UNIVERSITY OF ILLINOIS
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INTERNAL REPORT NO. 56

MODIFICATION OF TELETYPE EQUIPMENT FOR USE WITH ILLIAC

By

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I INTRODUCTION

Various modifications of the teletype equipment are required to make this equipment suitable for use in connection with the Illiac. These changes are necessary mainly to convert the equipment from operation with the teletype code to that of the coded binary code used for input and output from the Illiac. This report will describe the required conversion from standard teletype units to a uniform set of equipment for processing input and output tapes.

II TELETYPE PERFERATOR KEYBOARD MODIFICATION MODEL GPE 33BS

The perferator key levers are rearranged as shown in Figure 1A and 1B to provide convenient single hand operation for punching sexadecimal digits, space, and carriage return and line feed characters. Figure 1A shows the teletype letters code in the rearranged positions. This corresponds directly to Figure 1B which shows the Illiac code for this key lever arrangement.

The changes to accomplish this arrangement in teletype code are:

(1) R,T,O,P,E,Y,U,S,A,G,H,J,K,F,Z, Fig, M, Line Feed, V, B, and X keylevers are changed in position,

(2) Car. Ret., Space, N,C,D,I,L and Blank key lever combs are removed and rearranged so that the combs are riveted to the key levers as shown in Table 1.

COMB	KEY LEVER
Car. Ret.	I
Blank	Space
Space	D
D	Blank
L	N
N	L
I	C
C	Car. Ret.

Table 1

REARRANGEMENT OF KEY LEVER COMBS TELETYPE CODE

(3) Extensions and bars for the Blank key lever containing the teletype D code and the teletype Letters Shift key lever, as shown in Figure 2, are constructed and riveted to these key levers. These provide a Carriage Return and Line Feed bar on the left of the Zero bar and a Space bar on the right of the Zero bar for the Illiac code as shown in Figure 1B.

(4) The key levers are placed in position as in Figure 1A, and the key-tops are then placed to correspond to Figure 1B. Re-lettering of key-tops is done where required.

(5) The tension for the carriage return and line feed and space key lever springs must be increased to the same value as the zero key lever spring to over balance the added weight of the extension bars.

The punch block top plate does not allow the last character punched to be visible for checking. The top plate is therefore removed and .060 inch from the tape output edge is removed with a surface grinder. The chad chute is also reshaped to allow easier checking of the tape.

