SERVICE MANUAL

No. 2

ILLUSTRATIONS
showing
THE PATHS OF COINS
THROUGH
THE 5-10-25¢ SLUG EJECTOR
as used in
1941 HITONE SYMPHONOLAS
&
TYPES DSB-1Z, DS20-10Z, WB-1Z, WS-10Z & HMS-1
REMOTE CONTROL EQUIPMENT

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THEORY OF OPERATION
5-10-25¢ SLUG REJECTOR

When an electrical conductor is passed through a magnetic field a small voltage is generated within the body of the conductor. The voltage thus generated is short-circuited by the metal conductor and is dissipated in the form of heat: therefore, the conductor tends to resist the force which drives it through the magnetic field.

Since the various metals have different degrees of electrical conductivity it is possible to detect one metal from another by noting the behavior of each in a magnetic field. This is the basic principle used in the detection of coins in the 5-10-25¢ slug rejectors.

FIGURE 1

PATH OF 25¢ COIN

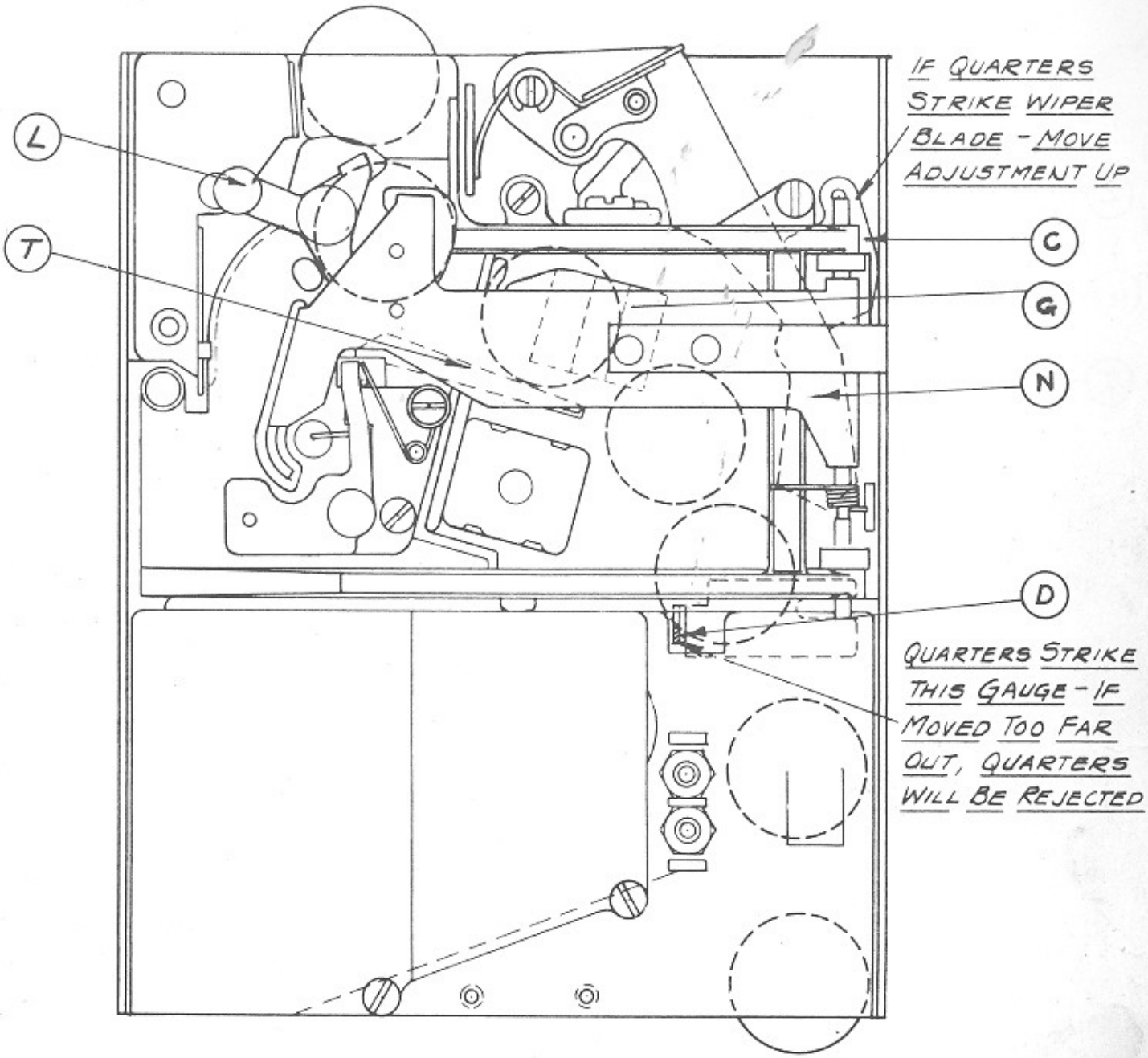
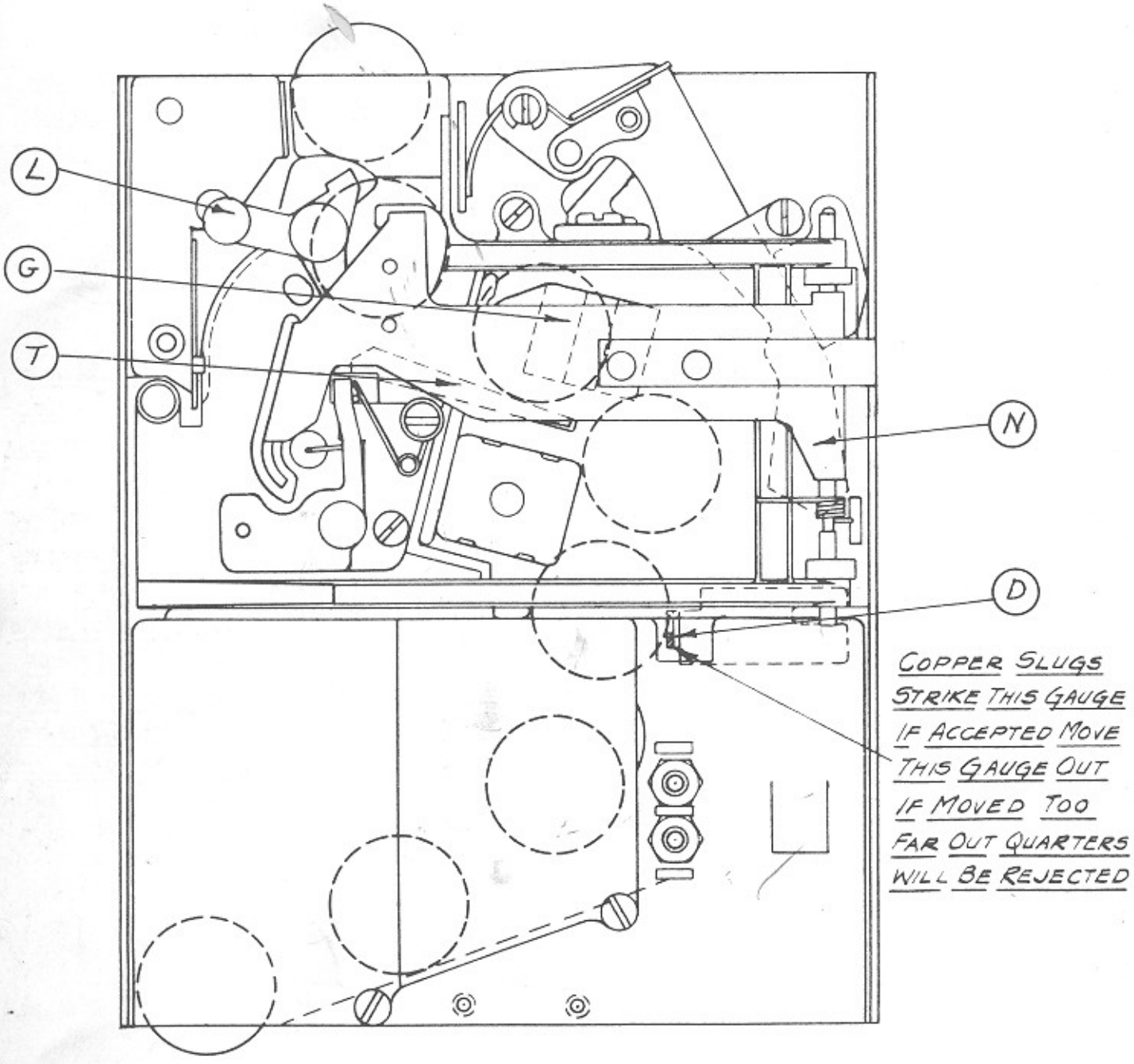


Fig. 1 shows the path of a genuine 25 cent coin. The coin first drops in the arms of the rotary sizing gauge (Item L) which turns under the weight of a good coin and deposits it upon inclined rail (Item T). As the coin rolls down the rail past the 25¢ magnet (Item G) its speed is checked (by generated eddy currents) and it leaves the rail at an angle that will permit it to miss the brass deflector (wiper blade) (Item N) and land with its center of gravity to the right of the copper deflector (Item D), thus it is accepted.

