

TELEPHONE No. 705 ('PAY-ON-ANSWER' COIN BOX)

Maintenance at Public Call Offices and Subscribers' Coin-Box Installations

1. **Scope.**—This Instruction gives general information for the maintenance of the Telephone No. 705 ('Pay-on-Answer' coin box) at public call-offices and subscribers' coin-box installations.

2. **Description.**—The Telephone No. 705 (Fig. 1) is a complete wall telephone incorporating a coin-collecting mechanism and comprises three main parts which are illustrated in Fig. 2:—

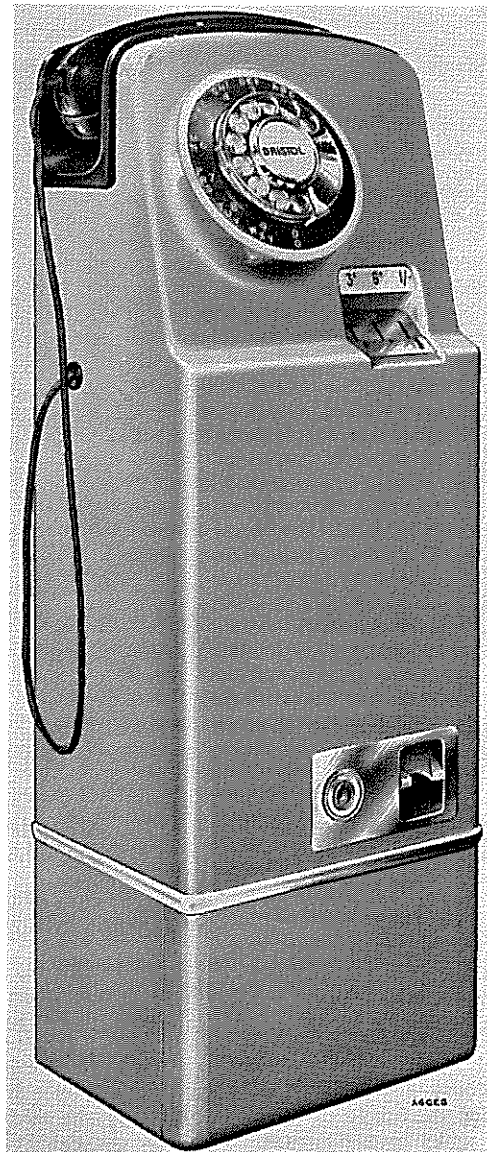


FIG. 1.

