

DESCRIPTION AND TRAINING MATERIAL OPERATION OF THE TELETYPEWRITER — 28-TYPE TELETYPEWRITER

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1. GENERAL

1.01 This section gives a general description of the 28-type teletypewriter and its purpose is to denote the differences in the main features of the 28-type as compared to the 14, 15 and 26-type teletypewriters.

1.02 The 28-type teletypewriter is of the newest design utilizing the five-unit start-stop code. Messages are ordinarily typed on paper eight and one-half inches wide. However, paper of lesser varying widths (minimum three inches) may be used.

1.03 The operating speed may be adjusted for 60, 75 or 100 words per minute by the changing of gears and may be wired for either 0.060 or 0.020 ampere line current.

1.04 The outside noise from the operation of the teletypewriter is reduced as it is almost completely sealed by the dome of the console.

1.05 The 28-type machine may be used on the same circuit with the 14, 15, 19, 26 or any type of teletypewriter equipment employing the start-stop five-unit transmission code.

2. CABINET

2.01 The cabinet is of the console type illustrated in Fig. 1. It is of sheet metal construction and is finished internally and

externally in baked enamel. The top of the cabinet forms a dome that is hinged at the rear. The dome is unlatched by a pushbutton and is counterbalanced by a mechanism that aids in raising it and supports it in the open position, Fig. 2. A copyholder is attached to the front of the dome. A glass through which the message may be read while being printed is located in the upper portion of the dome. This glass is positioned horizontally to avoid reflection from ceiling lights. The copy is illuminated by a copy light located under the dome. Rubber sealing strips are applied to the edges of both the dome and the door for silencing effects. Vibration mounts are placed beneath the rails that support the mechanical units within the cabinet. A tilting arrangement permits the assembled units to be tilted forward and supported, when the dome is open, to permit maximum accessibility to the mechanism while servicing. A terminal board for power and line connections is located on the inner rear wall.

3. KEYBOARD

General

3.01 The keyboard consists of an intermediate shaft assembly, a code bar mechanism and a signal generator. The keys are positioned in the conventional three-bank arrangement and are colored green. Special keys (red) for line break, keyboard lock and unlock, repeat operation, and local carriage return and line feed are located directly above the standard green keys. In operation, the motor drives the intermediate shaft which furnishes motive power to the typing unit main shaft. This, in turn, drives the signal generator driven gear which is connected to the keyboard clutch drum by a sleeve. Thus the keyboard clutch drum is caused to rotate continually while the motor is running. The transmitting cam-clutch assembly of the signal generator remains stationary except when motion is extended to it from the keyboard clutch drum. Engagement of the clutch is brought about by the operation of any one of the green keys or the space bar, and a transmitting cycle is then initiated. See Fig. 3.

