TELETYPE CORPORATION
Skokie, Illinois, U. S. A.

SECTION 574-237-100TC
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35 MULTIPLE WIRE DISTRIBUTOR

DESCRIPTION AND PRINCIPLES OF OPERATION

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1. GENERAL

1.01 The 35 multiple wire distributor is an electromechanical unit which transmits sequential, start-stop telegraphic signals from a parallel (multi-wire) input. Under an external control, such as a push button or stunt box, it will transmit control characters when these are set up externally by coding the distributor contacts. It may also be used to translate continuous parallel (multi-wire) intelligence into sequential, start-stop signals for transmission or use with receiving equipment. Provision is made for mounting the unit on various equipments including ASR, KSR, RO, and self-contained sets.

DESCRIPTION

1.02 The unit consists, essentially, of a common distributor assembly and an appropriate mounting bracket and cable assembly for each different installation. The common distributor assembly contains a clutch assembly with a cam sleeve. The cam sleeve actuates the contact levers which control the opening and closing of the contacts that generate the sequential, start-stop telegraphic signal. The common distributor assembly also contains a clutch trip magnet assembly. The magnet assembly consists of a magnet coil assembly mounted on an angle bracket which is mounted on a larger bracket. An armature bail and shaft mechanism are mounted on the angle bracket. A clutch trip and reset mechanism is mounted on the larger bracket. Ten cam-operated contact levers and contacts transmit start-stop code combinations. The unit may also be used to generate predetermined control characters. There are eight intelligence contacts and one auxiliary contact. A cable connector assembly furnishes the electrical connections from external sources to the contacts and clutch trip magnets.

1.03 Applicable modification kits used in conjunction with the unit consist of gear trains which transmit the required torque to rotate the cam sleeve and clutch assembly. The gear trains also make the necessary connection with the drive gear of the associated equipment. Mounting brackets provide for the proper mounting of the distributor assembly. Cables, terminals, and terminal mounting hardware are included where applicable.

TECHNICAL DATA

A. Dimensions

Width — 5 inches

Depth — 4 inches

Height — 6 inches

Weight — 3-1/2 pounds

B. Clutch Trip Magnet Rating

DC — 0.100 ampere at 48 volts (100 ohm dropping resistor required)

0.165 ampere at 120 volts (1000 ohm dropping resistor required)

AC — 120 volts

C. Signaling

Input — Parallel (multi-wire)

Output — Start-stop, sequential

Current — 0.020 or 0.060 ampere

D. Speed

Operations Per Minute	Words Per Minute
368	60
460	75
600	100

2. PRINCIPLES OF OPERATION

SIGNALING CODE (Fig. 2)

2.01 The information handled by the multiple wire distributor is in the form of a binary permutation code. The information, ie, characters, numerals, etc , are represented by combinations of binary intelligence levels, each of which may be in one of two states, ie, on-off, mark-space, etc.

2.02 The code (as used by this equipment) is expressed in electrical form only. Each level of the code combinations consists of either a current condition (referred to as a marking pulse) or a no-current condition (spacing pulse). The intelligence elements are preceded by a

