

PUBLIC CALL STATIONS

PRE-PAYMENT AND POST-PAYMENT MULTI-COIN-BOXES

MECHANICAL FEATURES - INSPECTIONS, LUBRICATION AND ADJUSTMENTS

(NOTE.- As this Instruction has been revised paragraphs have not been starred.)

1. CANCELLATIONS. Nil.
2. CONTENTS.

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3. SCOPE OF INSTRUCTION.

3.1 This Instruction describes the mechanical features, cleaning, lubrication and inspection and adjustment requirements of the various components of the pre-payment and post-payment multi-coinboxes. The mechanisms of the two coin-boxes are depicted in Figs. 1 and 2, respectively.

4. GENERAL.

4.1 The lubrication and various inspections and adjustments specified in this Instruction may be carried out only at Electrical Workshops or Telephone Repair Depots.

(5-10-73) THE COMPLETE mechanisms are to be forwarded in carrying cases S.L. NO G113A
OR G121.
30.5.69 (TN) (For Official Use Only) Page 1
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5. CLEANING.

5.1 The mechanism should be cleaned with a Brush, Cleaning, ~~KA 159~~^{KG 59}, and a dry duster (Cloth, cleaning, KA 11). Special attention should be given to the coin tracks and chutes where there is a tendency for greasy dirt to accumulate. If this deposit cannot be removed with a dry duster, use a rag moistened with Rectified Spirit KA 58. The plug and jack points should be examined and, if necessary, cleaned carefully with Crocus Paper, RB 153.

6. INSPECTIONS.

6.1 Coin-box mechanisms and relays which do not comply in all respects with the various requirements of the inspections given below should be adjusted as specified in the appropriate par. 8.1.1 to 8.4 inclusive.

6.2 Escapement Mechanism.

6.2.1 Pre-payment Mechanism. See Fig. 1. Verify, by counting, that the timing of the escapement is approximately seven seconds - e.g., not less than five and not more than nine. Check for wear on escapement operating crank, and Y-shaped B-button lever.

6.2.2 Post-payment Mechanism. See Fig. 2. Verify, by counting, that the timing of the escapement is approximately two seconds - e.g., not less than one and not more than three.

6.3 Balance Arm. See Fig. 1. The arm should be free in its bearings with the minimum amount of side-play. The crank portion of the arm should be clear of the swinging container. The operation of the arm is controlled by the position of the ~~the~~ counter-weight. The adjustment should be such that the balance-arm will only fully operate with ~~two~~^{three} 2-cent test tokens. ~~These are available from stock as G 707.~~

6.4 Coin-Box and Relay Springsets. When the adjustments mentioned in par. 6.4.1 to 6.4.3 inclusive, are being checked it will suffice if the contact and buffer clearances are roughly as indicated. Accurate adjustment to 1 or 2 mils either way is not necessary and the clearances should, therefore, be judged with the eye.

6.4.1 'Break' Springsets.

(a) A slight clearance should be observed between the lever spring and the operating buffer (or collet) when the springset is in the unoperated position. In the case of relay springsets a slight clearance should be observed between the lifting pin and the insulated buffers when the armature is unoperated and held firmly on the knife-edge. This ensures that the whole of the lever spring tension is exerted on the 'break' contact when the springset is normal.

(b) A slight 'follow' should be observed between the 'break' and 'lever' springs when they are operated and restored.

(c) When the springset is operated the minimum clearance should be 10 mils.

6.4.2 'Make' Springsets.

(a) There should be a minimum contact clearance of 10 mils.

(b) A slight 'follow' should be observed between the 'make' and 'lever' springs when they are operated and restored.

6.4.3 'Changeover' Springsets.

- (a) A slight clearance should be observed between the 'lever' spring and the operating buffer (or collet) when the springset is in the unoperated position. This ensures that the whole of the lever spring tension is exerted on the 'break' contact when the springset is normal.
- (b) The three contacts should not 'bunch' during the travel of the lever spring.
- (c) A slight 'follow' should be observed between the 'lever' spring and the 'break' spring, and also between the 'lever' spring and the 'make' spring, on the operation and release of the springset.
- (d) The minimum contact clearance in the normal and operated positions should be 10 mils.

6.5 Dialling Preventive Relay. Where fitted check that the relay operates when the handset is lifted and stays operated during dialling. Check that the operator and the emergency service can be raised without inserting any money. Check that the relay releases when the handset is replaced.

7. LUBRICATION.

7.1 Before any adjustments are attempted the escapement mechanism should be removed and lubricated with Oil, NZPO No. 1 (KAS2). This should be applied sparingly with a piece of No. 22 S.W.G. wire at the bearings in the back and front of the casework, and to the pawl and its pivot. The escapement mechanism should then be replaced.

7.2 Oil ~~dag~~ (KA 51) ^{oil, NZPO No. 1 KAS2} should be applied sparingly to the pre-payment mechanism only in the following places:-

- (a) On the bottom left-hand vertical side of the Y lever where it comes into contact with the escapement lever.
- (b) On the upper horizontal face on the left-hand side of the Y lever where it comes into contact with swinging container when button B is pressed. Also on that part of the swinging container itself.
- (c) On the A lever return spring where it rubs on the stop pin and operating lever when the A button is pressed.
- (d) On the coin-box cam and roller.

8. ADJUSTMENTS.

8.1 Escapement Mechanisms.

8.1.1 Pre-payment Mechanism. See Fig. 1. If the timing of the escapement varies widely from seven seconds, it should be verified that it is not caused by the springset No. 3 (see Figs. 1 and 5) being out of adjustment, or by the pawl spring of the escapement coming into contact with the wiring of the springset. If these are satisfactory, the helical spring should be freed from one of its anchoring points and button 'B' depressed and restored. The ratchet and pendulum should be free in their bearings, with a minimum of side-play. If there is any binding which is not due to lack of lubrication, the mechanism should be changed. If the bearings are free, the helical spring should be replaced with a new one.

8.1.2 When the spring is being fitted care should be taken not to stretch it permanently or to alter the formation of its ends. It should also be verified that it is not touching the side of the escapement mechanism. Any escapement mechanism which cannot be adjusted to meet the timing requirements should be reconditioned by changing any faulty or worn parts.

8.1.3 The escapement mechanisms in the older instruments differ from those in the later type in that the pendulum weight and arm were threaded, thus enabling the position of the weight to be altered with a consequent variation in the restore time of the escapement. This additional form of adjustment should be used in those cases in which it is available.