FIGURE 2

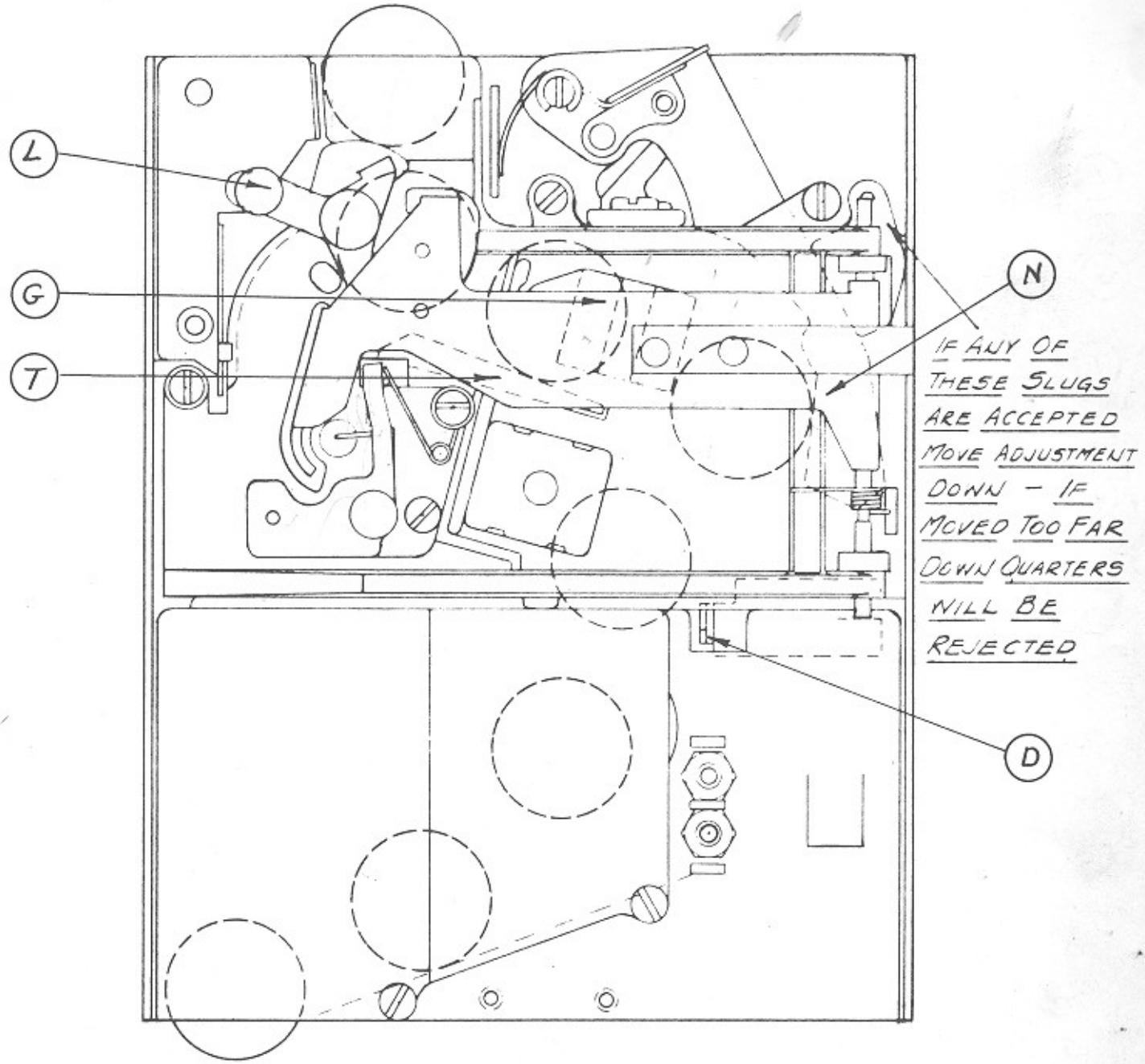
PATH OF 25¢ SIZE COPPER SLUGS



25¢ size slugs of copper follow the same path as the quarter until it reaches the magnet (Item G). Since copper is a very good electrical conductor eddy currents of a rather high order are generated. The copper slug will drop almost straight down at the end of the rail and strike the copper deflector (Item D) with its center of gravity to the left, see Fig. 2.