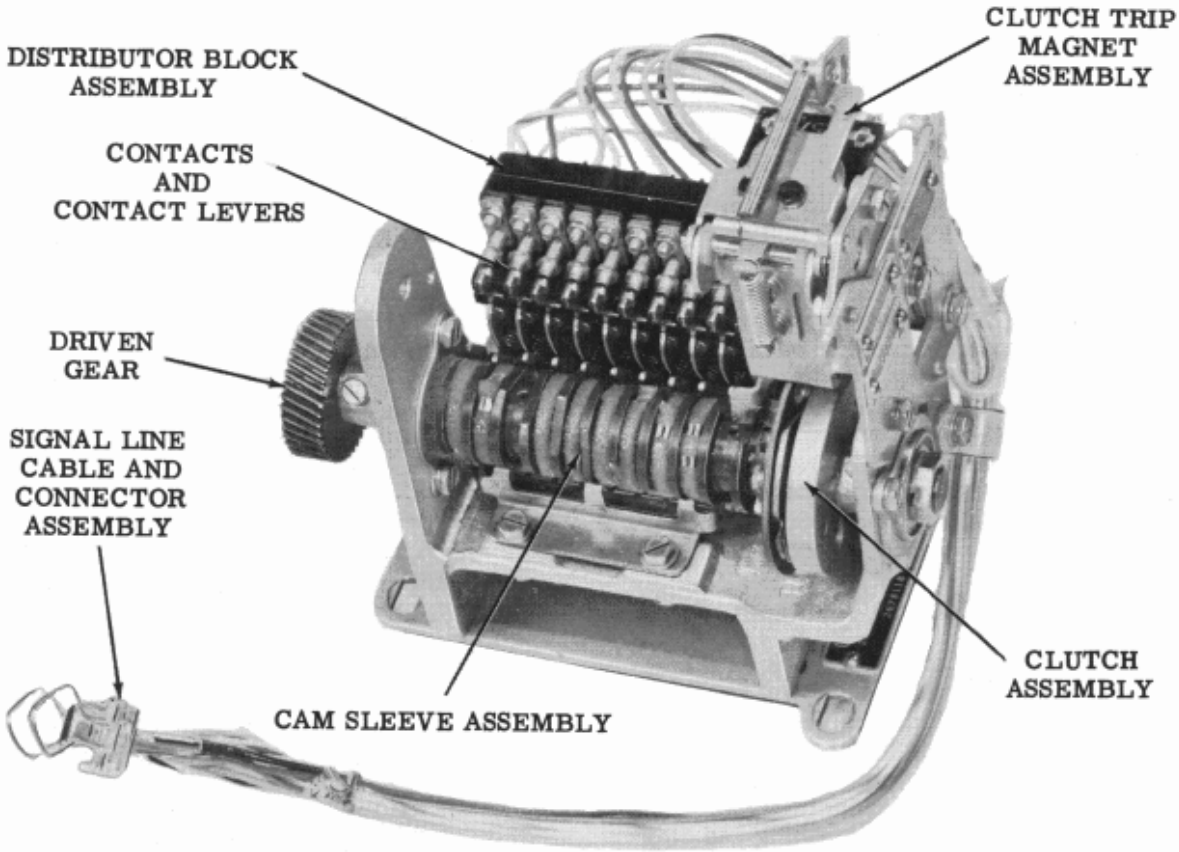

Figure 1 - 35 Multiple Wire Distributor

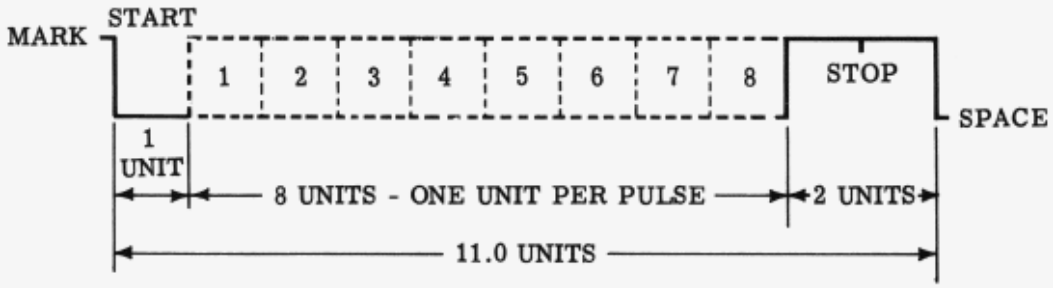

Figure 2 - Signaling Code

start element (always spacing) and are followed by a stop element (always marking). The start and stop elements provide means for mechanical synchronization between the multiple wire distributor and the receiving set. The multiple wire distributor is designed to accommodate an 11.00 unit transmission pattern.

MAIN SHAFT MOTION (Figs. 3, 4, and 5)

2.03 In the text that follows, it is assumed that the unit is mounted on an appropriate base and that it is receiving motion from a motor unit through the intermediate drive mechanism. It is also assumed that some type of parallel input is applied to the unit and that a means, such as a push button, is available for tripping the cam-clutch assembly. The unit is in its idling condition, and is under power with the cam-clutch disengaged.