8.1.4 When it is necessary to replace one of the earlier type escapements with one of the later type it will be found that the pawl spring of the mechanism will come in contact with the wiring of springset No. 3 and it will be necessary in all cases to remove the springset and draw up the wire so that it is flush with the spring tags. Also, as the escapement buffer of the later type mechanism is slightly shorter than that of the earlier type, it may be necessary to re-adjust springset No. 3 by setting all the springs a little towards the left. The adjustment should then proceed in accordance with par. 8.3.3 but sub-paragraph (e) may not apply.

8.1.5 Post-payment Mechanism. See Fig. 2. If the timing of the escapement varies widely from two seconds, it should be verified that the switching springs (see Figs. 2 and 6) are in correct adjustment. If these are satisfactory the bearings and helical spring should be checked as mentioned in par. 8.1.1. Any mechanism which cannot be adjusted to meet the timing requirements should be replaced.

8.1.6 The escapement mechanisms in the older post-payment instruments also differ from those in the later type in that the pendulum weight and arm were threaded, thus enabling the position of the weight to be altered with a consequent variation in the restore time of the escapement. This additional form of adjustment should be used in those cases in which it is available.

8.1.7 No further purchase of complete escapements (G 113B and G 121C) are being made. In future all faulty escapements that are repairable should be reconditioned by replacing the faulty parts.

8.1.8 Spare parts for pre-payment escapement mechanisms are stocked as (G 91 to 99) inclusive.

8.1.9 Spare parts for post-payment escapement mechanisms that differ from the pre-payment parts are stocked as (G 124 to 126) inclusive.

8.1.10 Also no further purchase is being made of item (G 119C) springsets complete with cable form and plug. In future springsets completely assembled will be stocked as (G 117A) and plugs 16-point as (G 115C). Only the part that requires changing should be requisitioned for. If the cable form requires changing a suitable cable form should be made up locally.

8.2 Balance Arm. Move the counter-weight to give the adjustment required. The adjustment is also dependent on that of springset No. 2 (see par. 8.3.2).

8.3 Coin-Box Springsets.

8.3.1 Springset No. 1, Pre-payment mechanism.

8.3.1.1 With the coin bar in the unoperated position make the following adjustments:-

- (a) Adjust buffer springs to be vertical (see Fig. 3(a)).
- (b) With springs Nos. 2 and 7 held clear, tension springs 5 and 6 against the operating buffer to give a combined pressure of 25 ± 3 (readjust) 25 ± 5 gm (test) measured at the tip of spring No. 6 (see Fig. 3(b)).
- (c) With spring No. 2 held clear, adjust spring No. 7, by setting it from a point just above its buffer, so that it lifts spring No. 6 clear of the operating buffer by approximately 2 mils (see Fig. 3(c)).
- (d) With spring No. 3 held clear tension spring No. 2 against the collet of spring No. 5 to a pressure of 25 ± 3 gm (readjust) 25 ± 5 gm (test) (see Fig. 3(d)).
- (e) Adjust spring No. 3 so that it lifts spring No. 2 clear of the collet by approximately 2 mils (see Fig. 3(e)).
- (f) Set springs Nos. 1 and 4 at a point just above their buffers to give a contact clearance between springs 1 and 2, and 4 and 5, respectively, of 10 mils minimum (see Fig. 3(e)).
- (g) Operate and restore the cam and check that there is reasonable "follow" on all "make" and "break" contact units.

8.3.2 Springset No. 2, Pre-payment mechanism.

- (a) As spring No. 8 is not used, adjust its buffer, so that with the balance arm operated spring No. 8 is clear of spring No. 9 (see Fig. 4(a)).
- (b) With the balance arm normal and spring No. 10 held clear, tension spring No. 9 against the operating buffer to give a pressure of 6-8 gm (readjust) and 5-9 gm (test), (see Fig. 4(b)).
- (c) With the balance arm normal tension spring No. 10 against spring No. 9 with a pressure of 16-20 gm (readjust) and 15-21 gm (test) (see Fig. 4(c)).
- (d) In conjunction with paragraph (c) adjust the buffer of spring No. 10 so as to give a clearance of approximately 5 mils between the buffer and spring No. 9 when the balance arm is normal (see Fig. 4(c)).
- (e) Operate the balance arm and check that there is approximately 10 mils clearance between springs Nos. 9 and 10 (see Fig. 4(d)).
- (f) Adjust position of balance arm weight to give correct operation.

8.3.3 Springset No. 3, Pre-payment mechanism.

- (a) Check that the spring set operating lever, when restoring, strikes spring No. 12 at a point between $1/32$ in. and $1/8$ in. from the top of the spring (see Fig. 5(a)).
- (b) With the escapement mechanism normal, position spring No. 11, by setting it from its root, to give a contact clearance between springs Nos. 11 and 12 of 15 ± 2 mils (readjust) 15 ± 5 mils (test) (see Fig. 5(b)).

- (c) With the escapement mechanism fully operated, tension springs Nos. 12 and 13 against spring No. 11 with a combined pressure of 25 ± 3 gm (readjust) 25 ± 5 gm (test) measured at the tip of spring No. 12 (see Fig. 5(c)).
- (d) Position spring No. 14, by setting it from its root, to give a contact clearance between springs Nos. 13 and 14 of 15 ± 2 mils (readjust) 15 ± 5 mils (test) (see Fig. 5(d)).
- (e) Allow the escapement mechanism to restore to normal and check that there is a slight "follow" between springs Nos. 13 and 14.
- (f) Re-check the clearance between springs Nos. 11 and 12 specified in (b) and make any necessary correction by re-positioning spring No. 11.

8.3.4 Spring set Post-payment mechanism. With the cam normal -

- (a) Straighten springs if necessary.
- (b) With spring No. 2 held clear, tension springs Nos. 1 and 3 against the cam with a combined pressure of 15 ± 2 gm (readjust) 15 ± 5 gm (test) measured immediately behind the bend of spring No. 1 (see Fig. 6(a)).
- (c) Tension spring No. 2 against spring No. 3 so that there is a clearance between spring No. 1 and the cam of approximately 5 mils (see Fig. 6(b)).
- (d) Tension spring No. 3 downwards so that spring No. 1 again rests against the cam, with a pressure of 10 ± 2 gm (readjust) 10 ± 5 gm (test) measured immediately behind the bend of spring No. 1 (see Fig. 6(c)).
- (e) Adjust spring No. 4 so that there is a contact clearance of 10 mils minimum between springs Nos. 3 and 4 (see Fig. 6(c)).
- (f) With the cam operated, check that there is reasonable "follow" on spring No. 4 and a contact clearance between springs Nos. 2 and 3 of 10 mils minimum (see Fig. 6(d)).

