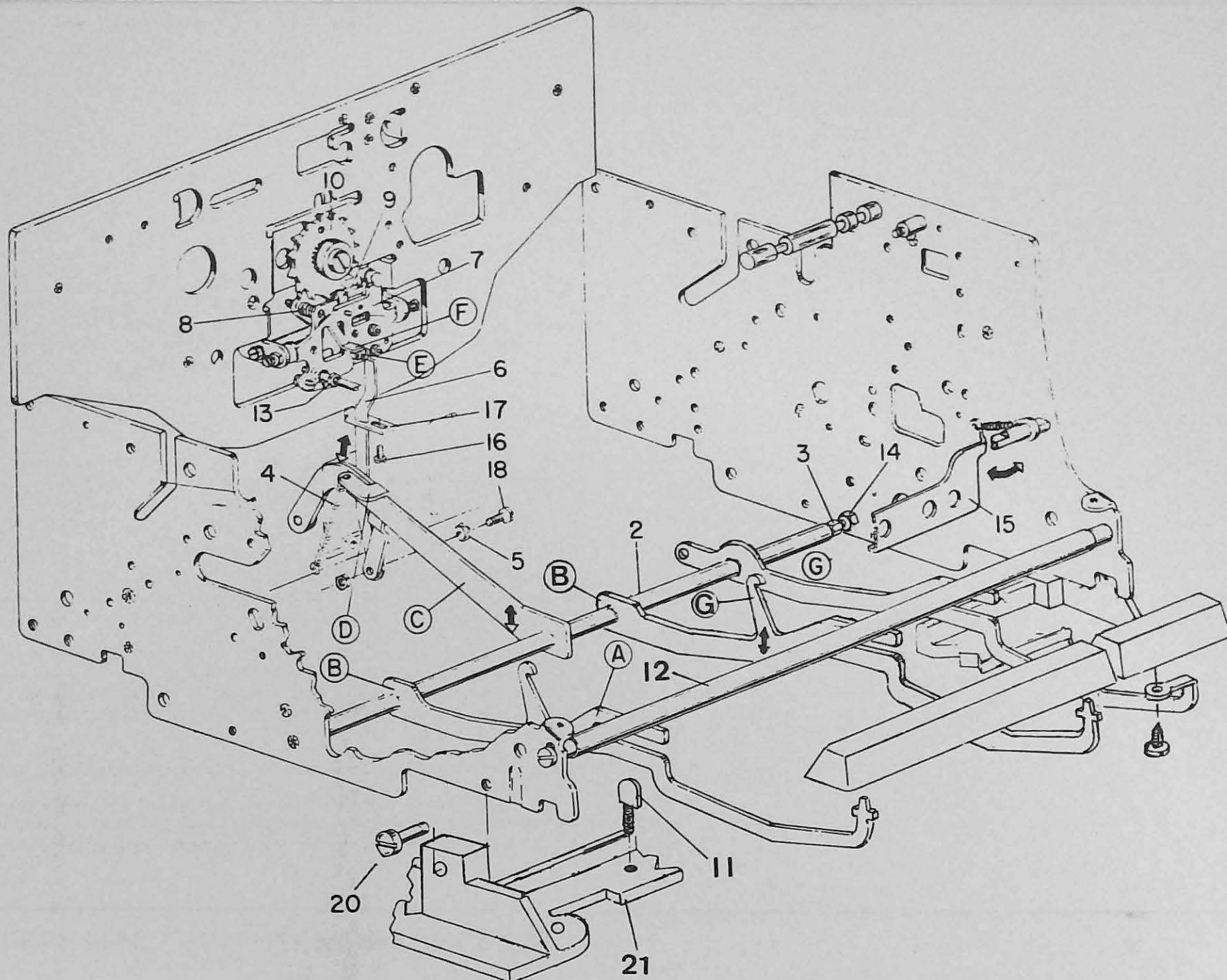
THIS IS DONE WHEN THE KEYLEVER (1) IS AT NORMAL OR REST POSITION AGAINST THE UPSTOP (7).

2. MARGIN RELEASE KEYLEVER (1) MUST LIMIT AGAINST KEYLEVER UPSTOP (7). AT THE SAME TIME THAT MARGIN STOP AND RELEASE BLADE (5) CONTACTS EXTENSION (E). FORM MARGIN RELEASE KEYLEVER (1) UP OR DOWN AT POINT (K) TO OBTAIN THIS CONDITION BE VERY COUTIOUS THERE IS NO BINDS.
3. LOOSEN SCREW (24) LEFT AND RIGHT. ADJUST THE MARGIN STOP RACK ADJUSTING / SCREW (25), RIGHT AND LEFT TO OBTAIN A SLIGHT CLEARANCE BETWEEN THE STOP PORTION (D) OF THE LEFT MARGIN STOP (23) AND LIP (A) TIGHTEN SCREWS (24) , LEFT AND RIGHT.
4. WITH THE MARGIN RELEASE KEYLEVER (1) IN NORMAL POSITION AND BLADE (5) CONTACTING EXTENSION, ADJUST ECCENTRIC STOP (28) TO ALLOW .010 TO .020 OF AN INCH (0.25 TO 0.5MM) CLEARANCE BETWEEN FACE (F) OF MARGIN RELEASE BLADE (5) FIG. (2) AND END OF SLOT (G) UNDER EXTENSION (E) OF ESCAPEMENT ROCKER PLATE (30).

### LINE LOCK ADJUSTING PLATE

THE LINE LOCK ADJUSTING PLATE (17) ESTABLISHES THE CORRECT POSITION OF THE ESCAPEMENT WHEEL TO PERMIT RELIABLE BACKSPACING OUT OF BY-PASSED MARGIN PORTION. WHEN TABULATING INTO THE RIGHT MARGIN, LINE LOCK ADJUSTING PLATE (17) PREVENTS AN OCCASIONAL ESCAPEMENT LOCK-UP, ESPECIALLY IN 16 SPACE MACHINES, SHOULD A / TRIP OCCUR WHILE THE MACHINE IS LINE LOCKED.





## 16 SPACE KEY

### SPACE - KEY

THE PURPOSE OF THE SPACE KEY IS TO MOVE THE CARRIAGE ONE SPACE AT A TIME WITHOUT PRINTING A CHARACTER.

#### NORMAL MODE :

THE SPACE KEY SPRING (4) HOLDS SPACE KEY EXTENSION (A) AGAINST KEYLEVERS UPSTOP (12) AND ROLL (E) ON PUSH LINK (6) IS AWAY FROM EXTENSION (F) OF ESCAPEMENT ROCKER (7). ESCAPEMENT ROCKER SPRING (8) HOLDS ESCAPEMENT ROCKER (7) IN NORMAL MODE AGAINST LOWER LIMIT SCREW. THREE EXTENSIONS ARE WELDED TO THE SPACE KEY SHAFT (2). THE TWO FORWARD EXTENSIONS (B) ARE THE SPACE BAR KEYLEVERS. THE REAR EXTENSION (C) OPERATES THE ESCAPEMENT ROCKER. DEPRESS SPACE KEY (1). THE TWO FORWARD EXTENSIONS (B) OF SHAFT (2) WILL MOVE DOWNWARD ROTATING SHAFT (2) CLOCKWISE, PIVOTING ON STUD (3), RAISING THE REAR EXTENSION (C) TO CONTACT AND RAISE ARM (D), YIELDING SPRING (4). ARM (D) IS CONNECTED TO PUSH LINK (6) BY ECCENTRIC (5). LINK (6) RAISES CAUSING ROLL (E) TO CONTACT EXTENSION (F) ROCKING ESCAPEMENT ROCKER (7) COUNTERCLOCKWISE, COMpressing SPRING (8) CAUSING THE LOOSE DOG (9) TO SLIDE OFF THE TOOTH OF THE ESCAPEMENT WHEEL (10) ALLOWING THE CARRIAGE TO MOVE TO THE LEFT, TURNING THE ESCAPEMENT WHEEL COUNTERCLOCKWISE, UNTIL THE ESCAPEMENT TOOTH CONTACTS THE FIXED DOG. THIS IS A PORTION OF A SPACE.

#### OPERATED MODE :

SPACE KEY (1) IS DEPRESSED; ESCAPEMENT ROCKER (7) HAS MOVED COUNTERCLOCKWISE ; THE FIXED DOG IS NOW ENGAGED WITH A TOOTH OF ESCAPEMENT WHEEL (10), WHICH PREVENTS THE CARRIAGE FROM MOVING; THE FORWARD EXTENSIONS (B) ARE LIMITING ON PUMPER SCREWS (11), RIGHT AND LEFT.

#### RESTORING ACTION :

RELEASE SPACE KEY (1). THE FORWARD EXTENSIONS (B) WILL RAISE, ROTATING SHAFT (2) COUNTERCLOCKWISE. PIVOTING ON STUD (3). THE REAR EXTENSION (C) WILL LOWER. AS SPRING (4) RESTORES TO NORMAL, ALLOWING ARM (D). TO LOWER WITH PUSH LINK (6) MOVING ROLL (E) AWAY FROM EXTENSION (F). SPRING (8) WILL RESTORE ROCKER (7) CLOCKWISE, ALLOWING THE FIXED DOG TO RELEASE THE TOOTH OF WHEEL (10) SO THE LOOSE DOG (9) WILL BE IN A POSITION TO INTERCEPT THE NEXT TOOTH ALLOWING THE CARRIAGE TO COMPLETE ONE FULL SPACE.

THE SPACE KEY HAS RETURNED TO NORMAL MODE, EXTENSIONS (A), RIGHT AND LEFT, ARE LIMITING ON UPSTOP (12) WITH THE LOOSE DOG ENGAGED WITH THE TOOTH OF ESCAPEMENT WHEEL (10) HOLDING THE CARRIAGE IN A STATIONARY POSITION.

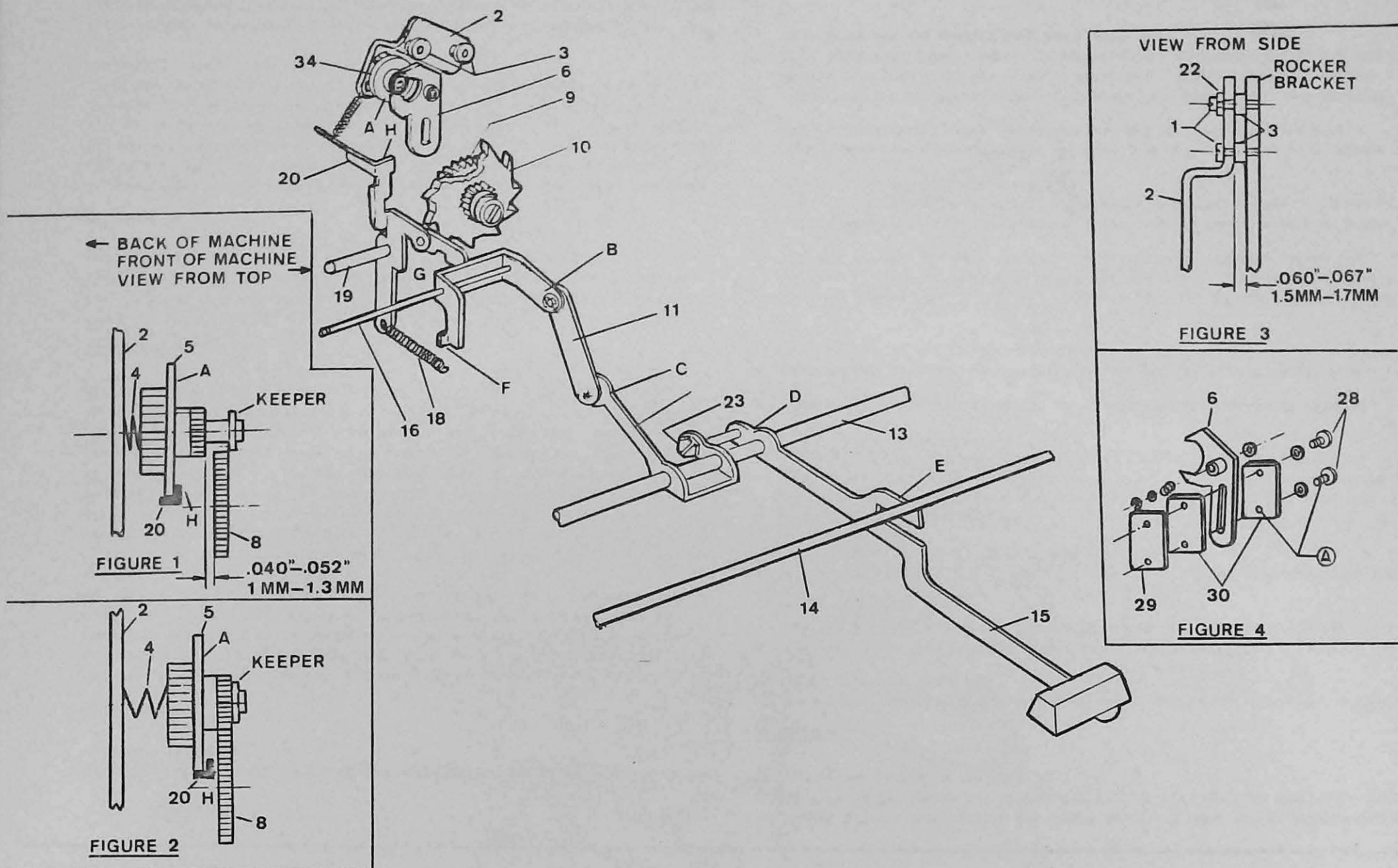
THE ROCKER (7) WAS MOVED DURING THE OPERATION OF THE SPACE KEY BY EXTENSION (F). DURING TYPING, THE ROCKER (7) IS OPERATED BY LINK (13) WHICH IS COMPLETELY INDEPENDENT OF THE ACTION OF THE SPACE KEY.

#### ADJUSTEMENTS

KEYLEVER UPSTOP AND ESCAPEMENT ROCKER STOP SCREW, LOWER MUST BE PROPERLY ADJUSTED BEFORE ADJUSTING SPACE KEY.