2.04 The main shaft receives its motive power from a gear mounted on the right side plate. The main shaft rotates continuously as long as the unit is under power.

2.05 The clutch trip magnet mechanism controls the starting and stopping of the cam clutch assembly. From an idling condition in which the magnet is de-energized, clutch disengaged and start-stop contact closed, power is applied to the clutch magnet. When the magnet is energized, the armature is attracted and the armature bail disengages the latched trip lever. As the trip lever is moved by its spring, it disengages the clutch shoe release lever. This permits the clutch to engage and rotate the cam sleeve. The clutch assembly and the cam sleeve rotate continuously as long as the clutch magnets are energized.

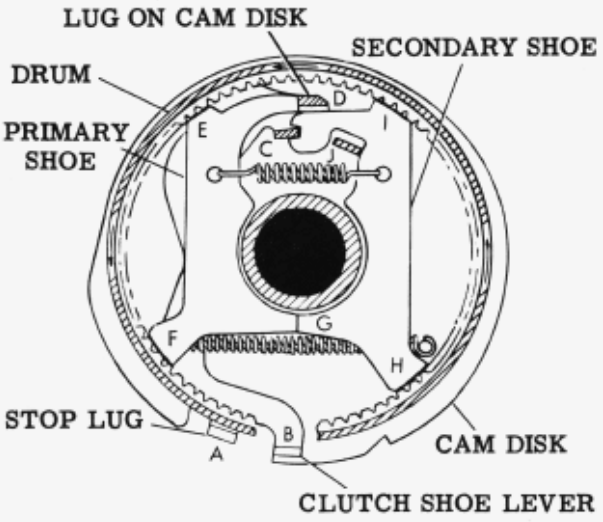

Figure 3 - Clutch, Engaged

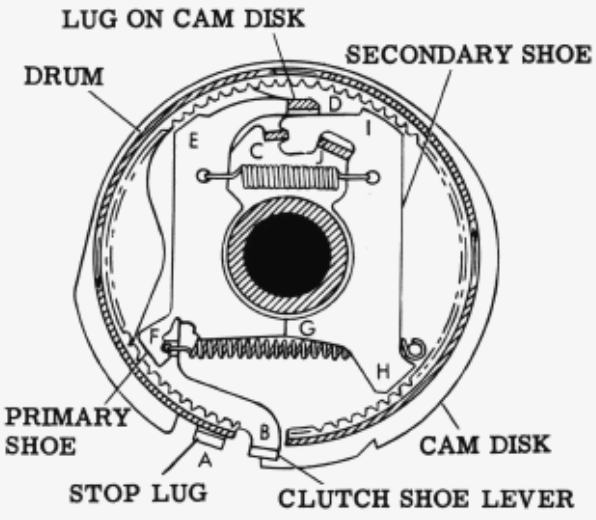

Figure 4 - Clutch, Disengaged

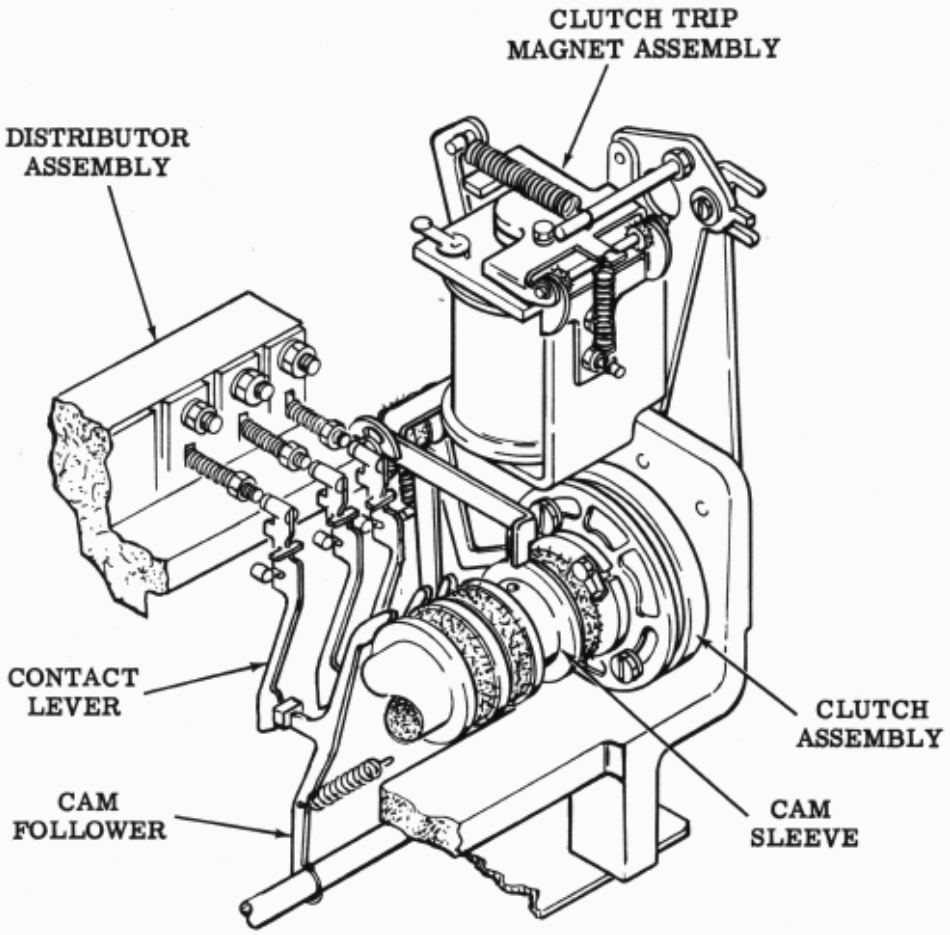

Figure 5 - Multiple Wire Distributor

2.06 When the clutch magnet circuit is broken, the armature and bail assembly are returned to their original position by the armature spring. As the clutch assembly completes its revolution, the reset cam operates the reset lever to its original position. There it is latched by the armature bail assembly, and acts to block the clutch shoe release lever. As the clutch assembly and the attached cam sleeve come to rest, the latch lever drops into a notch on the clutch disk assembly to hold the clutch disengaged until the clutch magnet is again energized.

2.07 Clutch engagement (Figure 3) is accomplished by releasing the lower end of the clutch shoe lever B. The upper end of the clutch shoe lever pivots about its ear C which bears against the upper end of the secondary shoe, and moves its ear D and the upper end of the primary shoe toward the right until the shoe makes contact with the drum at point E. As the clutch drum