TELETYPE CORPORATION
MODEL 28
TELETYPE APPARATUS

I N D E X

MODEL 28 PAGE PRINTER
SEND-RECEIVE

MODEL 28 PAGE PRINTER RECEIVE-ONLY

MODEL 28

APPARATUS PLAN

Model 28 is a designation applied to a complete new line of Teletype apparatus.

This is a carefully planned line of telegraph apparatus units built around five basic machine components.

The five components and the general plan for combining them are shown in the diagram which follows.

THE 28 PLAN

BASIC UNITS

TAPE PTR.   PAGE PTR.

TRANS. DIST.   REPERF.   KEYBOARD
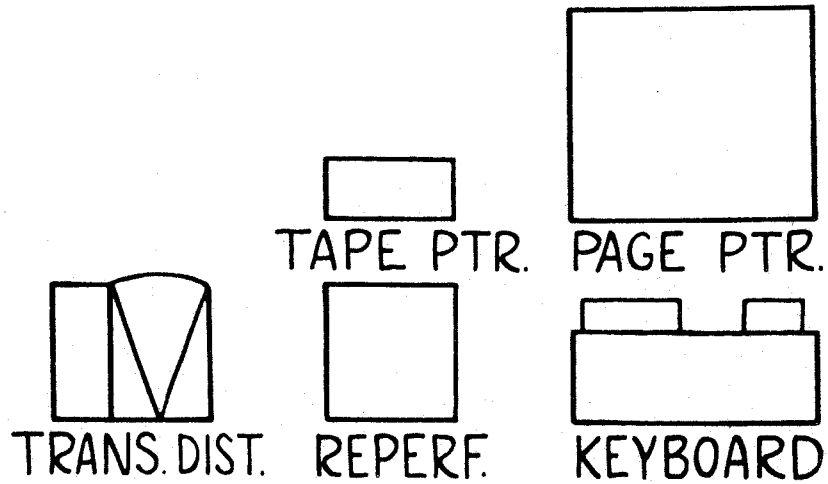
REPRESENTATIVE COMBINATIONS

COMPLETE SET

REPERF. TRANS.   KEYBOARD PERF.   SEND-REC. PTR.
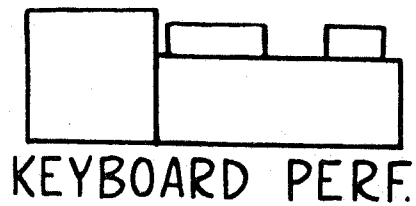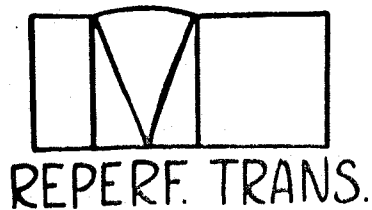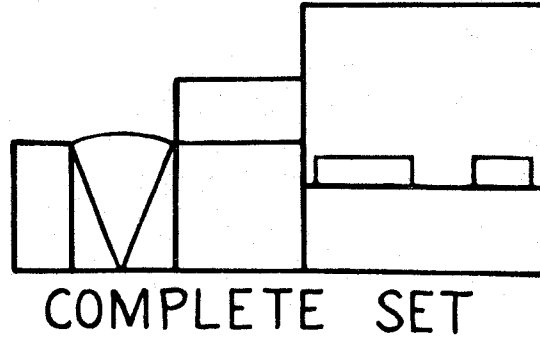
DESIGN OBJECTIVES OF THE MODEL 28 LINE

To meet the increasingly complex requirements of printing telegraph communication in an efficient and economical manner, it became evident that a new line of equipment was needed that would fulfill the following prime objectives:

1. Less maintenance.

2. Quieter operation

3. Increased speed.
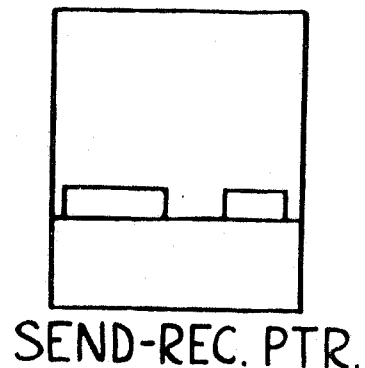
4. Lighter weight.

5. Smaller size

6. A complete line of apparatus units employing standardized basic components in various combinations.

7. Common mechanisms and parts wherever practicable.

8. Expanded capacity for special functions.

9. Greater shock resistance.

10. Stability of operation in non-horizontal positions and under conditions of severe vibration.

In the design of the new page printer, a survey showed the need for a wholly fresh approach. It was obvious that the requirements could not be met with an assemblage of modifications and adaptations of existing mechanisms.

For example, a review of the typing mechanisms used in previous Teletype units and in equipment developed by others indicated that they are generally unsuited to meet the new requirements.

Older clutch designs are especially inadequate. Felt clutches require frequent servicing due to heat and loss of lubricant; positive clutches are subject to variable engagement.

Type Box Printing

Of the innovations in the Model 28 printer, probably the most striking is the printing mechanism.

Type pallets, instead of being mounted on conventional type bars, are carried in a small rectangular box about $\frac{1}{2}$" thick, 1" wide, and 2" long. Pallets are arranged in four horizontal rows, each row having a capacity of 16 characters. Letters are in the left half of the box, figures in the right half.

To print, the type box is moved to bring the desired character to the printing position, and a printing hammer drives the pallet against the ribbon and paper. After each stroke, the type box is returned to its normal position below the printed line so the typed matter becomes visible.

Advantages:

1. Type alignment is controlled by manufacture of parts; no further adjustment required.

2. Type box is removable with a light finger motion; no tools required. Facilitates cleaning, as well as change to other characters (e.g., weather symbols).

3. Weight of carriage assembly reduced to 8 oz. (compared to 5 lbs. on Model 15).

4. Made possible reduction in over-all size and weight of machine.

5. Made possible use of stamped sheet metal framing instead of cast framework, permitting further reduction in weight of machine.

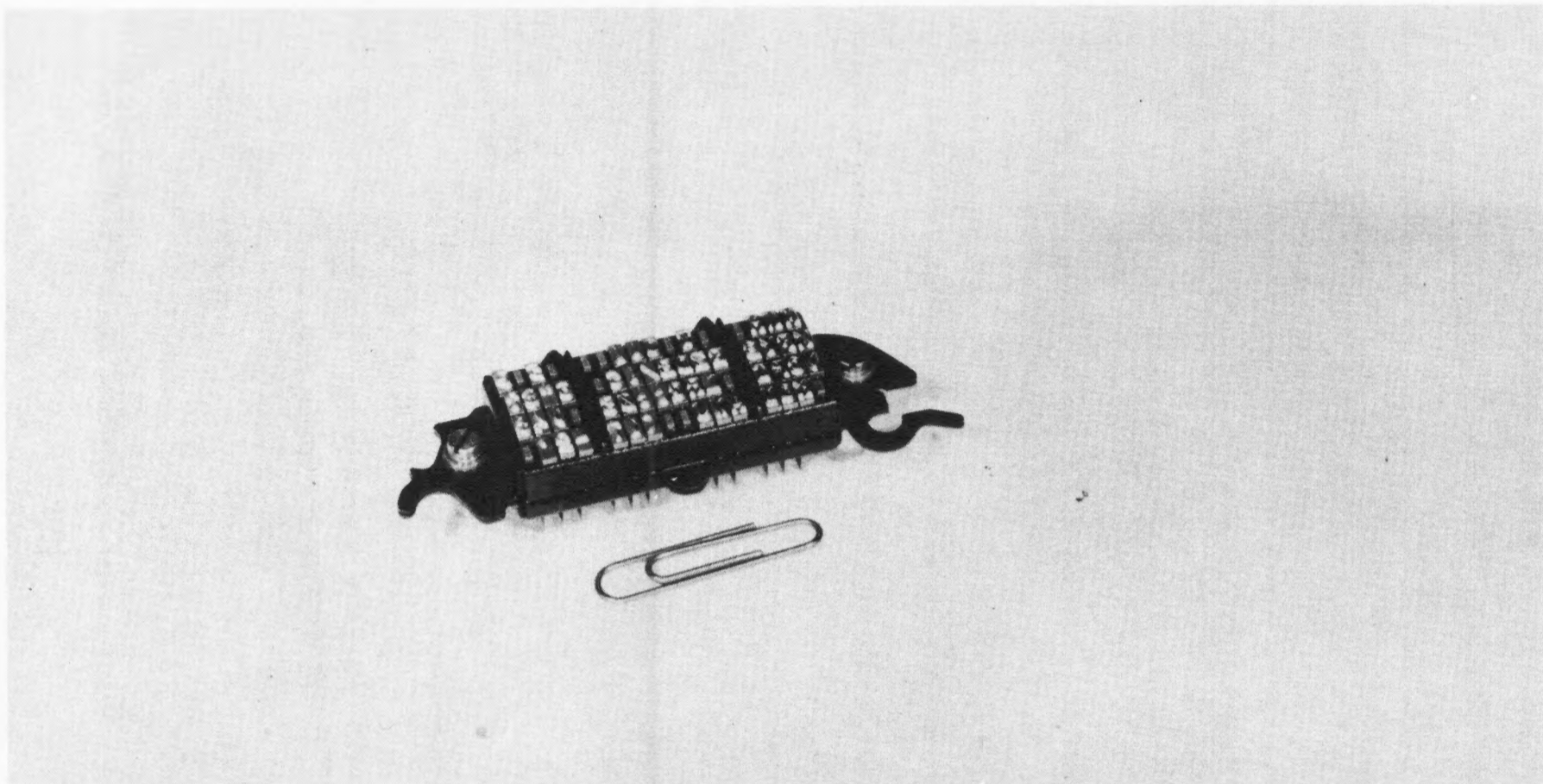Figure 2

THE TYPE BOX

Shown in comparison with an ordinary paper clip.
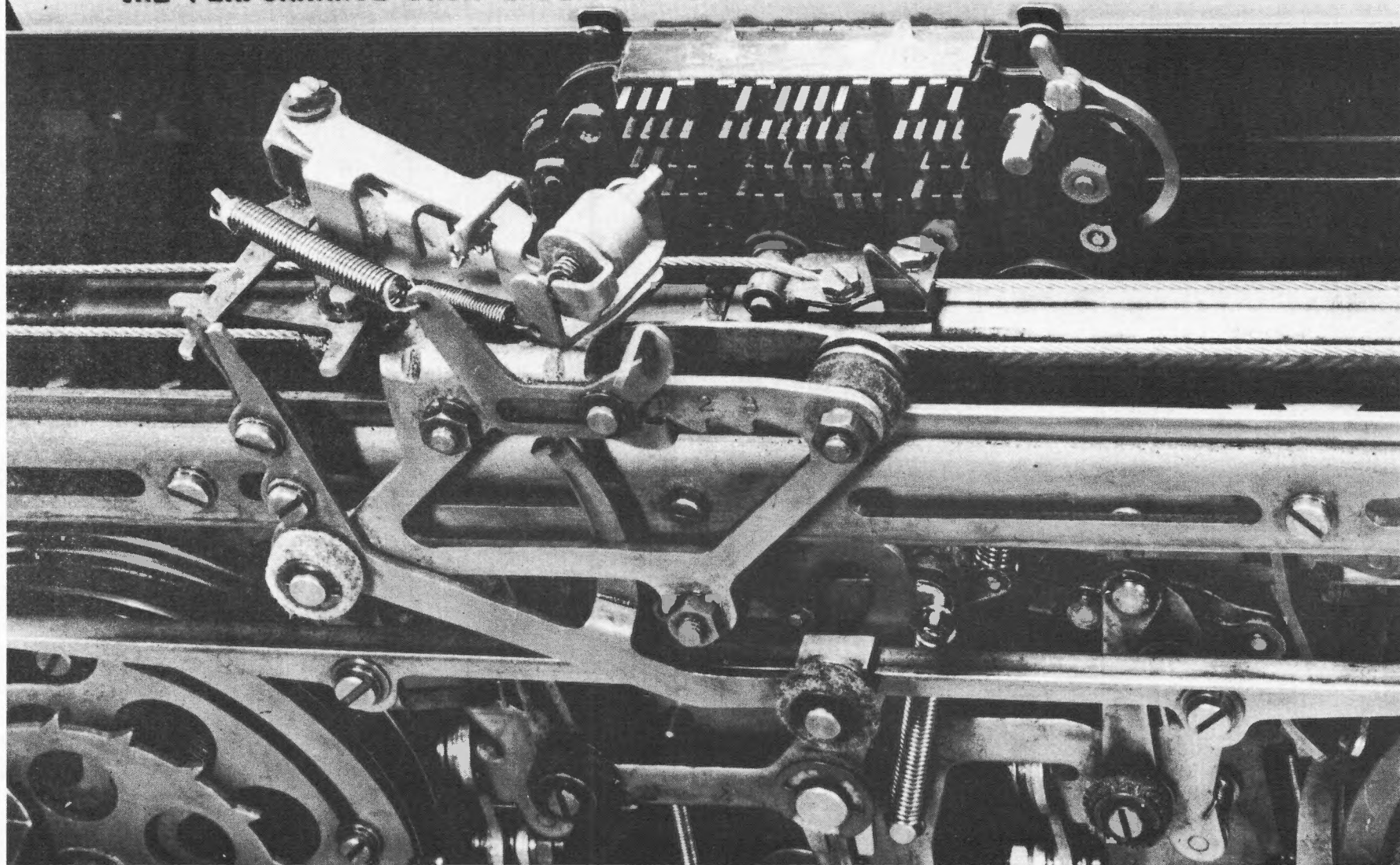
THE PERFORMANCE DATA INDICATES TH

Figure 3

When the type-box is in the desired position, the printing
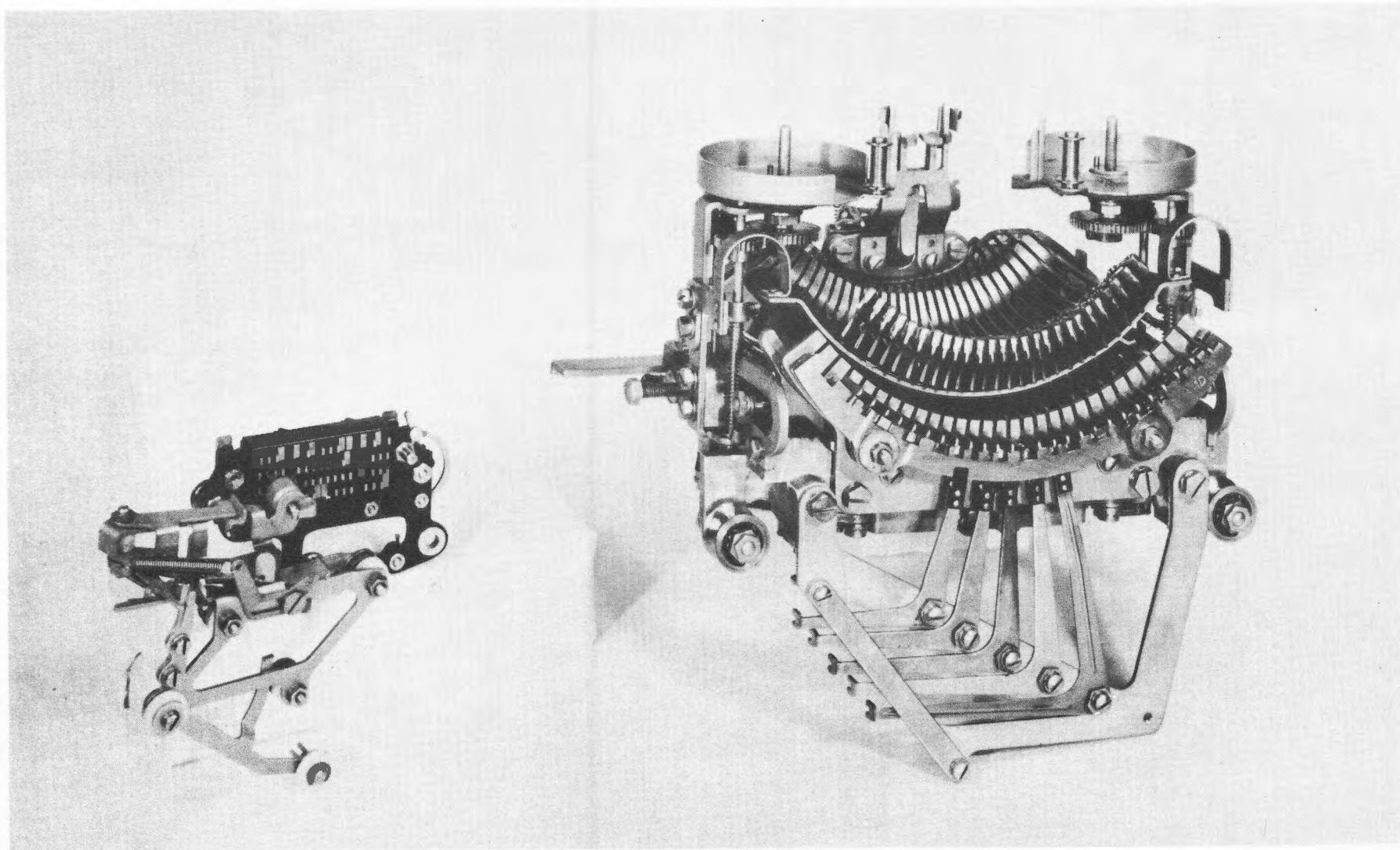hammer drives the type pallet against the ribbon and paper.