1. LOOSEN NUT AND TURN ESCAPEMENT ROCKER STOP SCREW, UPPER, OUT SO IT WILL INTERFERE WITH THE MOVEMENT OF ESCAPEMENT ROCKER (7) WHEN SPACE KEY BAR (1) IS FULLY DEPRESSED.
2. LOOSEN NUT (14) AND ADJUST SPACE KEY SHAFT PIVOT SCREW (3) TO ELIMINATE END PLAY OF SPACE KEY SHAFT (2) YET HAVE SHAFT FREE ON PIVOTS.
3. FORM SPACE KEY ARM EXTENSIONS (A) TO HAVE TOP OF SPACE KEY BAR (1) 5/6 OF AN INCH BELOW TOPS OF LOWEST BANK OF ALPHABET KEYS WHEN AT REST POSITION. AFTER CORRECT HEIGHT OR REST POSITION OF SPACE KEY BAR (1) HAS BEEN ESTABLISHED, THE LINE LOCK BAIL (15) SHOULD BE CHECKED FOR PROPER LOCKING OF SPACE KEY AT RIGHT MARGIN.
4. LOOSEN NUTS AND ADJUST SPACE KEY DOWNSTOP SCREWS (11) AS LOW AS POSSIBLE.
5. LOOSEN SPACE KEY PUSH LINK GUIDE SCREW (16) AND POSITION SPACE KEY PUSH LINK GUIDE (17) TO HAVE ROLL (E) NEAR FRONT END OF ARM (F). TIGHTEN SCREW (16).
6. DISCONNECT SPACE KEY SPRING (4). PRESS FORWARD ON LOWER PART OF ESCAPEMENT ROCKER (7) AND TEST SPACE KEY BAR FOR FREE MOVEMENT. SPACE KEY PUSH LINK (6) MUST BE FREE IN SPACE KEY PUSH LINK GUIDE (17). CONNECT SPRING (4).
7. LOOSEN SPACE KEY PUSH LINK ECCENTRIC SCREW (18) AND ADJUST PUSH LINK ECCENTRIC (5) TO HAVE ESCAPEMENT TRIP OCCUR AFTER THE SPACE KEY HAS TRAVELLED 3/16 OF AN INCH. TIGHTEN SCREW (18).
8. ADJUST DOWNSTOP SCREW (11), LEFT AND RIGHT, TO OBTAIN 1/16 TO 1/32" FURTHER TRAVEL OF SPACE KEY AFTER ESCAPEMENT TRIP HAS OCCURRED. TIGHTEN NUTS.
9. (PLATE 13) THE ESCAPEMENT ROCKER STOP SCREW (26) SHOULD NOT LIMIT MOVEMENT ROCKER (10) WHEN SPACE KEY IS FULLY DEPRESSED. ADJUST ESCAPEMENT ROCKER STOP SCREW (26), UPPER, UNTIL IT JUST CONTACTS ESCAPEMENT ROCKER (10) THEN TURN SCREW OUT ONE QUARTER TURN AND TIGHTEN NUT.





## 17 REPEAT SPACE KEY

### REPEAT SPACE KEY

THE PURPOSE OF THE SPACE KEY IS TO MOVE THE CARRIAGE MORE THAN ONE SPACE REPEATEDLY, WITHOUT PRINTING A CHARACTER.

#### NORMAL MODE :

THE REPEAT SPACE RATCHET COMMAND BAIL SPRING (18) THROUGH A SERIES OF LEVERS / HOLDS REPEAT SPACE KEY (15) AGAINST KEY LEVER UPSTOP (14) AND ALSO HOLDS REPEAT KEY RATCHET (5) FROM ENGAGING WITH REPEAT SPACE INTERMEDIATE GEAR (8).

#### OPERATED MODE :

REPEAT SPACE KEY (15) WILL MOVE DOWN WHEN DEPRESSED ROTATING ON SHAFT (13) / RAISING THE REAR EXTENSION (D). REPEAT KEY INTERMEDIATE BAIL (12) CONNECTED TO REPEAT SPACE KEY (15) ALSO ROTATES AND RAISES THE REAR EXTENSION (C), THE CONNECTING LINK (11), AND THE EXTENSION (B) OF REPEAT SPACE KEY INTERMEDIATE CONNECTING BAIL (17), THEREBY ROTATING SPACE KEY INTERMEDIATE'S CONNECTING (17).

LOWER EXTENSION (F) OF SPACE KEY INTERMEDIATE'S CONNECTING BAIL (17) WILL MOVE FORWARD CONTACTING AND ROTATING ESCAPEMENT BRACKET ASS'Y LOOSE DOG RELEASE (24) (PLATE (23)). THIS WILL LOWER LOOSE DOG (25) (PLATE (23)), THUS CARRIAGE IS FREE TO MOVE. SIMULTANEOUSLY REAR EXTENSION (G) OF SPACE KEY INTERMEDIATE'S CONNECTING BAIL (17) WILL LOWER CAUSING REPEAT SPACE RATCHET COMMAND BAIL (20) TO ROCK CLOCKWISE ON SHAFT (19). PORTION (H) OF REPEAT SPACE COMMAND BAIL (20) WILL / MOVE TOWARDS FRONT OF MACHINE RELEASING REPEAT SPACE RATCHET (5) WHICH IS UNDER TENSION OF RATCHET SPRING (4) CAUSING RATCHET TO SLIDE ON STUD AND ENGAGE WITH INTERMEDIATE GEAR (8).

THE CARRIAGE WHICH WAS FREE SIMULTANEOUSLY WILL MOVE THE SPEED OF THE MOVEMENT IS GOVERNED BY THE OSCILLATING ACTION OF THE REPEAT SPACE KEY PAWL (6) THAT ENGAGES AND DISENGAGES WITH THE LOBS OF THE RATCHET.

REPEAT SPACE KEY (15) IS DEPRESSED, ESCAPEMENT LOOSE DOG IS OUT OF ENGAGEMENT WITH A TOOTH OF ESCAPEMENT WHEEL, ALLOWING CARRIAGE TO MOVE. REPEAT SPACE RATCHET IS IN MESH WITH INTERMEDIATE GEAR (8) AND REPEAT SPACE KEY PAWL (6) IS OSCILLATING THUS GOVERNING THE SPEED OF THE CARRIAGE MOVEMENT.

#### RESTORING ACTION :

RELEASING REPEAT SPACE KEY (15) WILL ALLOW REPEAT SPACE KEY RATCHET COMMAND / BAIL SPRING (18), THAT IS UNDER TENSION, TO RESTORE THE SPACE KEY (15), DISENGAGE REPEAT SPACE KEY RATCHET (5) FROM THE INTERMEDIATE GEAR (8) AND RELEASE THE ESCAPEMENT LOOSE DOG TO INTERCEPT AND ENGAGE A TOOTH OF THE ESCAPEMENT WHEEL STOPPING THE CARRIAGE MOVEMENT.

### ADJUSTMENTS

1. TIGHTEN SCREWS (1) TO OBTAIN A .060 TO .067 OF AN INCH (1.5MM TO 1.7MM) DISTANCE BETWEEN THE ESCAPEMENT ROCKER BRACKET AND THE REPEAT RATCHET AND PAWL BRACKET (2). SEE FIG. 3.
2. LOOSEN SCREW (23) AND NUT (24) THAT CONNECTS REPEAT KEY (15) WITH REPEAT / SPACE KEY INTERMEDIATE BAIL (12).
3. MAINTAINING EXTENSION (E) OF REPEAT SPACE KEY LEVER (15) IN CONTACT WITH KEY-LEVER UPSTOP (14) AND WITH .040 TO .052 OF AN INCH (1MM TO 1.3MM) GAP BETWEEN FRONT FACE OF REPEAT SPACE RATCHET (5) AND BACK FACE OF REPEAT SPACE INTERMEDIATE GEAR (8) TIGHTEN SCREW (23) AND NUT (24). (SEE FIG 1).

#### NOTE 1 :

WHEN REPEAT SPACE KEY (15) IS IN NORMAL POSITION, PORTION (H) OF REPEAT SPACE RATCHET COMMAND BAIL (20) SHOULD BE IN CONTACT WITH FACE (A) OF REPEAT SPACE RATCHET (5). (FIG. 1).

#### NOTE 2 :

WHEN REPEAT SPACE KEY (15) IS DEPRESSED, PORTION (H) OF REPEAT SPACE RATCHET COMMAND BAIL (20) SHOULD NOT BE CONTACTING FACE (A) OF REPEAT SPACE RATCHET (5). (SEE FIG 2). ALSO FRONT FACE OF REPEAT SPACE RATCHET (5) SHOULD LINE UP WITH FRONT FACE OF REPEAT SPACE INTERMEDIATE GEAR (8).

#### NOTE 3 :

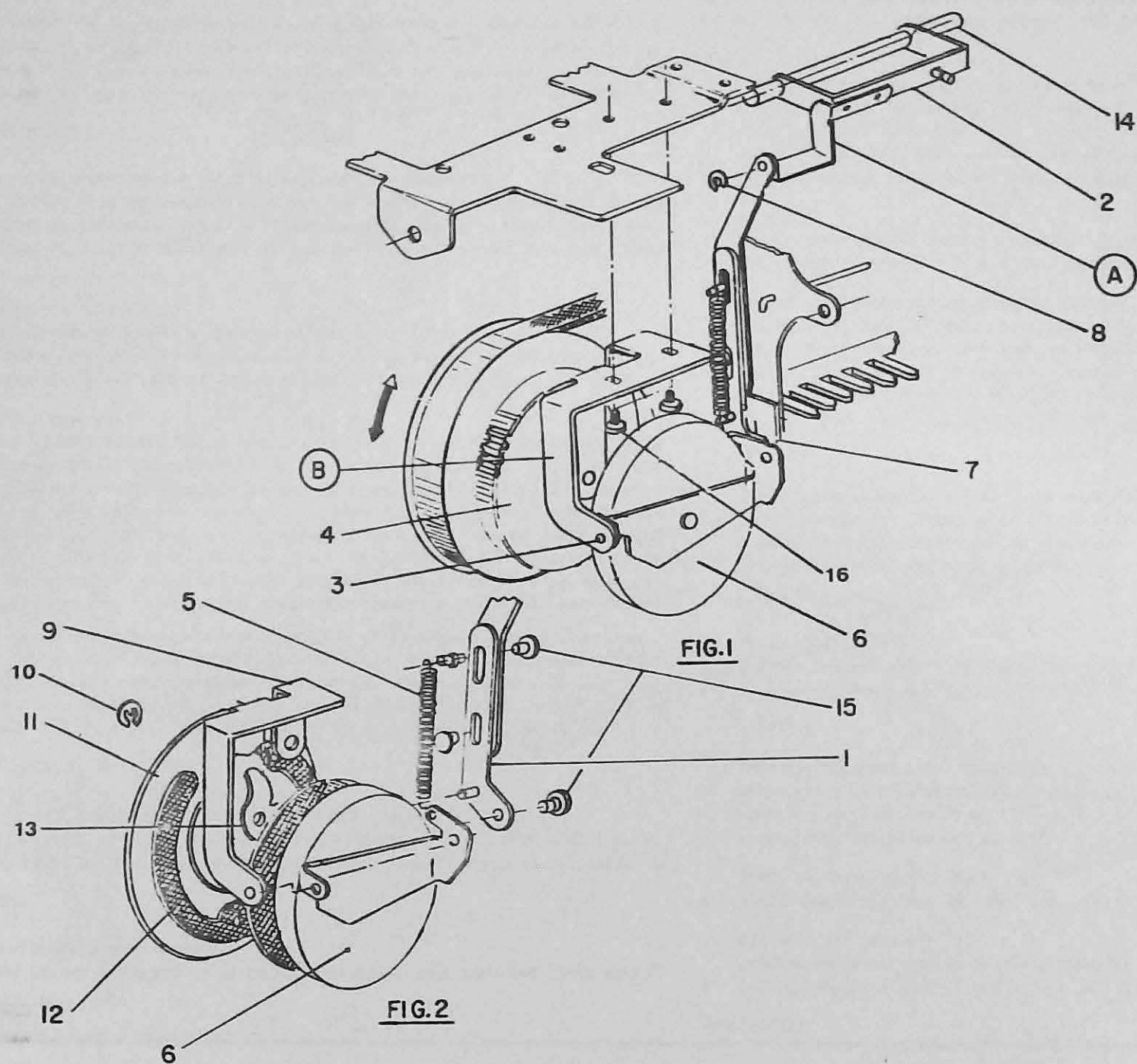
AT THE MOMENT LOOSE DOG (12) PLATE (23) DISENGAGES FROM ESCAPEMENT WHEEL / (13) PLATE (23) FREEING THE CARRIAGE TO MOVE, THE GEAR PORTION OF REPEAT SPACE RATCHET (5) SHOULD BE IN MESH WITH REPEAT SPACE INTERMEDIATE GEAR (8) BY / ABOUT .04 TO .06 OF AN INCH (1MM TO 1.5MM). IT MAY BE NECESSARY TO FORM LIP (B) OF LOOSE DOG RELEASE (24) TO OBTAIN THIS CONDITION. WHEN REPEAT SPACE KEY IS FULLY DEPRESSED CONDITIONS EXPLAINED IN NOTE 2 ABOVE WILL EXIST.

4. WITH SCREW DRIVER HOLD SCREW (1) AND ADJUST ECCENTRIC (22) TO OBTAIN PROPER MESH BETWEEN REPEAT SPACE RATCHET (5) AND REPEAT SPACE RATCHET INTERMEDIATE GEAR (8).
5. TO REGULATE THE SPEED OF THE CARRIAGE MOVEMENT, LOOSEN SCREWS (26), SLIDE COUNTERWEIGHT (27) AND COUNTERWEIGHT FASTENING PLATE (28) UP OR DOWN THE / SLOT OF REPEAT SPACE PAWL (6). TIGHTEN SCREWS (26). (SEE FIG. 4). ADDITIONAL FINE ADJUSTMENT CAN BE OBTAINED BY CHANGING THE HOOK-UP OF SPRING (21) UP OR DOWN THE NOTCHES OF REPEAT SPACE RATCHET COMMAND BAIL (20).

#### NOTE :

ON "A", "B" AND "C" LENGTH CARRIAGE ONLY ONE COUNTERWEIGHT (27) IS REQUIRED BUT ON "D" AND "F" LENGTH CARRIAGE TWO COUNTERWEIGHTS ARE USED.