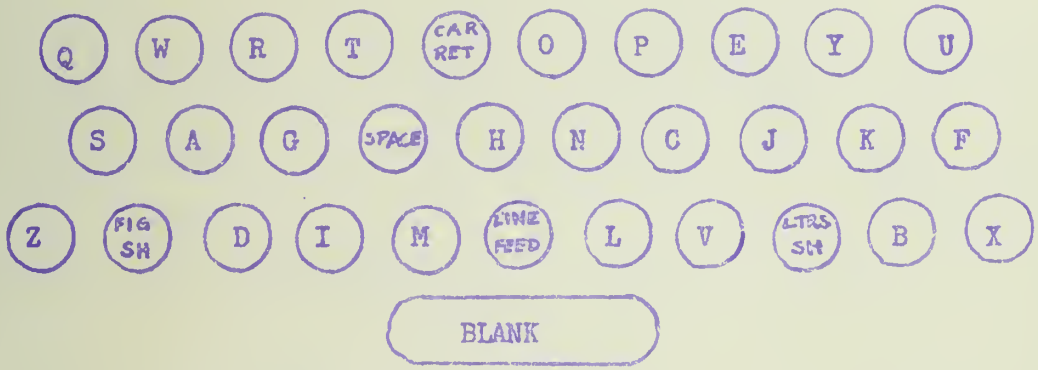


Fig. 1A

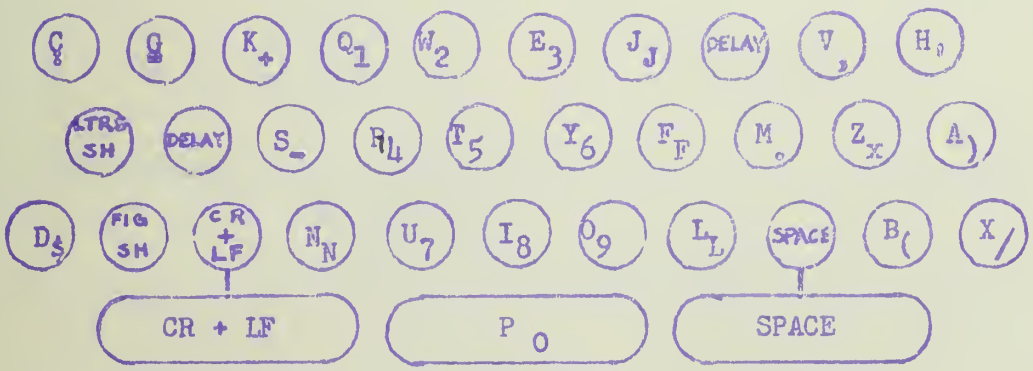
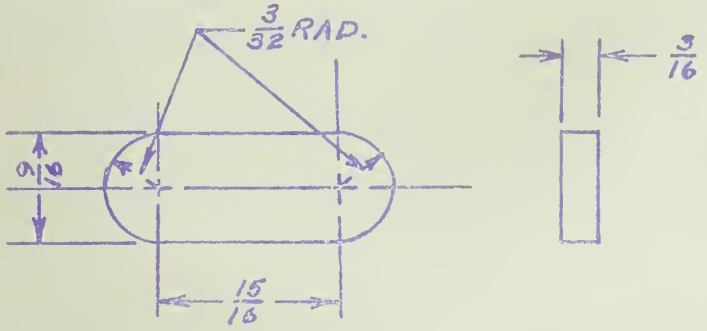
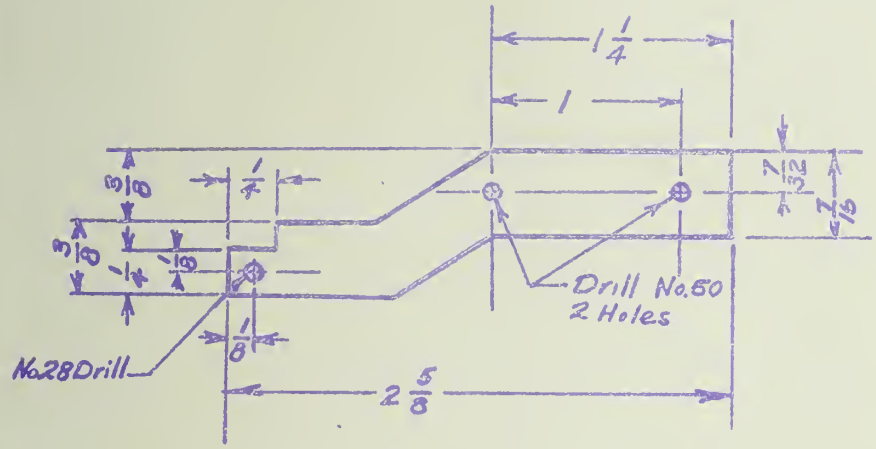