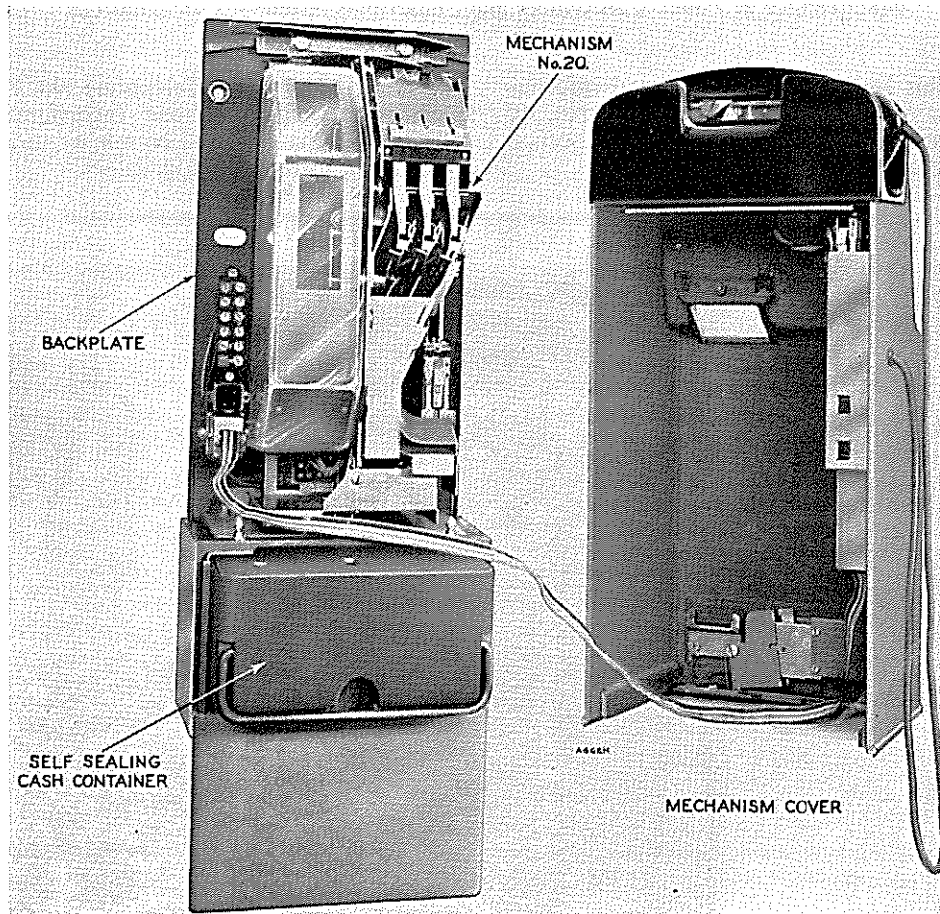


FIG. 2.

(a) *The mechanism cover* which carries the complete telephone circuit and fits over and locks on to the upper portion of the backplate.

(b) *The backplate* which carries the main terminal block and the connecting plugs and jacks of the telephone and mechanism circuits on its upper part, and has the cash compartment into which the self-sealing cash container slides bolted to its lower part.

(c) *The mechanism* which accepts and tests the coins, and signals to the exchange the value of any coin inserted. The mechanism jacks into position on the upper portion of the backplate.

3. Replaceable parts.—A list of the available replaceable parts is given in D 5510.

THE MECHANISM COVER AND ITS ASSOCIATED COMPONENTS

4. A rear view of the cover showing its main components is given in Fig. 3.

(a) To remove, unlock the Lock No. 39, ease the cover upwards until it is clear of the guides on the backplate, and then draw it off forward.

(b) The cover locating plate can be adjusted to make the cover fit snugly on to the backplate, by removing the two screws which secure the handset cradle, slackening the locating plate securing screws and sliding the plate forward or backward as necessary. When the correct position has been found tighten the securing screws and replace the handset cradle securing screws.