8.4 Dialling Preventive Relay. Where approval has been given by the Engineer-in-Chief fit relay N.Z.P.O. No. 50483 SB (~~L-303~~) together with capacitor (HC 674). This is a standard 3000-type relay employing standard adjustments.

9. TREATMENT IF COINS JAMMED IN COIN TRACKS.

9.1 When coins are found to have lodged in the coin tracks, the mechanism should always be removed from the coin-box and examined carefully, as it may then be possible to see the cause of the trouble. In cases where the blockage is caused by an accumulation of greasy dirt in a coin-track, the track should be cleaned as specified in par. 4. The track should also be cleaned in cases where the cause of the blockage cannot be determined and the fault cannot be reproduced.

9.2 Two Cent Coin Slot and Tracks. If a number of 2c coins are found lodged between the coin-deflecting plate and the side of the runway, it may be due to one of the following:-

- (a) A bent coin.
- (b) The edge of the coin-deflecting plate being burred or bent.

- (c) Insufficient clearance between the free end of the coin-deflecting plate and the side of the coin track.

If the coin-deflecting plate has been burred or bent to such an extent that it cannot be repaired satisfactorily, the mechanism should be changed. The free end of the coin-deflecting plate should be in line with the edge of the refund slot. If this clearance is too great, coins may not be deflected to the coin-gauge and may roll into the refund slot. The coin-deflecting plate should be adjusted by bending it with the fingers and not with pliers or any tool that will burr the surface. If this is found to be impracticable with the coin-deflecting plate in position, it should be removed from the mechanism.

9.3 Five Cent and Ten Cent Coin Slots and Tracks. Faults caused by wedged coins are usually caused by a 10c coin becoming lodged in the inside of the top portion of the bell gong. This will prevent any other coins from passing down the coin track. To overcome this, the gong should be rotated so that the microphone fixing bracket (attached to the bell gong centre) is in such a position that there is no possibility of the coin pivoting on the upper edge of the microphone fixing bracket and wedging inside the bell gong. To obtain this adjustment, it may be necessary to loosen the bell-gong fixing-screws and to move the bell-gong horizontally and/or vertically. At the same time care should be taken to prevent the microphone coming in contact with the mechanism case. After adjustment all nuts should be tightened, the mechanism replaced in the coin-box and the bell-gong checked with five and ten cent coins.

10. TOOLS REQUIRED.

10.1 The following tools are required for the adjustment of springsets of coin-box mechanisms and relays:-

<u>S.L. No.</u>	<u>Item</u>
KG 83	Adjusters, spring, B.P.O. No. 3
KG 230	Gauges, feeler, B.P.O. No. 3
KG 409	Pliers, adjusting, B.P.O. No. 3
KG 267	Gauges, tension, B.P.O. No. 1
KG 268	Gauges, tension, B.P.O. No. 2.

Except that any equivalent types of feeler gauge available locally may be used as a substitute, tools other than those mentioned above must not be used for adjusting the springsets.

11. CLEANING TOOLS REQUIRED.

11.1 These tools are required for the cleaning of coin-box mechanisms -

<u>S.L. No.</u>	<u>Item</u>
KG 59	Brushes, cleaning Spirit Rectified.
KD 159	
KA 58	
KA 70	Trichlorethylene
KA 11	Cloth, cleaning
RB 153	Crocus paper.

18.5.81 WRS.

12. LUBRICANT REQUIRED.

12.1 Lubricant required for the escapement mechanisms of coin-boxes -

S.L. No.

Item

~~KA 36~~ ~~Oil, bearing, B.P.O. No. 16~~

~~KA 51~~ ~~Oil, bearing, B.P.O. No. 16~~

KAS2

Oil, NZPO No 1

13. REFERENCES. E.N. G 1115.

(Figs. 1 to 6 follow)