## 18 BRAKE

### GOVERNOR

THE PURPOSE OF THE GOVERNOR IS TO REGULATE THE SPEED OF THE CARRIAGE DURING TABULATION.

#### NORMAL MODE :

LINK GOVERNOR ASSEMBLY (1) IS CONNECTED WITH TABULATOR FRICTION BAIL ASSEMBLY / (2). GOVERNOR ASSEMBLY IS AT REST POSITION, THEREFORE, THE PINION GEAR IS NOT MESHED WITH THE SPRING DRUM GEAR.

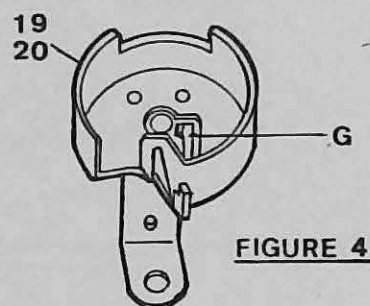
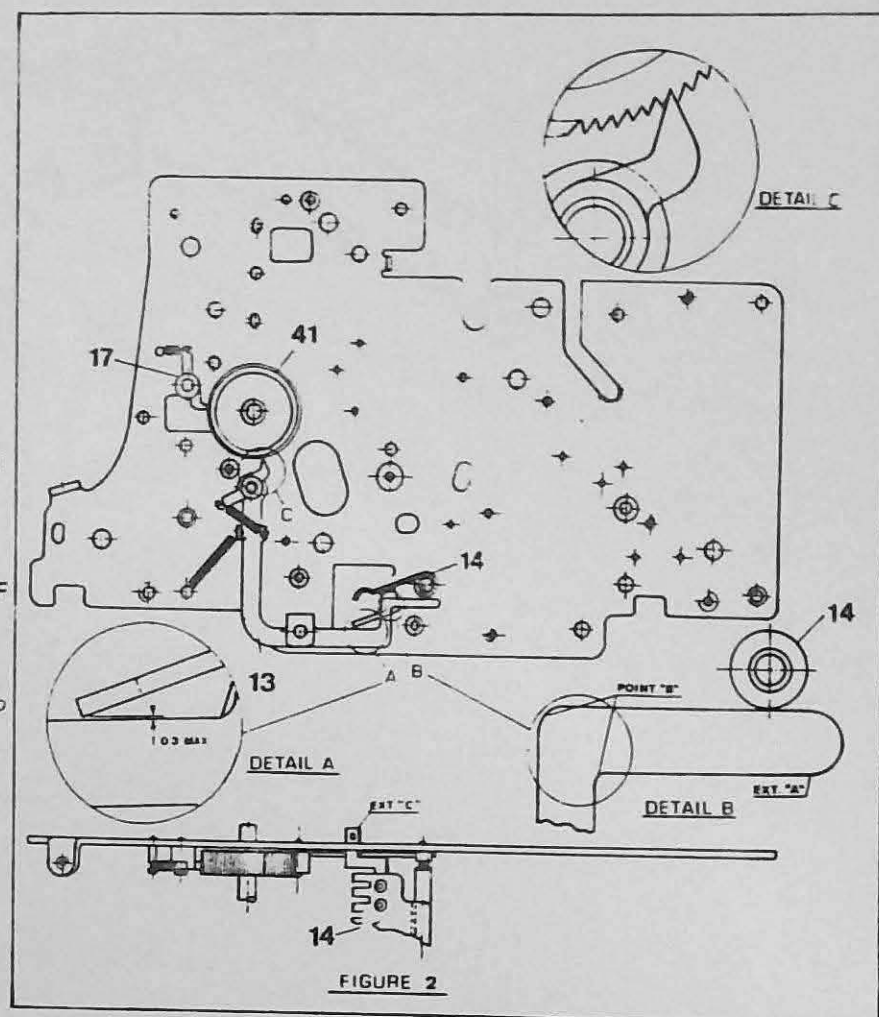
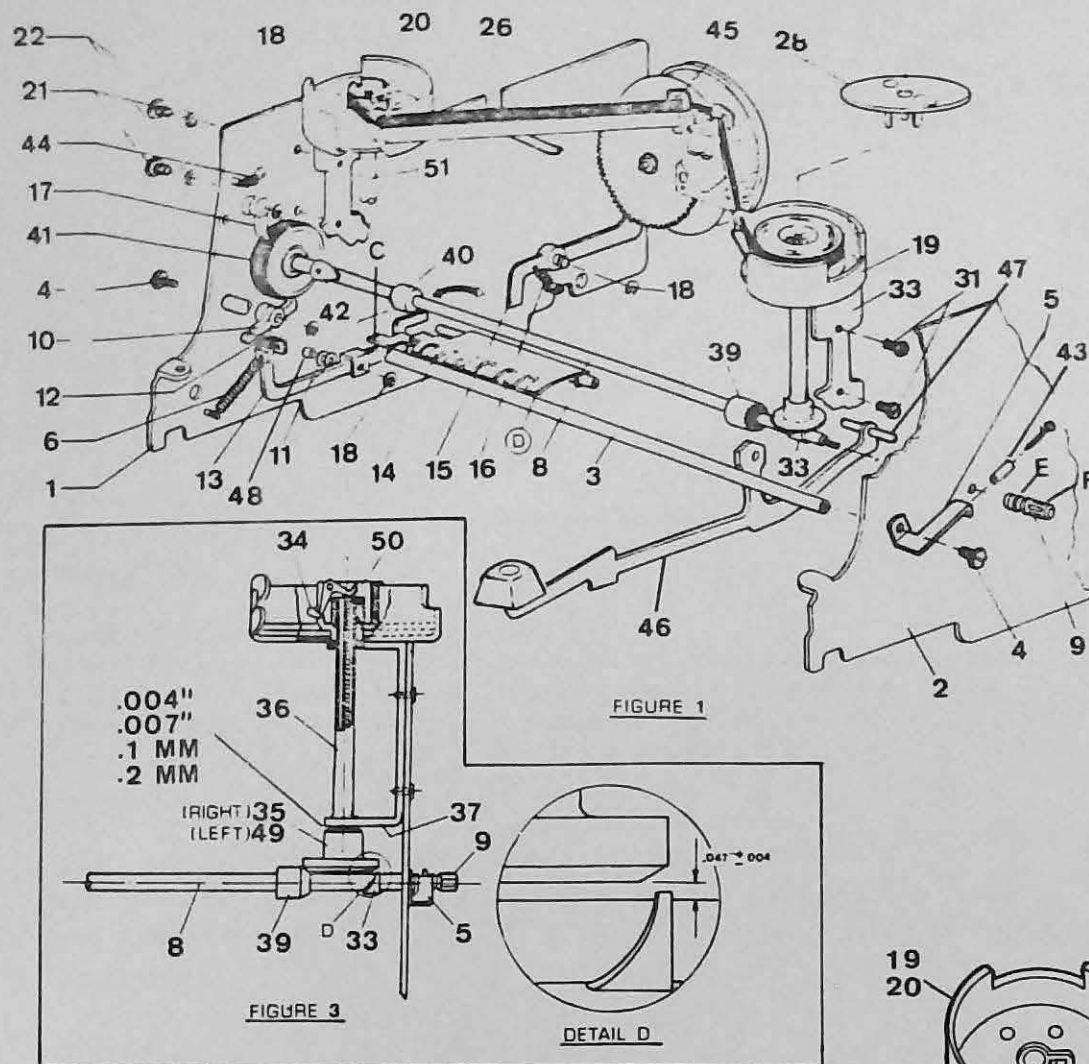
#### ACTION MODE :

DURING TABULATION, TABULATOR FRICTION BAIL (2) PIVOTS CLOCKWISE ON SHAFT (14) LIFTING LINK GOVERNOR ASSEMBLY (1). GOVERNOR (6) PIVOTING CLOCKWISE ON STUD (3) AND STUD GOVERNOR BRACKET (7), WILL MESH PINION GEAR WITH SPRING DRUM GEAR (4). PLATES AND SHOES INSIDE GOVERNOR ASSEMBLY (6) WILL ROTATE BY CENTRIFUGAL FORCE AND REGULATE THE SPEED OF THE SPRING DRUM.

#### OPERATED MODE :

FRICTION BAIL (2) IS UPWARD AND GOVERNOR GEAR (6) MESHED WITH SPRING DRUM GEAR (4).





## 19 RIBBON DRIVE

### RIBBON DRIVE AND REVERSE

THE PURPOSE OF THE RIBBON DRIVE MECHANISM IS TO WIND THE RIBBON ON THE RIGHT OR LEFT SPOOL AND TO AUTOMATICALLY REVERSE THE RIBBON FEED DIRECTION.

#### NORMAL MODE :

THE FORWARD PORTION OF THE KEYLEVER (46) WILL LOWER PIVOTING ON FULCRUM WIRE (47), CONTACTING FINGER (D) OF THE RIBBON UNIVERSAL BAR (14).

RIBBON UNIVERSAL BAR (14) WILL ROTATE COUNTERCLOCKWISE PIVOTING ON STUDS, CAUSING THE ATTACHED END EXTENSION (C) TO LOWER CONTACTING AND ROTATING RIBBON DRIVE PAWL BELL CRANK (13) CLOCKWISE ON STUD (48). RIBBON DRIVE PUSH PAWL (10) WILL ENGAGE AND ROTATE RIBBON DRIVE RATCHET (41).

RIBBON DRIVE RATCHET (41), LEFT GEAR (40) AND RIGHT GEAR (39) ARE ALL FIXED ON RIBBON DRIVE SHAFT (8) AND ROTATE COUNTERCLOCKWISE AT ALL TIMES. POSITION OF STUD (43) ATTACHED TO RIBBON DRIVE DETENT SPRING (5) IS ENGAGED IN RIBBON DRIVE DETENT CAM (9) DETERMINES WHICH SPOOL THE RIBBON WINDS ON.

WHEN STUD (43) IS ENGAGED IN RECESS (E) OF CAM (9) RIGHT GEAR (39) WILL ROTATE RIGHT RIBBON SPOOL GEAR 35.

WHEN STUD (43) IS ENGAGED IN RECESS (F) OF CAM (9) THE LEFT GEAR (40) WILL DRIVE LEFT RIBBON SPOOL GEAR (49).

FIGURE (3) SHOWS THE RIGHT RIBBON SPOOL GEAR (35) MESHED WITH GEAR (39). SHAFT (8) ALWAYS ROTATES COUNTERCLOCKWISE, SO GEAR (39) WILL ROTATE COUNTERCLOCKWISE, TURNING GEAR AND SHAFT (30) COUNTERCLOCKWISE, WINDING THE RIBBON ONTO THE RIGHT RIBBON SPOOL. THE RIBBON WILL CONTINUE TO WIND ONTO THE RIGHT RIBBON SPOOL UNTIL RIBBON UNWINDING FROM LEFT SPOOL LIBERATES TRIP LEVER (34) ALLOWING PLUNGER (50) SHOWN IN FIGURE (3) TO FALL. CAM (42) FIXED TO SHAFT (8) ROTATES AND THE NARROW PORTION OF CAM (42) WILL CONTACT PLUNGER (50) AND MOVE SHAFT (8) TO THE LEFT. CAM (42) ATTACHED TO SHAFT (8) WILL DETENT FROM RECESS (E) TO (F) OF SPRING (5) AND WILL HOLD SHAFT (8) IN DETENT.

AT THIS TIME GEAR (40) WILL BE MESHED WITH THE LEFT RIBBON GEAR (49) AND WILL ROTATE SHAFT (51) CLOCKWISE WINDING THE RIBBON ON THE LEFT SPOOL.

#### ADJUSTMENTS

WIND THE RIBBON ON THE LEFT RIBBON SPOOL; REMOVE RIBBON WINDING DISC (28) FROM THE RIGHT RIBBON SPOOL (19), THEN REMOVE END OF RIBBON RIGHT SPOOL AND REMOVE THE RIBBON FROM CARRIER (45); CONTINUE TO WIND THE RIBBON ONTO THE LEFT SPOOL AND REMOVE THE RIBBON COMPLETE WITH THE CORE FROM THE LEFT RIBBON SPOOL (20) RE MOVE SCREW (31) AND REMOVE THE RIGHT RIBBON SPOOL (19) FROM THE MACHINE).

CAM (33) AND (42) IS ATTACHED TO SHAFT (8) BY A PIN THE POINTS OF CAMS MUST BE ON OPPOSITE SIDES OF SHAFT (8) WITH HIGH POINTS TOWARD THE CENTER. IF REVERSE CAMS (33) AND (42) ARE NOT SET OPPOSITE AND OPERATOR SHOULD REMOVE RIBBON COMPLETELY FROM MACHINE, IT WOULD PERMIT BOTH RIBBON REVERSE PLUNGERS (34) TO ENGAGE BOTH REVERSE CAMS (33) AND (42) SIMULTANEOUSLY WHICH WOULD LOCK THE RIBBON DRIVING MECHANISM. REPLACE THE RIGHT RIBBON SPOOL COMPLETE (19), LOCATING PLUNGER (34) DIRECTLY OVER SHAFT (8).

1. LEFT RIBBON SPOOL SHAFT PINION GEAR (35) IS PRESS FIT ONTO THE RIBBON SPOOL SHAFT (36) TO OBTAIN ABOUT .008" CLEARANCE BETWEEN THE TOP OF GEARS (35) / AND BOTTOM OF RIBBON SPOOL SHAFT BRACKET (37). RIGHT RIBBON SPOOL IS ALSO ASSEMBLED IN THE SAME MANNER.

2. RIBBON SPOOL TENSION IS OBTAINED BY EXTENSION (G) ON RIBBON SPOOL 19 AND 20 FIG. 4 PRESSING AGAINST RIBBON SPOOL SHAFT 51.

TOO MUCH TENSION COULD CAUSE POOR RIBBON COVER. NOT ENOUGH TENSION WOULD ALLOW RIBBON TO WIND LOOSELY ON THE RIBBONS SPOOLS.

3. RIGHT RIBBON DRIVE GEAR (39), LEFT RIBBON DRIVE GEAR (40) AND RIBBON DRIVE RATCHET (41) ARE PRESS FITTED ONTO THE RIBBON DRIVE SHAFT (8) AND THE RIGHT RIBBON DRIVE REVERSING CAM (33), LEFT RIBBON DRIVE REVERSING CAM (42) ARE PINNED ONTO THE RIBBON DRIVE SHAFT (8) TO A SET DIMENSION USING GAGE 70-0567 FOR CONTROLLING THEIR PROPER LOCATION ON THE SHAFT.