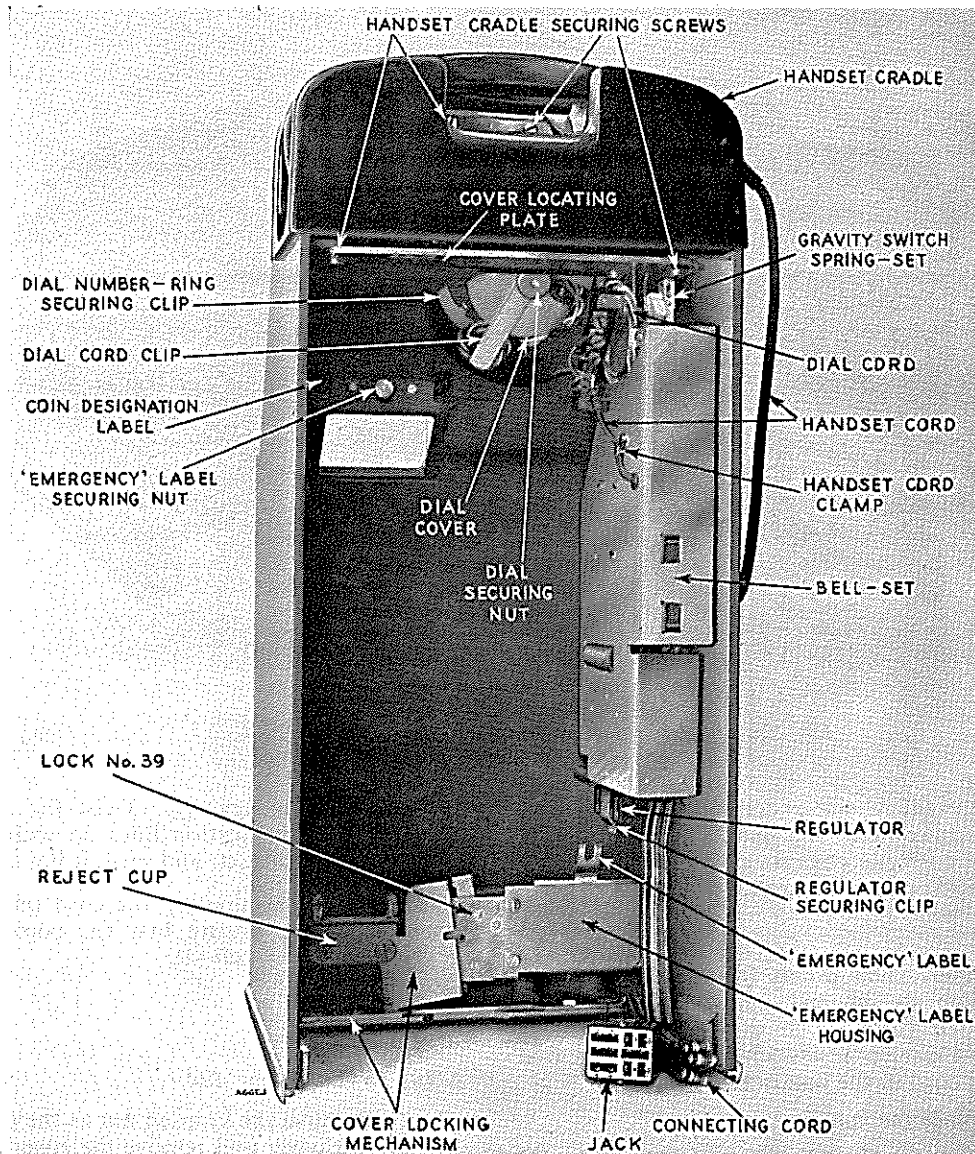


FIG. 3.

5. The handset cradle (Fig. 4) includes the gravity-switch operating mechanism.

(a) With the handset removed, the gravity-switch operating lever should lift the cradle arms to the limit of their travel and if either arm is then depressed, the other should remain fully raised. Attempts should not be made to alter the setting of the lever or cradle arms. Weak cradle-arm springs or a weak gravity-switch operating lever spring should be changed.

(b) To remove the cradle from the cover:—

(i) Remove the bell-set by undoing the knurled nut at the top and the captive screw at the bottom which secure it to the cover.

(ii) Remove the two countersunk screws in the cradle arm knife-edge plate and the countersunk screws in the cover locating plate which is situated inside the cover beneath the cradle.

(iii) Withdraw the cradle.

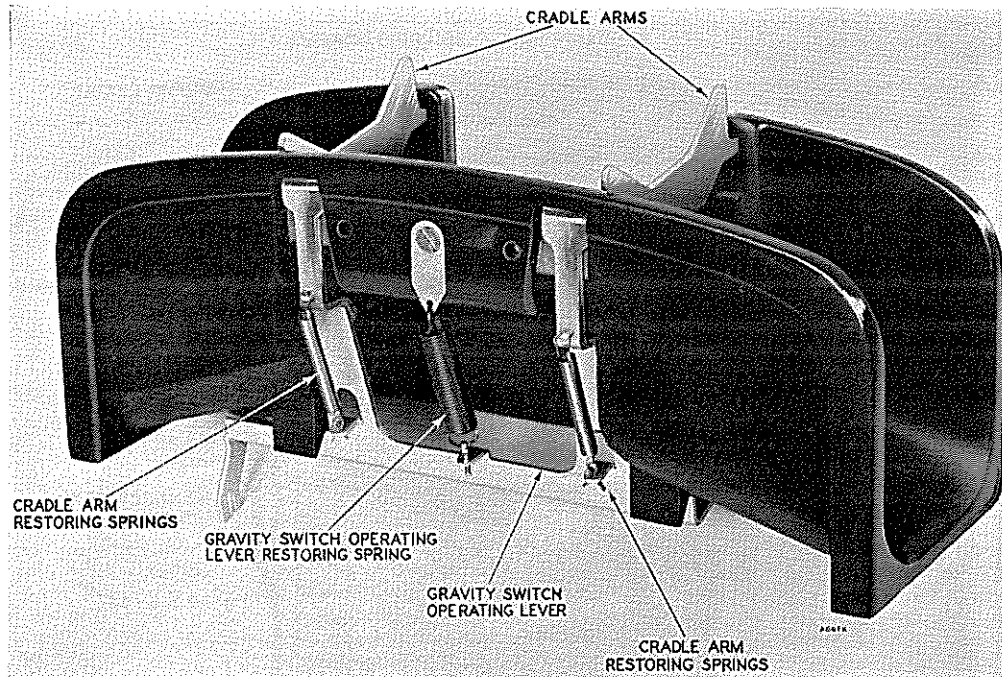


FIG. 4.