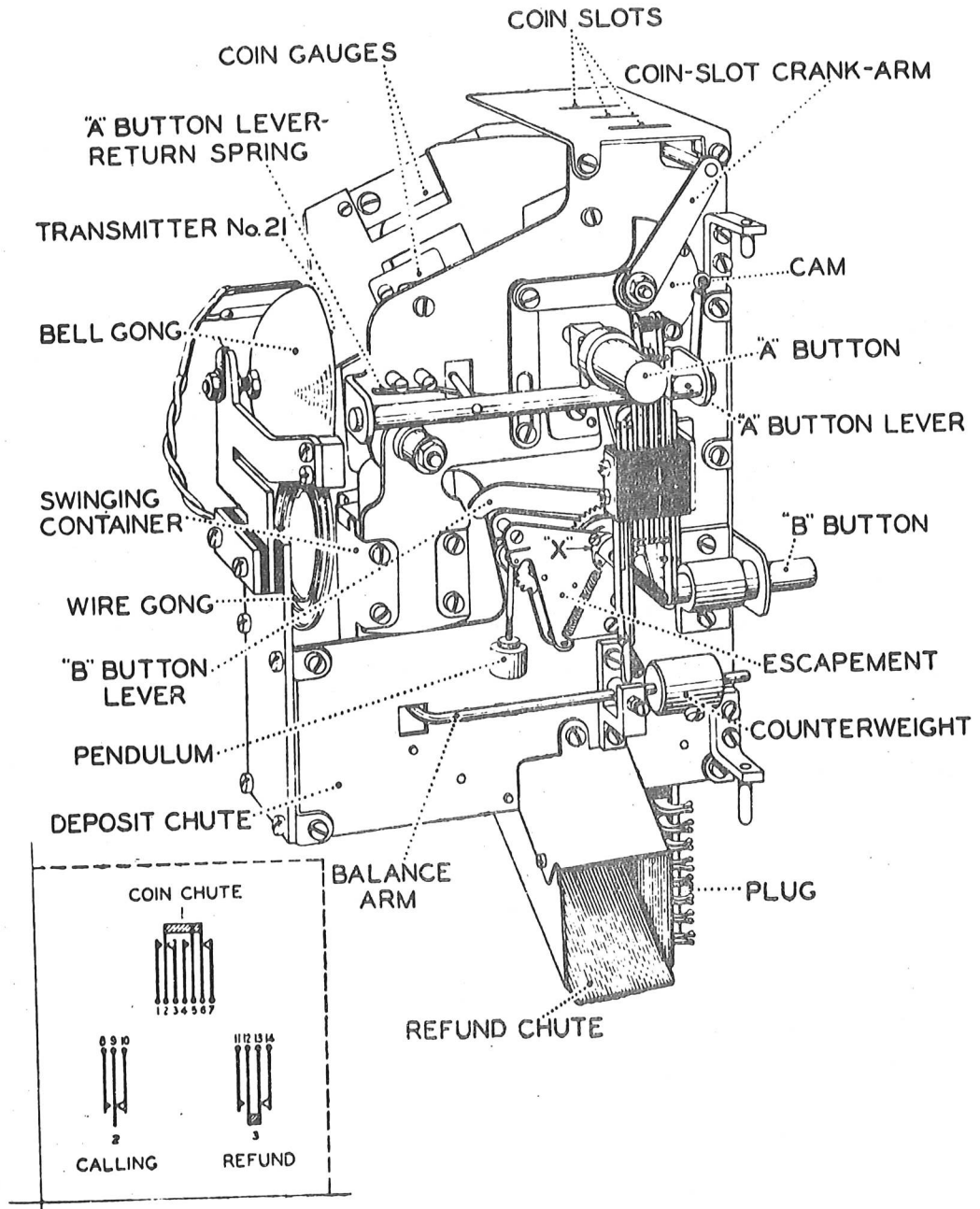


Fig. 1. Pre-payment coin-box mechanism.

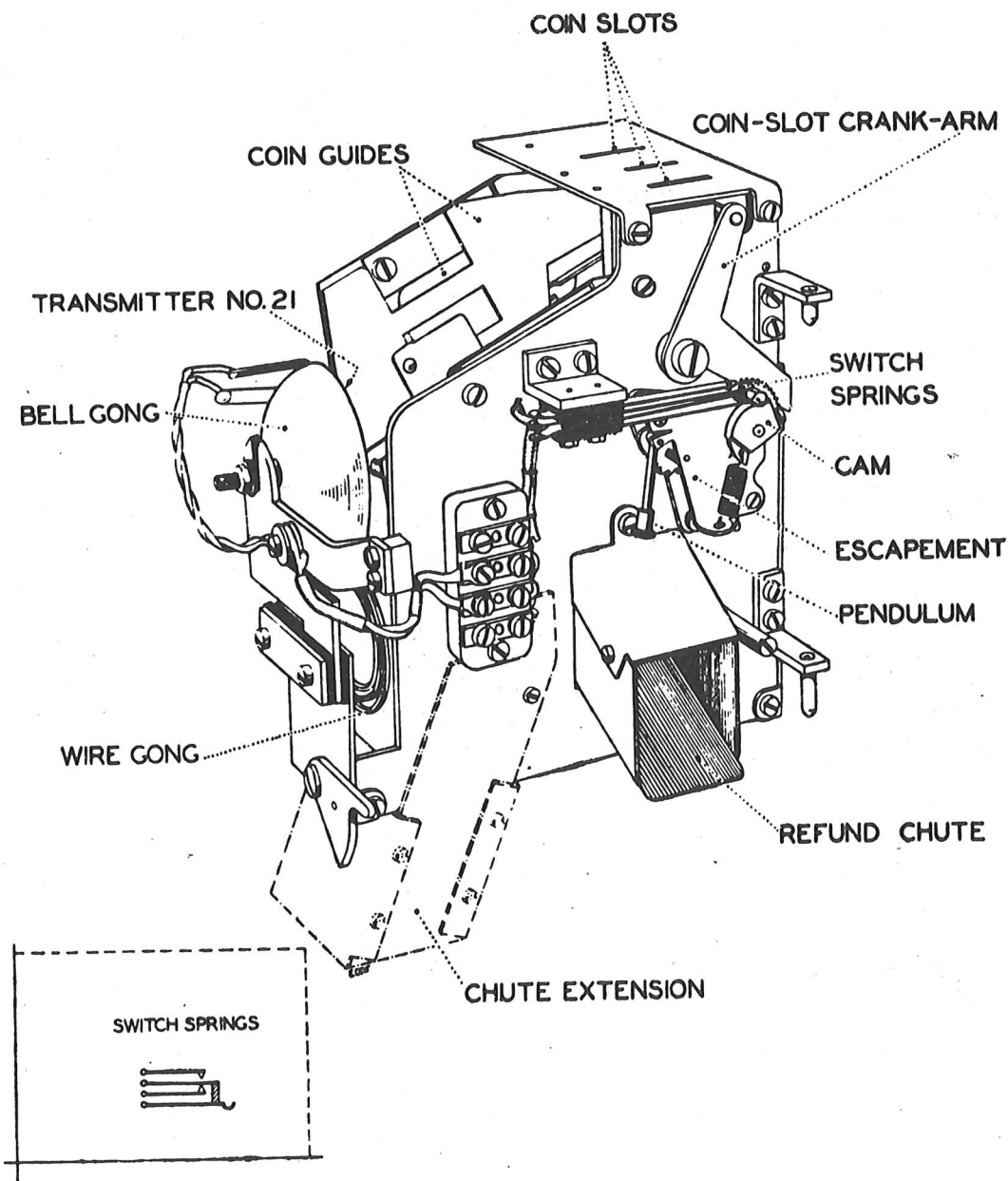


Fig. 2. Post-payment coin-box mechanism.