4. LOOSEN SCREWS (31), PLACE GAGE 76-0550 ON THE RIBBON DRIVE SHAFT (8) UNDER RIBBON SPOOL GEAR (35), ADJUST RIBBON SPOOL SO RIBBON SPOOL GEAR (35) WILL REST ON GAGE 76-0550, TIGHTEN SCREWS (31). BOTH LEFT SPOOL AND RIGHT / SPOOL ADJUSTMENT IS DONE IN THE SAME MANNER.

NOTE : THE ABOVE FOUR ADJUSTMENTS ARE VERY IMPORTANT TO OBTAIN THE PROPER MESH OF THE RIBBON DRIVE GEAR WITH THE RIBBON SPOOL GEAR.

5. LOOSEN SCREW (4), LOCATE ROLLER (43) ATTACHED TO RIBBON DRIVE DETENT SPRING (5) IN ONE OF THE RECESS OF RIBBON DRIVE DETENT CAM (9), APPLY SLIGHT PRESSURE ON THE CENTER OF THE SPRING (5) AND TIGHTEN SCREW (4).

CHECK IN THE FOLLOWING MANNER TO CONFIRM IF TOO LITTLE OR TOO MUCH PRESSURE WAS APPLIED ON SPRING (5) BEFORE TIGHTENING SCREW (4). APPLY 4.2 TO 6.3 / OZS. (120 TO 180 GRMS) ON EITHER END OF THE RIBBON DRIVE SHAFT (8), THIS SHOULD CAUSE DETENT OF SHAFT (8) FROM ONE RECESS OF THE CAM (9) TO NEXT / RECESS.

NOTE : ROLLER (43) SHOULD REVOLVE DURING DETENTING.



## 19 RIBBON DRIVE

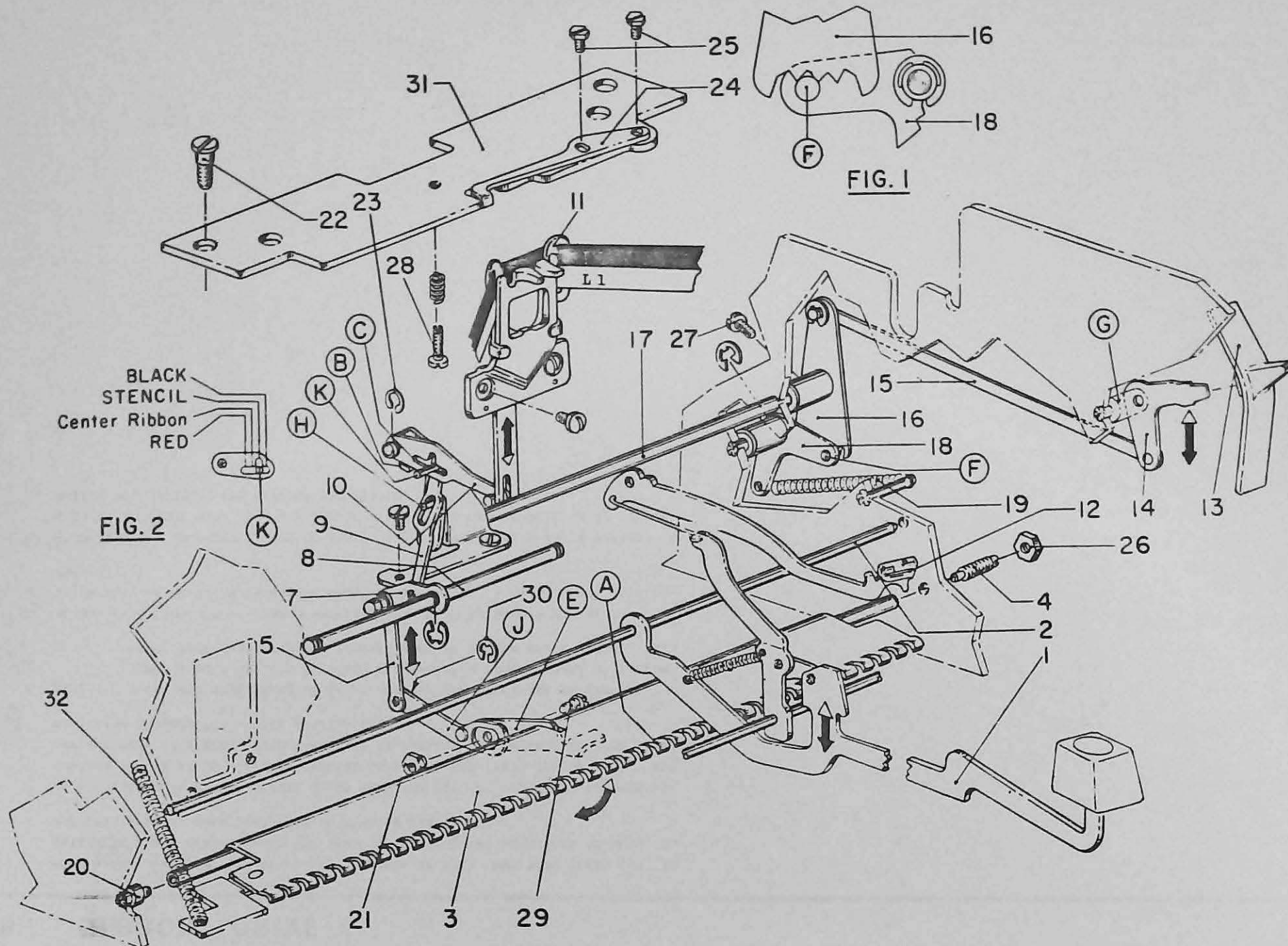
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6. FROM RIBBON DRIVE DETENT SPRING (5) TOWARDS OR AWAY FROM SIDE PLATE (2) TO OBTAIN THE SAME PLAY BETWEEN THE SPOOL GEAR AND DRIVE GEAR WHEN IN MESH ON THE LEFT SIDE AS WHEN GEARS ARE IN MESH ON RIGHT SIDE.
7. ADJUST EXTENSION "A" OF RIBBON DRIVE PAWL ARM (13) AT POINT "B" SO WHEN EXTENSION "A" IS AT REST AGAINST RIBBON UNIVERSAL BAR (14), SEE DETAILS "B" CONTACT FACE TO RIBBON DRIVE PAWL (10) IS PARALLEL TO CONTACT FACE OF RIBBON DRIVE RATCHET (41). SEE DETAILS (C).

NOTE : WHEN THIS ADJUSTMENT IS RIGHT AND THE TWO FACES ARE IN CONTACT / THERE SHOULD BE .010 TO .020" PLAY BETWEEN CONTACT FACE OF RIBBON DRIVE STOP PAWL (44) AND CONTACT FACE OF RIBBON DRIVE RATCHET (41).

8. ADJUST EXTENSION "C" OF RIBBON UNIVERSAL BAR (14) TO OBTAIN A MAXIMUM OF .012" PLAY IN RELATION TO RIBBON DRIVE PAWL ARM (13) WHEN AT REST. SEE DETAIL A.
9. WHEN PROPERLY ADJUSTED A FEED OF THREE TEETH OF THE RIBBON DRIVE RATCHET / (41) IS OBTAINED WITH EACH IMPULSE OF A KEY LEVER AND BETWEEN 25 TO 35 IMPULSES WILL REVOLVE THE RATCHET 360 DEGREE.





## 20 RIBBON SELECTOR

### RIBBON POSITION SELECTOR

THE PURPOSE OF THE RIBBON POSITION SELECTOR IS TO SELECT THE PORTION OF THE RIBBON THE TYPE WILL STRIKE. WHEN TYPING WITH A RED/BLACK RIBBON, SELECTION CAN / BE MADE OF EITHER BLACK OR RED OR STENCIL, AND WHEN USING AN ALL BLACK RIBBON THREE POSITIONS; "UPPER", "CENTER", "LOWER" AND "STENCIL" CAN BE SELECTED.

FIGURE (1) IS VIEWING THE RIBBON SELECTOR MECHANISM FROM THE RIGHT SIDE OF THE MACHINE. THE FIRST NOTCH TO THE LEFT OF STUD (F) IS FOR BLACK. THE SECOND / NOTCH WHERE STUD (F) IS LOCATED IS FOR STENCIL. THE THIRD NOTCH IS FOR THE CENTER OF THE RIBBON AND THE FOURTH NOTCH IS FOR RED. WHEN THE RIBBON SELECTOR / (13) IS IN THE TOP POSITION, STUD (K) WILL BE IN THE BLACK POSITION (SEE FIG. 2). STUD (K) WILL BE IN THE FRONT OF THE HORIZONTAL SLOT (C) OF THE ACTUATOR ARM / (10). AS THE RIBBON SELECTOR (13) IS MOVED DOWNWARD, BELLCRANK (14) WILL MOVE CLOCKWISE PIVOTING ON STUD (G) CAUSING LINK (15) TO MOVE BELLCRANK (16) COUNTERCLOCKWISE, STUD (F) WILL NOW BE IN STENCIL POSITION AS SHOWN IN FIGURE (1). AS BELLCRANK (16) MOVED COUNTERCLOCKWISE, ATTACHED SHAFT (17) WILL ALSO ROTATE / COUNTERCLOCKWISE CAUSING STUD (H) TO MOVE LINK (9) TO THE REAR POSITION STUD (K) DIRECTLY UNDER THE VERTICAL PORTION OF SLOT (C) AND WILL MOVE INTO THE VERTICAL SLOT (C) WHEN A KEYLEVER (1) IS DEPRESSED; THEREFORE, THE RIBBON WILL NOT RAISE WHEN THE SELECTOR (13) IS IN STENCIL POSITION BELLCRANK (16) WILL BE HELD IN THE DESIRED POSITION BY STUD (F) ON BELLCRANK (18) BY THE TENSION OF SPRING / (19). WHEN RIBBON SELECTOR (13) IS MOVED TO THE THIRD POSITION, STUD (K) WILL BE POSITIONED TO RAISE RIBBON CARRIER (11) SO THE TYPE WILL PRINT ON THE CENTER OF THE RIBBON. WHEN RIBBON SELECTOR IS SET AT THE FOURTH POSITION OR RED, STUD (K) WILL BE AT THE REAR OF HORIZONTAL SLOT (C) OF THE RIBBON ACTUATOR ARM (10), SEE FIG. 2, AND THE TYPE WILL STRIKE ON THE LOWER HALF OR THE RED PORTION OF / THE RIBBON. THE POSITION OF STUD (K) IN THE HORIZONTAL SLOT (C) DETERMINES HOW HIGH THE RIBBON IS GOING TO RAISE.

### RIBBON COVER

THE PURPOSE OF RIBBON COVER MECHANISM IS TO RAISE THE RIBBON TO PRINTING POSITION.

### NORMAL MODE :

ACTUATOR ARM (10) IS AT REST ON LIP (B); STUD (K) IS RESTING IN THE BOTTOM OF SLOT (C) TO LOCATE RIBBON UNIVERSAL BAR (3) IN RELATION TO KEYLEVERS (1).

DEPRESS KEYLEVER (1). THE FORWARD PORTION OF KEYLEVER (1) WILL LOWER, PIVOTING ON FULCRUM WIRE (2) CONTACTING FINGER (A) OF RIBBON UNIVERSAL BAR (3). RIBBON UNIVERSAL BAR (3) WILL ROTATE CLOCKWISE PIVOTING ON STUDS (4) AND (20), CAUSING THE ATTACHED REAR EXTENSION (E) TO RAISE ARM (5), YIELDING SPRING (32). BELLCRANK (7) WILL ROTATE CLOCKWISE ON SHAFT (8) RAISING LINK (9) CAUSING STUD (K) TO

CONTACT AND LIFT THE ACTUATOR ARM, (10) RAISING RIBBON CARRIER (11) TO THE PRINTING POSITION.

### OPERATION MODE :

KEYLEVER (1) IS CONTACTING INDIVIDUAL FINGER (A) OF RIBBON UNIVERSAL BAR (3); STUD (K) HAS RAISED AND IS HOLDING ACTUATOR ARM (10) AND RIBBON CARRIER (11) TO THE SELECTED RIBBON POSITION.

### RESTORING POSITION :

RELEASE KEYLEVER (1) AND THE FORWARD PORTION WILL RAISE, ALLOWING RIBBON UNIVERSAL BAR (3) TO ROTATE COUNTERCLOCKWISE, EXTENSION (E) AND ATTACHED LINK (5) WILL LOWER THROUGH THE RESTORING ACTION OF SPRING (32). BELLCRANK (7) WILL ROTATE COUNTERCLOCKWISE ON SHAFT (8) LOWERING LINK (9). STUD (K) WILL LOWER ALLOWING ACTUATOR ARM (10) TO RETURN TO LIP (B) AS RIBBON CARRIER (11) RESTORES TO NORMAL AND THE TYPE BAR (12) WILL REST ON THE TYPE BAR CUSHION.

### ADJUSTMENTS

MACHINES ARE USUALLY EQUIPPED WITH ONE-HALF INCH BLACK AND RED RIBBONS OR ONE-HALF INCH ALL BLACK RIBBONS.

WHEN THE MACHINE PRINTS PROPERLY IN BLACK POSITION, THE RED BECOMES AUTOMATIC. BEFORE RIBBON COVER ADJUSTMENTS CAN BE MADE, THE MACHINE MUST BE PROPERLY ADJUSTED FOR CYLINDER AND ANVIL ON FEET, NOTION, RIBBON SPOOL SHAFT CLEARANCE AND TENSION AND ALL SEGMENT ADJUSTMENTS.