Figure 4

A comparison of the new type-box with the older "basket"
carriage. The new type-box assembly weighs only 1/10th
as much as the older moving carriage.

6. Carriage return is very fast, with negligible power input.

7. Gravity has no significant effect on carriage motion.

8. Shift and unshift are accomplished with type box; platen remains stationary. Simplifies paper handling, improves readability.

9. Since each character is separately mounted (instead of a type pallet carrying two characters, as in conventional machines), overscoring and underscoring are eliminated.

10. Because the same hammer blow is applied to all characters, printing impression is more uniform. This is especially important in multiple copy work.

Ribbon Mechanism

The ribbon spools are mounted on the machine itself, rather than on the type carriage.

Provides a straight course for the ribbon travel. Facilitates changing of ribbons. Cuts down number of guides required. Also, in combination with the more gentle blow of the new type hammer, results in increased ribbon life.

All Steel Friction Clutch (Fig. 5)

Another striking innovation is the new clutch. It is an all steel, internal expansion friction clutch which disengages in the stopped condition. Older clutches depend upon slippage between felt washers and steel plates when a stop is interposed, so that the driven member is mechanically held from turning.

Clutches of the new design are used not only for driving the selector cams, but for the various other power actions—moving the type box, feeding the paper, spacing, etc.

The new type clutches are used throughout the Model 28 line.

Advantages:

1. Eliminates need for frequent clutch lubrication; requires oiling only once or twice a year.

2. Lengthens lubrication interval for printer:
   60 speed - 3000 hours operation
   100 speed - 1500 hours operation

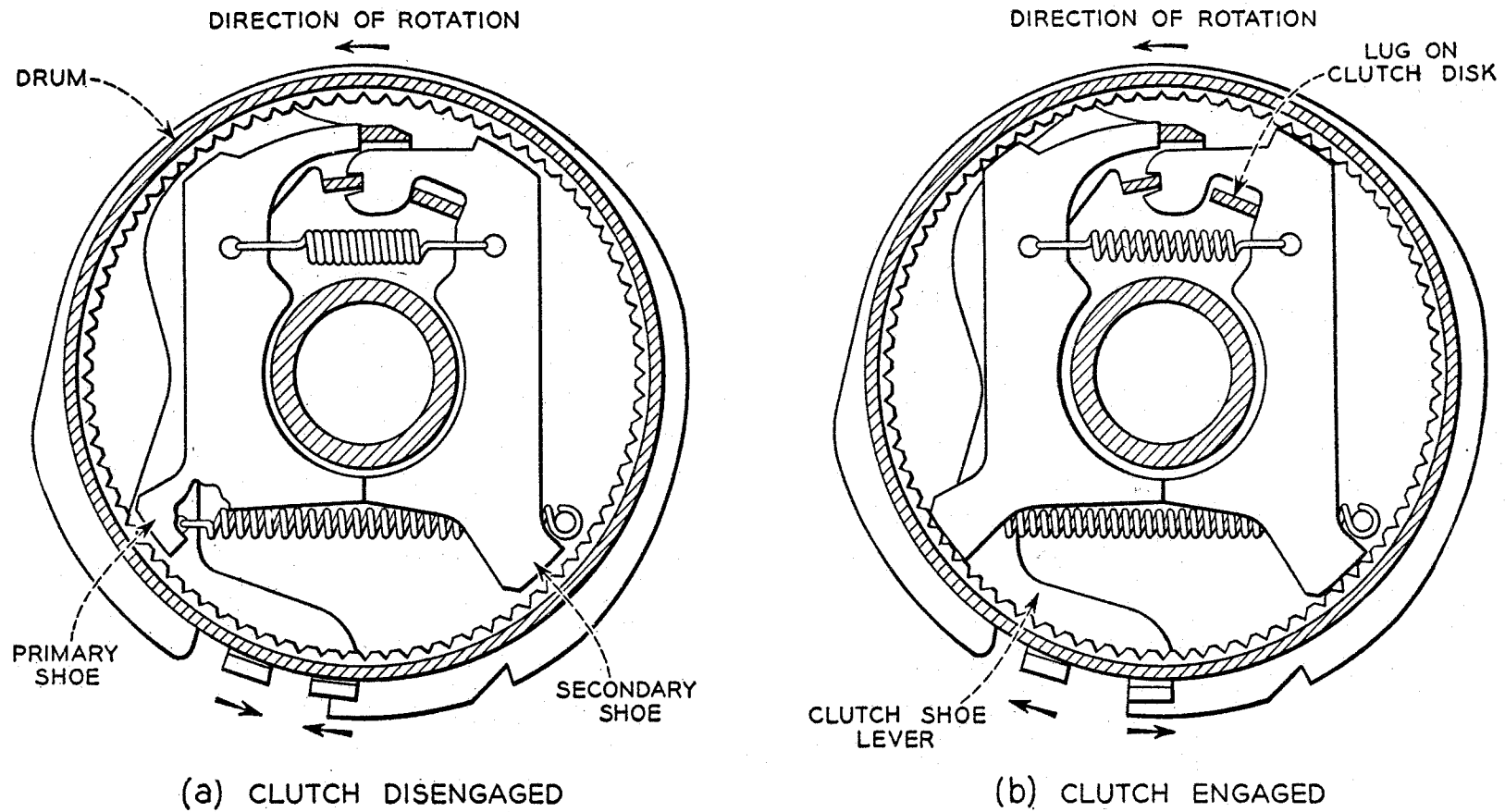3. Has exceptional stability. No need for frequent torque adjustment.

(a) CLUTCH DISENGAGED   (b) CLUTCH ENGAGED

Fig. 5 — The clutch used on the Model 28 teletypewriter is an internal expansion friction clutch.

Selector (Fig. 6)

The selector has only two adjustments.

When adjustment is made in accordance with the specification, correct operation with proper margins is immediately obtained.

The magnet armature is unusually small and light, with a very short travel. This provides high speed operation with low power input.

"Stunt Box" (Fig. 7)

In recent years, there has been a growing need for a simple means of handling—without the sacrifice of key characters—an ever-increasing number of nontyping tasks, such as station selection, remote control, suppression of typing and spacing, etc.

In the Model 28 printer, all nontyping operations are controlled by a unique "stunt box". Extending across the full width of the typing unit, it has 42 slots. Each slot can hold a function bar capable of responding to an assigned code.

Ten positions are reserved for the common functions—carriage return, line feed, shift, etc.

Thirty-two positions are available for "special assignments". This, in effect, expands the telegraph alphabet, since the number of possible code combinations is large.

Power-Driven Code Bar Selection

The code bars (which are the indexing mechanism from which the type box obtains its positioning information) are driven by direct motor power to either the marking or spacing position. This overcomes effects of gravity and the drag of thick lubricants under low temperature conditions.

Positive drives are extensively used throughout the printer for this same reason.

Paper Feed

A separate clutch is used for line feed. Permits "power" feed-out of paper and eliminates need for exposed platen crank.

An improved paper straightener mechanism provides constant operation under adverse conditions without paper jamming.
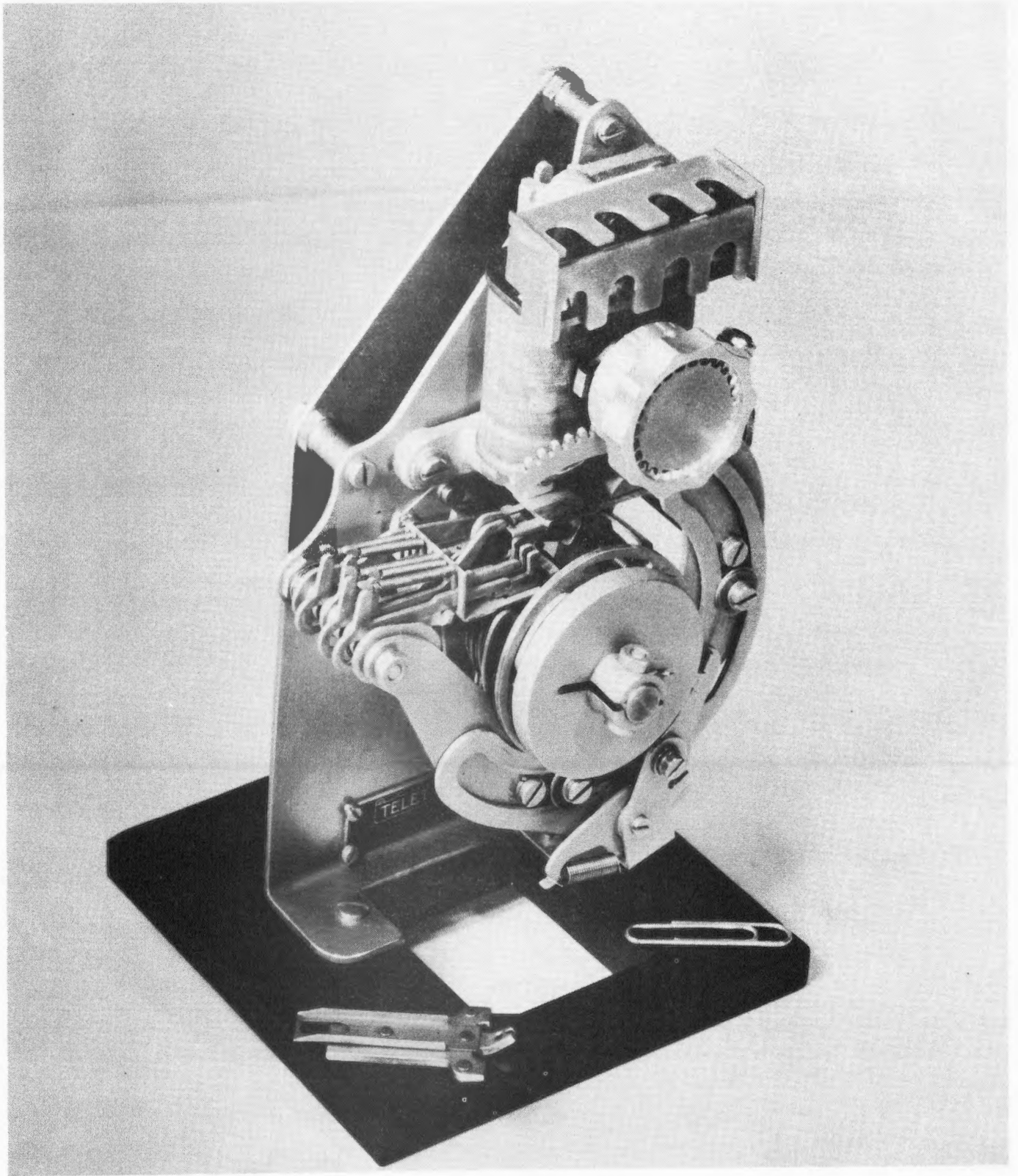
Figure 6

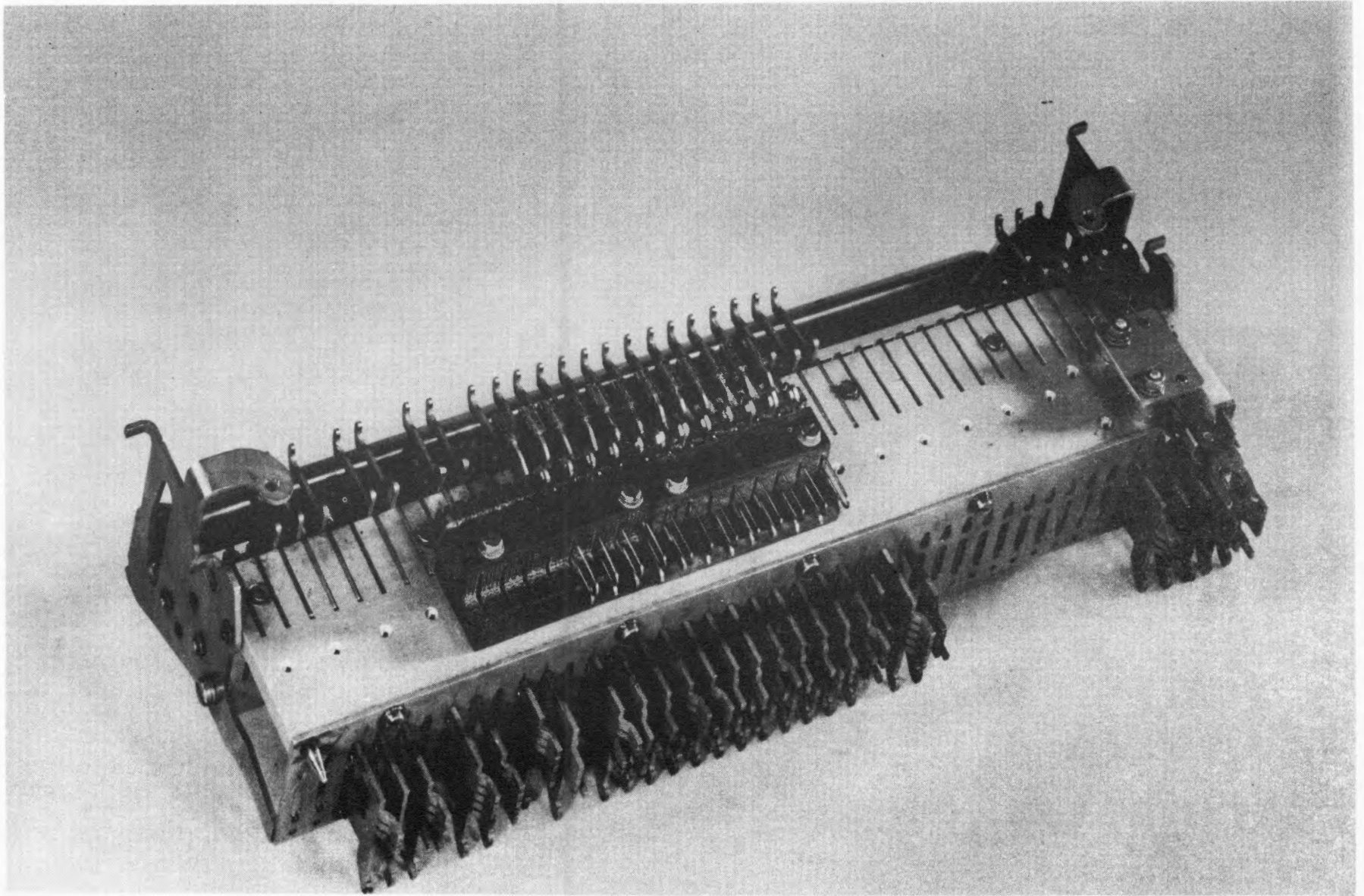THE SELECTOR

Requires only two adjustments

Figure 7

THE "STUNT BOX"

Expands the telegraph alphabet.