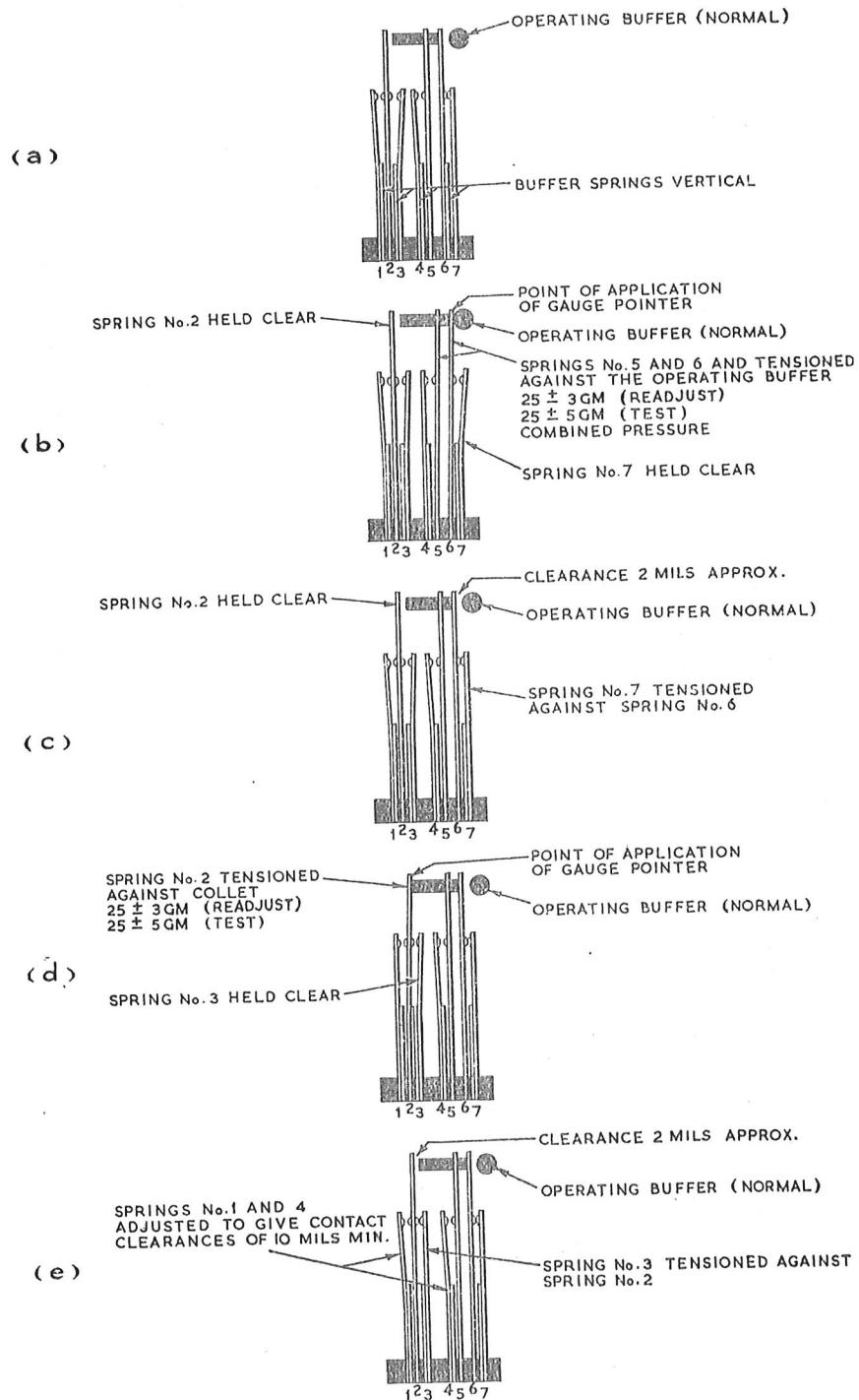


FIG. 3

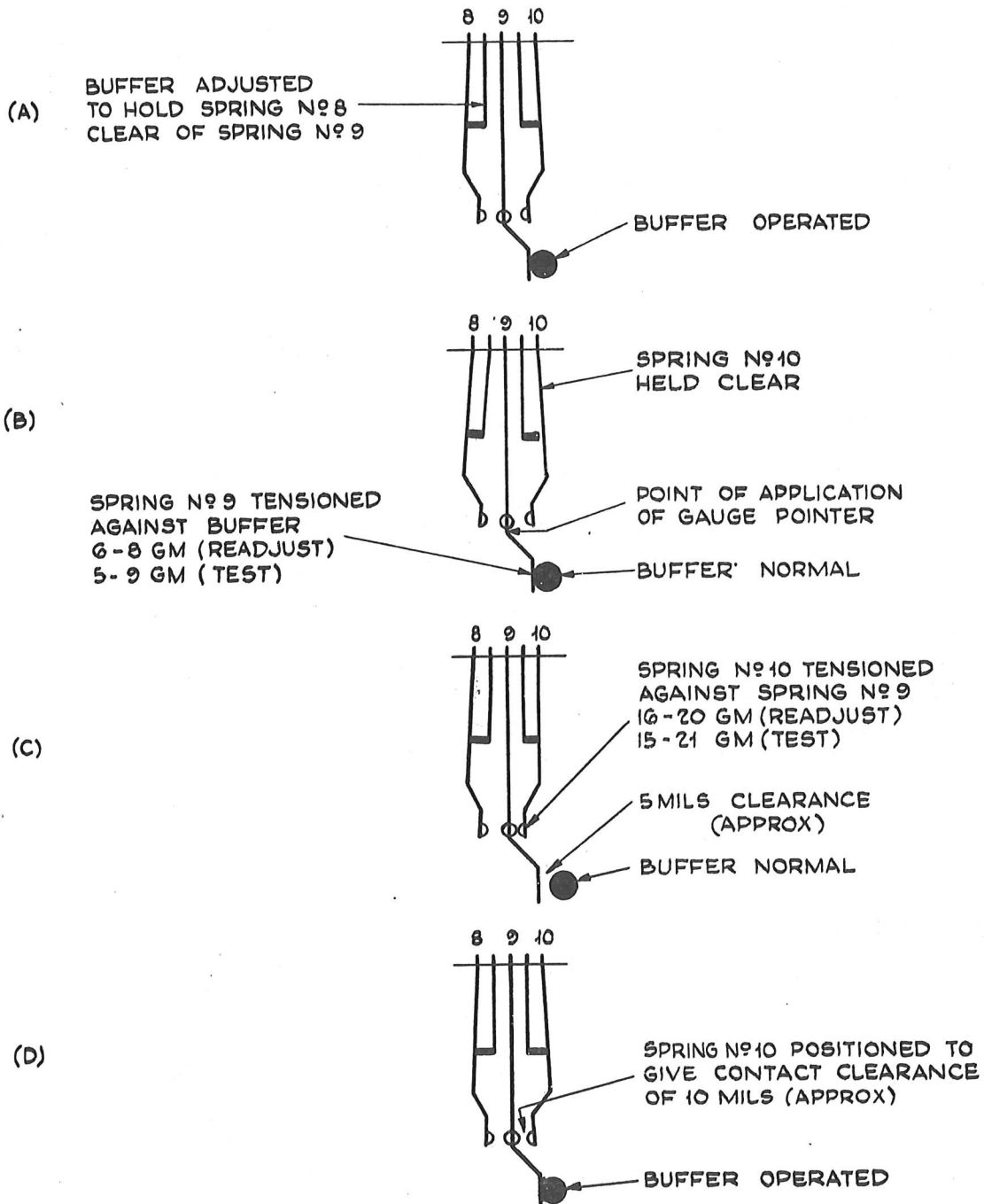


FIG. 4

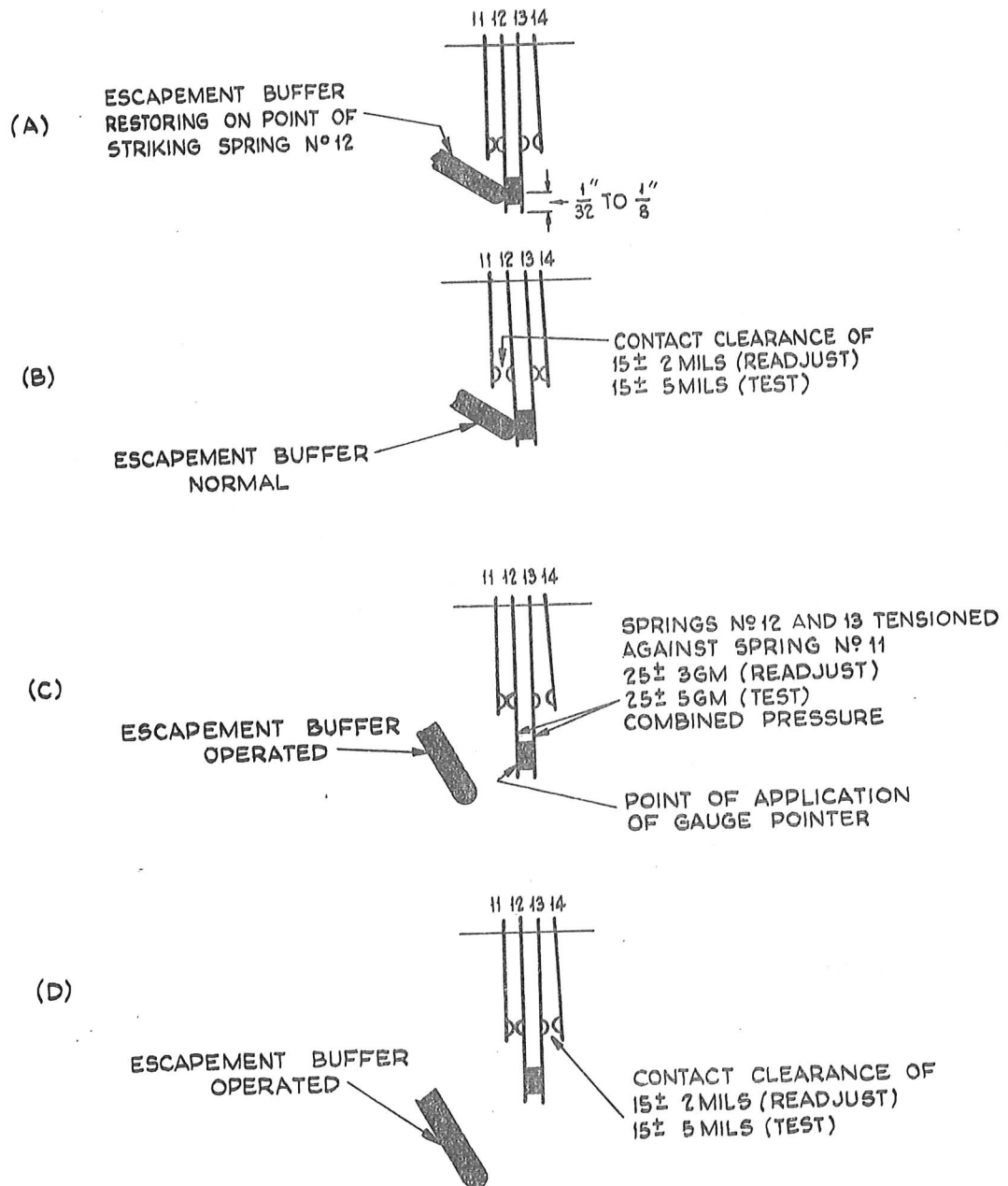


FIG. 5

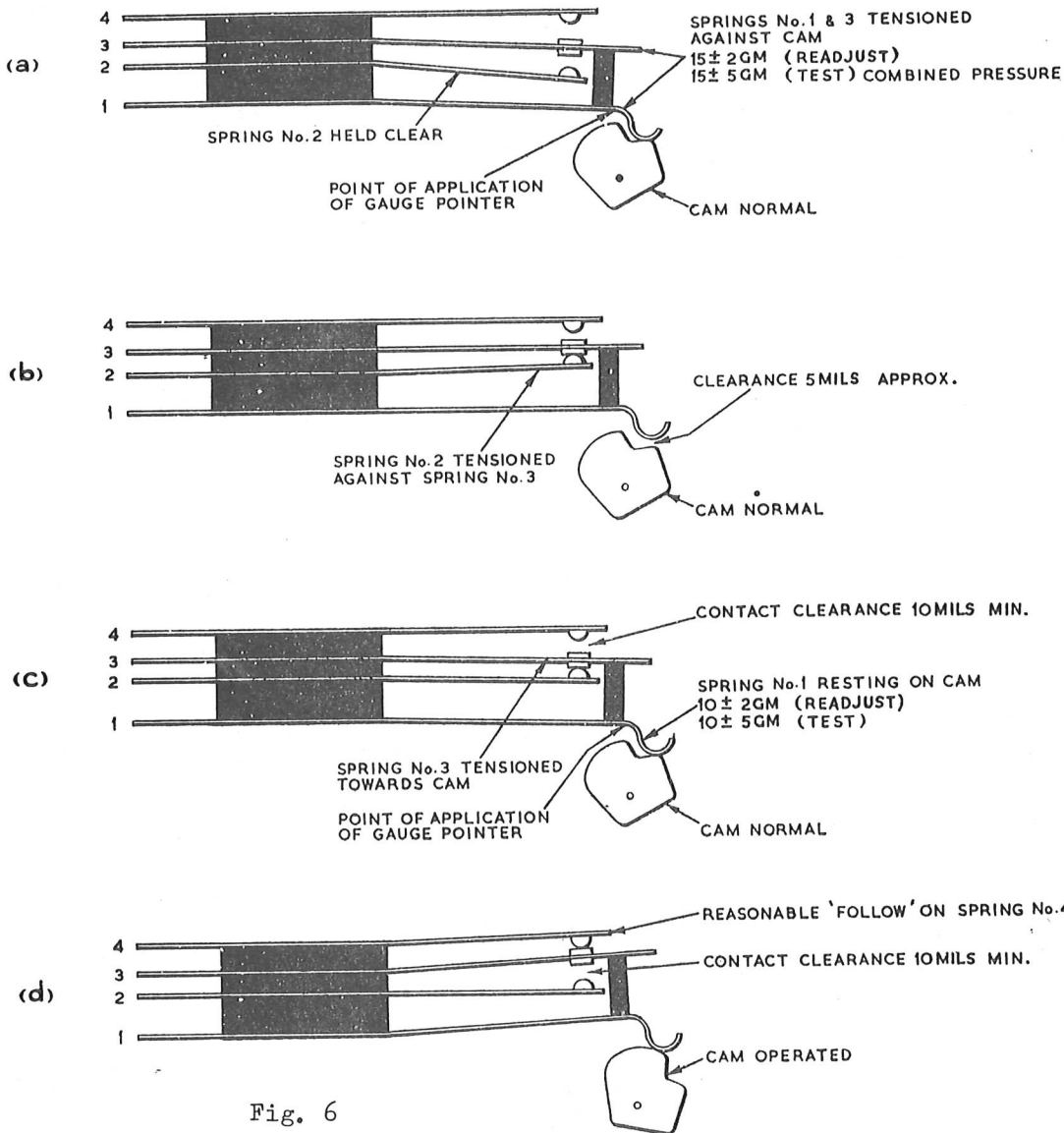


Fig. 6

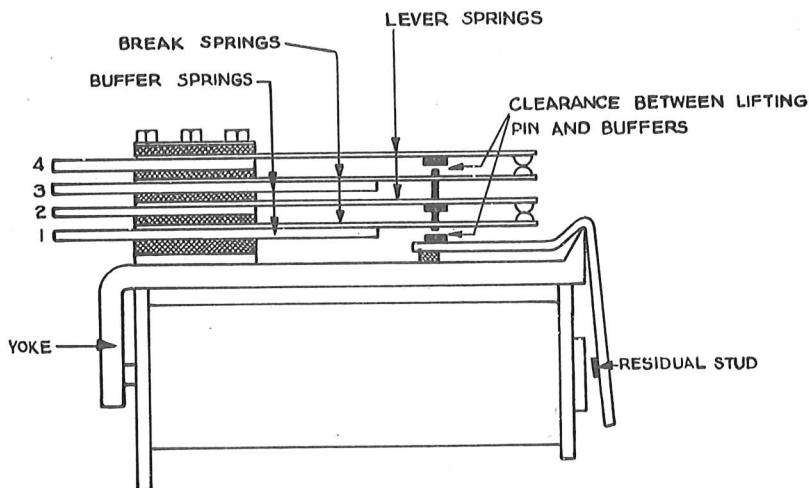


Fig. 7 Relay No. 281A

END

PUBLIC CALL STATIONS

COIN-COLLECTING TELEPHONE

APPLICATION, MECHANICAL FEATURES, MAINTENANCE

1. APPLICATION.

1.1 It is proposed that the Coin-collecting Telephone (C.C.T.) S.L. No. G 600 shown in Fig. 1, is to become the standard instrument for all new P.C.S. installations. As the unit is self-contained it readily adapts itself to shipboard service and other temporary requirements.