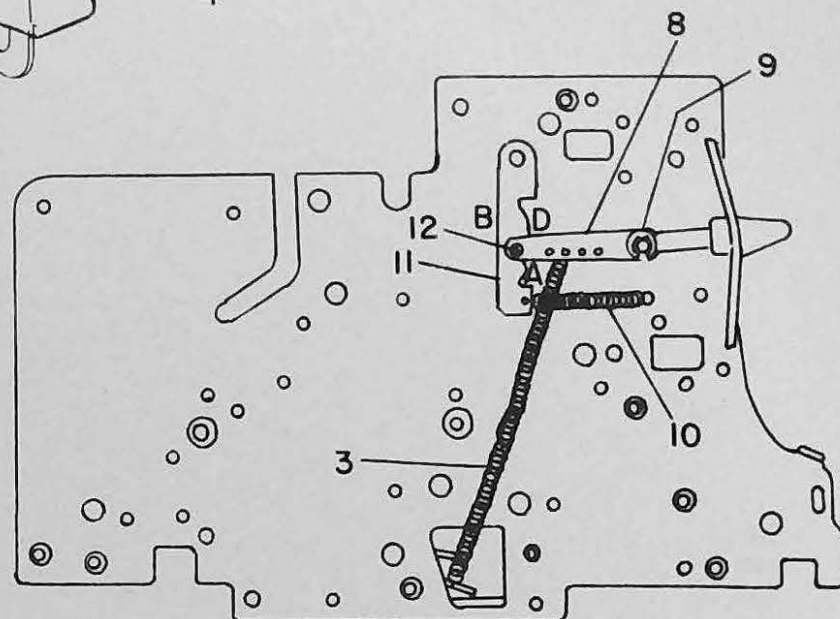
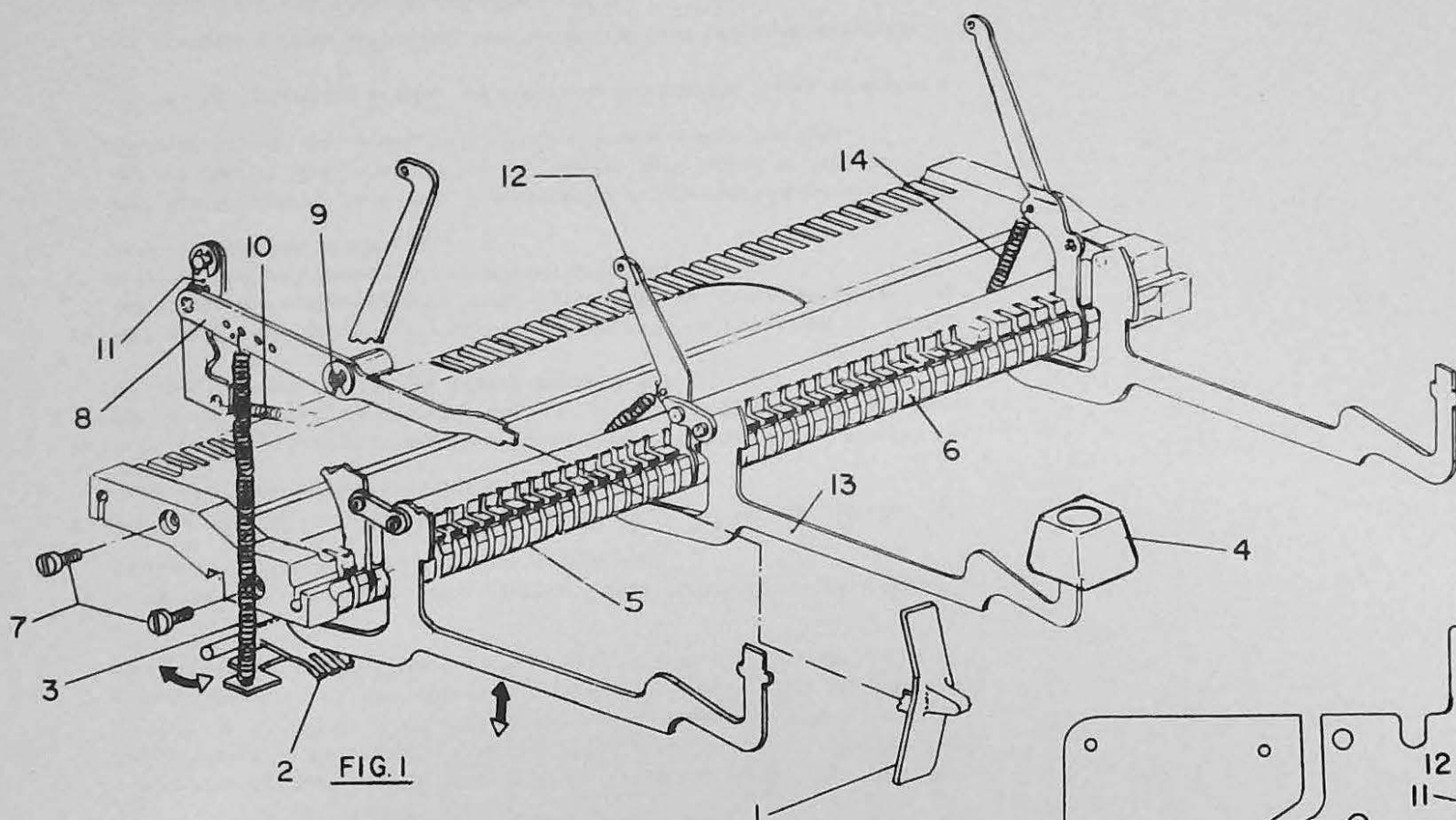
1. LOOSEN NUT (26) AND ADJUST PIVOT SCREW (4) TO ELIMINATE EXCESS END PLAY OF RIBBON UNIVERSAL BAR (3). THE RIBBON UNIVERSAL BAR IS ADJUSTABLE ON RIGHT END ONLY.
2. LOOSEN SCREW (29). ADJUST ECCENTRIC NUT (21) SO THE HIGH POINT IS STRAIGHT TO THE FRONT. TIGHTEN SCREW (29). IT MAY BE NECESSARY TO LOCATE ECCENTRIC FOR FINAL ADJUSTMENT. THIS IS TO MAKE SURE THE RIBBON UNIVERSAL BAR FINGERS (A) ARE NOT RESTING ON THE KEY LEVERS (1) WHEN THE KEYLEVER IS AT REST POSITION.
3. APPLY FOLD-A-MATIC. MOVE RIBBON CONTROL LEVER (13) TO STENCIL. LOOSEN SELECTOR SHAFT SCREW (27). ROTATE SHAFT (17) UNTIL STUD (K) OF RIBBON LEFT PUSH LINK UPPER (9) WILL ENTER VERTICAL POSITION OF SLOT (C) OF RIBBON ACTUATOR ARM (10). CENTRALLY, WHEN A KEYLEVER IS DEPRESSED OR TYPE BAR IS / RAISED TO ANVIL POSITION. TIGHTEN SCREW (27). RIBBON LEFT PUSH LINK STUD (K) MUST BE ACCURATELY ADJUSTED FOR STENCIL POSITION BEFORE THE REMAINING ADJUSTMENTS CAN BE MADE.



## 20 RIBBON SELECTOR

4. WITH RIBBON SELECTOR (13) IN BLACK POSITION, DEPRESS SHIFT LOCK KEY. WITH PAPER IN MACHINE, TYPE A SERIES OF UNDERScores. THE TOP EDGE OF THE BLACK PORTION OF THE RIBBON SHOULD BE APPROXIMATELY 1/32" BELOW THE TYPED UNDERSCORE. IF NOT, FORM LIP (B) TO OBTAIN THIS CONDITION. NORMALLY LIP (B) WOULD REQUIRE ADJUSTMENT. ONLY IF A RIBBON CARRIER BRACKET HAS BEEN REPLACED WOULD IT BE NECESSARY TO MAKE THIS ADJUSTMENT. RESTORE FOD-A-MATIC TO TYPING POSITION.
5. LOOSEN SCREWS (25). THEY ARE ACCESSIBLE BY MOVING THE CARRIAGE OF THE EXTREME LEFT POSITION TO THE REAR OF THE CARD HOLDERS BUT IN FRONT OF THE CARRIAGE. MOVE RED RIBBON UPSTOP (24) TO THE REAR. THE BLACK UPSTOP SCREW (28) IS ACCESSIBLE THROUGH THE BOTTOM OF THE MACHINE. TIP THE MACHINE UP ON ITS BACK. TURN THE SCREW (28) IN THREE TURNS.
6. TYPE ENTIRE KEYBOARD IN BOTH BLACK AND RED. UPPER AND LOWER CASE. THE TYPE SHOULD STRIKE ON THE CENTER OF THE BLACK AND CENTER OF RED PORTIONS OF THE RIBBON. IF TYPE STRIKES TOO HIGH ON THE RIBBON, LOOSEN SCREW (29) AND ADJUST ECCENTRIC (21) TOWARD BOTTOM OF THE MACHINE. IF TYPE STRIKES TOO LOW ON THE RIBBON, LOOSEN SCREW (29) AND ADJUST ECCENTRIC (21) TOWARD TOP OF THE MACHINE.
7. IF TWO OR THREE KEYLEVERS THROUGH RIBBON TOO HIGH OR TOO LOW, FORM RIBBON / UNIVERSAL BAR FINGERS (A) UP OR DOWN AS REQUIRED.
8. IF MORE THAN TWO OR THREE KEYLEVERS THROUGH RIBBON TOO HIGH OR TOO LOW, / CHECK PRECEDING RIBBON COVER ADJUSTMENTS.
9. MOVE THE RIBBON CONTROL LEVER (13) TO BLACK POSITION HOLD A TYPE BAR TO / PLATEN AND ADJUST BLACK UPSTOP SCREW (28) TO OBTAIN APPROXIMATELY .010 ADDITIONAL DOWNWARD MOVEMENT OF RIBBON UNIVERSAL BAR (3).
10. MOVE THE RIBBON CONTROL LEVER (13) TO RED POSITION HOLD TYPE BAR TO PLATEN AND ADJUST RED RIBBON ACTUATOR UPSTOP (24) TO OBTAIN APPROXIMATELY .010 ADDITIONAL DOWNWARD MOVEMENT OF RIBBON UNIVERSAL BAR (3). TIGHTEN ADJUSTING SCREWS (25).
11. WHEN RIBBON CONTROL LEVER (13) IS MOVED BLACK TO RED POSITION OR VICE VERSA AND THE CARRIER MOVES, THIS IS CALLED FLICKER, THIS INDICATES STUD (K) IS TOUCHING EDGE OF THE STENCIL SLOT (C) OF RIBBON ACTUATOR ARM (10).  
  
IF THE ABOVE CONDITION EXISTS, THE FOLLOWING ADJUSTMENTS SHOULD BE CHECKED:  
  
A. RIBBON UNIVERSAL BAR FINGERS ARE FORMED TOO HIGH (TOUCHING KEYLEVERS).  
B. RIBBON ACTUATOR DOWNSTOP (B) FORMED TOO LOW.





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FIG. 2

## 21 TOUCH CONTROL

### TOUCH CONTROL

THE PURPOSE OF TOUCH CONTROL IS TO GIVE THE TYPIST SELECTIVITY OF TOUCH.

#### NORMAL MODE :

THE KEY TENSION OR TOUCH CONTROL IS REGULATED BY THE AMOUNT OF SPRING TENSION APPLIED TO THE RIBBON UNIVERSAL BAR (3).

WHEN LEVER (1) IS IN THE UPWARD POSITION, STUD (12) OF THE KEY TENSION REGULATOR LEVER (8) WILL BE HELD BY SPRING (10) IN NOTCH (A) OF THE KEY TENSION REGULATOR DETENT LEVER (11), SPRING (3) IS AT ITS MINIMUM EXTENSION RESULTING IN THE LIGHTEST TOUCH. WHEN LEVER (8) PIVOTS CLOCKWISE ON STUD (9) DETENTING STUD (12) INTO NOTCH (D) OF THE DETENT LEVER (11) CAUSING SPRING (3) TO EXTEND THUS INCREASING KEYLEVER TENSION. ADDITIONAL TENSION CAN BE OBTAINED BY MOVING SPRING IN THE ANCHOR HOLES OF THE REGULATOR LEVER (8).

#### OPERATED MODE :

KEYLEVER (9) IS DOWN, RIBBON UNIVERSAL BAR (1) HAS BEEN PIVOTED CLOCKWISE, CAUSING SPRING (3) ANCHORED TO RIBBON UNIVERSAL BAR (2) AND KEY TENSION REGULATOR / LEVER (1) TO EXTEND.

#### RESTORING ACTION :

KEYLEVER (9) RETURNS, SPRING (3) RESTORES, ROTATING RIBBON UNIVERSAL BAR (2) COUNTERCLOCKWISE TO NORMAL MODE.