III. THE KEYBOARD

The Model 28 is equipped with a power keyboard. It has a "universal" keystroke—uniform for all keys. The touch is light and shallow.

The keys are modern, completely redesigned. Spacing between keys is the same as on standard typewriters.

An extra row of keys has been added for local control of functions such as carriage return, line feed, etc. Included are local lock and unlock keys to prevent accidental depression of a keylever.

The keyboard is sealed against dust.

Signal Generator

In place of the six-contact signal generator used on older machines, the Model 28 is equipped with a single contact signal generator mechanically operated by the distributor.

Advantages:

1. No adjustment is ever required, other than positioning the assembly itself.

2. Has the form of a transfer switch. Permits either open or closed signal transmission, or transmission of signals of alternate polarity.

The signal generator is mounted in a metal box for protection and shielding against radio interference.

Signal generators of the new type are used throughout the Model 28 line.

Improved Synchronous Motor

The synchronous motor is especially designed for long life.

The ball bearings are greatly oversize to minimize bearing trouble. The starting switch has been eliminated by the use of a rugged external starting relay so the service man has no need to open the motor.

An improved internal air circulating system rapidly takes heat out of the motor and an external fan circulates the warm air along the machine cover surface so that heat is quickly dissipated from the machine without the need for external air circulation. This helps to keep noise in and dirt out.

Rubber mountings are provided to minimize motor noise.

Governed Motor

A universal AC/DC governed motor provides long periods of trouble-free service.

The governor has a life of 3000 hours without attention. This is approximately equal to the life of the motor brushes and matches the extended service period for the rest of the machine.

The governed motor operates at 3600 RPM, which is the speed of the 60 cycle synchronous motor, and therefore, uses the same gears. The two motors are mechanically interchangeable.

IV. PAGE PRINTER CABINETS AND COVERS

Cabinet (Fig. 8)

The cabinet was designed with the following objectives in mind:

1. Operating convenience

2. Accessibility for servicing and maintenance

3. Suppression of noise

4. Good appearance

All mechanical controls have been brought to the front. The manual platen crank has been eliminated and replaced with a rapid motor-driven feed-out controlled by a button on the keyboard.

A lamp within the cabinet illuminates the copy. The angle of the window above the copy has been chosen so that glare is practically eliminated.

The upper section of the cabinet swings open to provide access for insertion of paper and ribbons and for maintenance. The entire page printer keyboard set is mounted on a cradle so that the set can be pivoted forward for access on all sides. If desired, the operating portions of the set can be removed from the cabinet and the lower front tray shown pivoted forward in the photograph (Fig. 8) can be slipped horizontally into the upper portion of the cabinet to provide a working surface for servicing.

Electrical accessories, such as the line relay, motor control relay, rectifier, etc., have been placed in a box behind the typing unit.

Except for a narrow paper exit slot, the cabinet is entirely sealed to suppress noise; keep out dust.

Cabinets may be fastened together in rows to conserve floor space.
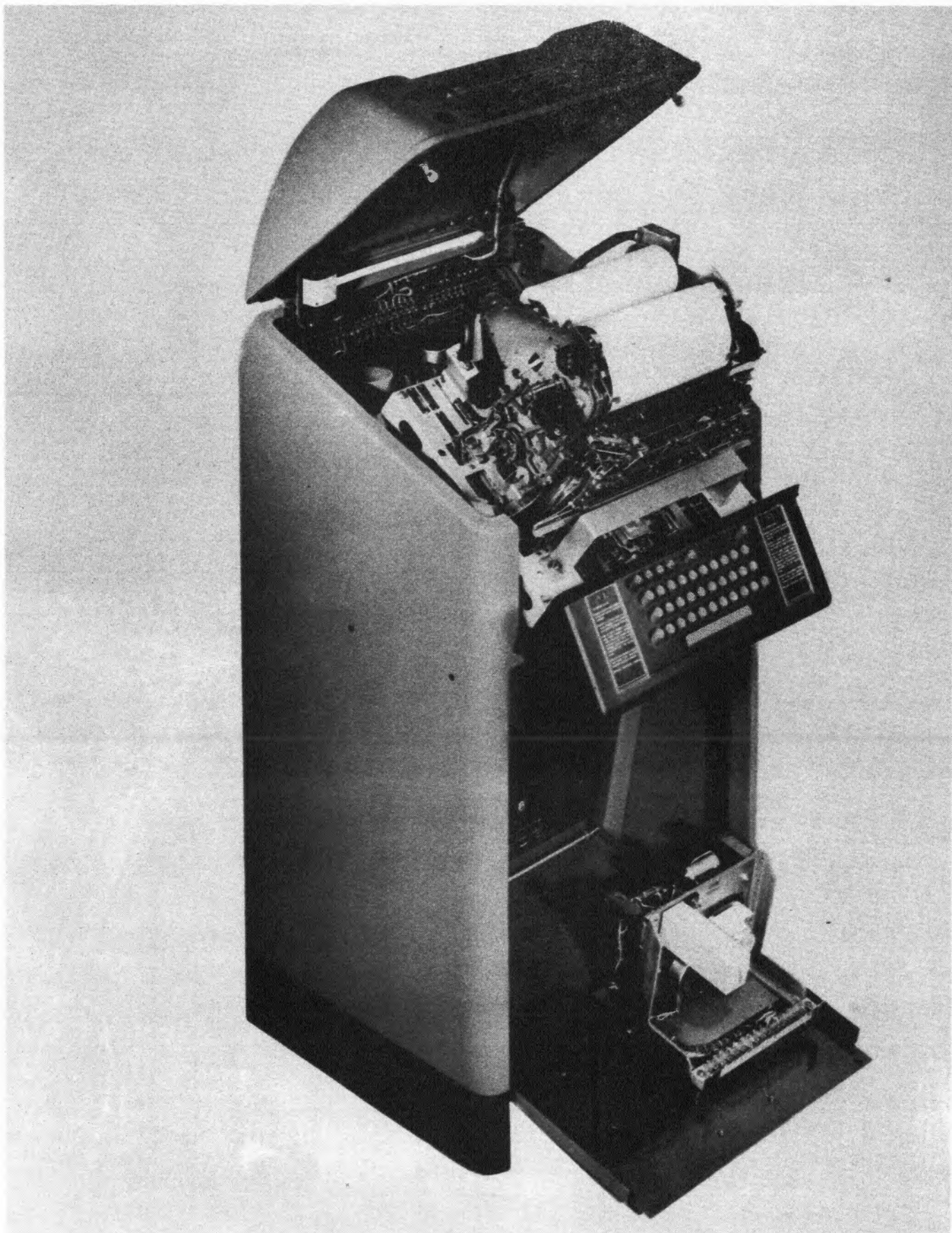
Figure 8

THE CABINET

Cover - Table Model

A light-weight, low-cost cover for rack or table mounting; close fitting—takes up a minimum amount of space.

Includes as many of the features of the cabinet design as possible:

1. All mechanical controls on front of cover, including motor-driven feed-out.

2. Copy lamp inside cover.

3. Non-glare copy window.

4. Electrical accessories mounted in box behind typing unit.

5. Easy access for changing of paper and ribbons.

6. Sealed to keep dirt out and cut down noise.
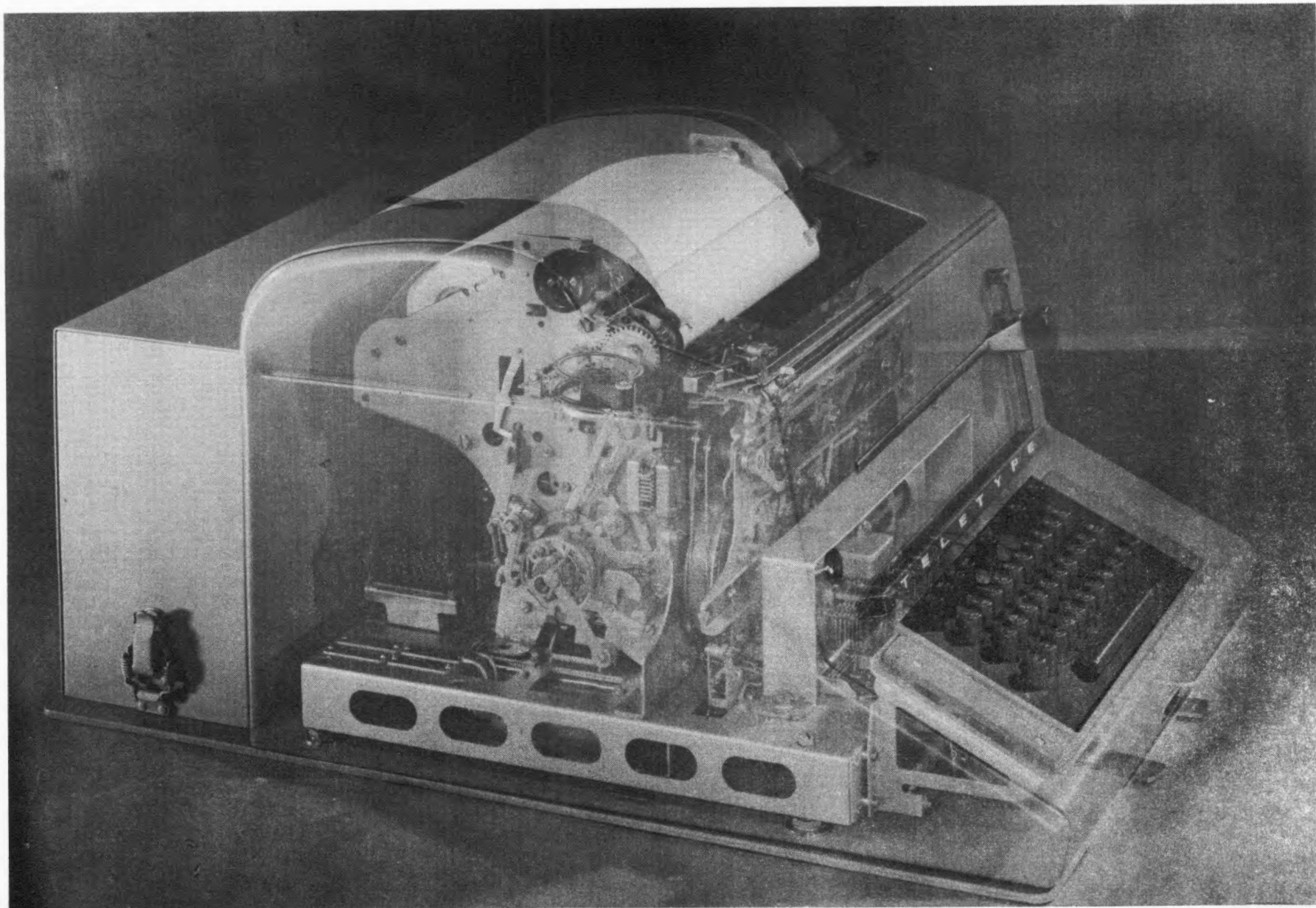
MODEL 28 PAGE PRINTER

For Rack or Table Mounting
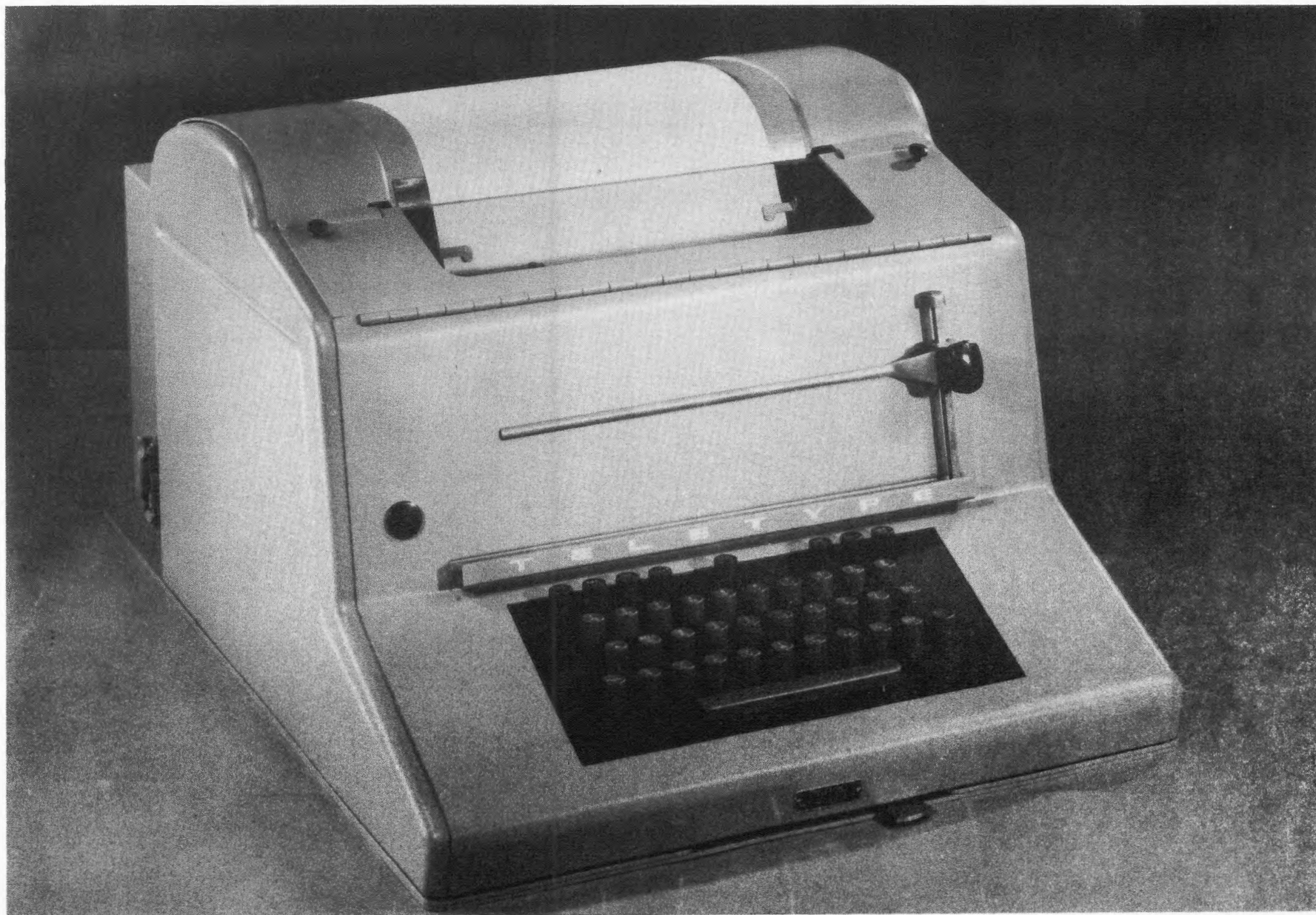
MODEL 28 PAGE PRINTER

For Rack or Table Mounting

Cover - Command Aircraft Model

This is an early version of the table model.