1.2 The C.C.T. may be used for S.C.B. installations if C.C.B.s S.L. No. G 110 are not available or if the location of the equipment is such that the C.C.T. has distinct advantages over the G 110 C.C.B.

2. MECHANICAL FEATURES.

2.1 The C.C.T. is a development of the C.C.B. (G 110). It comprises a telephone circuit, prepayment coin mechanism and cash container. The unit is 22 in. high, 9 in. wide (excluding handset and switchhook) and $6\frac{1}{4}$ in. deep. It weighs 36 lb.

2.2 The mechanism (G 117) is the same as that used in the G 110 C.C.B. except for the refund chute. It is enclosed in a pressed-steel case very similar to the G 110 C.C.B. with a die-cast aluminium cover incorporating a refund flap aperture. Within the case is a compartment for the standard self-sealing cash box.

2.3 The dial is contained in a cast aluminium mounting on top of the case.

2.4 The telephone circuit in the unit is based on the B.P.O. 706 telephone transmission circuit. The handset is the standard B.P.O. No. 3 type.

2.5 The mechanism, mechanical and circuit operation are described in G 4020.

3. MAINTENANCE.

3.1 For maintenance procedure see G 0015.

4. AVAILABILITY.

4.1 It is expected that the instrument will become available about June next.

5. CANCELLATIONS. Nil.

6. REFERENCES. G 0015, G 4020

(Figs. 1 & 2 follow)