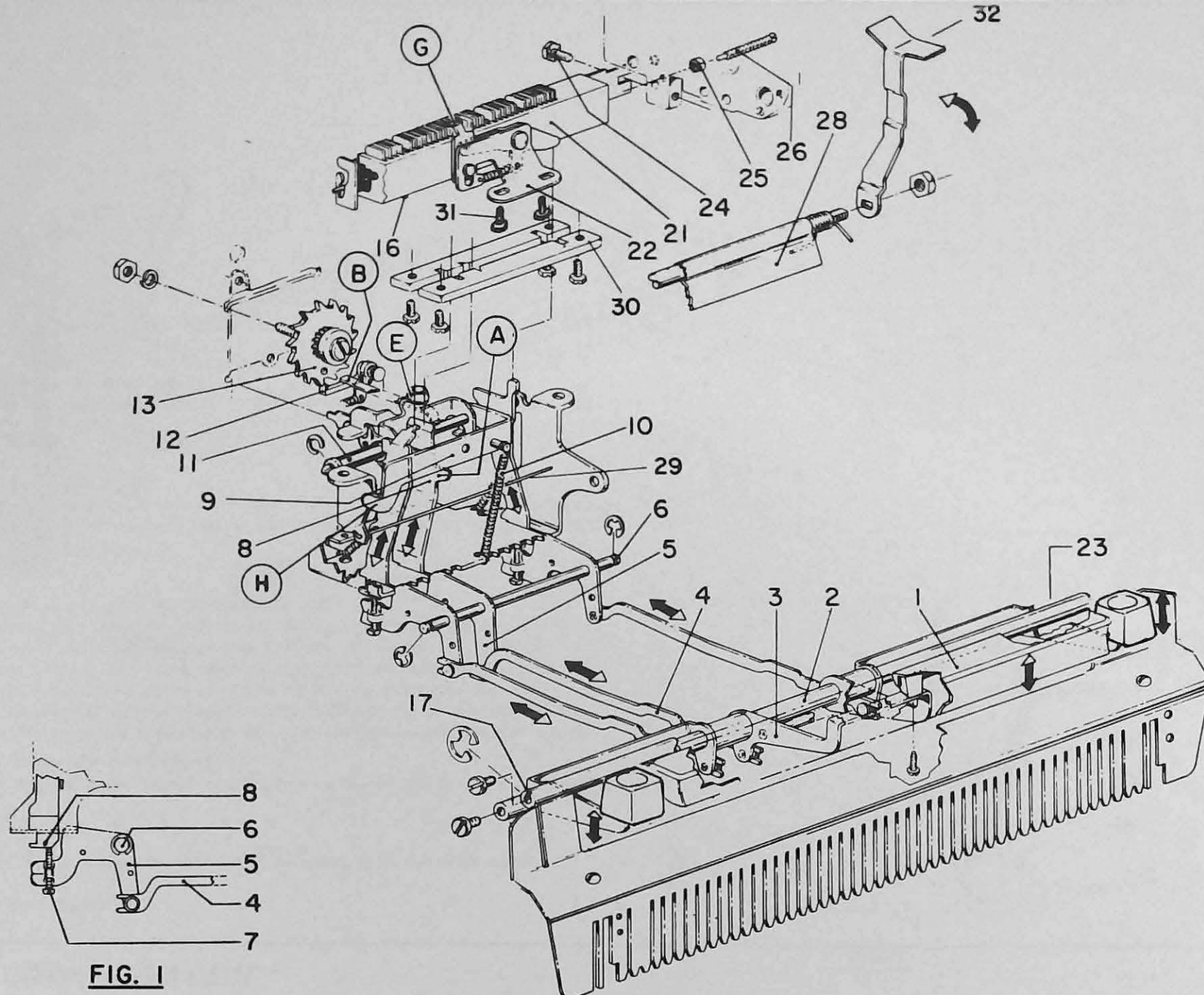


FIG. 1

## 22 TABULATOR

### TABULATOR

THE PURPOSE OF THE TABULATOR MECHANISM IS TO MOVE THE CARRIAGE SEVERAL SPACES BY PRESSING AND HOLDING THE TABULATOR BAR. THIS ALLOWS RAPID CARRIAGE MOVEMENT TO DO COLUMN WORK OR STATISTICAL REPORTS. TABULATOR STOPS CAN BE SET AT ANY DESIRED POSITION.

#### NORMAL MODE :

TABULATOR FRICTION BAIL (9) IS RESTING ON EXTENSION (A) OF TABULATOR BLADE (8). THE LOOSE DOG (12) IS AT REST POSITION ENGAGED WITH ESCAPEMENT WHEEL (13) PREVENTING THE CARRIAGE FROM MOVING.

DEPRESS TABULATOR BAR (1). THE FORWARD PORTION WILL LOWER, PIVOTING ON SHAFT (2) ROCKING ARM (3) CLOCKWISE, MOVING LINK (4) TO THE REAR AND ROCKING BELL-CRANK, (5) CLOCKWISE, PIVOTING ON SHAFT (6); FIGURE 1. SCREW (7) WILL CONTACT AND RAISE TABULATOR TABLE (8). EXTENSION (A) WILL LIFT FRICTION BAIL (9), YIELDING SPRING (10). AS BAIL (9) ROTATES COUNTERCLOCKWISE ON SHAFT (11), LIP (B) WILL LOWER AND RELEASE THE LOOSE DOG (12) FROM ESCAPEMENT WHEEL (13). THE CARRIAGE IS FREE TO MOVE TO THE LEFT BY TENSION OF THE MAIN SPRING.

AS BAIL (9) PIVOTS COUNTERCLOCKWISE, GOVERNOR CONNECTED TO EXTENSION (H) WILL ENGAGE THE SPRING DRUM GEAR (SEE SECTION ON GOVERNOR OPERATION) THE TABULATOR BRAKE WILL ALLOW THE CARRIAGE TO MOVE AT A SAFE AND EVEN SPEED TO PREVENT DAMAGE TO THE TABULATOR BLADE OR THE TABULATOR STOPS. THE CARRIAGE WILL MOVE TO THE LEFT UNTIL TABULATOR BLADE CONTACTS A SET TABULATOR STOPS (16).

#### OPERATED MODE :

TABULATOR BAR (1) IS DOWN; TABULATOR BLADE (8) IS RAISED; LIP (B) HAS RELEASED LOOSE DOG FROM ESCAPEMENT WHEEL (13), THE UPPER PORTION OF TABULATOR BLADE (8) IS IN CONTACT WITH A SET TABULATOR STOP (16). GOVERNOR IS ENGAGED WITH SPRING DRUM GEAR (4) (PLATE 18).

RELEASE TABULATOR BAR (1). THE FORWARD PORTION OF TABULATOR BAR WILL RAISE / ROCK ARM (3) COUNTERCLOCKWISE, PIVOTING ON SHAFT (2), ALLOWING LINK (4) TO MOVE TO THE FRONT, ROCKING BELL-CRANK (5) COUNTERCLOCKWISE, ALLOWING TABULATOR BLADE (8) TO LOWER. EXTENSION (A) WILL ALLOW BAIL (9) TO ROTATE CLOCKWISE, AS SPRING (10) RESTORES TO NORMAL. AS BAIL (9) ROTATES CLOCKWISE, THE LIP (B) WILL RAISE, ALLOWING LOOSE DOG (12) TO BE IN A POSITION TO INTERCEPT THE NEXT TOOTH ON ESCAPEMENT WHEEL (13). AS THE TABULATOR BLADE (8) LOWERS, IT WILL SLIDE OFF TABULATOR SET STOP (16), ALLOWING THE ESCAPEMENT WHEEL (13) TO MOVE COUNTERCLOCKWISE UNTIL INTERCEPTED BY THE LOOSE DOG (12). AS BAIL (9) RESTORES, EXTENSION (H) / WILL ROTATE COUNTERCLOCKWISE CAUSING GOVERNOR TO DISENGAGE FROM THE SPRING DRUM GEAR (SEE SECTION ON GOVERNOR OPERATION). TABULATOR BAR (1) IS RESTORED TO NORMAL WITH ARM (3) RESTING AGAINST SHAFT (17).

TABULATOR BLADE (8) HAS RESTORED TO NORMAL. LIP (B) HAS MOVED AWAY FROM THE LOOSE DOG (12) AND THE LOOSE DOG IS NOW HOLDING THE ESCAPEMENT WHEEL (13) AND THE CARRIAGE REMAINS IN A STATIONARY POSITION.

#### ADJUSTMENTS

MESH OF FEED RACK WITH ESCAPEMENT WHEEL PINION MUST BE PROPERLY ADJUSTED BEFORE TABULATOR ADJUSTMENT CAN BE MADE.

1. ADJUST TABULATOR CLEAR KEYLEVER, TABULATOR KEYLEVER (3) AND TABULATOR SET KEYLEVERS TO JUST LIMIT AGAINST TABULATOR KEY UPSTOP (17), BY ADJUSTING THE RESPECTIVE SCREWS (7).

TO REMOVE EXCESSIVE END PLAY IN TABULATOR KEYLEVER (3), TABULATOR SET KEYLEVER AND TABULATOR CLEAR KEYLEVER MOVE RUBBER RETAINER (23) TO THE LEFT UNTIL THERE IS MINIMUM AMOUNT OF SIDE PLAY IN THE BELL-CRANKS; CHECK ALL / BELL-CRANKS FOR FREEDOM OF MOVEMENT WITHOUT BINDS.

2. FORM LIP (B) SO ESCAPEMENT LOOSE DOG (12) DOES NOT BOTTOM IN GUIDE WHEN TABULATOR KEY BAR (1) IS FULLY DEPRESSED. THE LOOSE DOG (12) SHOULD BE APPROXIMATELY ONE HALF WAY DOWN IN LOOSE DOG GUIDE. THIS ADJUSTMENT WILL ALLOW ESCAPEMENT LOOSE DOG TO BE FULLY RESTORED AND IN POSITION TO INTERCEPT / TOOTH OF ESCAPEMENT WHEEL BEFORE TABULATOR STOP BLADE RELEASES "SET" TABULATOR STOP. THIS WILL ALSO PREVENT ESCAPEMENT LOOSE DOG BOTTOMING IN ESCAPEMENT LOOSE DOG GUIDE, WHICH COULD CAUSE INCORRECT TABULATION.
3. REMOVE PLATEN, PAPER THROUGH AND FEED ROLLS. SET ONE STOP (16) WITH A / SCREW DRIVER. LOOSEN TABULATOR STOP RACK SCREW (24), RIGHT AND LEFT, AND NUT (25) FOR SCREW (26). TURN SCREW (26) OUT SO IT WILL NOT INTERFERE WITH THE MOVEMENT OF THE TABULATOR STOP RACK (21). MOVE THE TABULATOR STOP RACK (21) TO THE LEFT (FACING REAR OF THE MACHINE) AS FAR AS THE SLOT WILL PERMIT. MAKE TWO SCREWS (24) FRICTION TIGHT. TURN SCREW (26) IN UNTIL 3/4 SPACE DROP OF THE CARRIAGE IS OBTAINED. TIGHTEN NUT (25). DROP IS A TERM USED TO DESCRIBE THE DISTANCE THE CARRIAGE TRAVELS AFTER TABULATOR STOP / BLADE (8) RELEASES "SET" TABULATOR STOP (16). WITH A TABULATOR STOP SET A NUMBER (20) POSITION ON THE FRONT CARRIAGE SCALE AND THE CARRIAGE AT (19), DEPRESS TABULATOR KEY BAR (1) AND HOLD. THE CARRIAGE WILL STOP AT 19-1/4. RELEASE TABULATOR KEY BAR (1). CARRIAGE WILL TRAVEL REMAINING 3/4 SPACE AND STOP AT (20) AFTER TABULATOR BLADE (8) RELEASES SET. SET TABULATOR / STOP (16). THIS WOULD BE CONSIDERED 3/4 SPACE DROP. THIS IS A VERY IMPORTANT ADJUSTMENT.

TABULATE TO THE SET TABULATOR STOP AND BACKSPACE ONE SPACE. OBSERVE POSITION ON THE FRONT SCALE, TABULATE TO THE STOP. CARRIAGE SHOULD MOVE ONE SPACE. DEPRESS TABULATOR CLEAR KEY AND THE SET STOP SHOULD RESTORE.



## 22 TABULATOR

4. WITH ALL TABULATOR STOPS (16) RESTORED, ADJUST TABULATOR STOP RACK (21) TO OBTAIN ABOUT 1/32" CLEARANCE BETWEEN TOP OF TABULATOR STOP BLADE (8) AND BOTTOM OF TABULATOR STOP RACK (21) WHEN TABULATOR KEY BAR (1) IS FULLY DE-PRESSED. CHECK RACK HEIGHT AT BOTH ENDS. BE VERY CAUTIOUS THAT YOU DO NOT MOVE TABULATOR STOP RACK (21) Laterally DURING THIS ADJUSTMENT. TIGHTEN / TWO SCREWS (24).
5. SET A TABULATOR STOP (16) WHAT CAN BE CLEARLY VIEWED THROUGH EITHER RIGHT OR LEFT RECTANGULAR OPENING IN CARRIAGE FEED ROLL SUPPORT BRACKET AND TABULATE TO SET STOP POSITION. LOOSEN TABULATOR STOP SET BRACKET SCREWS (31) WHICH ARE ACCESSIBLE FROM UNDERNEATH THE MACHINE. PLACE MACHINE ON ITS BACK. TWO SCREWS ARE VISIBLE ON BOTTOM OF THE CARRIAGE. ADJUST TABULATOR STOP SET BRACKET (22) SO LIP (G) WILL BE DIRECTLY OVER SET TABULATOR STOP (16). TIGHTEN SCREWS. LIP (G) OF TABULATOR STOP SET BRACKET (22) MUST BE HIGH ENOUGH TO CLEAR TOPS OF RESTORED TABULATOR STOPS (16) YET FULLY DETENT TABULATOR STOP TO SET POSITION WITHOUT LIMITING ON TOP OF RACK (21) WHEN IT IS FULLY DEPRESSED. IF EITHER OF THESE CONDITIONS FAIL, CHECK THE HEIGHT OF THE TABULATOR STOP RACK (21) FOR 1/32" BETWEEN TOP OF TABULATOR BLADE (8) AND BOTTOM OF TABULATOR STOP RACK (21), WITH TABULATOR KEY (1) FULLY DE-PRESSED. REPLACE FEED ROLL, PAPER TROUGH AND PLATEN.
6. (PLATE 18) TO ADJUST ENGAGEMENT OF GOVERNOR GEAR (6) WITH SPRING DRUM GEAR (4) DEFORM EXTENSION OF TABULATOR FRICTION BAIL ASS'Y (2) AT POINT (A). WHEN IN MESH THREE SHOULD BE SLIGHT PLAY BETWEEN THE CONTACT FACES OF THE MESHED GEARS.  
  
NOTE : THIS ADJUSTMENT MUST BE DONE WHEN THE TABULATOR BAR (1), PLATE 13, IS FULLY DEPRESSED.
7. CARRIAGE SHOULD NOT MOVE FAST DURING TABULATOR AT THIS WOULD CAUSE TOO MUCH SHOCK ON THE TABULATOR STOP (16) OR BLADE (8).