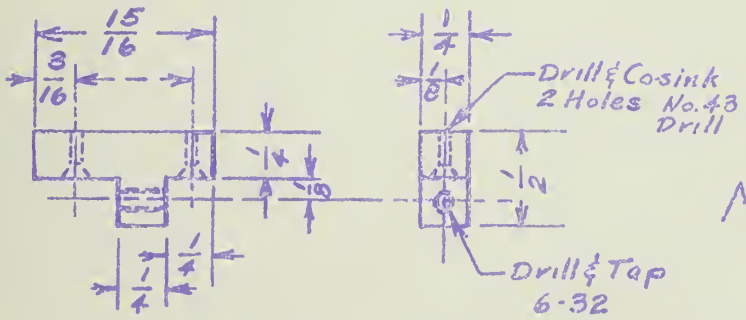
Fig. 1B



SPACE BAR
MAT'L: BAKELITE

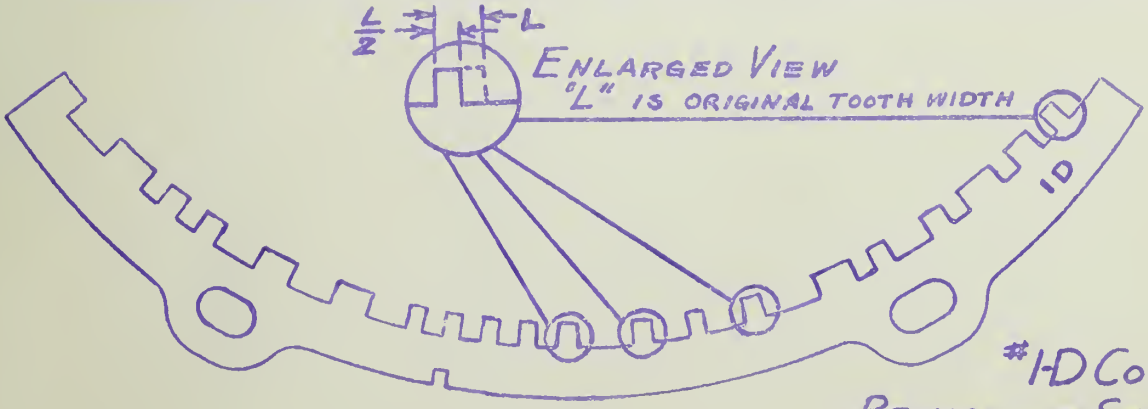


LEVER EXTENSION
MAT'L: STEEL, LOW CARB
.050 THICK



BAR MOUNT
MAT'L: ALUMINUM

FIG. 2



#10 CODE BAR
REWORK AS SHOWN

FIG. 3

III TELETYPE PRINTER MODIFICATION MODEL 15 TELETYPE TYPE ARRANGEMENT 69

The type pallets must be changed to different type bars so as to give the code on the type bar positions as shown in Table 2.

TYPE BAR POSITION	TYPE PALLET FIGURE SHIFT	LETTERS SHIFT
3	$	D
4	x	Z
5	(	B
6	J	J
7	'	V
8	7	U
9	'	H
10	9	O
11	5	T
12	3	E
13	N	N
14	6	Y
15	0	P
16	1	Q
17	8	I
18	.	M
19	+	K
20	2	W
21	F	F
22	)	A
23	=	G
24	-	S
25	L	L
26	:	C
27	/	X
28	4	R

Table 2

To obtain these combinations on the type pallets one each of the special type pallets in Table 3 are needed for each printer being modified.

DESCRIPTION	TELETYPE PALLET PART NO.	TYPE BAR POSITION TO BE USED ON
A)	82289	22
B (	99188	5
H 8	118084	9
L L	122884	25
N N	122883	13
F E	122351	21
G ⊟	120938	23
Z x	122351	4
J 8	74318	6
S +	89547	24

TABLE 3

SPECIAL TYPE PALLETS

To obtain the J J combination on type bar 6, two pallets are cut using the J from each pallet. Cutting is also necessary to form the K + combination on position 19. The pallets to go on positions 7, 21, 23 and 24 are modified by filing part of the characters off to give the desired combination. The X/ on type bar 27 is the only pallet not to be changed.

The printer code bar must be reworked as shown in Figure 3.

The printer may be equipped with either an automatic carriage return and line feed on space mechanism or a tabulator mechanism. Since both of these special features are designed to use the same function lever position it is not feasible to have both features on the same printer.

For the tabulator mechanism the teletype sets of parts No. 87860, Tabulate on Upper Case "Z", and No. 89992, used to stop the transmitter distributor while the printer carriage is moving in response to a tabulation signal, should be installed in accordance with the installation instructions as supplied with the part sets. The function levers, carriage return Pos. 2, and line feed Pos. 12 are modified to have the code profile as shown in Figure 4. This is done by grinding off some of the existing tangs and riveting on a correctly formed 1/16" tool steel piece.

The wiring necessary between the printer and transmitter distributor for the No. 89992 set of parts is shown in the Wiring Diagram for Receiving Only Printer Figure 5. If installation is made on a Table 19 set the correct interconnection is shown in Table 4.

For the automatic carriage return and line feed mechanism, the teletype set of parts 115751 should be installed with the position 6 and 12 function levers being reworked as shown in Figure 6 and the position 2 function lever being reworked as shown in Figure 4.

A function lever is placed in position 7 to cause a delay of the printer on the two delay codes. This function lever is 7A, teletype part number 74932 modified as shown in Figure 7.