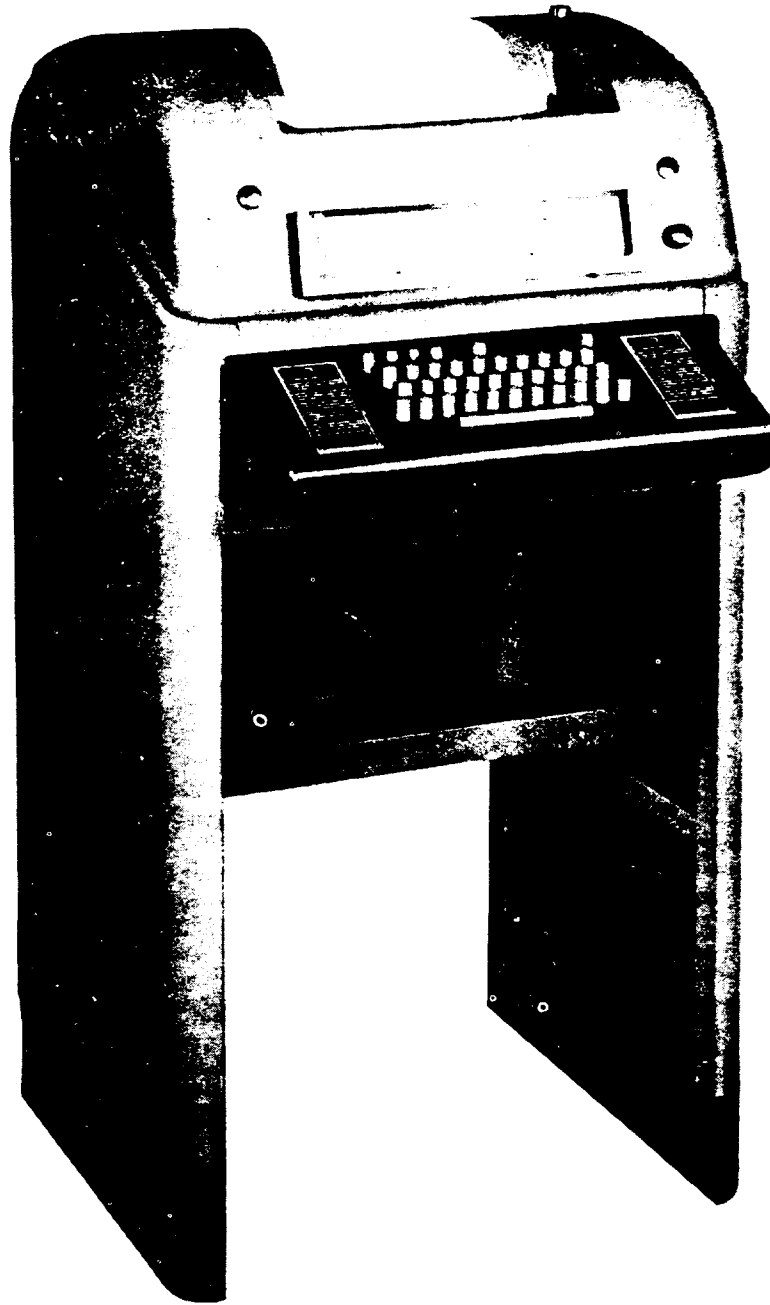


Fig. 1 - 28 Type Teletypewriter (Cover Down)

Intermediate Shaft Assembly

3.02 The intermediate shaft driven gear is engaged with and driven by the intermediate shaft driving gear on the motor. The main shaft driving gear on the intermediate shaft transfers this motive force to the typing unit main shaft. The gear ratio between the driving gear on the motor and the driven gear on the intermediate shaft determines the maximum speed

at which the equipment will operate. These gears are readily replaceable with gears which will furnish other operating speeds.

Code Bar Mechanism

3.03 In the keyboard a new code bar mechanism is employed in which the code bars are moved by a cam to sense the depressed key lever. As a result, the key stroke is only $5/16$