FIGURE 3

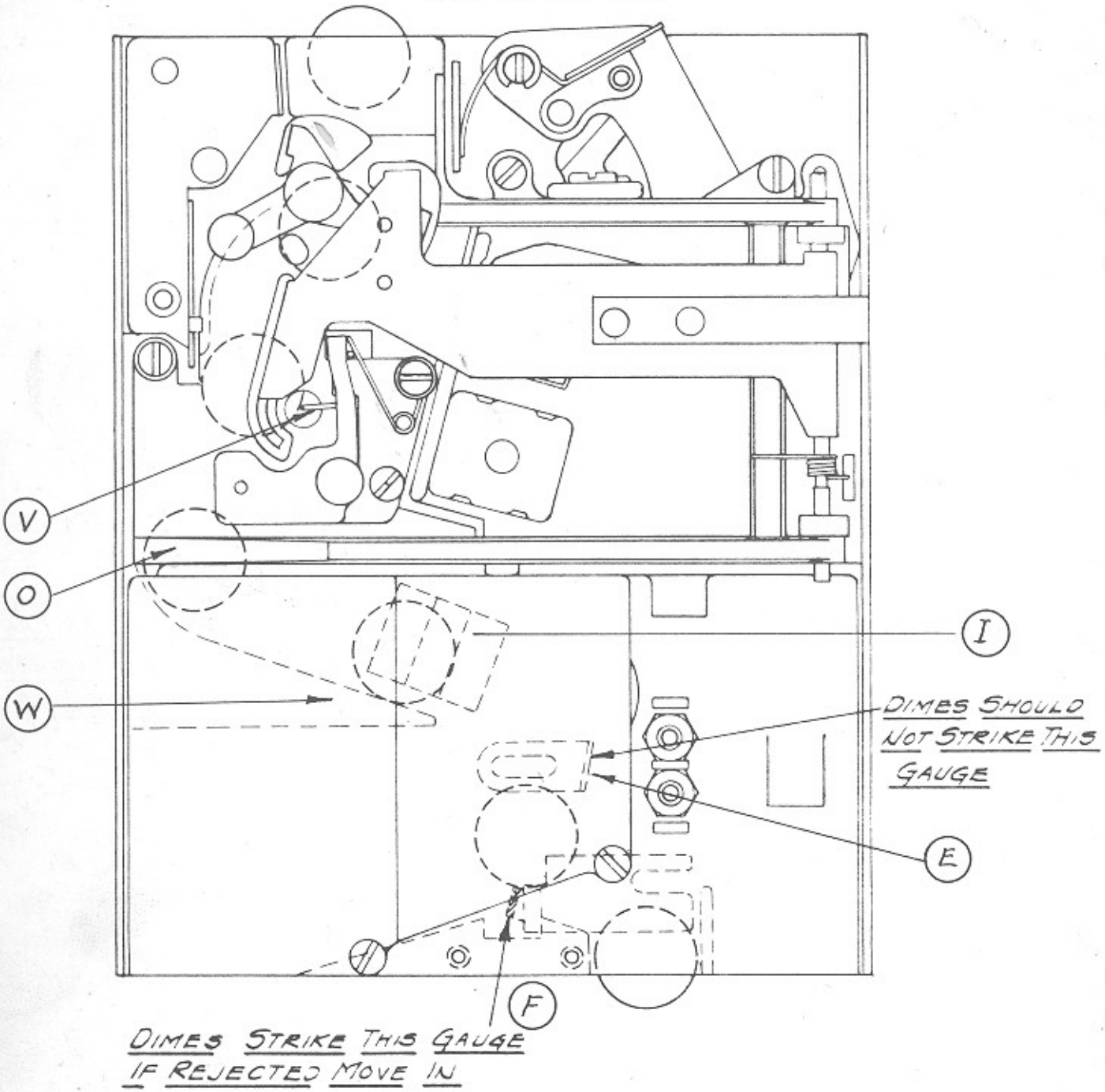
PATH OF 25¢ SIZE BRASS, LEAD, ZINC, OR GERMAN SILVER SLUGS



25¢ size slugs of brass, lead, zinc or German silver have a higher electrical resistance than a quarter and as a result go through the magnetic field at a greater speed. This raises the angle in which they leave the rail to a point where they strike the brass deflector (wiper blade)(Item N) and are deflected to the right of the copper gauge (Item D) (See Fig. 3).