CONNECT WIRE FROM	TO
TD Slip contact number 8	Table Terminal B - 39
TD Slip contact number 9	Table Terminal B - 38
Table Terminal B - 39	Table Terminal A - 42
Table Terminal B - 38	Table Terminal B - 37
Printer Base Terminal 26	Printer Base Terminal 21
Green Wire of Printer Cord	Printer Base Terminal 43

TABLE 4

WIRING INTERCONNECTION FOR TABUIATE MECHANISM TO DELAY TRANSMITTER-DISTRIBUTOR ON A TABLE NO. 19 INSTALLATION

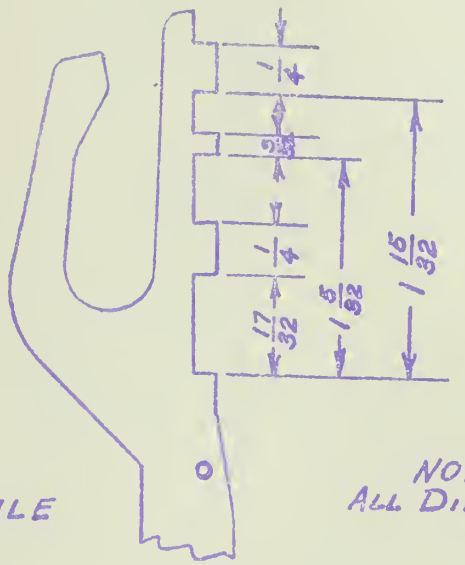
The signal bell mechanism is disabled by either removing the mechanism or placing the bell hammer to the rear of the bell.

The letters position function lever is removed and a modified function lever as shown in Figure 8 is used for the letters shift function lever.

IV Perforator Transmitter Modification - Type Model 15

A new set of selector bars, as shown in drawing number L536, replaces the original selector bars for the keyboard. This gives a keyboard arrangement as shown in Figure 1B. The key-tops should be changed to conform to this arrangment

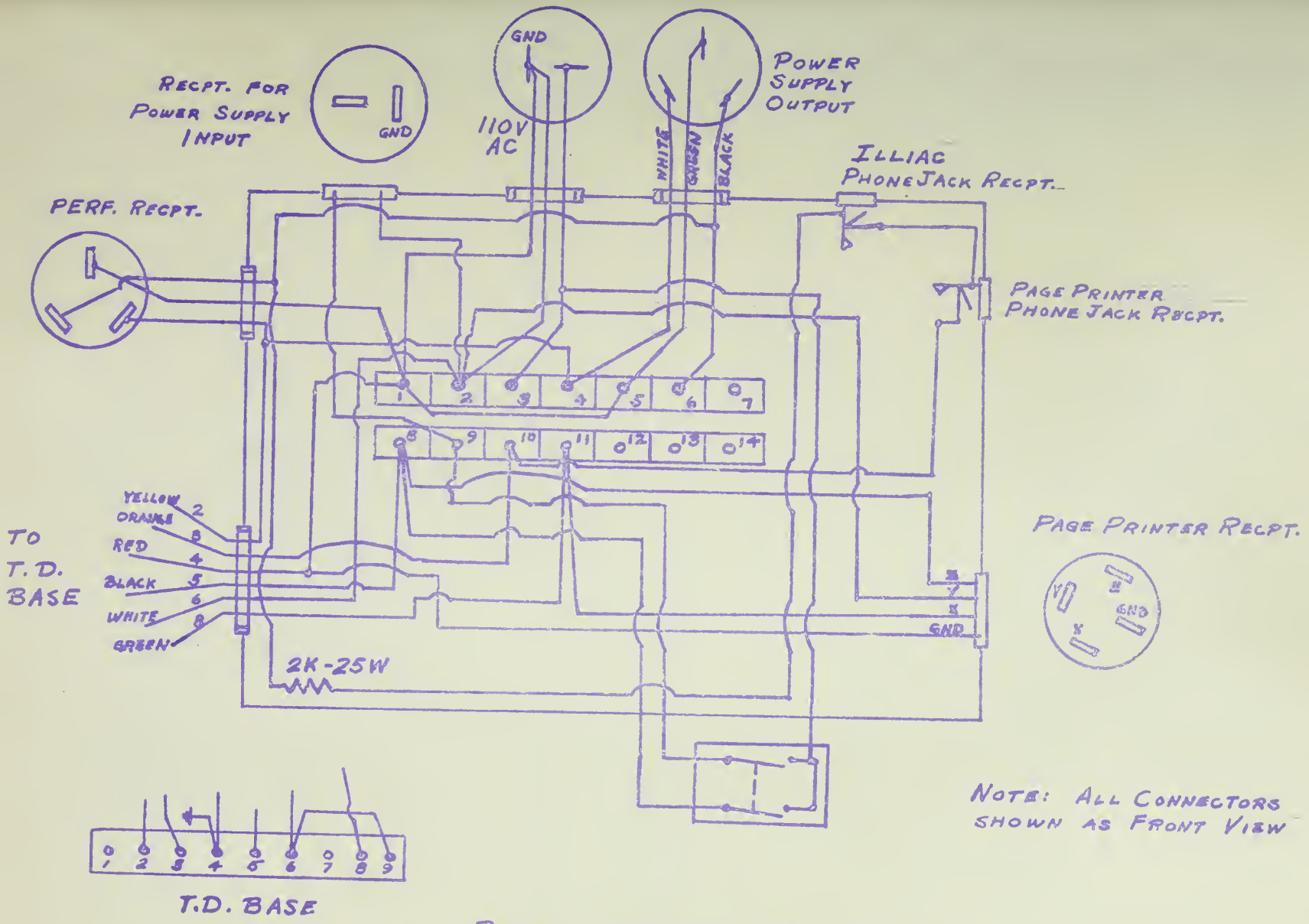
Levers are added to the keyboard for the carriage return and line feed and space. The parts needed to attach these levers are shown in Figure 9.