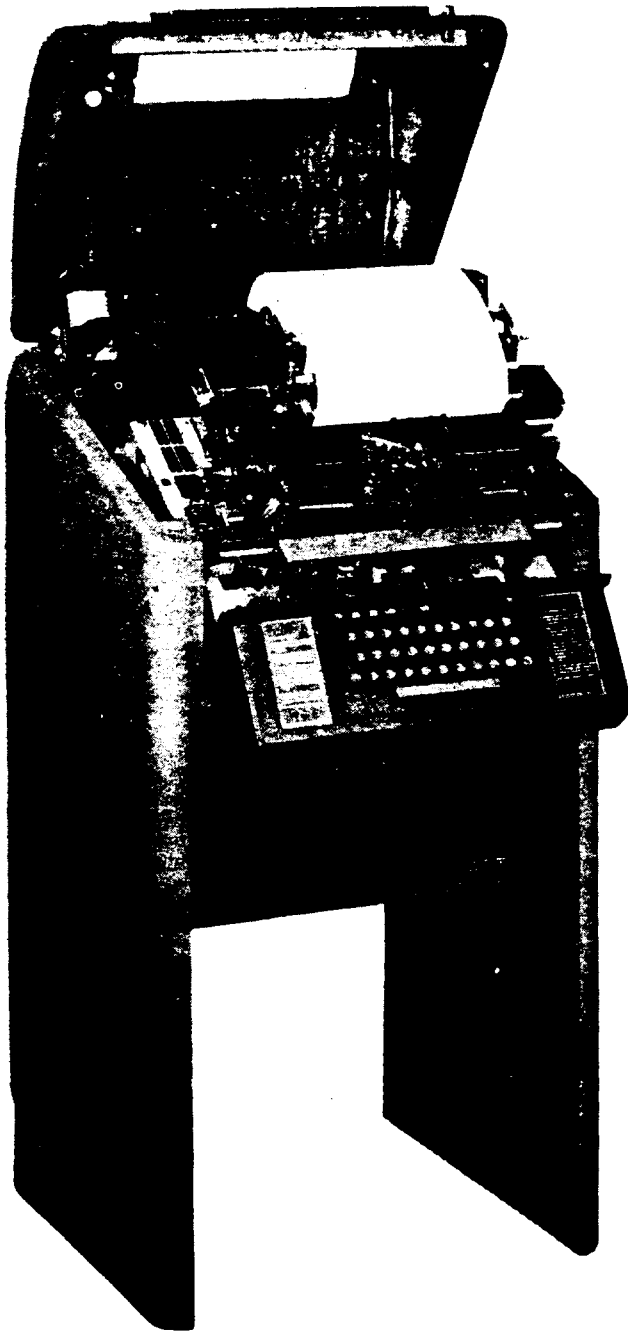


Fig. 2 - 28 Type Teletypewriter (Tilted for Servicing)

inch long and the operating pressure is considerably lighter than on previous equipment. The stroke is the same for all keys and the pressure is uniform regardless of position or previous selection. The key tops are spaced the same as on a standard typewriter. See Fig. 3.

Signal Generator Mechanism

3.04 A rocking contact arrangement generates the signals. This mechanism produces accurate chatter-free signals, either polar or neutral, without delicate adjustment. No change in cams is required for operation at various speeds. (See Fig. 3.)

4. KEYS FOR LOCAL FUNCTIONS

- 4.01 Local Carriage Return Mechanism: Operation of the local carriage return key (red) causes the carriage to return on the local typing unit without disturbing the line circuit.
- 4.02 The Local Line Feed: Operation of the local line feed key (red) causes the line feed mechanism to feed the paper on the local typing unit at a rapid rate without disturbing the other typing units on the same line circuit.
- 4.03 Break Mechanism: Operation of the break key lever (red) opens the line circuit until it is released.
- 4.04 Repeat Mechanism: Operation of the repeat key (red) simultaneously with one of the green keys causes the character or function selected to be repeated as long as the keys are held operated. When the keyboard is equipped with this feature the spacing function will automatically repeat as long as the space bar is held depressed.
- 4.05 Keyboard Lock Mechanism: Operation of the keyboard lock key (red), either manually or as the result of a "break" signal, prevents the operation of the keyboard. The operation of the keyboard unlock key (red) will again allow operation from the keyboard. See Fig. 4.
- 4.06 Automatic Carriage Return - Line Feed Function: If the carriage return and line feed signals are not received before the carriages are within one character of the right end of the line, the automatic carriage return and line feed function levers will operate and cause the simultaneous carriage return and line feed operation locally.

5. TYPING UNIT

5.01 The most obvious new feature is the substitution of a small, light, compact type box for the type basket. The use of this type box has the following advantages:

- (1) The weight of the carriage assembly is only 8 ounces, making it possible to operate with a single carriage return and