Reassemble in the reverse order and when replacing the bell-set ensure that the pin in the spring-set operating cam correctly engages in the forked end of the gravity-switch operating lever.

6. The handset.—This differs from previous handsets, apart from its physical appearance, inasmuch as the cord conductors are connected directly to the transmitter and receiver insets and a different method of locking the cord in the handset is used.

(a) *To replace the handset cord:*—

(i) Disconnect the cord conductors from the bell-set terminal strip, release the cord clamp and withdraw the cord from the cover.

(ii) Disconnect the cord conductors from the receiver and transmitter insets.

(iii) Grip the moulded cord grommet where it enters the handset, and push it into the handset, at the same time turning it to bring the brass lug opposite the keyway in the corner of the cord entry hole. The turning of the grommet can be assisted by twisting the brass lug inside the transmitter cavity, with the thumb of the hand holding the handset.

(iv) Withdraw the cord.

(v) When fitting the new cord, offer the grommet to the cord entry hole so that the brass

lug enters the keyway. Twist the grommet so that its square portion lines up with the square hole in the handset, and push it home.

(vi) After terminating the cord on the bell-set terminal strip ensure that the cord is securely clamped to the bell-set.

7. The dial.

(a) *To remove the dial:*—

(i) Remove the knurled nut at the centre of the dial dust cover and remove the cover.

(ii) Draw out the dial, in its mounting, from the front.

(iii) Remove the locking screw and disengage the dial from its mounting.

(iv) When replacing the dust cover take care not to trap the dial cord conductors between the cover and the dial mounting.

(b) *The dial cord* should be neatly coiled and tucked behind the cord retainer.

The cord is terminated on the bell-set by soldered connexions and therefore cord changing on site is not recommended. The bell-set should be removed and returned to the overhaul centre for a new cord to be fitted.

(c) The dial outer number ring is secured by a spring clip inside the cover, which has four tongues protruding through the dial aperture to engage in recesses in the inner edge of the number ring. (Fig. 5).

(d) To change the number ring:—

(i) Remove the dial as described in (a) (i) and (ii).

(ii) With the tip of a bradawl or other sharp-pointed instrument gently ease the tongues of the spring clip out of the recesses in the number ring.

(iii) Remove the number ring.

(iv) Place the new number ring in position.

(v) Holding the number ring in position with the thumb, place the forefinger on the spring clip, behind one of the tongues. Press on the clip, at the same time easing the tongue over the inner edge of the number ring until it drops into place in its recess. Repeat in turn with the other tongues.

(e) To change the spring clip:—

(i) Remove the dial and disconnect the dial cord from the dial.

(ii) Remove the outer number ring.

(iii) Remove the handset cradle as described in par. 5(b).

(iv) Lift out the spring clip.

(v) Insert the new clip and replace other components.

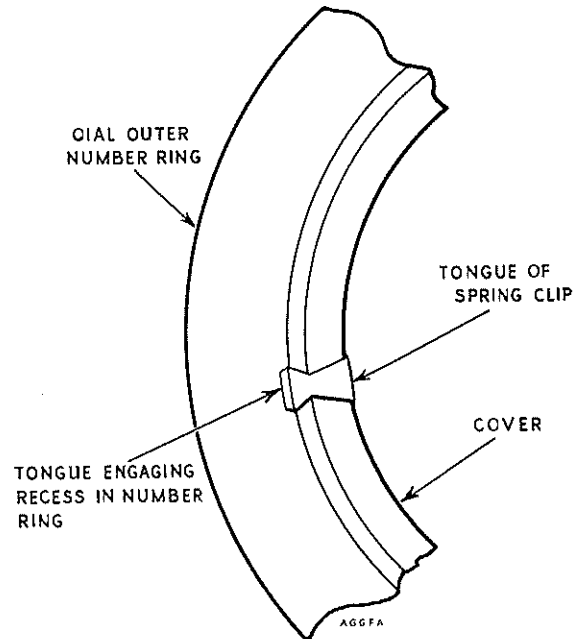


FIG. 5.