CARRAIGE RETURN
& LINE FEED
FUNCTION LEVER PROFILE

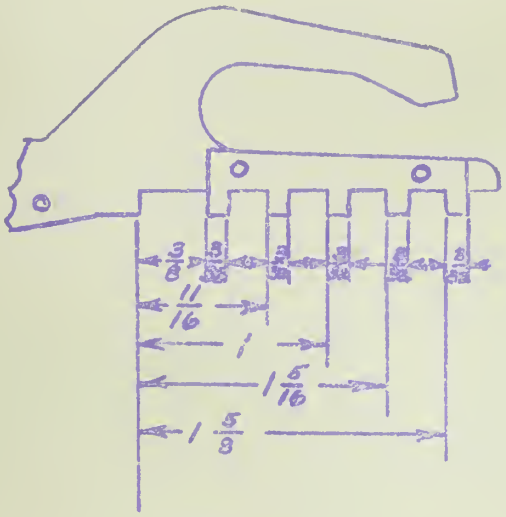
NOTE:
ALL DIMENSIONS ± 1/64

FIG. 4



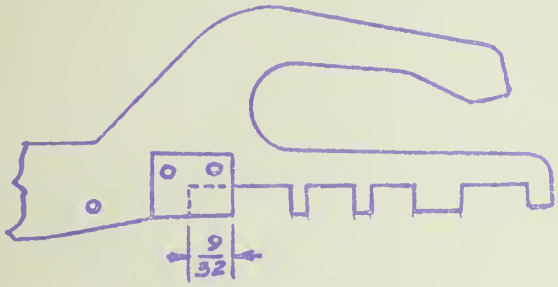
RECEIVING ONLY PAGE PRINTER
CONNECTION WIRING DIAGRAM TO ILLIAC

FIG. 5



POSITION 6

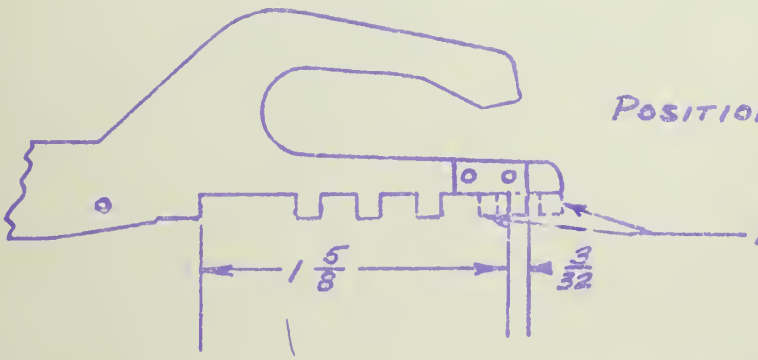
RIVET AS SHOWN
MAT'L: 1/16 STOCK TOOL STEEL