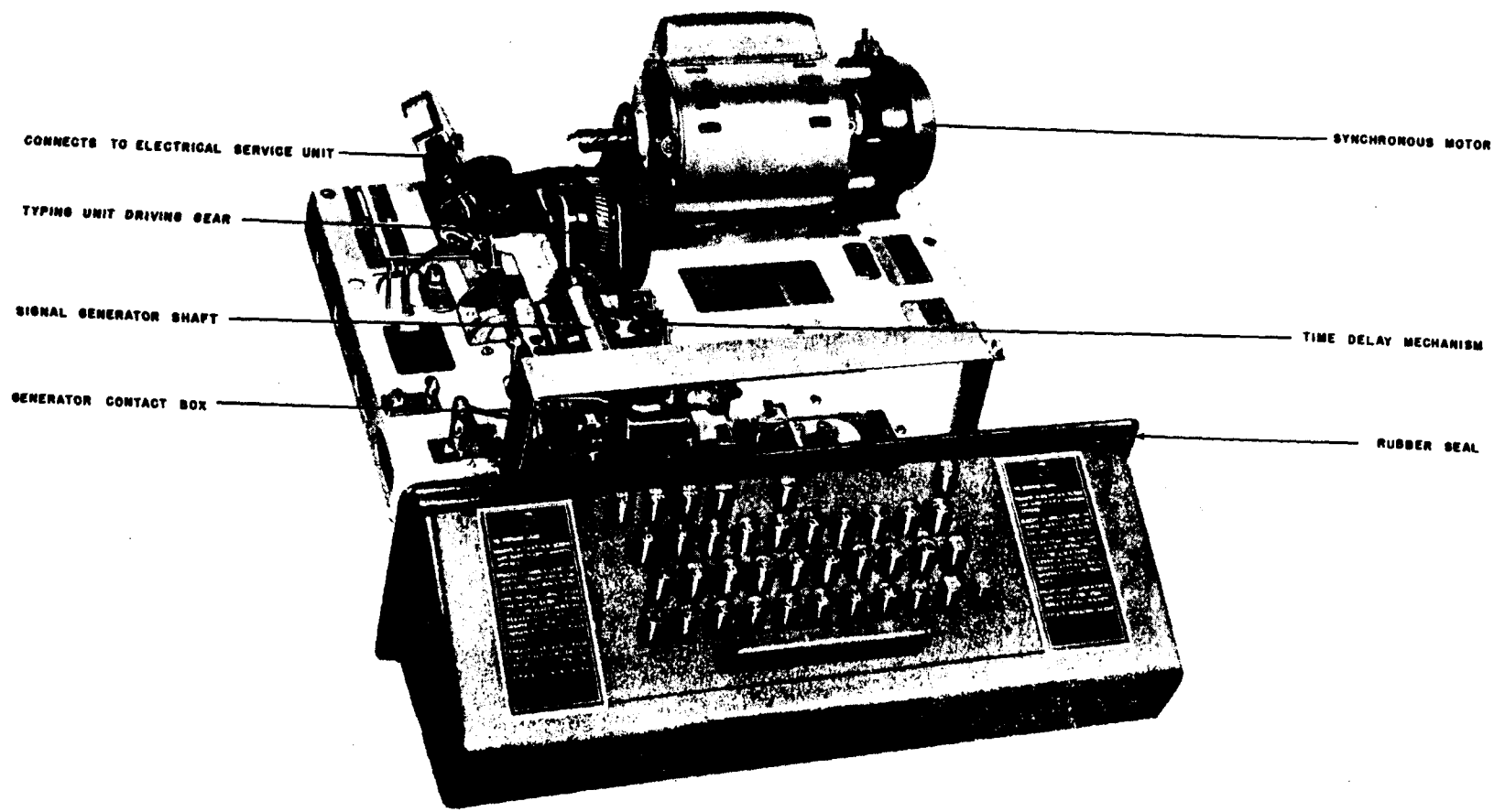


Fig. 3 - Keyboard with Motor

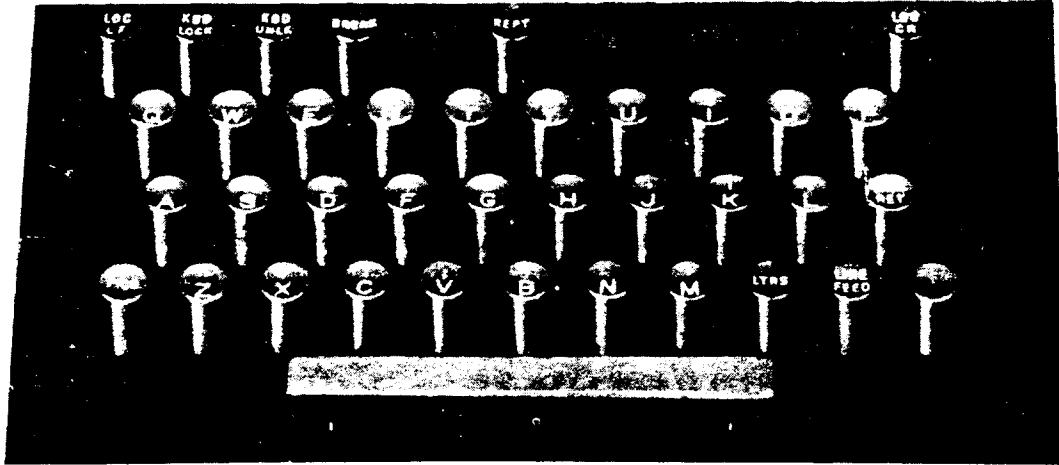


Fig. 4 - Keyboard Keys

line feed signal. The reduced carriage makes possible a smaller, lighter, over-all machine. See Fig. 5.

- (2) No type alignment is required at any time.
- (3) Type boxes are easily removed and replaced.
- (4) A separate pallet is provided for each character. This eliminates overscoring and underscoring.
- (5) Pallets can be readily replaced by the serviceman.
- (6) The spring-driven striker produces a uniform type bar blow at all speeds and for all type positions. Good carbon copies are thus assured with longer ribbon life.