Several Model 28 printers housed in these covers have been installed in command aircraft.

MODEL 28 PAGE PRINTER

Installed in Command Aircraft—SAC

MODEL 28 PAGE PRINTER

Installed in Command Aircraft—SAC

Cover - Advance Base Model

A light-weight, close-fitting cover especially designed for use at advanced air bases. Fits in immersion-proof carrying case.

Weights and dimensions of the Model 28 Advance Base Printer and auxiliary equipment are as follows:
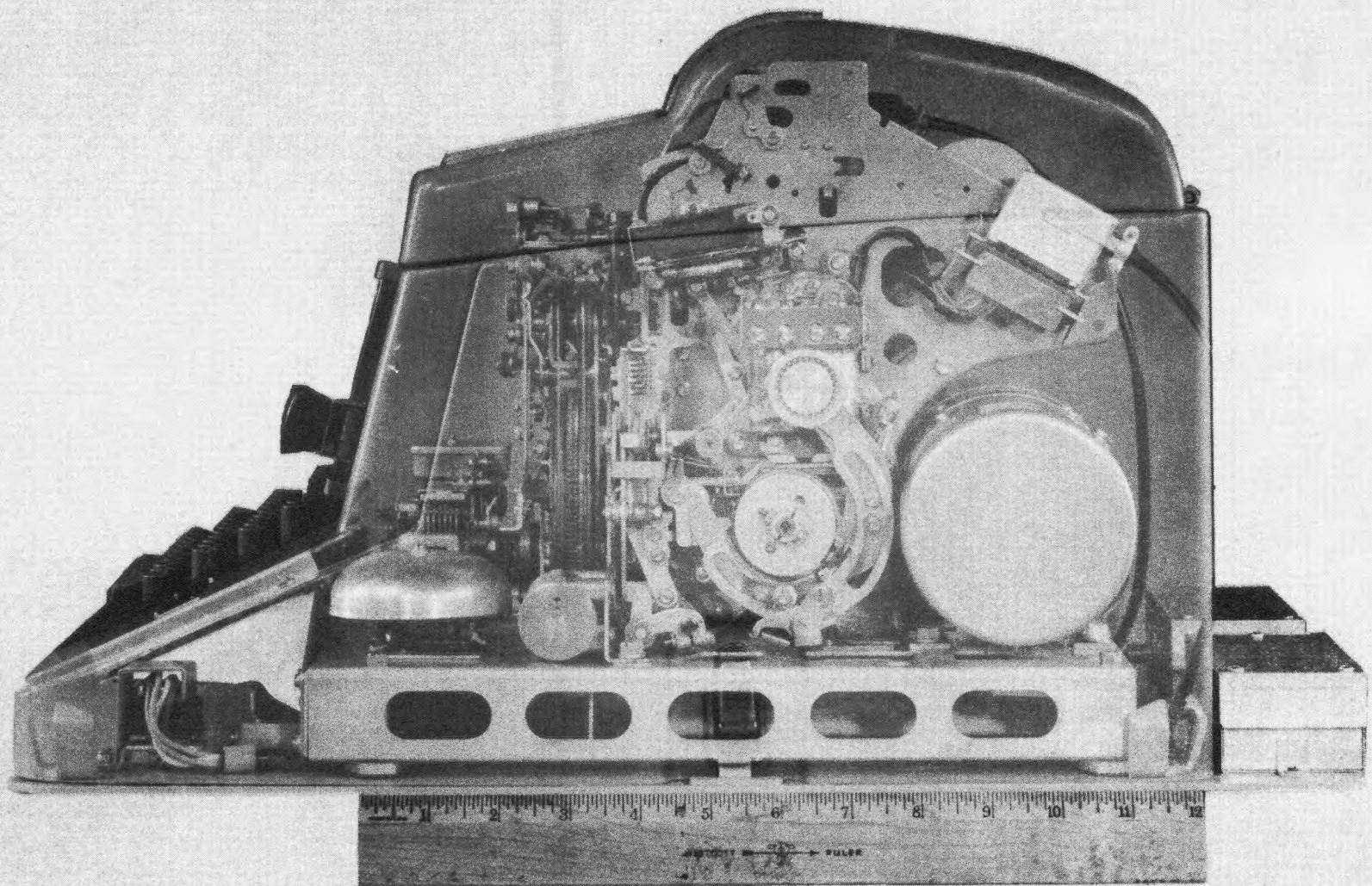
Weight

Page Printer		18.5 lbs.
Keyboard with Motor		19.5 lbs.
Cover		8.0 lbs.
	Total	46.0 lbs.
Electrical Service Unit		3.0 lbs.
*Immersion-proof cover		14.0 lbs.
Chest		53.0 lbs.

Over-all Dimensions	Width	Height	Depth
Printer and Cover	17"	12"	19"
*Immersion-proof Cover	19"	13"	25"

*Immersion-proof cover contains electrical service unit as well as printer. Complete advance base printer equipment may be transported in one package.

IMMERSION PROOF CARRYING CASE -

Advance Base Model 28 Page Printer

MODEL 28 PAGE PRINTER - ADVANCE BASE

V. PAGE PRINTER AND KEYBOARD ACCESSORIES

The Model 28 plan provides for a full range of accessories needed in printing telegraph communications and for a large variety of conveniences for operators and maintenance personnel.

Many of these optional features are in process of development, and a number of the more important ones are currently available.

Among the accessories on which development is well advanced are the following:

Page Printer

Station Selector System
  A telegraph selective calling system.

Time Delay Motor Stop Mechanism
  To shut motor off after idle line time of a pre-
  determined length.

Electrical Motor Stop Mechanism
  To shut motor off remotely upon receipt of the
  proper sequence of characters.

Automatic Carriage Return-Line Feed

Sprocket Feed Platen
  Will feed up to twelve copies interleaved with
  one-time carbon.

Horizontal Tabulator
  With automatic cut-out of transmitter distributor
  during tabulation.

Form Starter
  Upon receipt of the proper character sequence, this
  mechanism will cause the platen power drive to feed
  the paper up to the desired starting position at the
  head of the next form. Also useful in communications
  to give uniform paper size to messages, simplifying
  their handling and filing.

Reperforator Control
  To control an auxiliary tape reperforator.

Local Reverse Line Feed, motor-driven

On Line Back Space
  This mechanism, together with Reverse Line Feed, will
  enable the operator to bring previously typed material
  back for correction. Permits the printer to double
  as a typewriter where space and/or weight considerations
  make a dual-purpose instrument desirable.

Keyboard

Off-Normal Contact
  A contact operating during the keyboard signal
  generating cycle to condition a radio transceiver
  for transmission.

Repeat-on-Space Mechanism
  To allow the space signal to be repeated while
  the space bar is held depressed.

Cabinet

Offset Copyholder

Form Accumulator Shelf
  For continuous form papers.

Form Paper Supply Box

Accessory Mounting Relay Rack
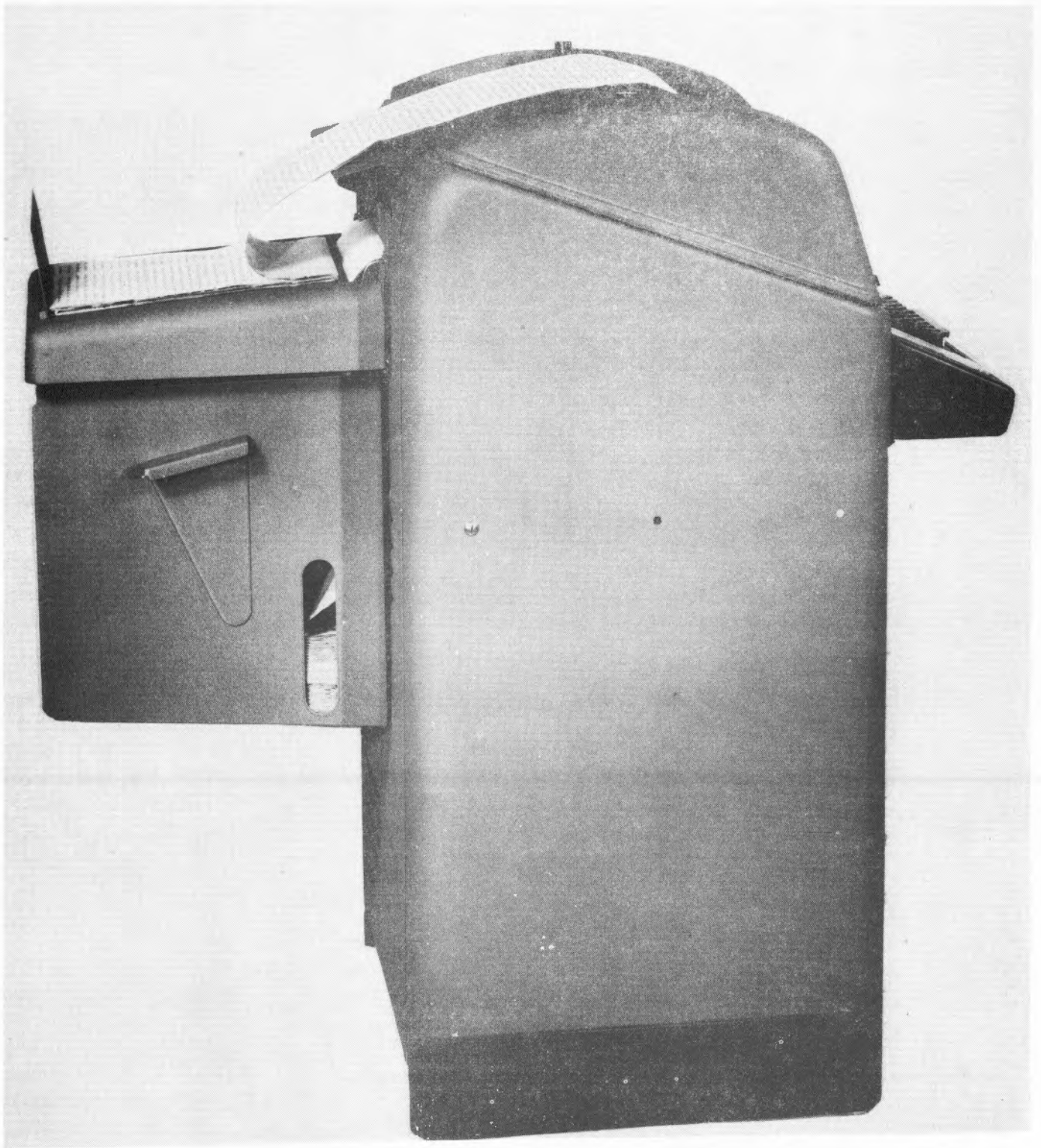

Electrical

Line Relay, with mounting

D.C. Power Package
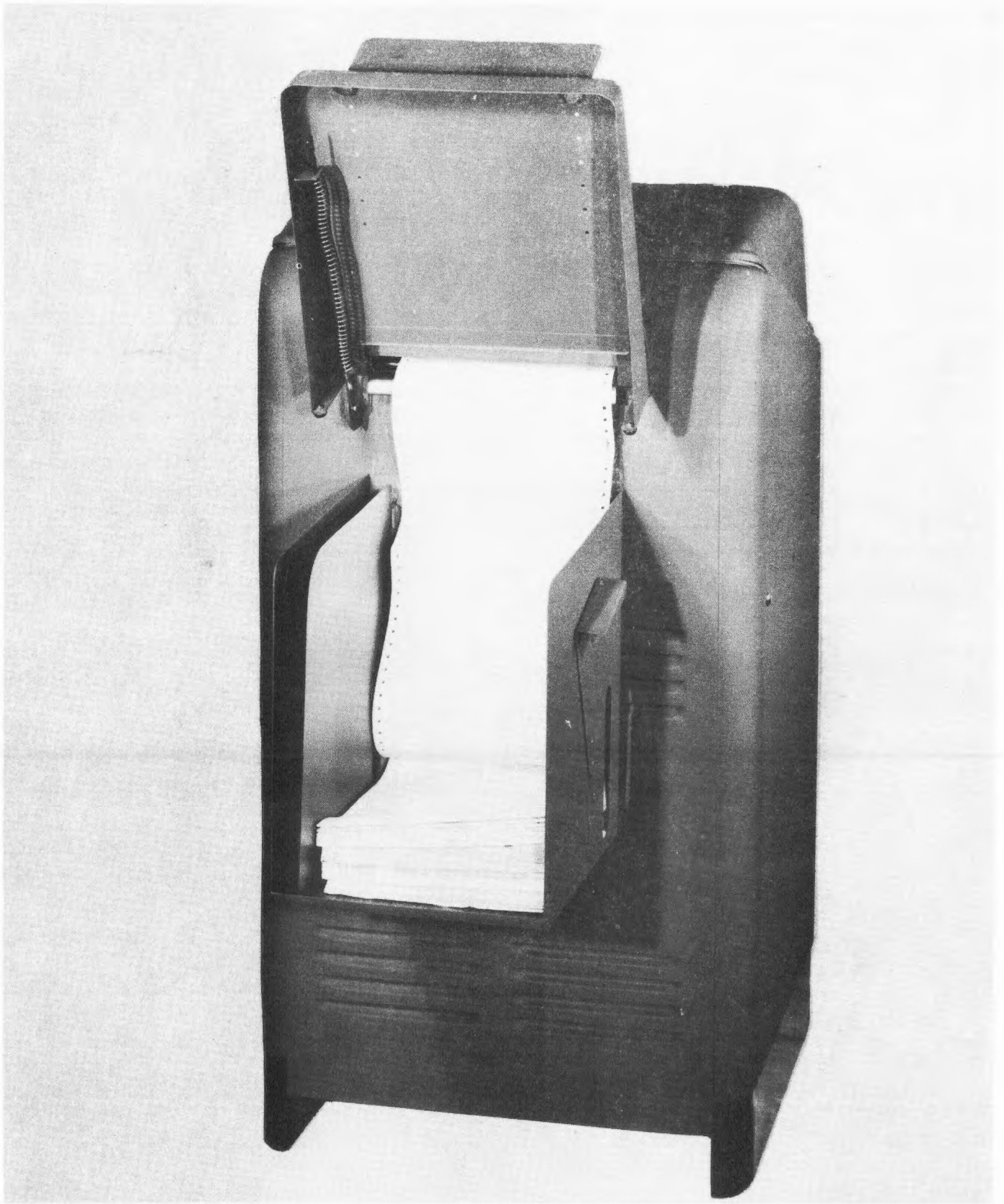 To permit operation on direct current power.
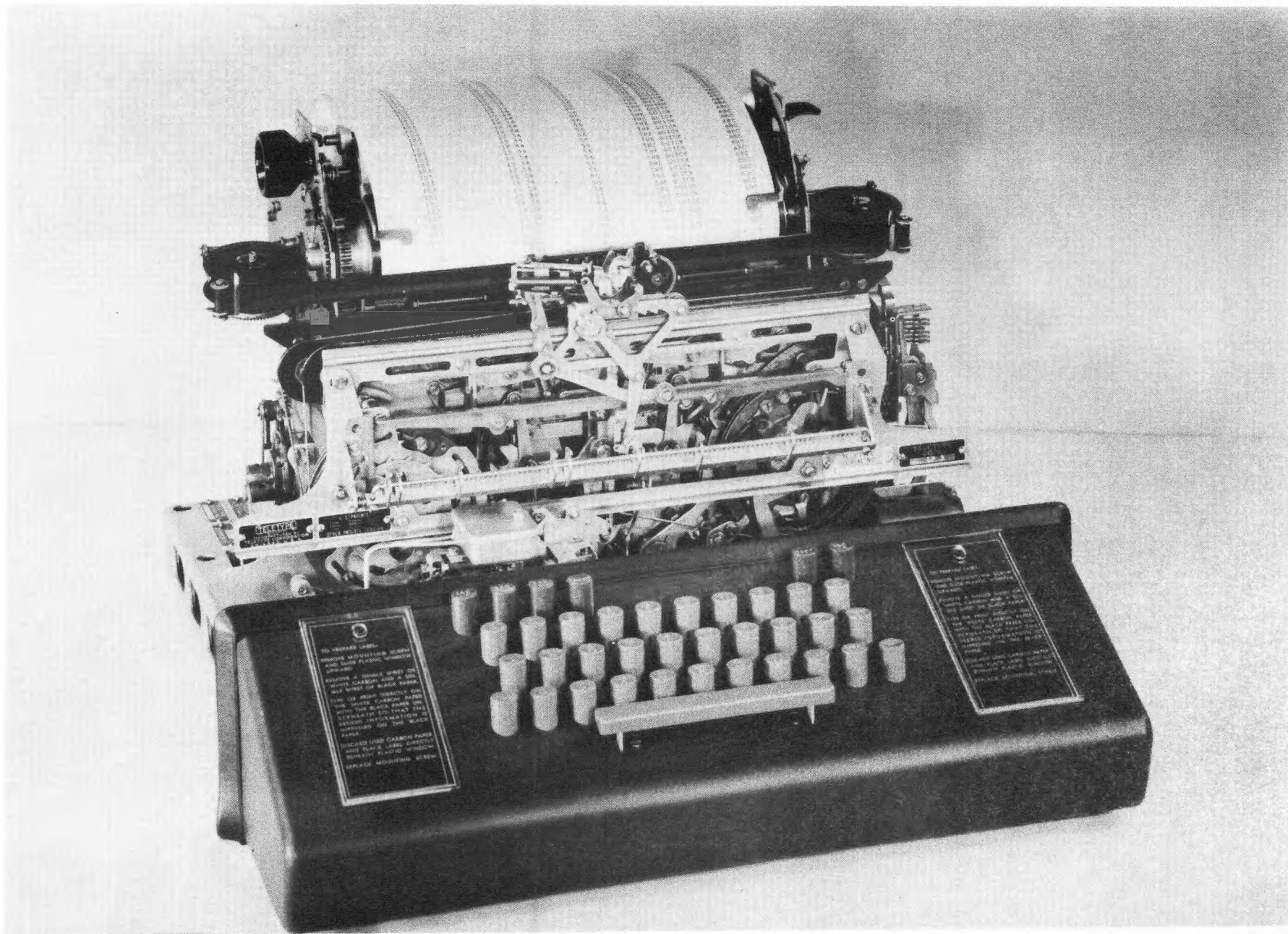
Radio Interference Suppression Filters.