8. The regulator (Fig. 6) which automatically adjusts the level of the speech to suit the line current, is plugged into a jack at the bottom of the bell-set and secured by a spring clip. It can be inserted in either of two ways:—

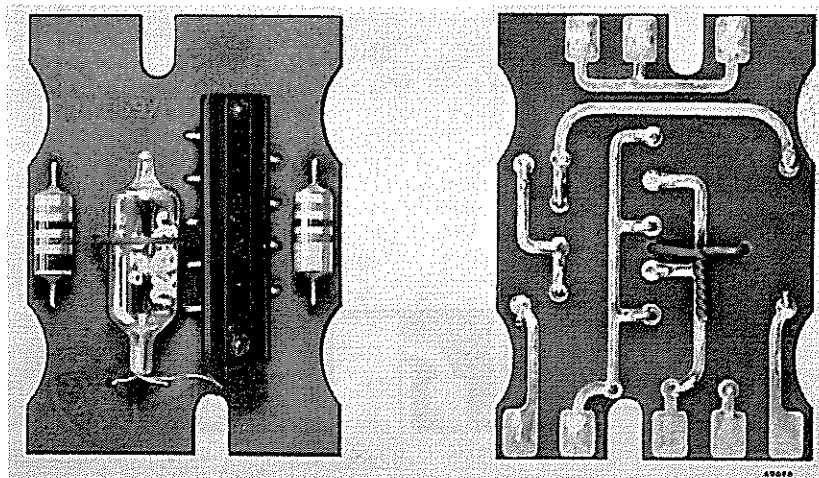


FIG. 6.

(a) Working position [Fig. 7(a)]. The regulator is in circuit.

(b) "Test" position [Fig. 7(b)]. The regulator is out of circuit but continuity of the telephone circuit is maintained through the printed links on the regulator baseboard. By this means a regulator can be quickly tested or service maintained if a

regulator is faulty and a replacement is not immediately available.

9. The bell is a standard Bell No. 59A except that one gong is replaced by an eccentric stop, which should be regarded as a gong for adjustment purposes. The bell should be adjusted in accordance with Stations, A 5905.

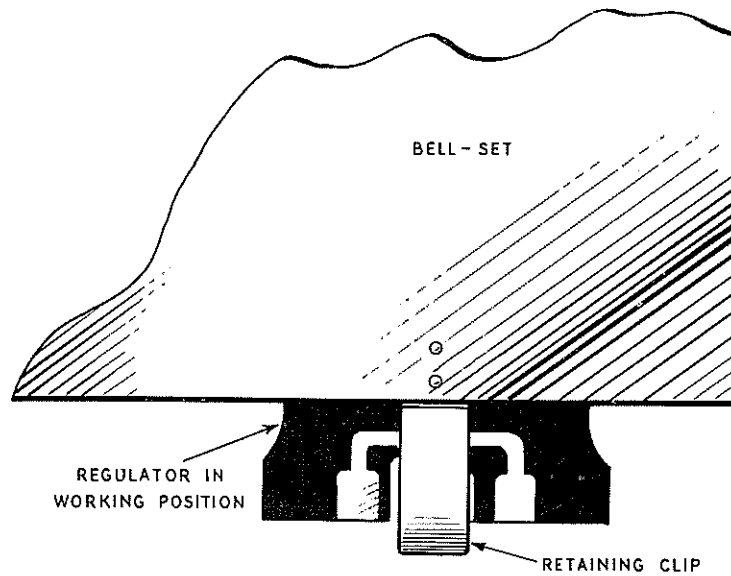


FIG. 7(a).