5.02 In operation, the type box keeps step with a printing carriage and presents the proper type pallets to the printing hammer to receive the printing strokes as the printing carriage advances along the line.

5.03 The shift function has been built into the type box mechanism making it unnecessary to move the paper. Reading the copy as messages are received and handling of paper are thus facilitated.

5.04 Refined mechanical design and new basic principles provide smooth operation at 100 words per minute. These include a new type of clutch and a basically new type box driving and positioning mechanism. The new all-metal clutches engage when tripped and disengage to a no-load condition. Felt clutches have been completely eliminated.

6. ELECTRICAL SERVICE ASSEMBLY

6.01 The electrical service assembly is mounted in the console at the rear of the teletypewriter unit. The "basic" assembly contains receptacles for keyboard plug and teletypewriter plug, together with power fuses, convenience outlet, copy-light switch, series-parallel switch, line closing relay, and master power switch. (See Fig. 6.)

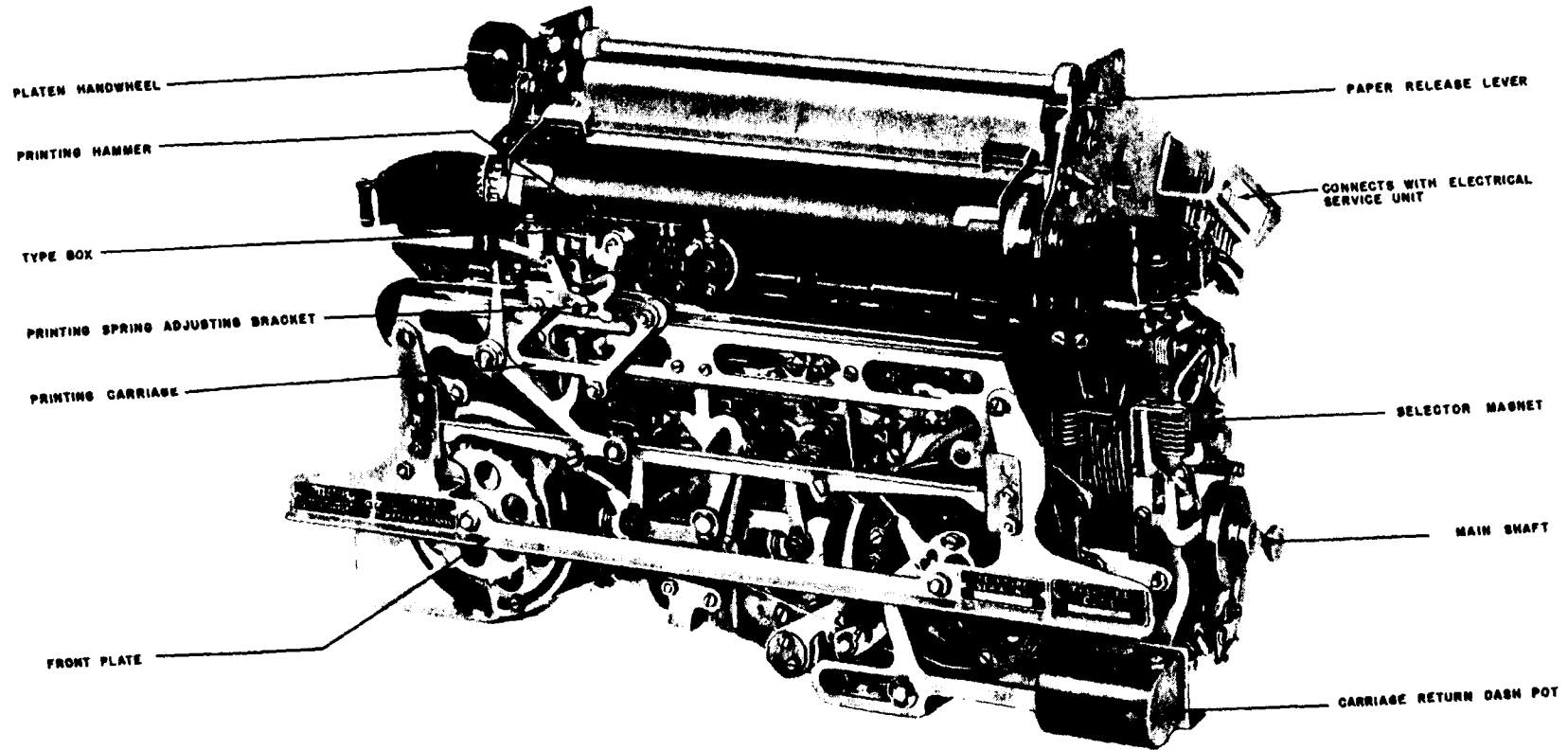


Fig. 5 - Typing Unit (Front View)