FIGURE 4

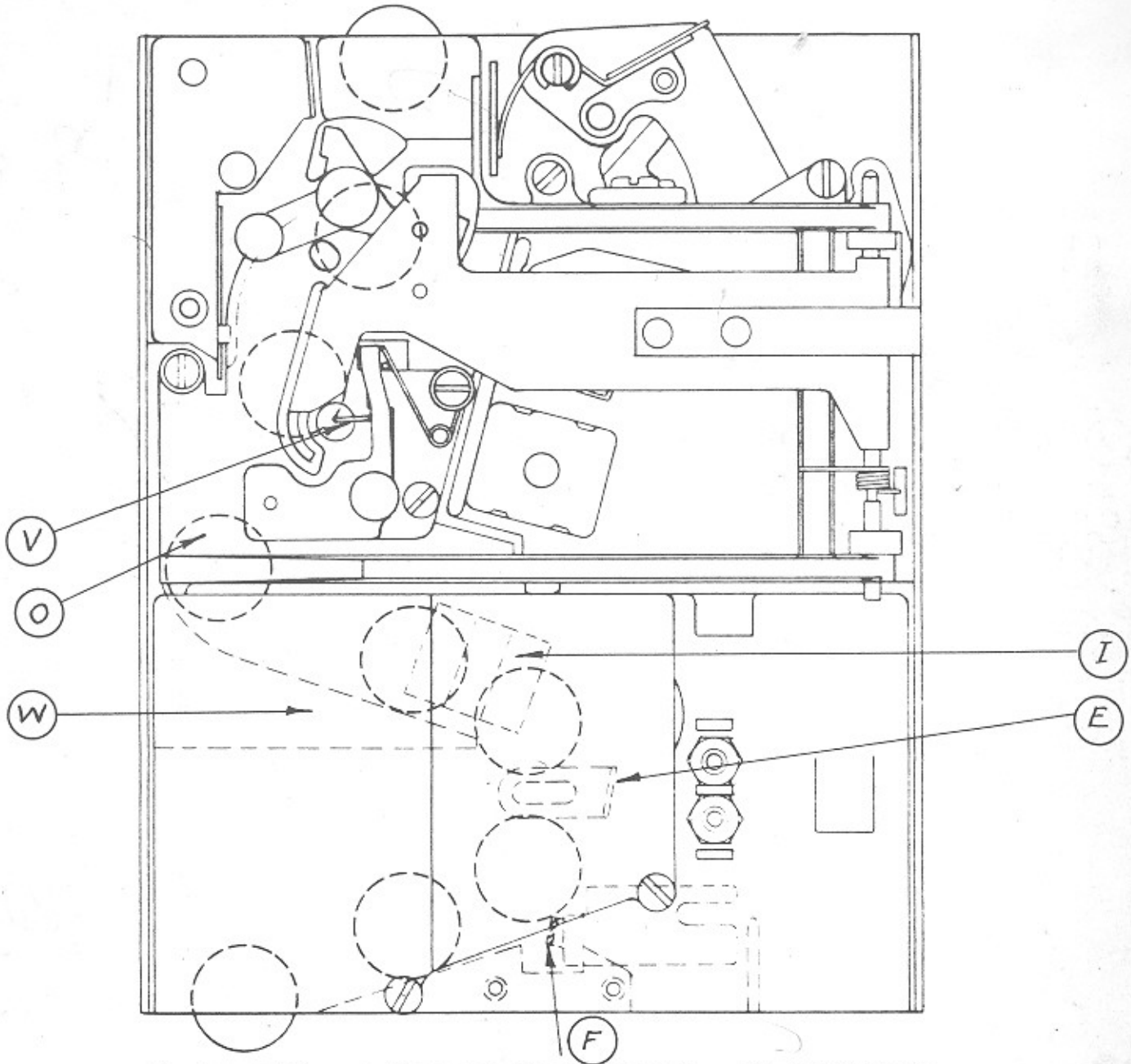
PATH OF 10¢ COIN



As a 10¢ size coin enters the slug rejector it passes through the 25¢ rotary gauge and to the left of the 5¢ undersize gauge wire (Item V) (oversize 10¢ slugs stop here). At the bottom edge of the scavenger gate (Item O) the dime is deflected through an opening in the frame plate of the unit and is deposited on the 10¢ rail (Item W) which is mounted on the bottom edge of the 10¢ scavenger gate (undersize slugs are rejected here) if the coin is of the correct size it rolls down the 10¢ rail (Item W), passing through the field of magnet (Item I) where its speed is retarded enough to prevent it from striking brass deflector (Item E) and will land on copper deflector (Item F) with its center of gravity to the right, Fig. 4.