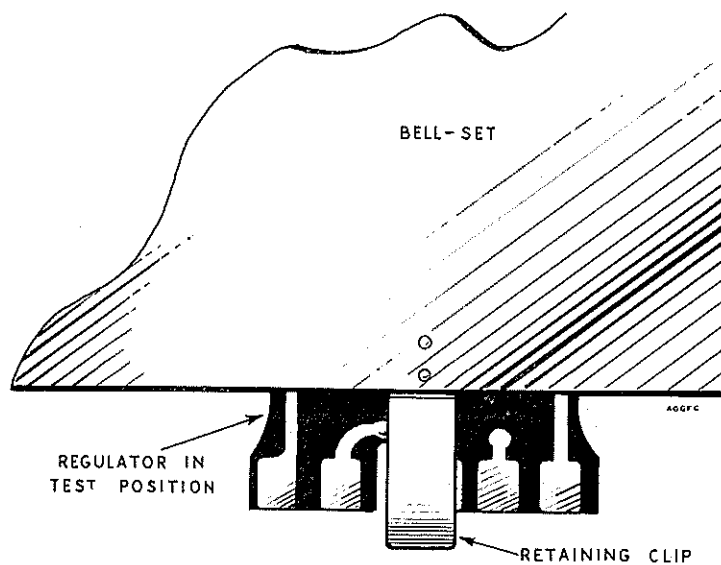


FIG. 7(b).

10. Gravity-switch spring-set adjustment.—The gravity-switch spring-set is a standard 3000-type relay spring-set and the principles of spring adjustment detailed in Automatic, B 5144 apply.

Springs should be straight throughout their length and twin contact points should make or break simultaneously as judged by eye. If necessary the tongues should be aligned with the Adjuster, Spring, No. 2. Spring pressures quoted below should be measured at the tip of the spring:—

(a) Adjust springs Nos. 2 and 4 (Fig. 8) to a pressure of 16–20 gm (15–21 gm test) against their buffer-block steps.

(b) Lift spring No. 6 clear and tension spring No. 5 against the buffer-block step to 16–20 gm (15–21 gm test).

(c) Set the cam approximately midway in its travel and then position the spring-set on its rocker by adjusting nuts A and B with a Spanner, Flat, BA 4–6, so that with spring No. 1 resting against the cam follower and the cam follower resting against the cam there is a contact clearance between springs Nos. 1 and 2 of 15–20 mils.

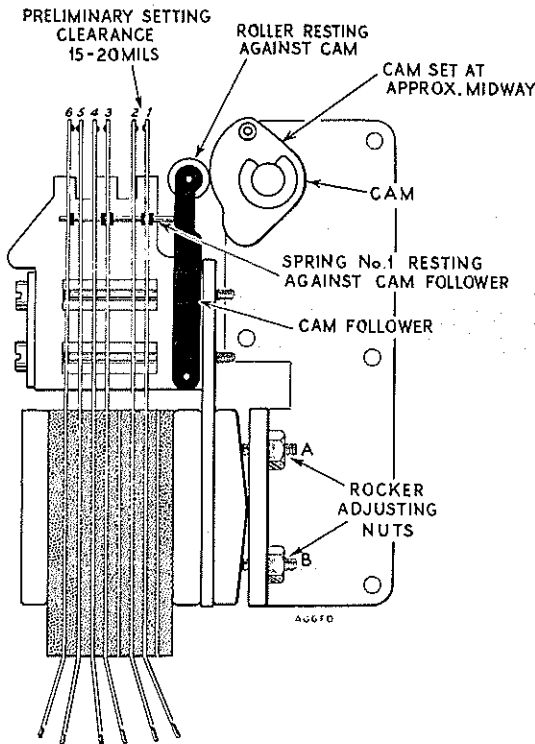


FIG. 8.

(d) Tension spring No. 1 against the cam follower to 6–8 gm (5–9 gm test).

(e) Tension spring No. 3 against spring No. 1 to 6–8 gm (5–9 gm test).

(f) Tension spring No. 6 against spring No. 5 so that spring No. 5 leaves the buffer-block step by a minimum of 2 mils and there is a resultant pressure towards the cam follower of 6–8 gm (5–9 gm test).

(g) Set the cam so that the spring-set is fully operated (Fig. 9). There should be a minimum clearance between springs Nos. 2 and 4 and their respective buffer-block steps of 2 mils and a minimum contact clearance between springs Nos. 5 and 6 of 10 mils.