turns clockwise, it drives the primary shoe downward so that it again makes contact with the drum, this time at point F. There, the combined forms acting on the primary shoe cause it to push against the secondary shoe at point G. The lower end of the shoe then bears against the drum at point H. The revolving drum acts to drive this shoe upward so that it again makes contact at point I. The forces involved are multiplied at each of the preceding stops. The aggregate force is applied through the shoes to the lug J on the clutch cam disk, and the disk and attached cam sleeve turn in unison with the drum.

2.08 Disengagement (Figure 4) is effected when the lower end of shoe lever B strikes the trip lever. Lug A and the lower end

of the shoe lever are brought together and the upper end of the lever B pivots about its ear C and allows its other ear D to move toward the left. The upper spring then pulls the two shoes together and away from the drum. The latch lever seats in the indent in the cam disk and the cam is held in its stop position until the clutch is again engaged. As the clutch completes its revolution, a reset cam by means of a reset lever returns the trip lever to its latched position.

CONTACT MECHANISM (Fig. 5)

2.09 The contact arrangement consists of ten contacts each of which has a contact lever and cam associated with it. Eight of these contacts are for the intelligence elements of the signaling code, one for the start-stop element, and one is for the auxiliary contact.

2.10 Each time the clutch is tripped, the cam sleeve rotates one complete revolution, and its individual cams actuate their respective contact levers in sequence. These contact levers control the opening and closing of the contacts for measured intervals of time. Operation of the distributor contacts generates sequential start-stop signal pattern corresponding to the code combinations from the external multi-wire source.