FIGURE 5

PATH OF 10¢ SIZE COPPER SLUGS

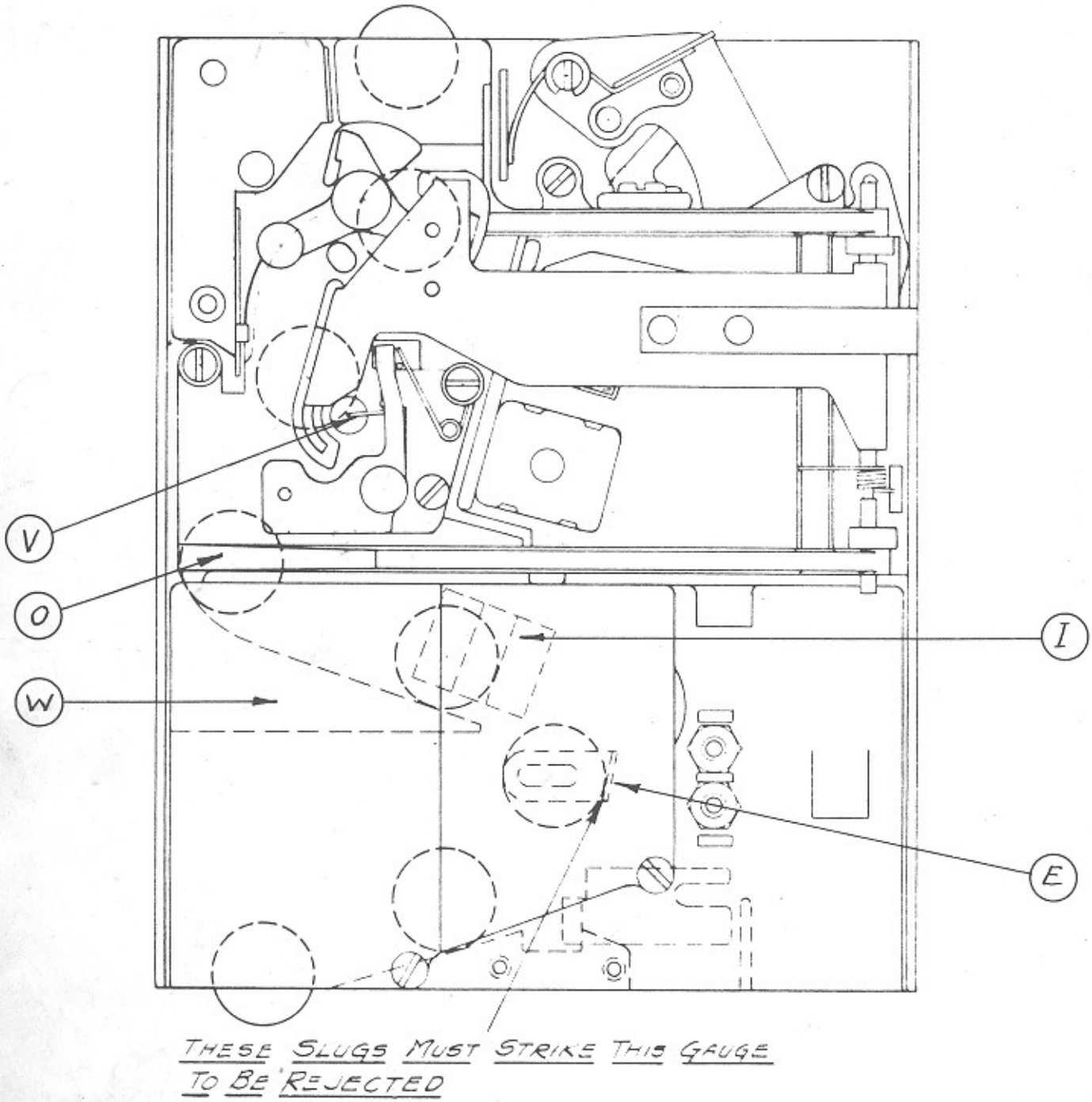


COPPER SLUGS STRIKE THIS GAUGE - IF ACCEPTED MOVE GAUGE OUT - IF MOVED TOO FAR OUT DIMES WILL BE REJECTED

10¢ size slugs of copper follow the path of the dime to the magnet where it is retarded more than a dime due to the higher conductivity of copper. The copper slug as a result drops off the rail onto the copper deflector gauge (Item F) with its center of gravity to the left (See Fig. 5).