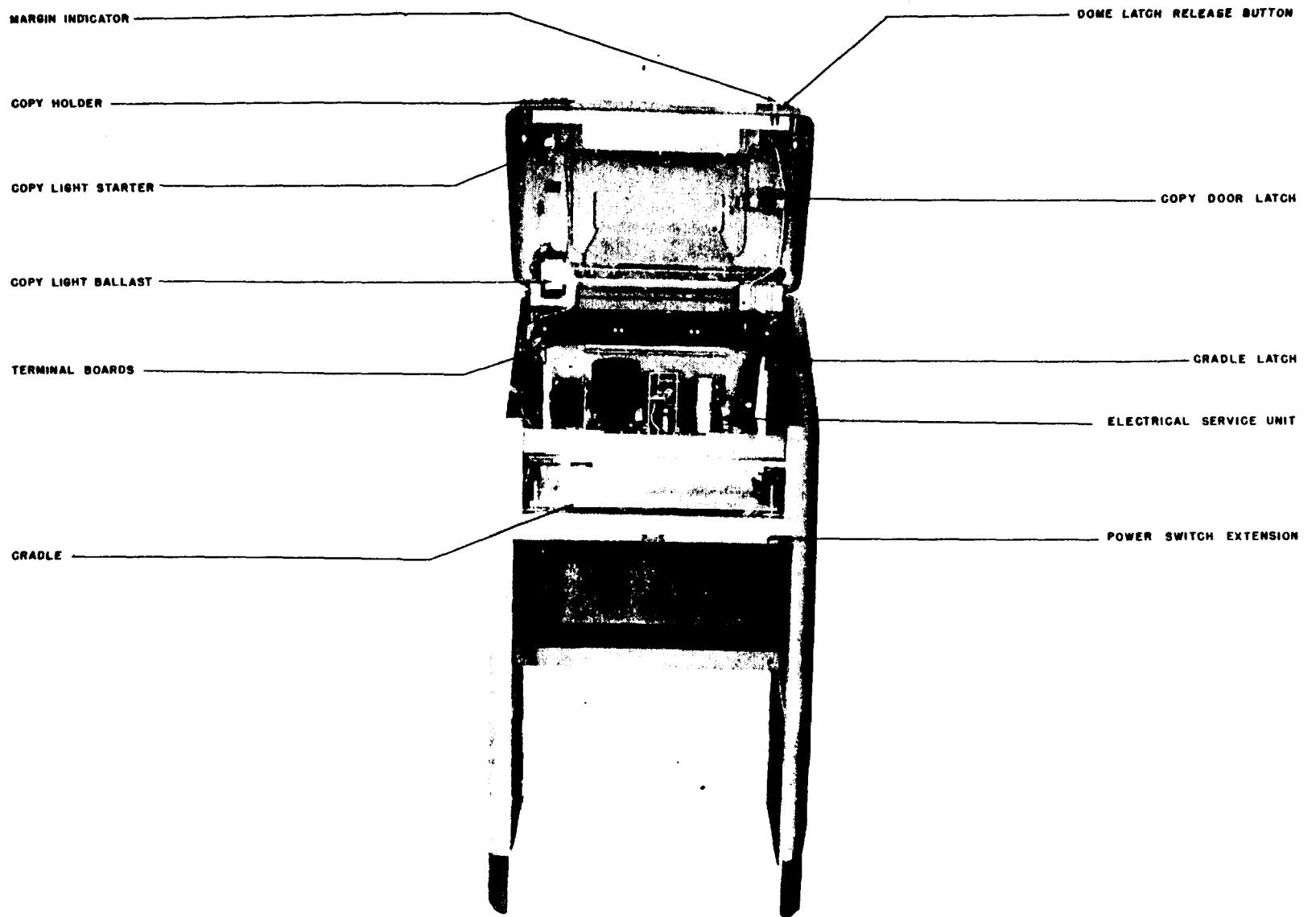


Fig. 6 - Cabinet, with Electrical Service Unit