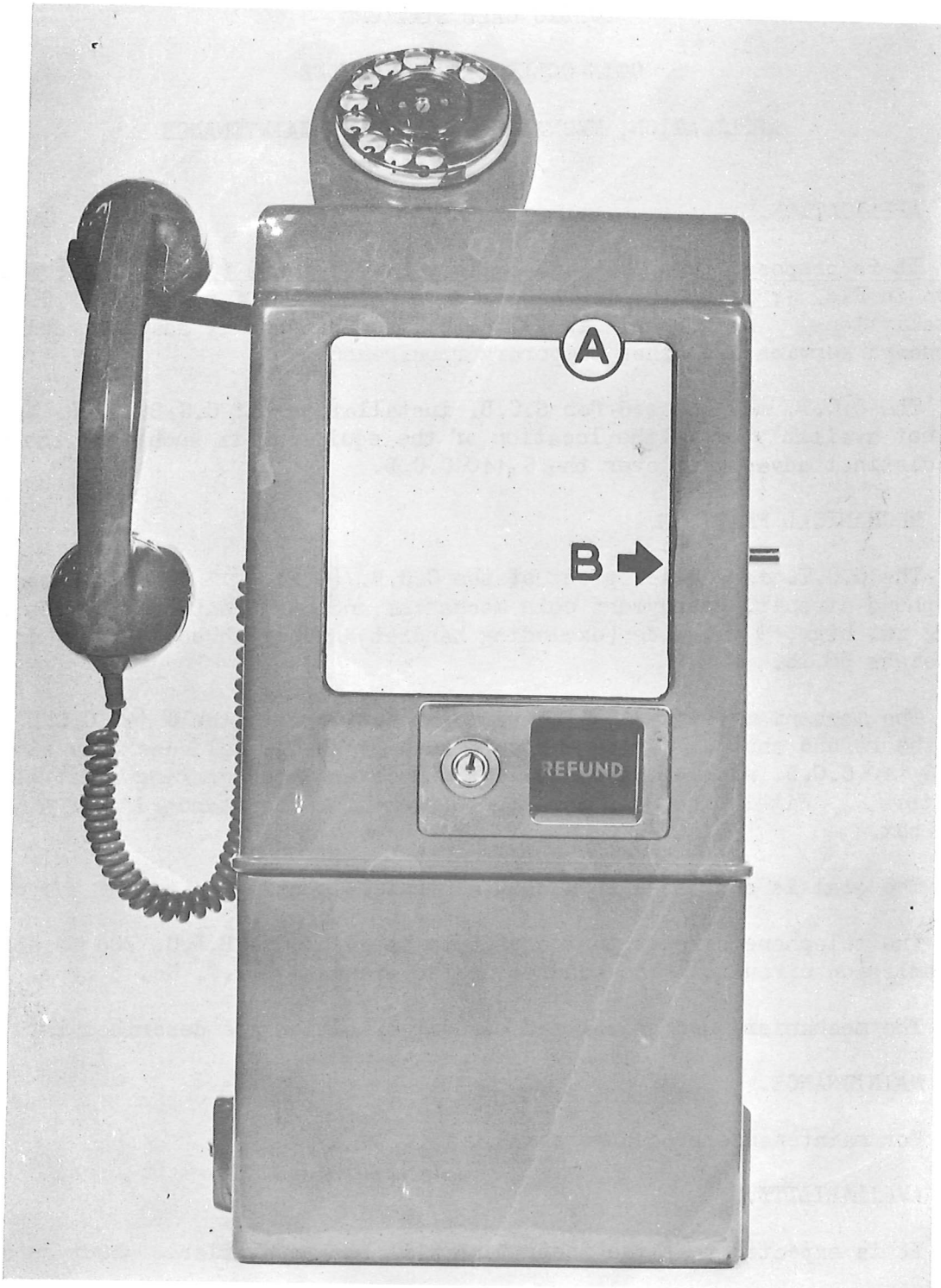


Fig. 1

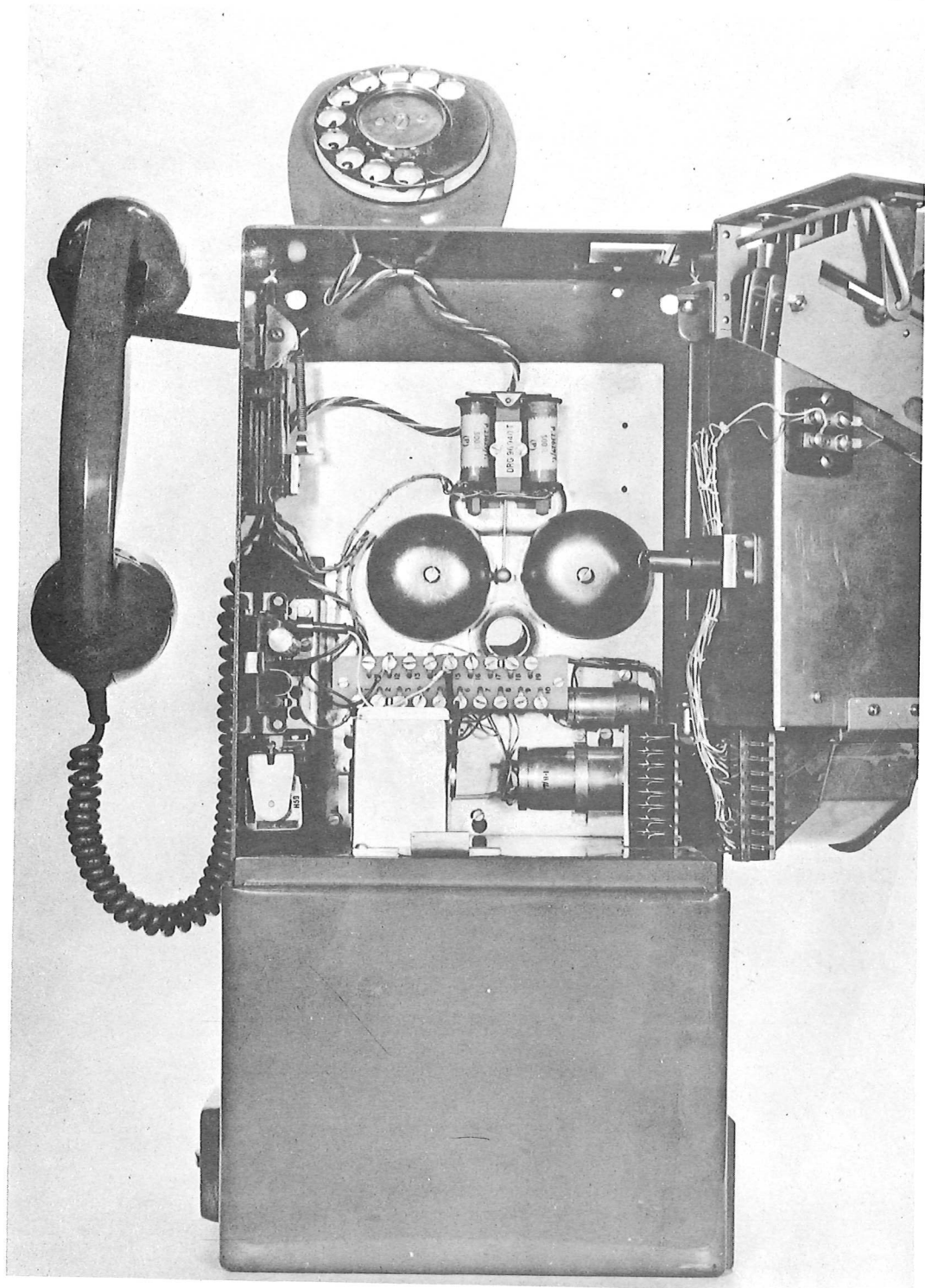


Fig. 2

END