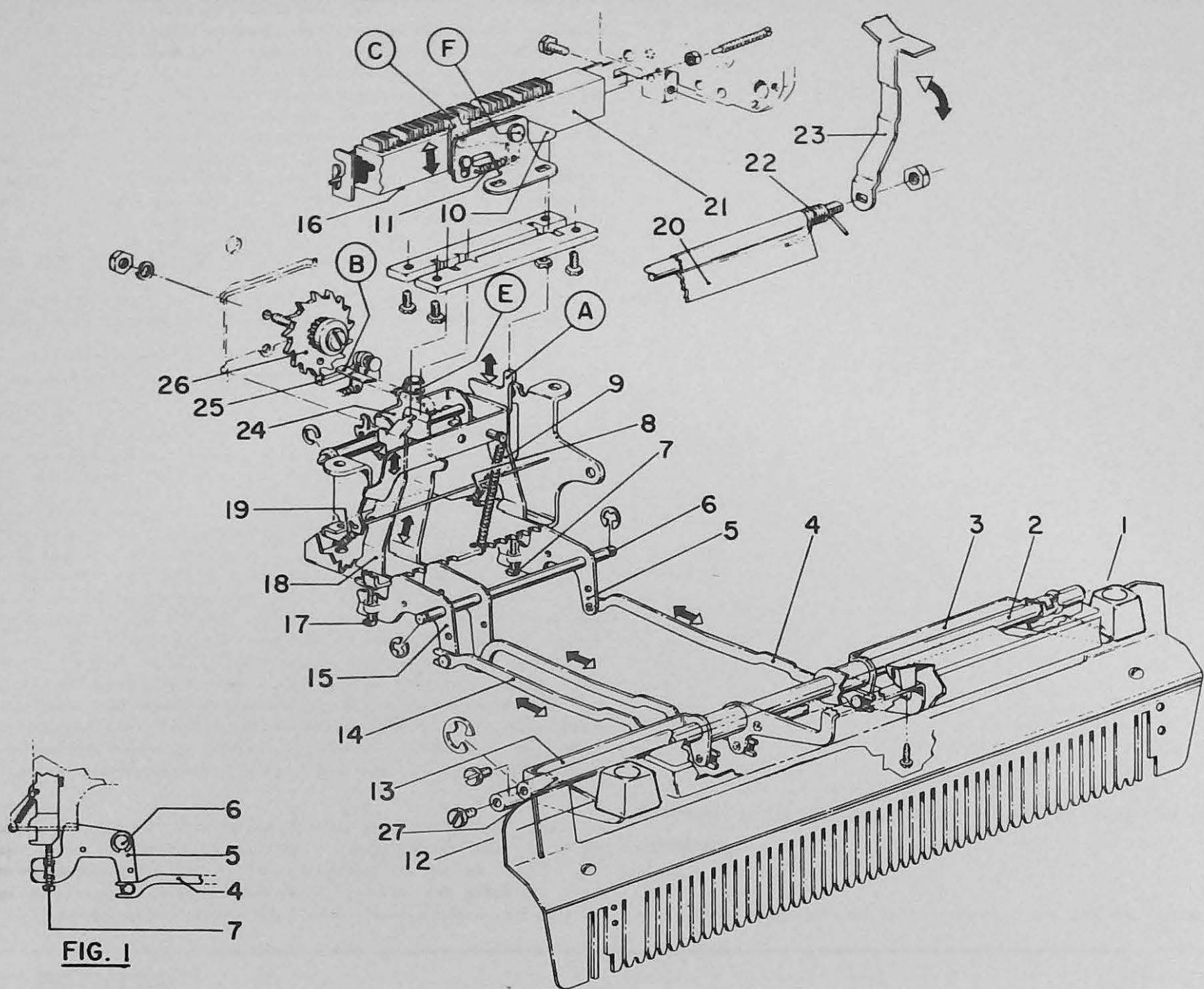
TO TEST TABULATION : DEPRESS THE TABULATOR SET KEY AT POSITION NUMBER (5) AND POSITION NUMBER (10), (20), (30), (40), (50), (60), (70) AND (8). TABULATE AGAIN SEVERAL TIMES ACROSS / THE PAGE AND THE CARRIAGE SHOULD STOP AT THE SAME POSITION ON THE CARRIAGE SCALE EACH TIME THIS IS DONE. SET SEVERAL SUCCESSIVE TABULATOR STOPS. FOR EXAMPLE, START AT POSITION NUMBER (50) AND SET EACH STOP AT (51), (52), (53) ETC. TO (60). TABULATE TO EACH / STOP. TABULATOR STOP BLADE SHOULD ENTER BETWEEN TWO SUCCESSIVELY SET TABULATOR STOPS WHEN TABULATOR KEY BAR (1) IS DEPRESSED. FAILURE ON ANY OF THE ABOVE / TESTS INDICATES TABULATOR STOP RACK IS NOT PROPERLY ADJUSTED FOR 1/4 SPACE DROP

NOTE : WHEN DEFORMING CARD HOLDER STUD (12) TAKE CARE NOT LOOSEN STUD INSIDE PLATE.

### FOLD-A-MATIC

THE PURPOSE OF THE FOLD-MATIC PRINCIPLE IS TO ALLOW THE MACHINE TO BE OPENED





## 23 TABULATOR SET/CLEAR

### TABULATOR SET KEY

THE PURPOSE OF THE TABULATOR SET KEY, IS TO SET TABULATOR STOPS AT ANY DESIRED POSITION OF THE CARRIAGE.

#### NORMAL MODE :

TABULATOR SET KEY (1) IS RESTING UPWARD AGAINST SHAFT (27), BLADE (9) IS CONTACTING SCREW (7), LIP (C) IS HELD AWAY FROM TOP OF TABULATOR STOPS (16) BY SPRING (11). DEPRESSING TABULATOR SET KEY (1) WILL ROTATE BAIL (3) CLOCKWISE, PIVOTING ON SHAFT (2), MOVING LINK (4) TO THE REAR, ROCKING BELLCRANK (5) CLOCKWISE, PIVOTING ON SHAFT (6). SCREW (7) WILL CONTACT AND RAISE TABULATOR SET BLADE (9), YIELDING SPRING (8) UNTIL EXTENSION (A) CONTACTS THE RIGHT END OF BELLCRANK (10), PIVOTING ON STUD (F), LOWERING THE LEFT END, YIELDING SPRING (11), SO LIP (C) OF SET BRACKET WILL CONTACT AND SET THE TABULATOR STOP (16).

#### OPERATED MODE :

TABULATOR SET KEY (1) IS FULLY DEPRESSSED; LIP (C) OF TABULATOR SET BRACKET HAS TABULATOR STOP (16) FULLY DEPRESSSED.

#### RESTORING ACTION :

RELEASE TABULATOR SET KEY (1). BAIL (3) WILL ROTATE COUNTERCLOCKWISE, MOVING / LINK (4) TO THE FRONT OF THE MACHINE. BELLCRANK (5) WILL ROCK COUNTERCLOCKWISE ALLOWING BLADE (9) TO LOWER, AS SPRING (8) RESTORES. EXTENSION (A) WILL MOVE AWAY FROM BELLCRANK (10), ALLOWING LIP (C) TO RESTORE TO NORMAL AS SPRING (11) RESTORES. THE TABULATOR STOP (16) HAS A FULCRUM WIRE THROUGH IT. THE CENTER POSITION OF TABULATOR STOP (16) IS SMALLER THAN THE TOP AND BOTTOM POSITION, SO WHEN LIP (C) PUSHES DOWN ON TABULATOR STOP (16), THERE IS A DETENT OR SNAP ACTION AS THE CENTER PORTION OF TABULATOR STOP (16) PASSES FULCRUM WIRE.

### TABULATOR CLEAR KEY

THE PURPOSE OF THE TABULATOR CLEAR KEY (12) IS TO RESTORE SET TABULATOR STOPS / (16) TO NORMAL POSITION.

#### NORMAL MODE :

TABULATOR CLEAR KEY (12) IS RESTING UPWARD AGAINST SHAFT (27), BLADE (18) IS HELD IN CONTACT WITH SCREW (17) BY SPRING (19) AND THE TOP PORTION OF BLADE (18) IS NOT CONTACTING SET TABULATOR STOP (16).

DEPRESS TABULATOR CLEAR KEY (12) AND THE FORWARD PORTION WILL LOWER PIVOTING ON SHAFT (2), ROCKING BAIL (13) CLOCKWISE MOVING LINK (14) TO THE REAR, ROCKING

BELLCRANK (15) CLOCKWISE PIVOTING ON SHAFT (6). SCREW (17) WILL CONTACT AND RAISE TABULATOR CLEAR BLADE (18) YIELDING SPRING (19). AS BLADE (18) RAISES, THE TOP PORTION CONTACTS THE BOTTOM OF SET TABULATOR STOP (16), DETENTING THE TABULATOR STOP (16) TO A RESTORED POSITION.

#### OPERATED MODE :

TABULATOR CLEAR KEY (12) IS FULLY DEPRESSSED, TOP PORTION OF TABULATOR BLADE (18) HAS TABULATOR STOP (4) FULLY RESTORED TO NORMAL.

RELEASE TABULATOR CLEAR KEY (12). THE FORWARD PORTION WILL RAISE ROCKING RAIL (13) COUNTERCLOCKWISE, MOVING LINK (14) TO THE FRONT OF THE MACHINE ALLOWING / BELLCRANK (15) AND TABULATOR CLEAR BLADE (18) TO RESTORE TO NORMAL AS SPRING (19) RESTORES.

#### CARRIAGE RELEASE

THE PURPOSE OF THE CARRIAGE RELEASE BLADE (20) IS TO RELEASE LOOSE DOG (25) / FROM ESCAPEMENT WHEEL (26), TO ALLOW THE CARRIAGE TO BE MOVED TO ANY DESIRED POSITION.

#### NORMAL MODE :

THE CARRIAGE RELEASE BLADE (20) IS HELD AT REST AGAINST THE REAR OF TABULATOR RACK (21) BY SPRING (22) ON THE RIGHT END OF THE CARRIAGE RELEASE BLADE.

AS THE CARRIAGE RELEASE BLADE (20) IS OPERATED CLOCKWISE BY MOVING LEVER (23) FORWARD, THE REAR OF BLADE (20) CONTACTS FRICTION BAIL ROLL (E) OPERATING REAR FRICTION BAIL (24) COUNTERCLOCKWISE, CAUSING EXTENSION (B) TO MOVE DOWNWARD TO RELEASE THE LOOSE DOG (25) FROM THE ESCAPEMENT WHEEL (26).

#### OPERATED MODE :

LEVER (23) IS FORWARD, BLADE (20) IS HELD TO THE REAR, EXTENSION (B) IS HOLDING LOOSE DOG (25) DOWN.

#### RESTORING ACTION :

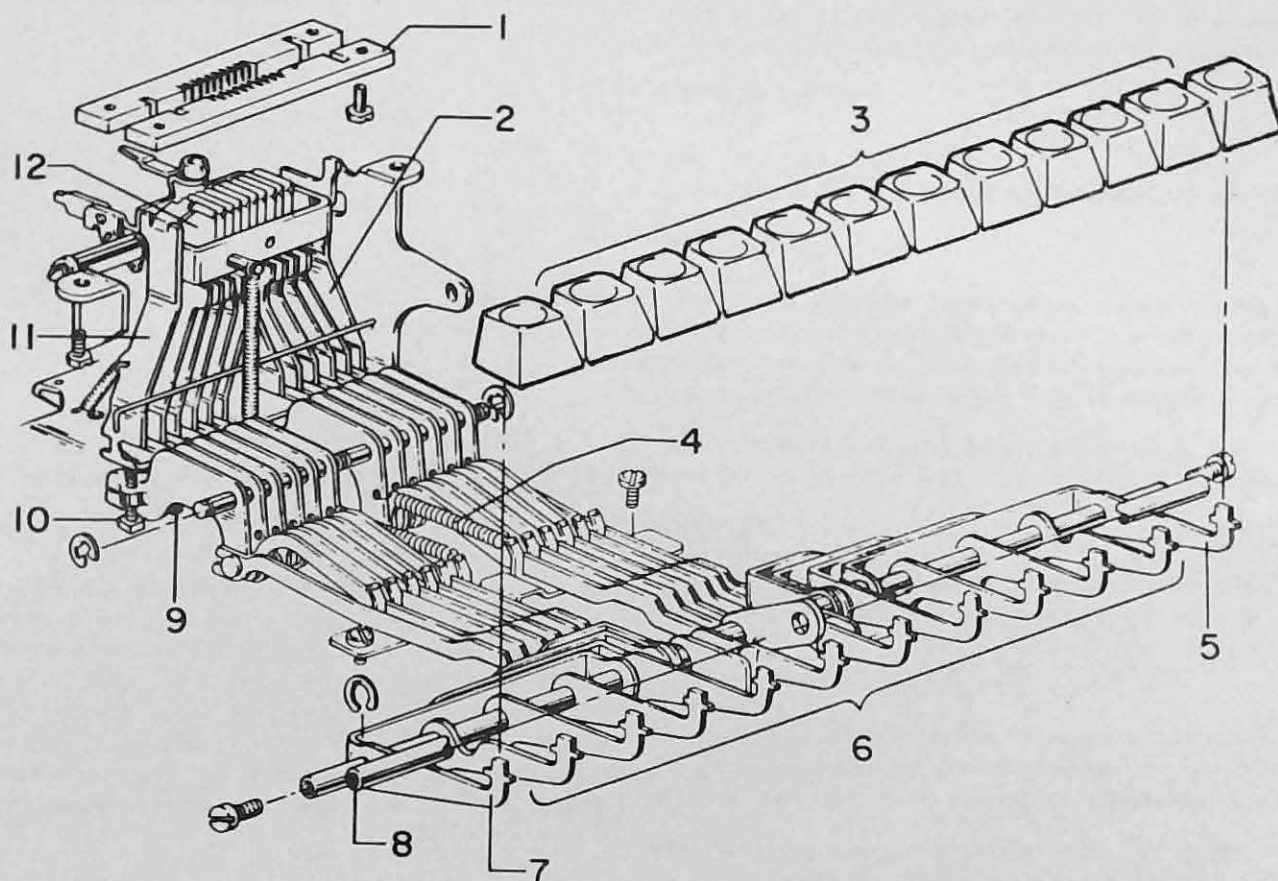
AS LEVER (23) IS MOVED TO THE REAR BY THE TENSION OF SPRING (22), CARRIAGE RELEASE BLADE (20) MOVES AWAY FROM ROLL (E) TO RESTORE REAR FRICTION BAIL (24). AT THIS TIME, LIP (B) WILL ALLOW THE LOOSE DOG (25) TO INTERCEPT THE NEXT TOOTH OF ESCAPEMENT WHEEL (26).

#### ADJUSTMENTS

WE WILL ASSUME THAT ALL ADJUSTMENTS PERTAINING TO CYLINDER AND ANVIL ARE CORRECT. MAKE NECESSARY CHECK.