MODEL 28 SPROCKET FEED PRINTER

MODEL 28 SPROCKET FEED PRINTER

MODEL 28 PAGE PRINTER
with horizontal tabulator

VI. TRANSMITTER DISTRIBUTOR SETS

A. <u>Single Message</u>

This transmitter distributor was developed as a component of the Model 28 line, to meet the need for a simple, low cost, basic tape reader. In keeping with the overall objectives of the Model 28 program, emphasis was placed on reliability of operation, compactness, minimum weight and minimum maintenance requirements.

General Operating Features:

1. Uses motor, clutch and signal generator of the same type as the page printer.

2. Speeds up to 200 wpm are available.

3. Tape is advanced by a unique feed wheel. The tape is engaged by 7 feed pins on this wheel, which hold the tape securely and keep tape feeding problems to a minimum.

4. Tape-out Mechanism. The unit shuts off when a sixth pin senses the absence of tape at the end of transmission.

5. Motor ON-OFF switch.

6. Tape lid release button.

7. Three-position transmitter control. Unit may be put in running position, or one of two stop positions:

    (a) with feed wheel held from rotating so tape position is not lost;

    (b) with feed wheel free to rotate so tapes may be inserted into transmitter (as in torn-tape switching applications) without the necessity of lifting the tape lid.

Accessories:

1. Tight and tangled tape stop. For applications where the transmitter distributor is to be used next to a perforator. When the transmitter distributor has absorbed the tape loop, tension in the tape will raise the stop arm, shutting off the unit. Stop arm will also lift if tangled tape should try to enter the lid.

2. Torn feed hole tape stop mechanism. If tape is not being properly fed by the feed wheel because of torn feed holes, this device will automatically stop the transmitter.
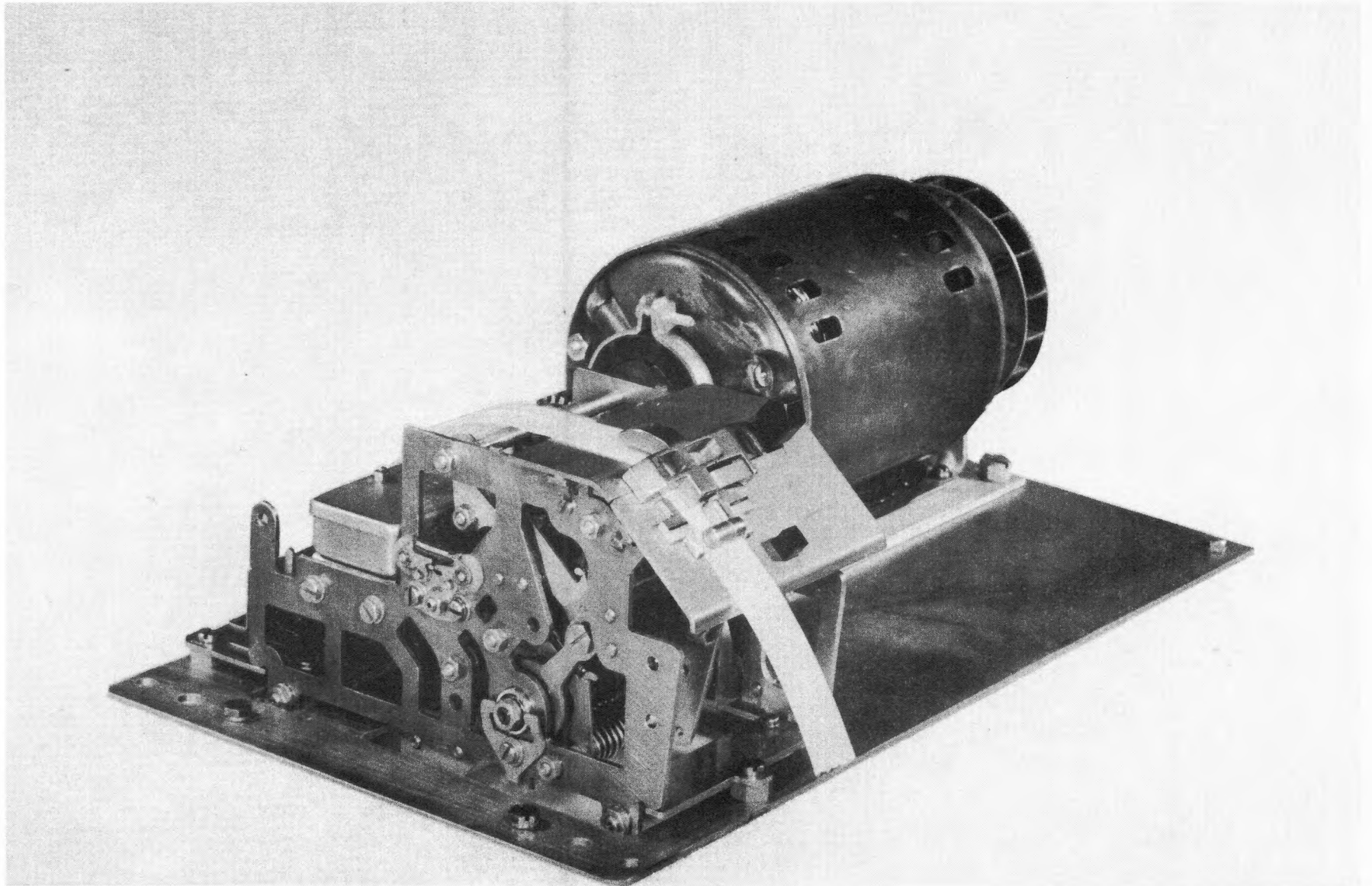
MODEL 28 TRANSMITTER DISTRIBUTOR

TELETYPE CORPORATION
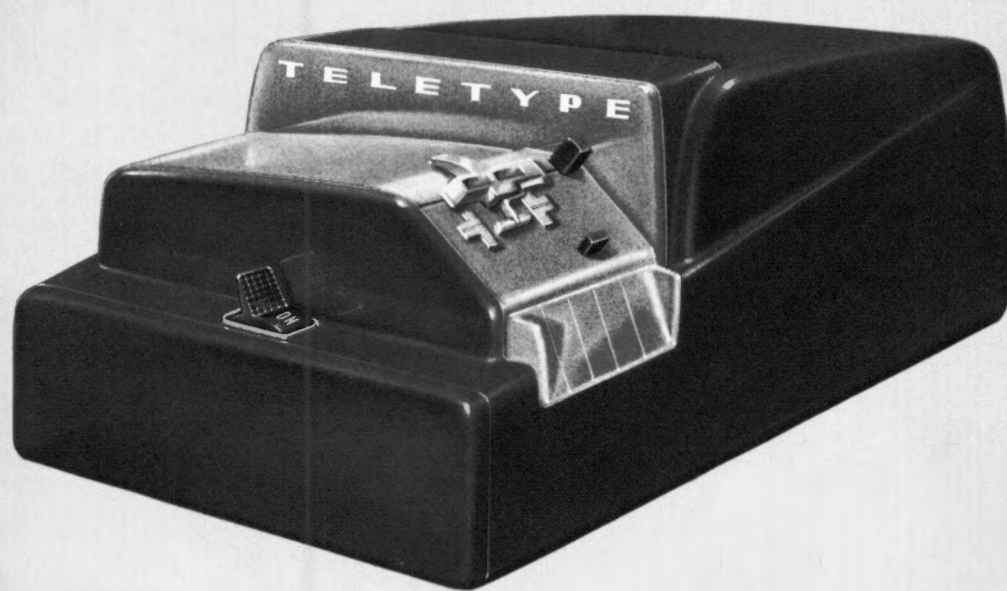
MODEL 28 TRANSMITTER DISTRIBUTOR (SINGLE MESSAGE)

3. Bell on "Blank". Transmits "Blank" (nonrepeat) without affecting tape in unit. For audible signaling purposes. Used primarily in railroad applications.

4. Multi-wire output. For cross-office switching, where it is desired to transmit at high speed. Also convenient for operating relays which act as control circuits for transmitters sending without benefit of a monitoring page printer.

5. Remote space block. Stops feeding and repeats character previously sensed.

6. Break lock. Should signal line open, this mechanism will stop the transmitter so message will not be transmitted into the open line. It can be arranged to sound an alarm bell.

7. Stop on "Blank". Stops the transmitter when a "Blank" combination appears in the tape.

8. Tape deflector. For use in connection with multiple address messages in a torn-tape relay system. Deflects tape to front of unit instead of permitting it to go to discard.

B. Multiple Arrangement - Three Message

Three transmitter distributors, gang mounted, driven by a single motor.

C. Multiple Arrangement - Six Message

Six transmitter distributors, gang mounted, driven by a single motor. Available in two arrangements:

1. A single row of six transmitters.

2. A "terraced" arrangement, with three transmitters in the lower row and three in the upper row. The motor is mounted to the rear of the lower row; the upper row is offset for operating convenience. The back of the unit is flush. A compact, space-saving arrangement. Can be element of torn-tape transmitter bay.
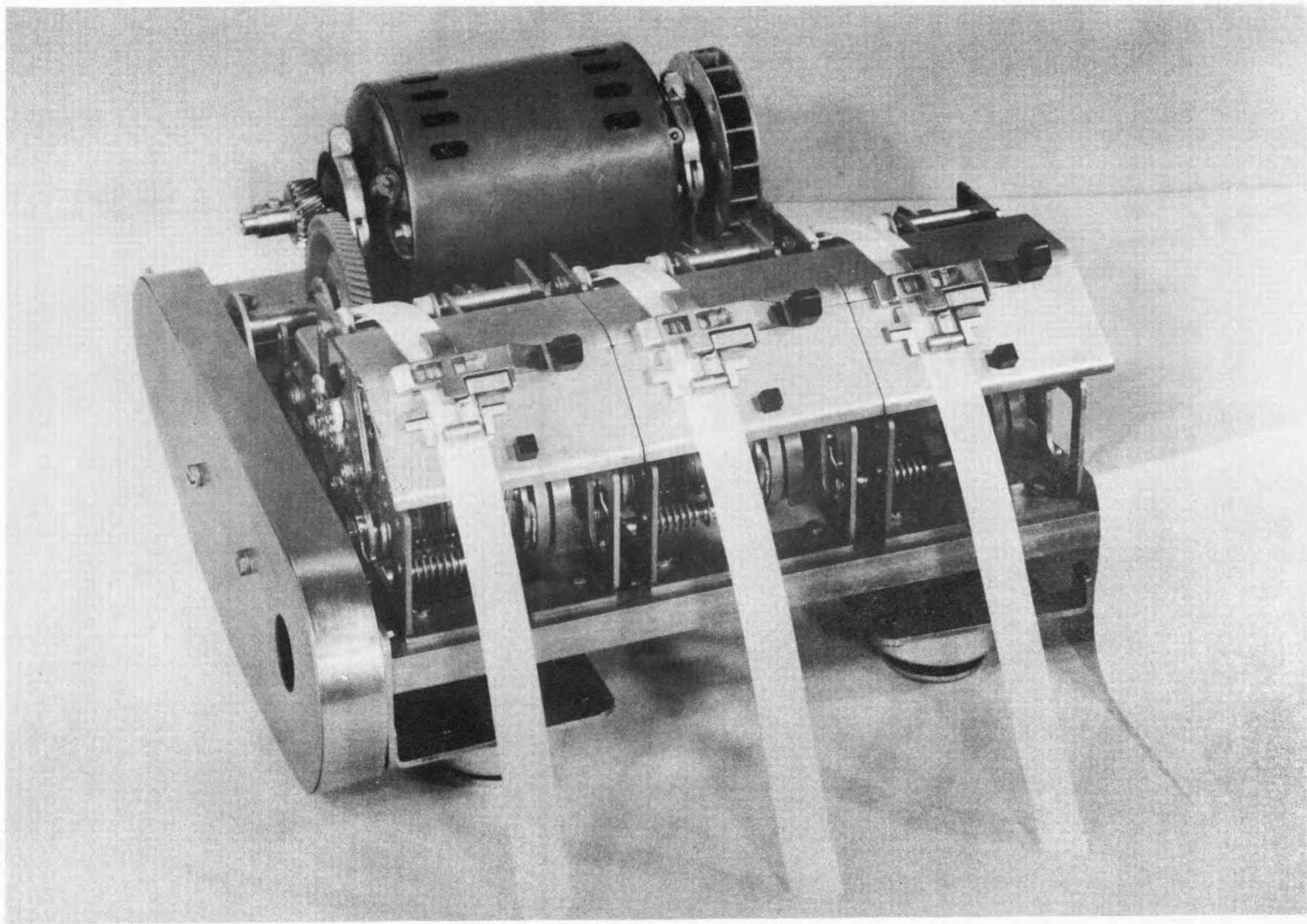
MODEL 28 TRANSMITTER DISTRIBUTOR