POSITION 12

REWORK OF FUNCTION LEVERS
FOR AUTOMATIC C.R. & L.F. MECHANISM

FIG. 6

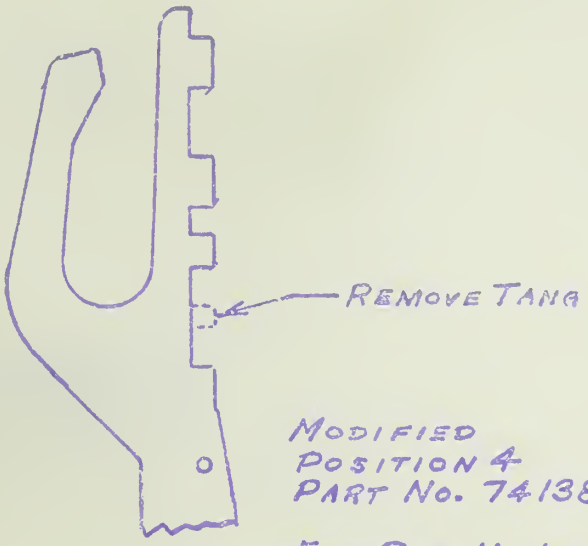


POSITION 7

REMOVE TANGS

DELAY FUNCTION LEVER

FIG. 7



MODIFIED
POSITION 4
PART No. 74138

FOR POS. 11 LETTER SHIFT
FUNCTION LEVER

FIG. 8

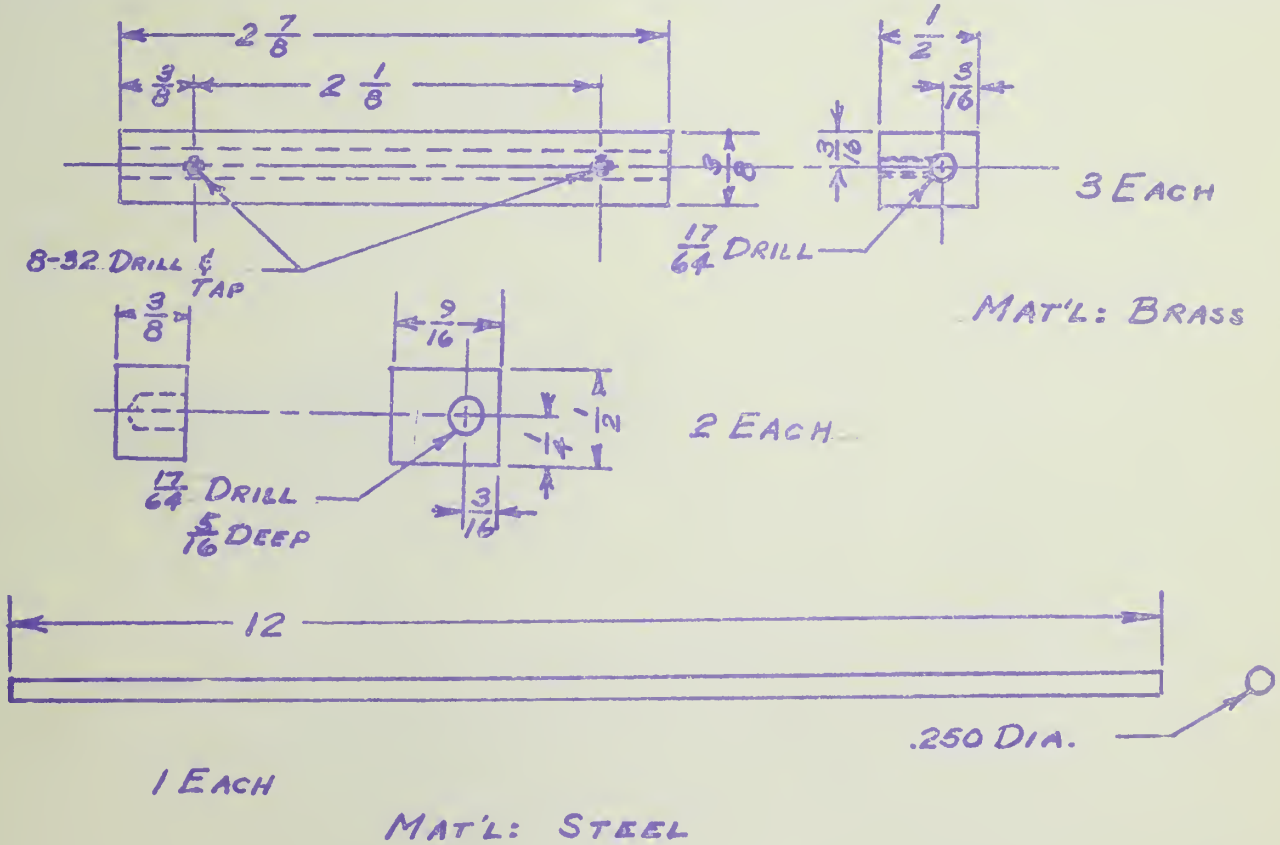


FIG. 9