FORM ESCAPEMENT LOOSE DOG RELEASE ROLL (E) SO THE ROLL DOES NOT CONTACT CARRIAGE RELEASE BLADE (20), WHEN CARRIAGE RELEASE LEVERS ARE NORMAL. ESCAPEMENT LOOSE DOG (25) SHOULD NOT BOTTOM IN ESCAPEMENT LOOSE DOG GUIDE WHEN CARRIAGE RELEASE LEVERS ARE FULLY DEPRESSSED, TEST FOR BOTH CONDITIONS - ENTIRE LENGTH OF CARRIAGE.





## 24 TEN KEY TABULATOR

### TEN KEY TABULATOR

MACHINES EQUIPPED WITH TEN KEY DECIMAL TABULATOR, HAVE TEN TABULATOR KEYS TO PERFORM THE SAME OPERATION AS TABULATOR KEYS ON SINGLE KEY TABULATOR MACHINES.

THE POSITION OF TABULATOR STOP BLADES IN TABULATOR COMBS (1) POSITIONS CARRIAGE TO THE PROPER DOLLAR DENOMINATION TO THE LEFT OF THE DECIMAL POINT AUTOMATICALLY WHEN A TABULATOR KEY IS DEPRESSED.

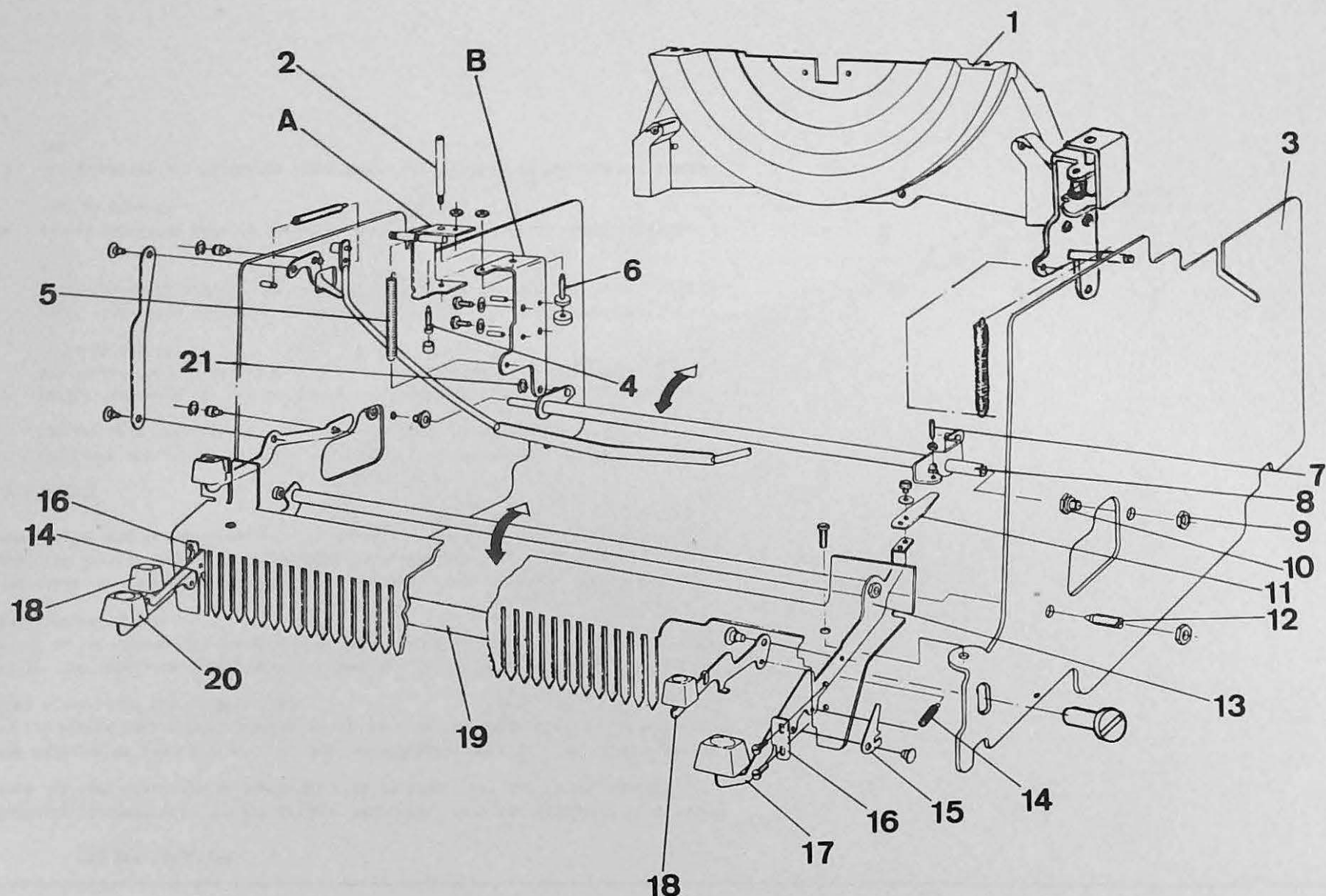
TO SET THE TABULATOR STOPS, MOVE THE CARRIAGE TO THE POSITION WHERE THE DECIMAL POINT IN THE COLUMN IS LOCATED AND DEPRESS TABULATOR SET KEY. SET ONE STOP FOR EACH COLUMN DESIRED.

TABULATOR KEY CAPS (3) ARE NUMBERED IN UNITS OF TENS, HUNDRED, THOUSANDS, ETC. WHEN THE DESIRED TABULATOR KEY IS DEPRESSED, THE CARRIAGE WILL AUTOMATICALLY / MOVE TO THE PROPER POSITION.

### ADJUSTMENTS

1. TABULATOR BELLCRANK SPRING (4) MUST HAVE SUFFICIENT TENSION TO HOLD TABULATOR KEYLEVERS (6) AGAINST TABULATOR KEYLEVER UPSTOP (8).
2. ADJUST TABULATOR SET KEY BELLCRANK AND TABULATOR CLEAR KEY BELLCRANK ADJUSTING SCREWS (10) SO KEY LEVERS (5) AND (7) WILL JUST CONTACT TABULATOR KEY LEVER UPSTOP (8).
3. ADJUST TABULATOR BELLCRANK ADJUSTING SCREWS (9) TO OBTAIN APPROXIMATELY / .010" CLEARANCE BETWEEN TOP OF SCREWS AND BOTTOM OF TABULATOR STOP BLADES (12).
4. ADJUST TABULATOR DROP TO THE DECIMAL KEY POSITION AND ALL OTHER POSITION / WILL BE CORRECT.
5. ALL OTHER TEN KEY TABULATOR ADJUSTMENTS ARE THE SAME AS FOR ONE KEY TABULATOR.





## 25 SHIFT

### SHIFT

THE PURPOSE OF THE SHIFT MECHANISM IS TO MOVE THE SEGMENT FROM LOWER CASE PRINTING POSITION TO THE UPPER CASE PRINTING POSITION. THE LOWER CASE IS THE SMALL LETTERS AND THE UPPER CASE IS THE CAPITAL LETTERS.

#### NORMAL MODE :

THE REST POSITION OF SHIFT KEYLEVER (17) AND (20) IS AGAINST KEYLEVER UPSTOP (10). THE SEGMENT (1) AND KEYLEVER (17) IS HELD IN LOWER CASE POSITION BY BALANCING SPRING (5). THE SEGMENT (1) IS AGAINST LOWER CASE UPSTOP SCREWS (4). DEPRESS KEYLEVER (20) OR (17) AND THE FORWARD POSITION WILL MOVE DOWN AND OSCILLATE SHIFT (13) COUNTERCLOCKWISE PIVOTING ON SCREWS (12), LEFT AND RIGHT. RAISING THE REAR EXTENSION, LEAF SPRING ATTACHED TO KEYLEVER (17) OSCILLATES / SHIFT ROCKER SHAFT (8) CLOCKWISE LOWERING THE REAR ARMS SEGMENT BRACKET (B), LEFT AND RIGHT, ATTACHED TO SEGMENT (1) AND ALSO SHIFT ROCKER SHAFT (8) WILL LOWER SEGMENT (1) TO UPPER CASE POSITION AGAINST DOWN STOP SCREWS (6), SPRINGS (5) ARE EXTENDED.

#### OPERATED MODE :

KEYLEVER (20) IS HELD DOWN, THE SEGMENT (1) HAS LOWERED AGAINST STOP SCREWS (6) HELD IN POSITION BY LEAF SPRING (11) AND THE TYPE WILL NOW PRINT CAPITAL LETTERS, AS IT IS ILLUSTRATED ON PLATE (FIGURE 2).

#### RESTORING ACTION :

RELEASE KEYLEVER (17) AND THE FORWARD PORTION WILL MOVE UP AND OSCILLATE SHIFT SHAFT (13) CLOCKWISE, PIVOTING ON SCREWS (12), RIGHT AND LEFT, LOWERING THE / REAR EXTENSION, LEAF SPRING RELEASE. SEGMENT TO MOVE TO LOWER CASE POSITION BY RESTORING OF BALANCING SPRINGS (5).

#### SHIFT LOCK

THE PURPOSE OF THE SHIFT LOCKS IS TO HOLD THE SEGMENT IN THE UPPER CASE POSITION WITHOUT HOLDING THE SHIFT KEY (1) DOWN MANUALLY.

#### NORMAL MODE :

KEYLEVER (20) AND (17) IS IN THE UPWARD POSITION, LATCH (15) IS FORWARD SEGMENT (1) IS UP, SO LOWER CASE CHARACTERS WILL PRINT.

DEPRESS SHIFT LOCK KEY (18), LEFT OR RIGHT, SHIFT LOCK (15) WILL LATCH ON SHIFT LOCK PLATE (16) PREVENTING KEYLEVER (20) AND (17) FROM RESTORING. TYPE WILL NOW PRINT THE UPPER CASE OR CAPITAL LETTERS. SPRING (14) WILL YIELD WHILE / SHIFT LOCK IS LOCKED.

WHEN SHIFT KEYLEVER (17) OR (20) IS LOCKED DOWN, SEGMENT (1) IS STOPPED BY DOWN STOP SCREWS (6) LEAF SPRING (11) WILL PERMIT KEYLEVER (17) TO MOVE DOWNWARD, SLIGHTLY, AFTER SEGMENT HAS STOPPED AGAINST DOWN STOP SCREWS (6). SPRING (14) WILL SUPPLY TENSION TO HOLD SHIFT LOCK (15) LOCKED UNDER PLATE (16).

TO RELEASE SHIFT LOCK KEYLEVER (17) OR (20) MUST BE DEPRESSED FAR ENOUGH TO / YIELD LEAF SPRING (11) WHICH WILL ALLOW SHIFT LATCH (15) TO SNAP OUT FROM UNDER THE SHIFT LOCK PLATE (16), BY SPRING TENSION (14), KEYLEVER (17) OR (20) WILL NOW RESTORE TO NORMAL UNDER TENSION OF BALANCING SPRINGS (5) TO RETURN TO LOWER CASE.

#### ADJUSTMENTS SHIFT

1. LOOSEN NUT AND ADJUST SCREW (12) TO ELIMINATE END PLAY IN SHAFT (13).
2. LOOSEN NUTS AND TURN LEFT AND RIGHT SEGMENT SHIFT STOP SCREWS (4) AND (6) AND ALSO LOOSEN AND TURN OUT SHIFT SHAFT SCREW (7) IN ORDER TO OBTAIN THE MAXIMUM MOVEMENT WITH THE TYPE BAR SEGMENT (1).

THIS IS A TEMPORARY ADJUSTMENT.

3. SEGMENT SHOULD MOVE FREELY DOWN WITHOUT BINDS WHEN PRESSURE IS APPLIED DOWNWARDS ON THE SEGMENT (1) AND SEGMENT SHIFT SPRINGS (5) SHOULD RETURN THE SEGMENT (1) SMOOTHLY WHEN PRESSURE IS REMOVED FROM THE SEGMENT (1).

ON FEET ADJUSTMENT :

1. LOOSEN LEFT NUT AND ADJUST UPPER CASE STOP SCREW (6) TO PLACE UPPER CASE OR CAPITAL LETTERS ON FEET, TIGHTEN NUT. THIS CAN BE TESTED BY HOLDING SHIFT KEYLEVER (20) DEPRESSED AND TYPING VERY LIGHTLY USING THE CAPITAL "H" TO DETERMINE IF THE CURVATURE OF THE TYPE IS EQUAL TO THE CURVATURE OF THE / PLATEN.
2. TEST TYPE ADDITIONAL CAPITAL CHARACTERS FROM THE LEFT, CENTER, AND RIGHT PORTION OF THE SEGMENT (1) IN THE SAME MANNER EXPLAINED ABOVE TO VERIFY AN OVERALL CONSTANT IMPRESSION.
3. LOOSEN NUT AND ADJUST RIGHT UPPER CASE STOP SCREW (6). TEST WITH A STRIP / OF PAPER THAT BOTH LEFT AND RIGHT STOP SCREWS (6) LIMIT AT THE SAME TIME. TIGHTEN NUT.

#### ADJUSTMENTS SHIFT LOCK

1. LOOSEN SCREWS FOR THE SHIFT LOCK PLATE (16) RIGHT AND LEFT AND ADJUST SO SHIFT FLAT SPRING (11) YIELDS SLIGHTLY. WHEN SHIFT LOCK KEYS ARE DEPRESSED AND LATCHED, SPRING (11) WILL BE UNDER SLIGHT TENSION. TIGHTEN SCREWS IN



## 25 SHIFT

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THE SHIFT LOCK PLATES (16). LOCK BOTH SHIFT LOCKS DOWN. DEPRESS THE RIGHT SHIFT KEY (17) THE RIGHT SHIFT LOCK SHOULD UNLOCK THE RIGHT ONE. DEPRESS A LITTLE HARDER, THEN THE LEFT LOCK SHOULD UNLOCK. REVERSE THIS TEST ON THE LEFT SIDE. SPRING (14) RESTORES LATCH (15) TO NORMAL AS KEY LEVER (17) OR (20) IS RELEASED.

2. SHIFT BALANCING SPRINGS (5) SHOULD TYPE BAR SEGMENT (1) TO NORMAL LOW CASE POSITION.

NOTE :

LEFT SHIFT BALANCING SPRING (5) IS SHORTER THAN THE RIGHT SPRING (5), THEREFORE, THE LEFT SPRING WILL HAVE MORE TENSION WHEN BOTH SPRINGS (5) ARE EXTENDED TO THE SAME LENGTH.