Multiple Arrangement - 3 Message

TELETYPE CORPORATION

MODEL 28 TRANSMITTER DISTRIBUTOR—MULTIPLE ARRANGEMENT (3 MESSAGE)

MODEL 28 TRANSMITTER DISTRIBUTOR

Multiple Arrangement - 6 Message

TELETYPE CORPORATION

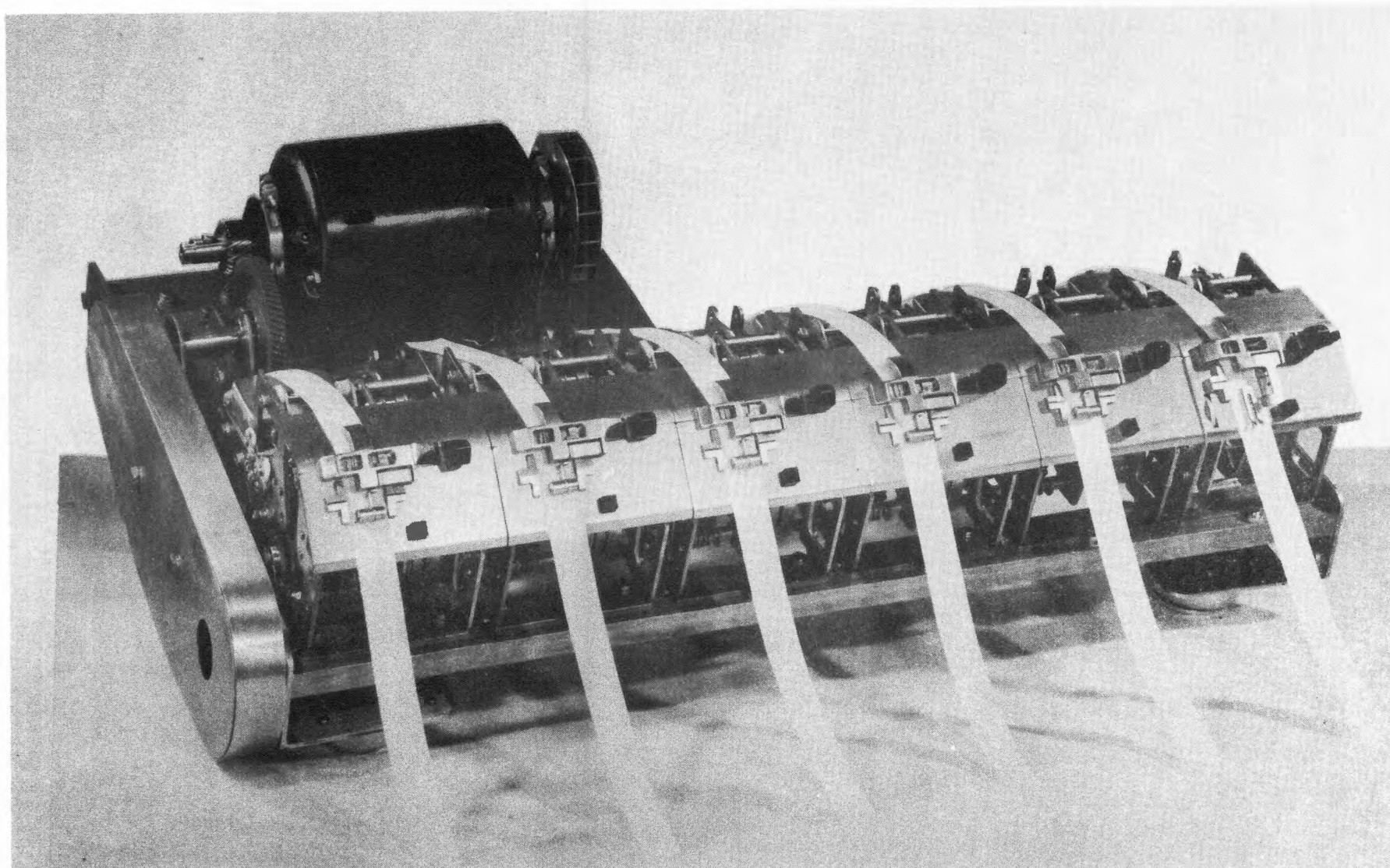MODEL 28 TRANSMITTER DISTRIBUTOR—MULTIPLE ARRANGEMENT (6 MESSAGE)

MODEL 28 TRANSMITTER DISTRIBUTOR – MULTIPLE ARRANGEMENT (6 MESSAGE)

VII. REPERFORATOR SETS -- RECEIVE-ONLY

As part of the Model 28 line, entirely new components have been developed for perforating tape and typing on tape. These units have been designated as the Tape Punch and the Tape Printer.

The Punch Unit

A weak point of older punching mechanisms is the feed pin of the punch block, which must participate in every cycle of operation. The new Punch uses a tape feed wheel for a roll-in type of feed hole, distributing the wear over 24 feed pins.

The Model 28 Punch perforates a square, chadless code hole, which greatly reduces the force required to perforate tape, and consequently the strain on the entire mechanism and on the motor.

These two major innovations, together with a number of minor improvements, have resulted in a Punch Unit which represents an important advance over older means for punching tape.

Advantages:

1. Laboratory tests show it has double the life of previous punch units.

2. Eliminates expensive die blocks.

3. Contains a large number of common and interchangeable parts.

4. Simplifies and cuts down maintenance:
   (a) Lubrication intervals are extended
   (b) Assembly and disassembly are simpler
   (c) Accessibility for adjustment is improved

5. As a by-product of the use of the tape feed wheel, the threading of tape has been made much easier; simple tape insertion with a twist of the tape feed wheel knob threads the unit.

The Tape Printer

Built primarily as an adjunct to the punch unit, the small typing mechanism incorporates a readily interchangeable plastic type wheel. Character sizes and fractions up to 0.200" are permitted. The last character printed is visible to the operator.

The unit uses a standard typewriter ribbon, which can be readily changed by an untrained operator. A small hammer delivers an adjustable blow to the underside of the tape to type the character impression.

A. Nontyping Reperforator

Combining the Punch Unit with the Selector, Motor Unit, and the proper gears produces a simple, reliable and compact Nontyping Reperforator. All metal clutches are used.

Speeds from 60 w.p.m. to 200 w.p.m. are available.

The Reperforator is capable of handling up to a 7-element code on tapes as wide as 7/8", although it is usually arranged for the standard 11/16" tape.

Extensive use is made of simple harmonic motion principles, and the absence of felt clutches results in long lubrication intervals.

B. Typing Reperforator

Since the Model 28 tape typing mechanism was designed as a complement to the Punch unit, a single-unit Nontyping Reperforator may be easily upgraded to a Typing Reperforator by the simple addition of the tape typing mechanism.

Printing occurs on the 11/16" wide tape directly over the chad perforations, six characters behind the punching point. This six-character lag was chosen to match equipment now in use.

The Typing Reperforator is capable of speeds from 60 w.p.m. to 150 w.p.m.

C. Nontyping Reperforator - Multiple Arrangement

The Model 28 Selector and Punch Unit have been designed to fit into a very narrow space. The selector push bars have been arranged to coincide exactly with the punch fingers so that an extremely simple transfer mechanism will carry the received signal permutation directly to the punch fingers.

This simplicity permits four Nontyping Reperforators, driven by a single motor, to be mounted abreast in the shelf of the standard Teletype Universal Cabinet.
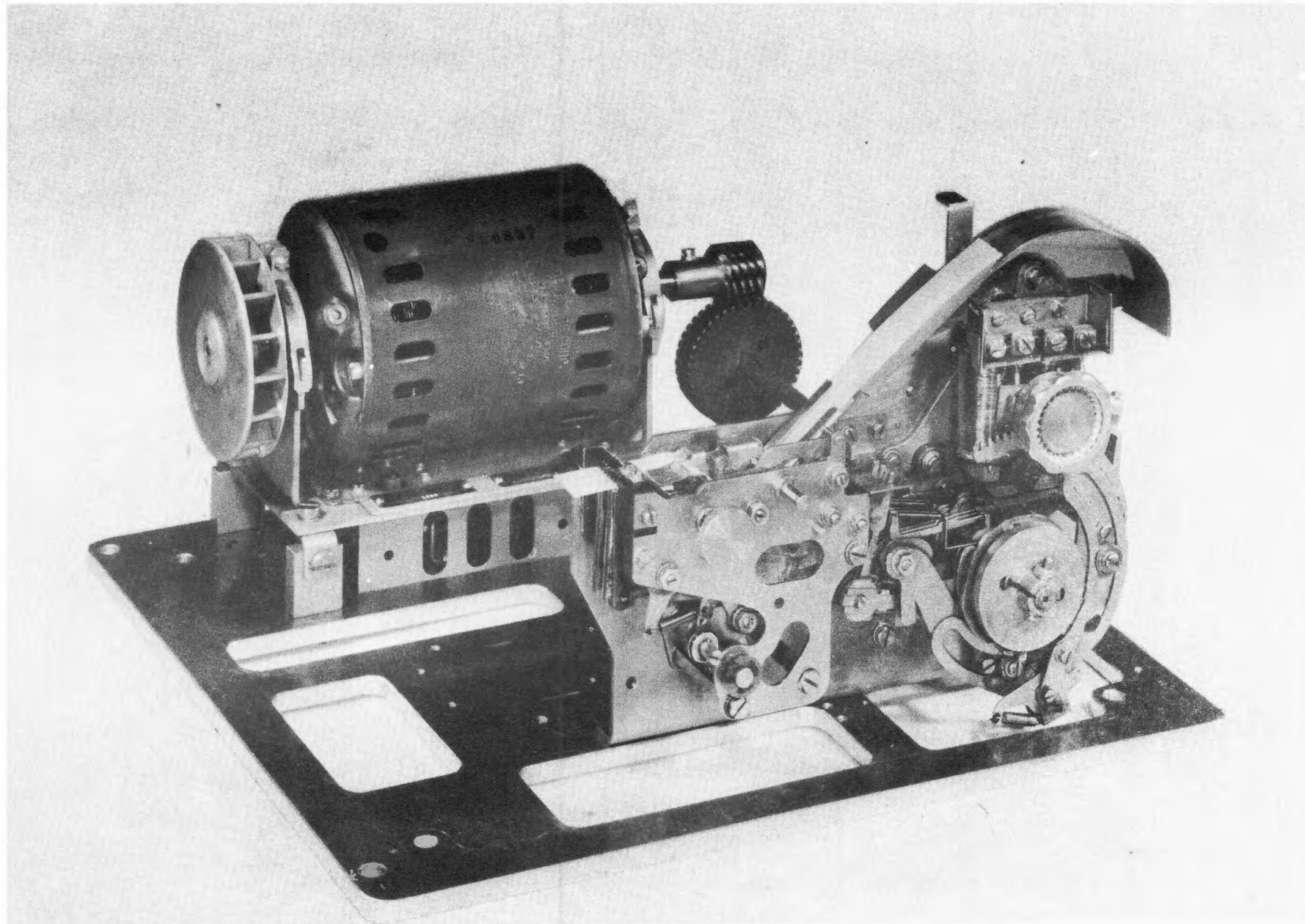
MODEL 28 REPERFORATOR - NONTYPING
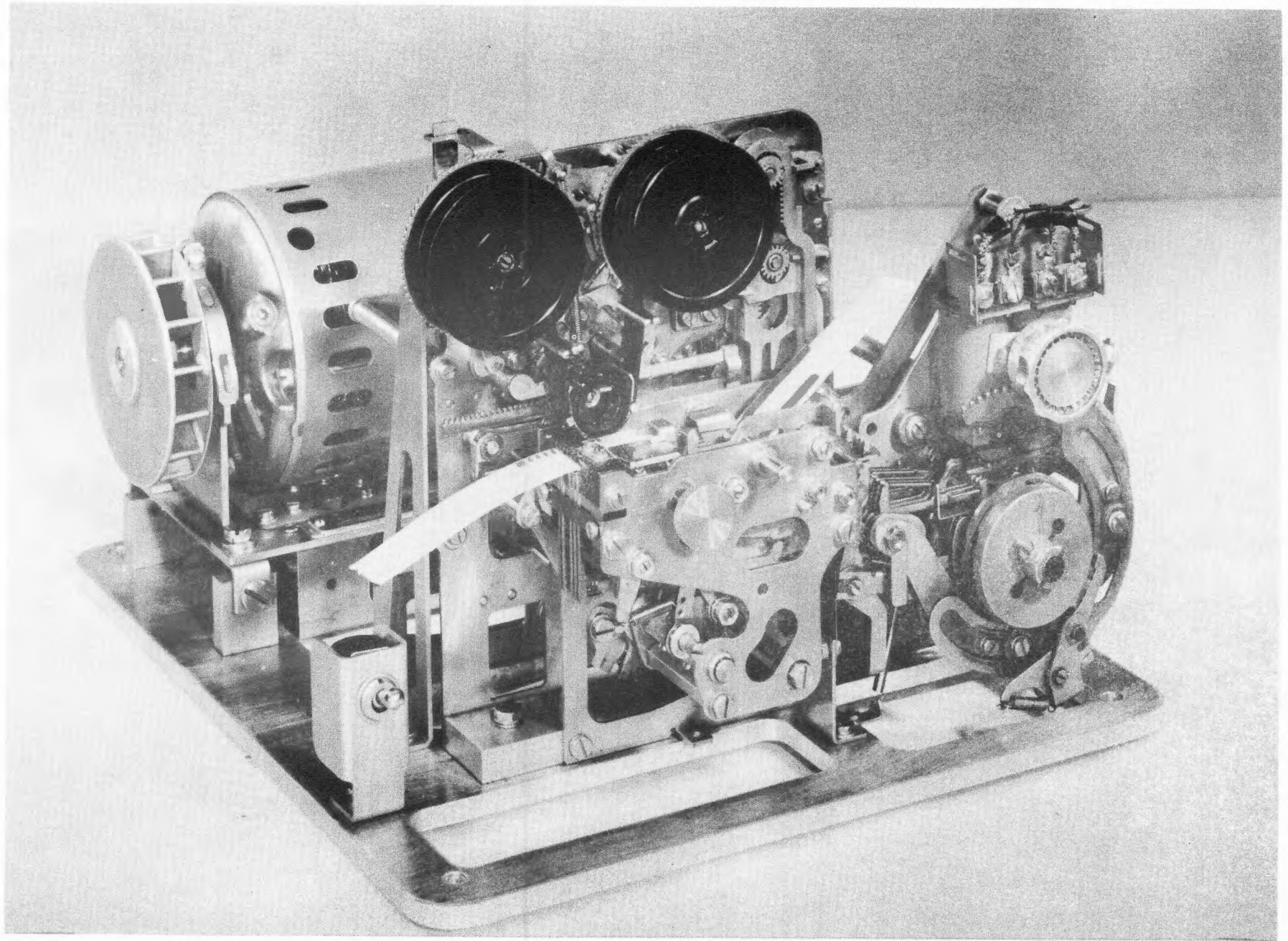
MODEL 28 REPERFORATOR - TYPING