FIGURE 6

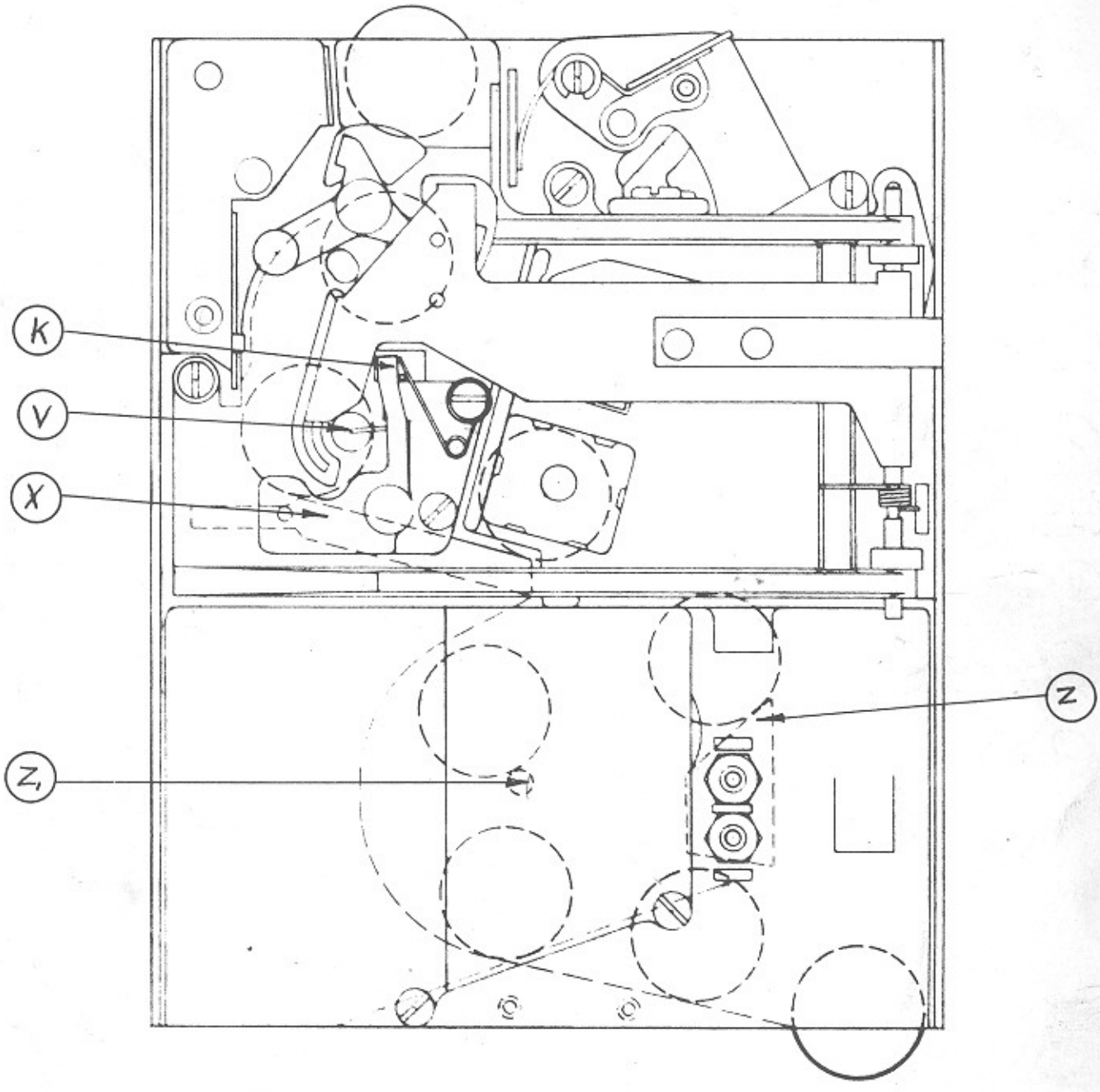
PATH OF 10¢ SIZE LEAD, ZINC, BRASS, OR GERMAN SILVER SLUGS



10¢ size slugs of brass, lead, zinc or German silver also pass the magnet (Item I) via the route of a good 10¢ coin, here again the spurious coins having a higher electrical resistance will leave the rail (Item W) at a higher rate of speed and strike the brass deflector (Item E) (See Fig. 6).