TELETYPE CORPORATION

MODEL 28 REPERFORATOR - TYPING

MODEL 28 REPERFORATORS – TYPING and NONTYPING

Multiple Arrangement – In Universal Cabinet

D. **Typing Reperforator - Multiple Arrangement**
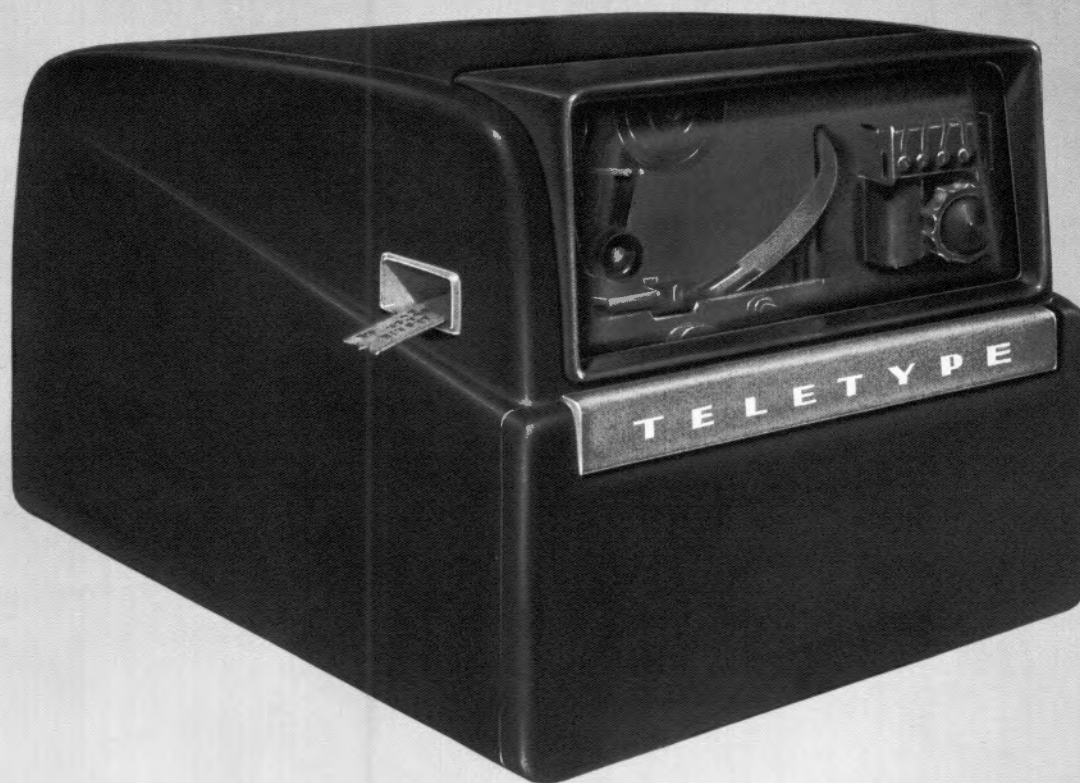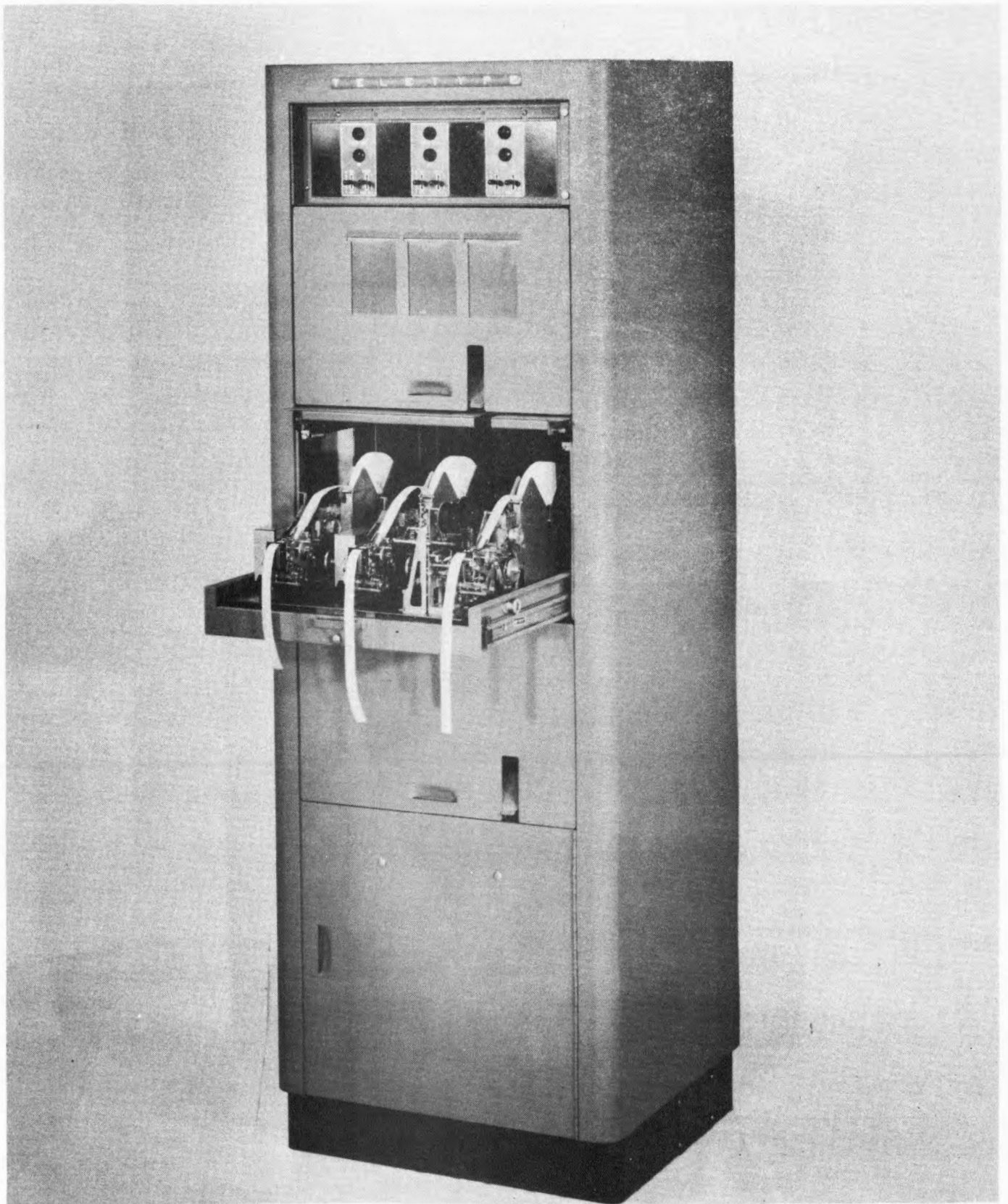
Here, again, the compactness of design of Model 28 components makes it possible to concentrate considerable equipment in small space. Either two or three (as desired) Typing Reperforators may be mounted abreast in the Teletype Universal Cabinet. Driving these units from one motor makes available a simple receiving group for a Torn-Tape switching center.

Of course, it is not necessary that all units of a multiple arrangement be either typing or nontyping. An accompanying illustration shows one Typing Reperforator used with two Nontyping Reperforators in a Teletype Universal Cabinet.

Accessories for Reperforators

Following is a list of the more important optional accessories available for Reperforators:

1. Backspace mechanism.

2. Non-interfering tape feed-out. Automatically at the end of a message, or manually at the push of a button, this mechanism will cause a predetermined length of tape to be fed out. Should a message start coming in while tape is being fed out, the mechanism is so designed that tape feeding will stop immediately and the message will be recorded without loss of even the first character.

3. Code reading contacts. These contacts close and open in accordance with the received characters, providing a five-wire electrical signal to be used for control purposes.

4. Low Tape alarm

5. Torn Tape alarm

6. Tape notcher. Permits notching of the side of the tape to cause the Transmitter Distributor tape-out pin to stop automatic transmission at a predetermined point. This feature is used predominantly with keyboard units.

VIII.   KEYBOARD OPERATED TAPE SETS

As a result of the careful planning which has gone into the Model 28 line, a wide variety of keyboard-based tape printing, tape perforating and tape reperforating apparatus becomes available. Basic components and mechanisms are put together in various combinations to obtain multiple-purpose equipment of exceptional versatility and compactness.

The high percentage of common components, mechanisms and parts yields a further dividend simplifying maintenance and reducing problems connected with repair parts inventory.

For perforating, the keyboard becomes a free-speed instrument. The top speed of 150 words a minute is far higher than an operator can normally type. However, to provide for speed bursts between readily typed character combinations -- such as "ER" or "TH" -- an overlap feature has been built into all Model 28 keyboards. This permits depression of the succeeding keylever before the cycle actuated by the preceding keylever has been completed. An instantaneous speed of 1,440 o.p.m. between any two successive characters is available.

A.   Keyboard Perforator - Nontyping

The successor to the standard Teletype tape Perforator (GPE), used to prepare a perforated tape for transmission over a signal line by a transmitter distributor.

Consists of: Model 28 Punch
               Model 28 Keyboard

General Operating Features:

1.   Free keyboard

2.   Tape back space

3.   LTRS erase

Accessories:

1.   Tape notcher, to stop transmission at predetermined point. Notch in tape will be sensed by the tape-out mechanism of the transmitter distributor.

2.   Linear scaled character counter. Since it is difficult for the operator to tell when a complete page line has been typed, this convenient character counter has been

provided to give a visual indication of the typing position. Counter can be read at a glance while operator is viewing copy. Line light flashes on at an adjustable distance before the end of the line to warn the operator. For low-cost installations the end-of-line indicator is available without the counter scale.

B. Keyboard Perforator - Typing

This is a new combination, making possible off-line preparation of chadless tape with typing on the tape.

Consists of: Model 28 Punch
                Model 28 Keyboard
                Model 28 Tape Printer

Optional Equipment:
                Character Counter

Same as Nontyping Keyboard Perforator except that tape printer has been added.

C. Keyboard Tape Printer

The successor to the Model 14 Tape Printer, used for telegraph transmission on printed tape, gummed or ungummed.

Consists of: Model 28 Keyboard
                Model 28 Tape Printer
                Model 28 Selector
                Model 28 Signal Generator

Optional Equipment:
                Character Counter

D. Typing Reperforator

The successor to the Model 14 Send-Receive Typing Reperforator, combining facilities for interchange of messages and for receiving tape for relaying purposes.

Consists of: Model 28 Punch
                Model 28 Keyboard
                Model 28 Tape Printer
                Model 28 Selector
                Model 28 Signal Generator

Optional Equipment:
                Character Counter

E. Typing Reperforator with Free Keyboard Option

Same as Typing Reperforator previously discussed, except keyboard arranged for optional free-speed operation, for off-line preparation of tape at high speed

MODEL 28 KEYBOARD PERFORATOR - TYPING

TELETYPE CORPORATION

MODEL 28 KEYBOARD PERFORATOR - TYPING

MODEL 28 SEND - RECEIVE TYPING REPERFORATOR

IX. TAPE SENDING SETS

These sets combine the facilities of the keyboard-operated tape sets with the transmitter distributor.

A. Tape Sending Set with Nontyping Keyboard Perforator

Same components as Nontyping Keyboard Perforator, with transmitter distributor added.

Consists of: Model 28 Punch
                    Model 28 Keyboard
                    Model 28 Transmitter Distributor

B. Tape Sending Set with Typing Keyboard Perforator

Same components as Typing Keyboard Perforator, with transmitter distributor added.

Combines for the first time a free keyboard typing perforator with a transmitter distributor to form a compact message originating station for the inexperienced operator

Consists of: Model 28 Punch
                    Model 28 Keyboard
                    Model 28 Tape Printer
                    Model 28 Transmitter Distributor

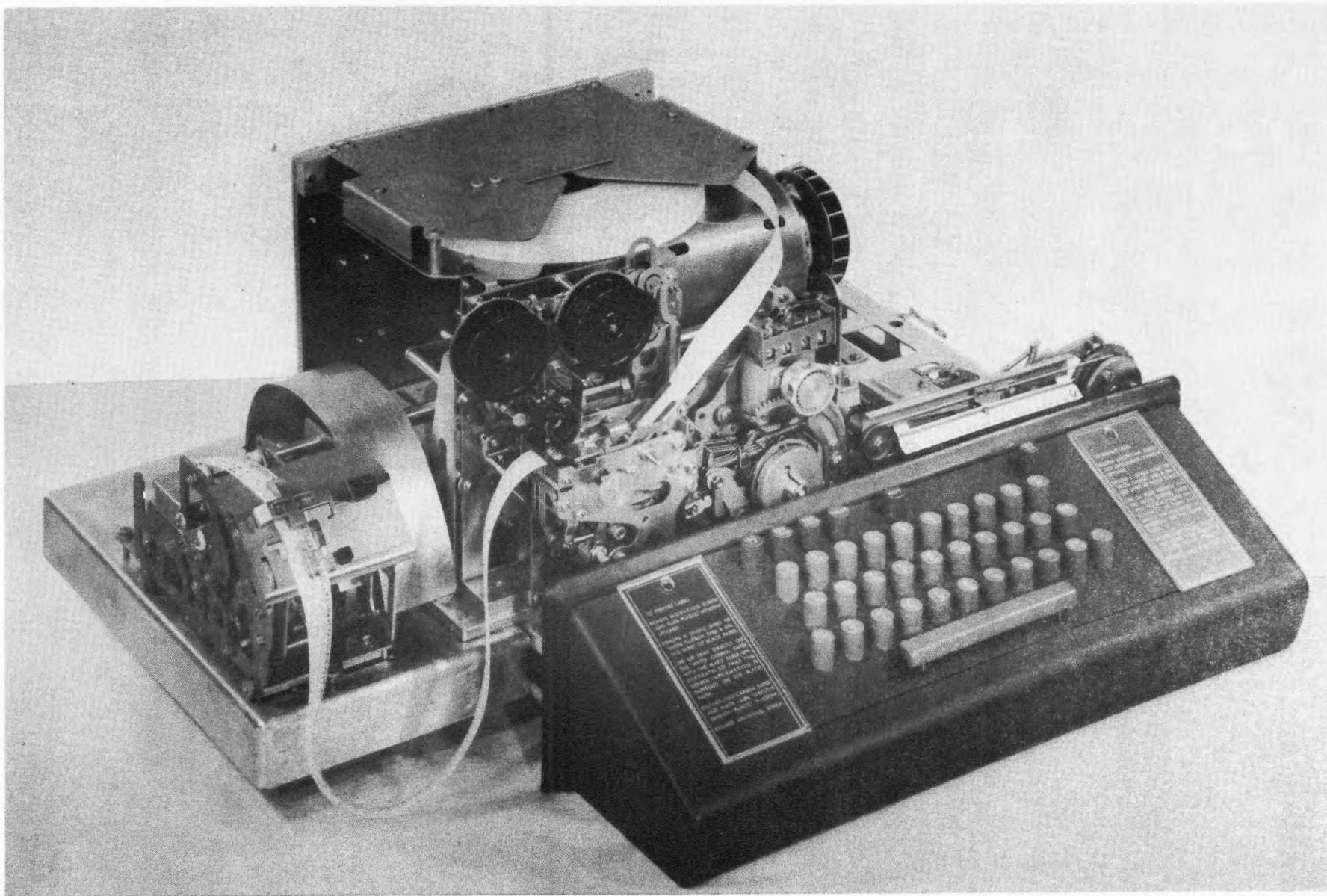MODEL 28 TAPE SENDING SET WITH TYPING KEYBOARD PERFORATOR

C. Tape Sending Set with Send-Receive Typing Reperforator

        Same components as Send-Receive Typing Reperforator, with transmitter distributor added.