FIGURE 7

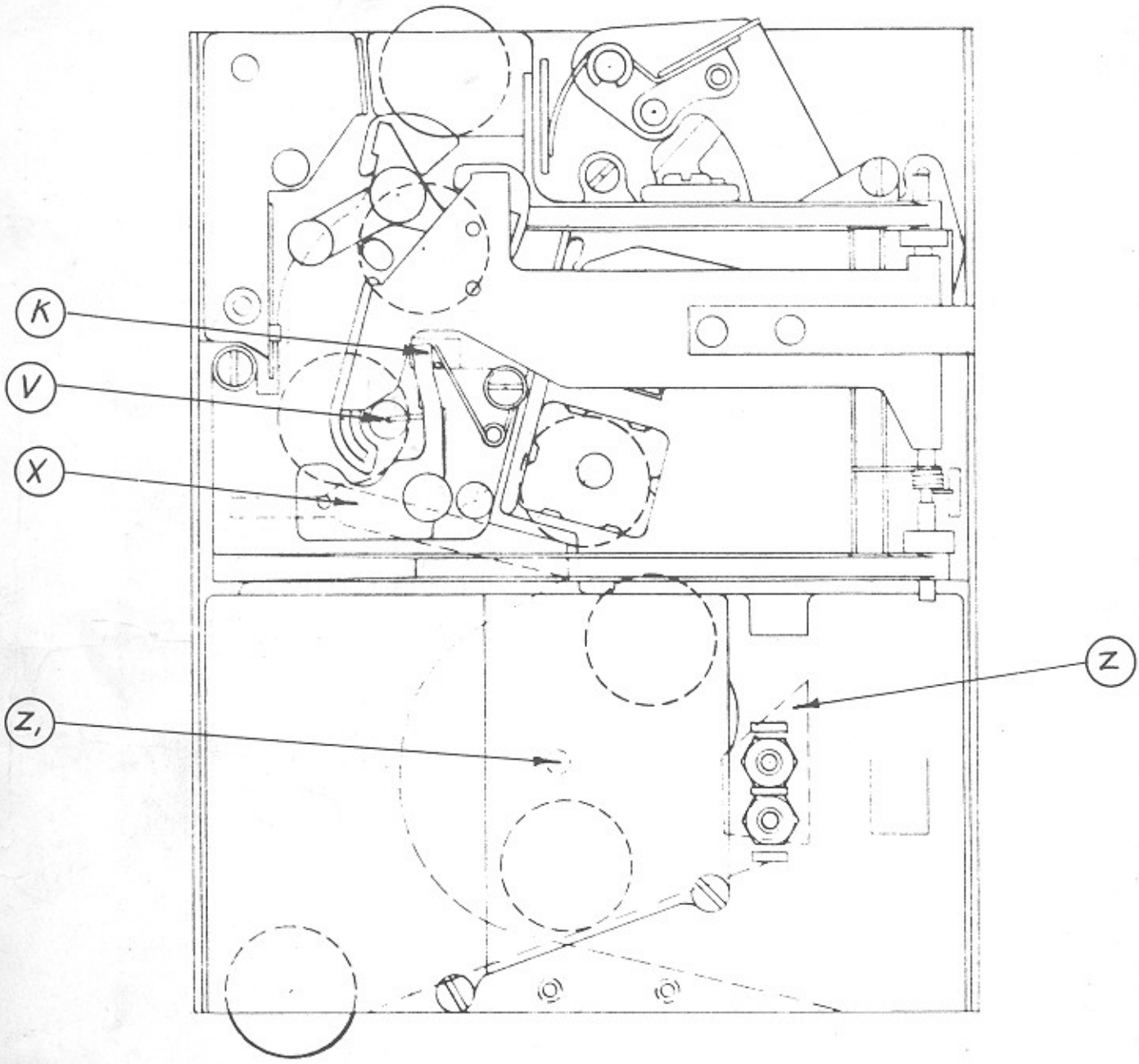
PATH OF 5¢ COIN



The 5¢ coin will pass through the 25¢ rotary gauge and engage the 5¢ undersize gauge lever (Item K). If the coin is of the correct diameter, lever K will turn slightly on its pivot and withdraw undersize gauge wire (Item V) from the path of the coin to permit it to drop on the rail (Item X). The genuine 5¢ coin, having an unusually high resistance will roll down rail X at a high rate of speed striking the anvil (Item Z) from which it will rebound with enough force to clear the barrier stud (Item Z1). Thus it is shown that 5¢ coins are tested for hardness as well as electrical resistance.

FIGURE 8

PATH OF 5¢ SIZE BRASS, ZINC OR COPPER SLUGS



5¢ size slugs of brass, copper or zinc all have electrical resistance much lower than the alloy of which nickels are made and as a result will be slowed down in the magnetic field, this will cause all such spurious coins to strike the anvil too low or miss it entirely and thus be rejected, see Fig. 8.

Before making any adjustment on the 5-10-25¢ slug rejectors, it is important that the reason for such action be well fixed in mind, guess work or "cut and try" is seldom successful and usually results in unsatisfactory operation. It is extremely important that the slug rejector unit be level and vertical. Any strains, binds or warping it may be subjected to can only detract from its efficiency.

FIGURE 9

SLUG REJECTOR