        The equivalent of the TG-26 set.

Consists of: Model 28 Punch
                Model 28 Keyboard
                Model 28 Tape Printer
                Model 28 Selector
                Model 28 Signal Generator
                Model 28 Transmitter Distributor

MODEL 28 TAPE SENDING SET
With Send-Receive Typing Reperforator
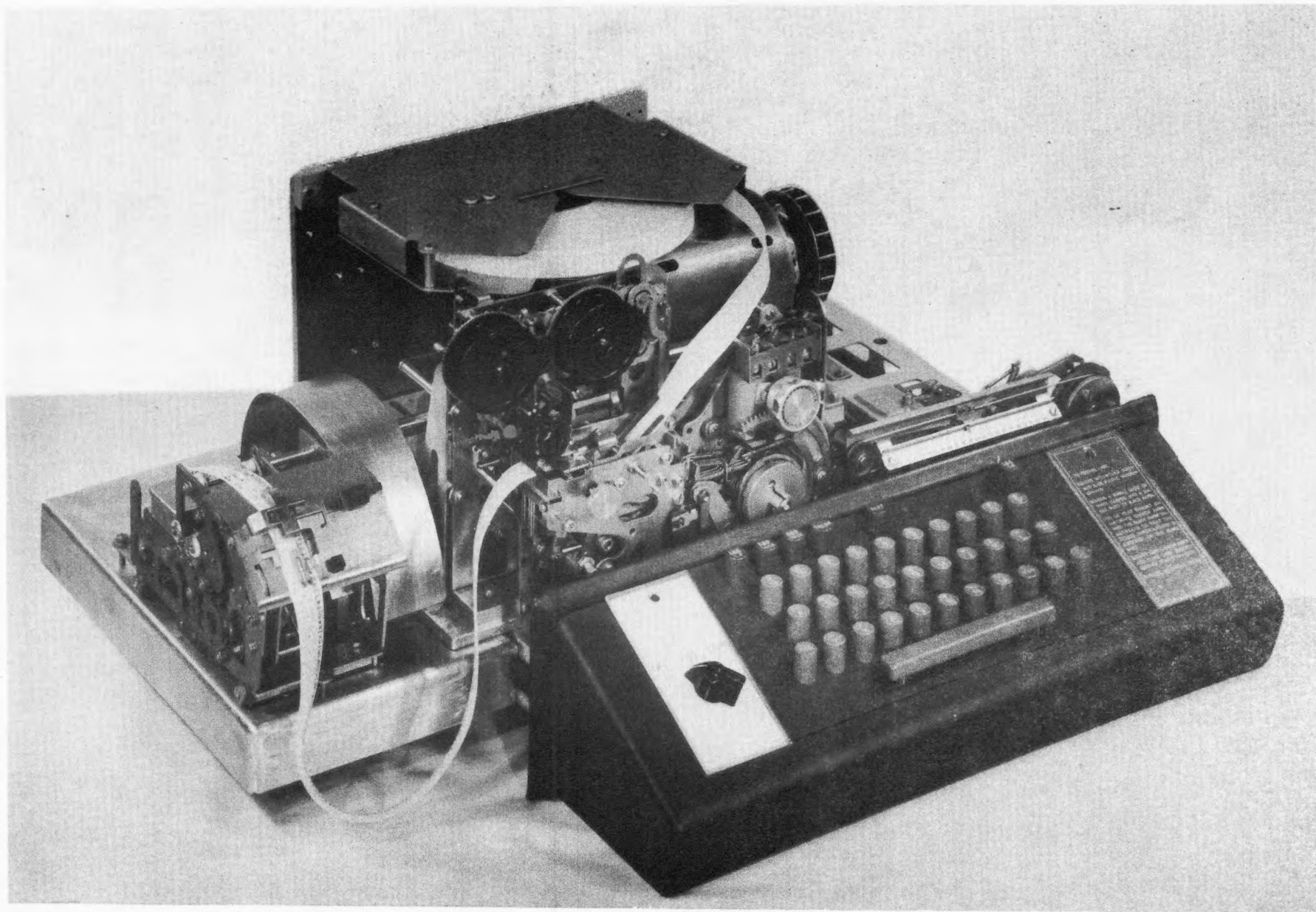(TG-26 equivalent)

TELETYPE CORPORATION

MODEL 28 TAPE SENDING SET WITH SEND-RECEIVE TYPING REPERFORATOR

D. Tape Sending Set with Send-Receive Typing Reperforator and
Free Keyboard Option

Same components as preceding set, except keyboard arranged
for optional free-speed operation, for off-line preparation of
tape at high speed. Choice between on-line and high-speed
off-line operation is made by a simple flick of a switch.

This unique set is the logical extension of the facilities
offered in the TG-26 set.

MODEL 28 TAPE SENDING SET
With Send-Receive Typing Reperforator
Equipped for Free Keyboard

X. TAPE SENDING SET WITH SEND-RECEIVE PAGE PRINTER

While the Tape Sending Set with Send-Receive Page Printer is the most versatile unit in the Model 28 line, its primary function is to serve as a high-capacity message originating station. Made up of basic mechanisms previously introduced, the set will do everything the popular Model 19 Set has so long done, and more.

By means of a control lever, the operator can select any one of the following three operating conditions:

1. Keyboard Position -- The keyboarded message is sent directly to the distant receiver while the Page Printer provides a local copy.

2. Keyboard and Tape Position -- Tape is produced as a by-product of the on-line keyboarding operation.

3. Tape Position -- A tape is produced by the keyboard operator. Here the operator is not tied down to the signal line rhythm and can type at top speed on a free keyboard. Normally the tape coming from the Perforator is inserted into the Transmitter Distributor and automatically transmitted, with a local copy of the message being made on the Page Printer.

A. **Tape Sending Set with Send-Receive Page Printer - without Typing Reperforator Feature**

Consists of:

Keyboard Tape Perforator, with Signal Generator

Page Printer, mounted above the Keyboard Perforator

Transmitter Distributor, mounted to the left of the tape exit point of the Keyboard Perforator.
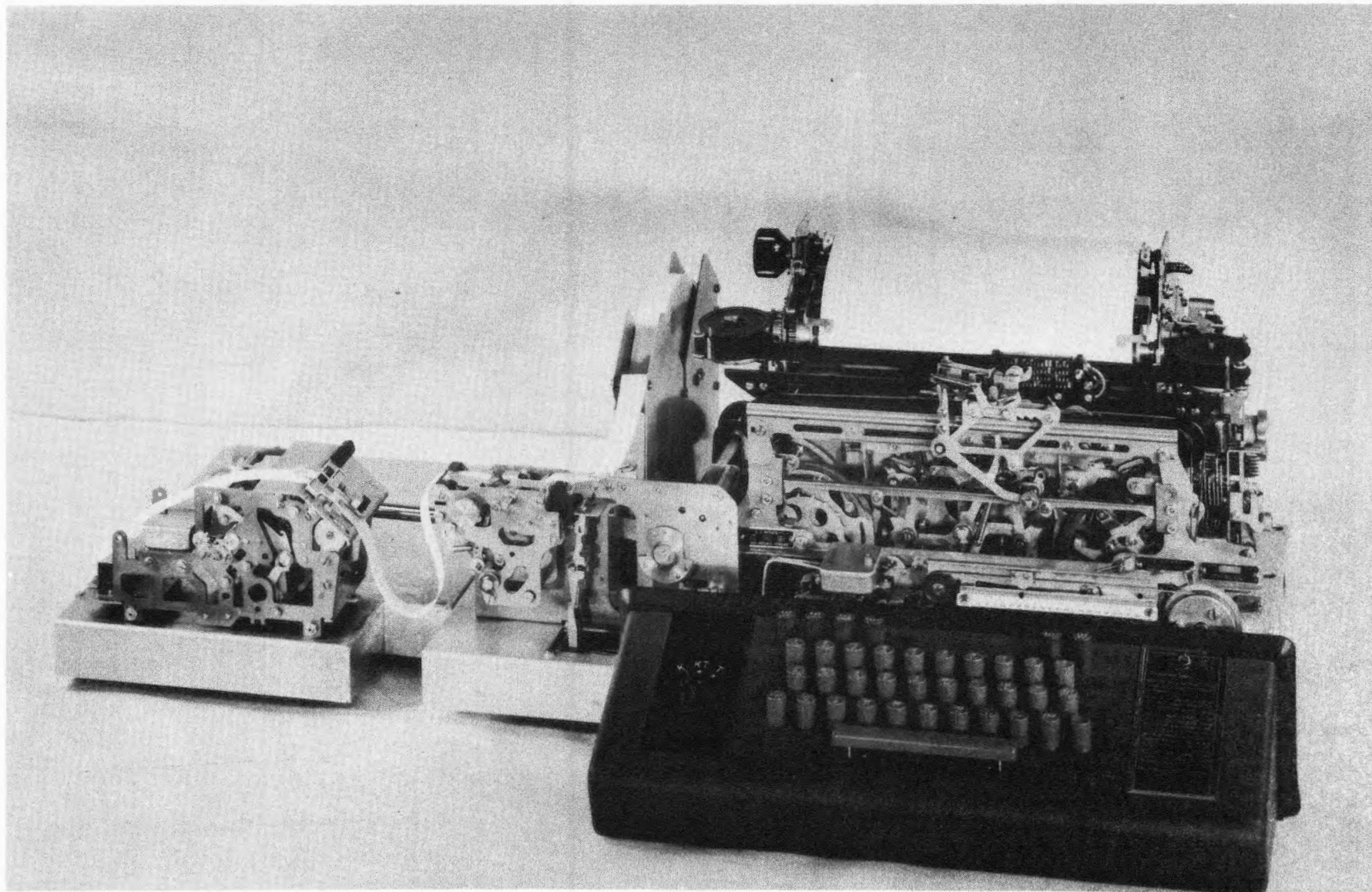
MODEL 28 TAPE SENDING SET
With Send-Receive Page Printer
(Equivalent of Model 19)

B. **Tape Sending Set with Send-Receive Page Printer - with Typing Reperforator Feature on Keyboard Perforator**

(a) The versatility of the set previously described can be further extended by adding either or both of the following components:

1. A Tape Printer can be added to the Punching Unit of the Keyboard Perforator, so that messages will appear in typed form on the tape.

2. A Receiving Selector can be mounted to the right of the Punching Unit of the Keyboard Perforator so that the Punch Unit can be used as an auxiliary tape receiver when the set is in the keyboard position.

Addition of the Tape Printer in no way interferes with the extremely high rate of speed of which the free keyboard is capable.

Adding the Selector affords an inexpensive reperforator feature, useful for tape relay work, tape reproduction or correction, etc.
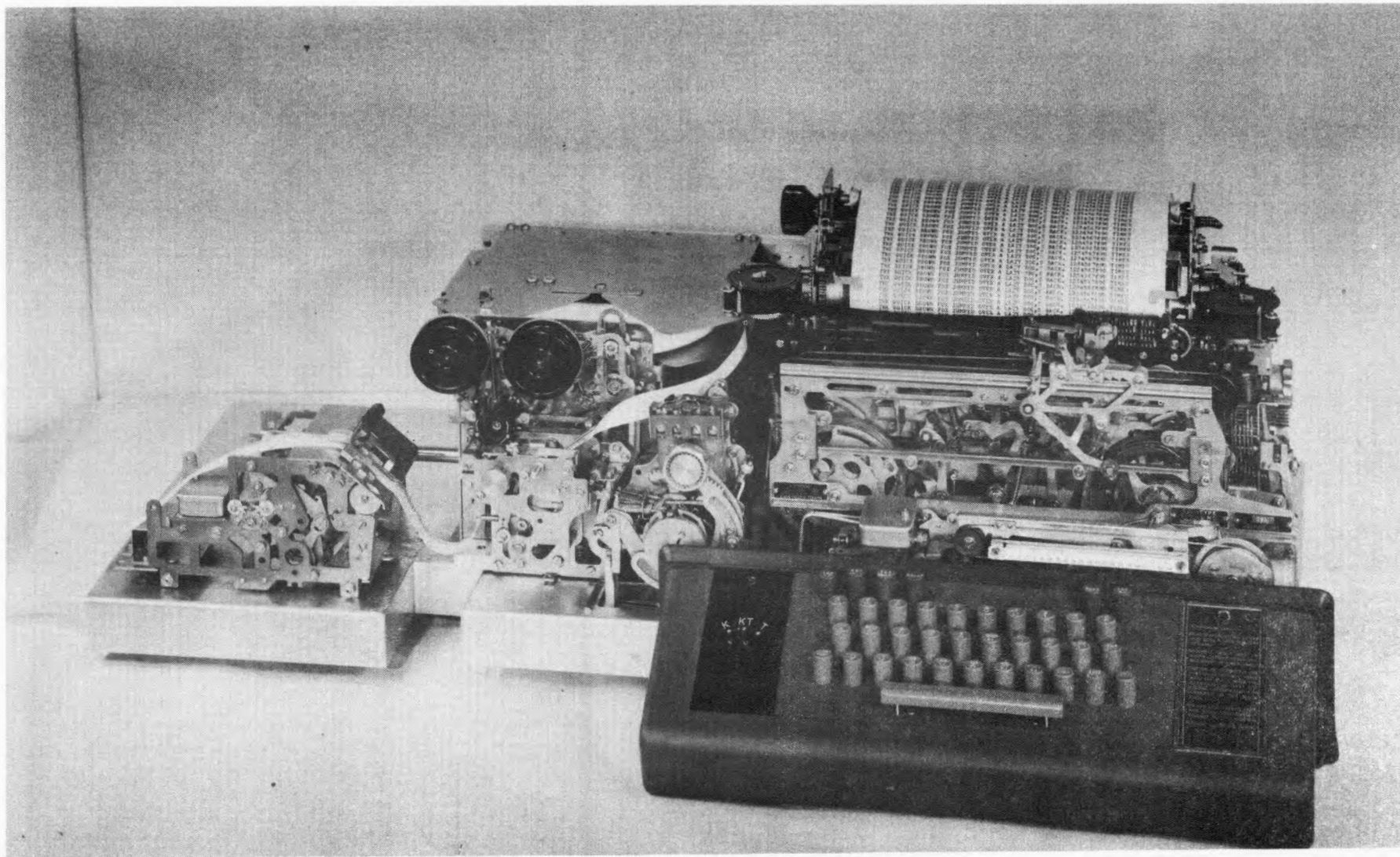
MODEL 28 TAPE SENDING SET
WITH SEND-RECEIVE PAGE PRINTER

Provides typing on the perforated tape.
Equipped with receiving selector on punch.

C. **Tape Sending Set with Send-Receive Page Printer - With Self-Contained Auxiliary Typing Reperforator**

Where simultaneous keyboard perforation and reperforated tape reception from a distant sending station are desired, facilities are available to mount a completely self-contained auxiliary typing reperforator on the left-hand shelf of the console, behind the transmitter distributor.

The reperforator feature on the keyboard perforator described under "B" above might or might not be desired in this case, depending upon the amount of relay and tape reproduction work handled by the station.

D. Accessories

A full range of accessories and optional features are contemplated for these sets. In addition to those applicable to the Page Printer, the Keyboard, the Transmitter Distributor and the Typing Reperforator, a number of special accessories will be provided, among which are:

Character Counter with End-of-Line Indicator Light

Large Pull-Out Relay Rack
  For installation of a wide variety of electric or electronic line terminating gear.

Offset Copyholder

An $8\frac{1}{2}$" x 11" tray to receive local copies of messages transmitted.

MODEL 28 KEYBOARD PERFORATOR-TRANSMITTER

With Page Printer