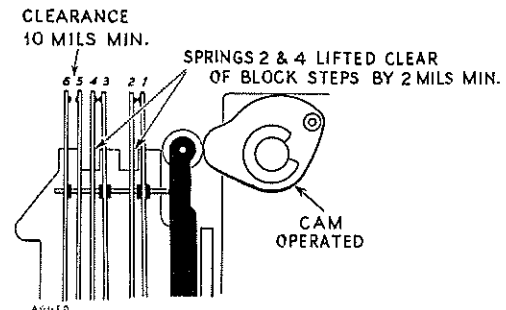


FIG. 9.

If necessary, to obtain these clearances, make a further adjustment of nuts A and B but check also that when the spring-set is released (Fig. 10) there are minimum contact clearances between springs Nos. 1 and 2 and 3 and 4 of 10 mils and that spring No. 5 is depressed clear of its buffer-block step by at least 2 mils. If the foregoing requirements cannot be obtained by adjustment of nuts A and B, the tips of the springs may be set slightly to give the required clearances.

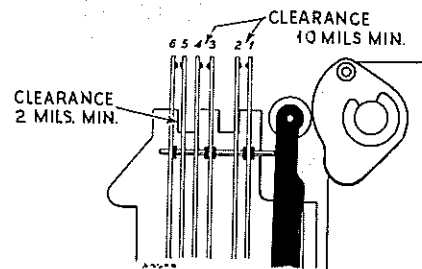


FIG. 10.

(h) Replace the bell-set in its position inside the cover, ensuring that the pin on the cam engages in the forked-end of the gravity-switch operating lever.

(j) Slacken nut N with a Spanner, Flat, BA 4-6, insert a Spike, Capstan, No. 1 in the hole H (Fig. 11)

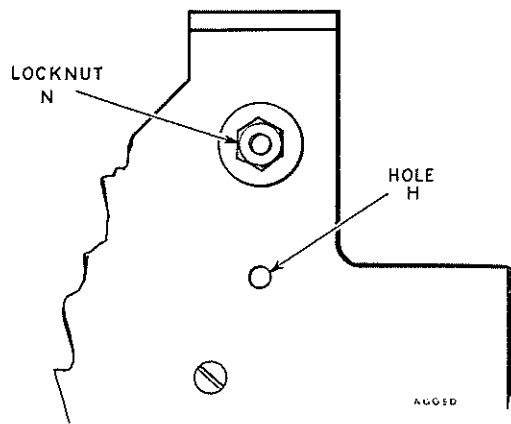


FIG. 11.

and adjust the position of the spring-set by levering it with the capstan spike so that:—

(i) when the handset is on the cradle, the spring-set is fully released, i.e. spring No. 5 is depressed clear of its buffer-block step

(ii) when the handset is removed, the spring-set is fully operated, i.e. springs Nos. 2 and 4 are lifted clear of their buffer-block steps.

(k) Tighten nut N.

11. The coin denomination plate.—To change the plate, prise up the right-hand end at the same time applying firm pressure to the left-hand end to slide the plate out of its slot. Insert the new plate and slide it home.

12. The cover locking mechanism.—The component parts of the cover locking mechanism are shown in Fig. 12. To change the Lock No. 39:—

(a) Remove the locking-lever pivot screw and the locking lever.

(b) Remove the four screws which secure the lock and housing for the 'emergency' label, and remove the lock and label housing.

(c) Fit the new lock, at the same time replacing the label housing.

(d) Replace the locking lever, taking care to hook the locking bar return spring over the left-hand edge of the lever.

(e) Replace the pivot screw.

13. Emergency removal of cover.—If the cover cannot be unlocked due to failure of the Lock No. 39, it may be released in the following manner. The co-operation of the collecting staff is required since access has to be gained to the cash compartment.

(a) Open the cash compartment.

(b) Remove the two nuts just inside the top edge of the cash compartment with a Spanner, Cranked, No. 7 to release the cover locking studs.

(c) Remove the cover complete with the locking studs.

To recover the studs:—

(d) Remove the four screws which secure the locking-bar baseplate to the cover and remove the plate complete with the locking bar.

(e) The locking bar may then be moved to free the studs which should be replaced on the cash compartment.

(f) Change the faulty lock as described in par. 12 and replace the locking bar.

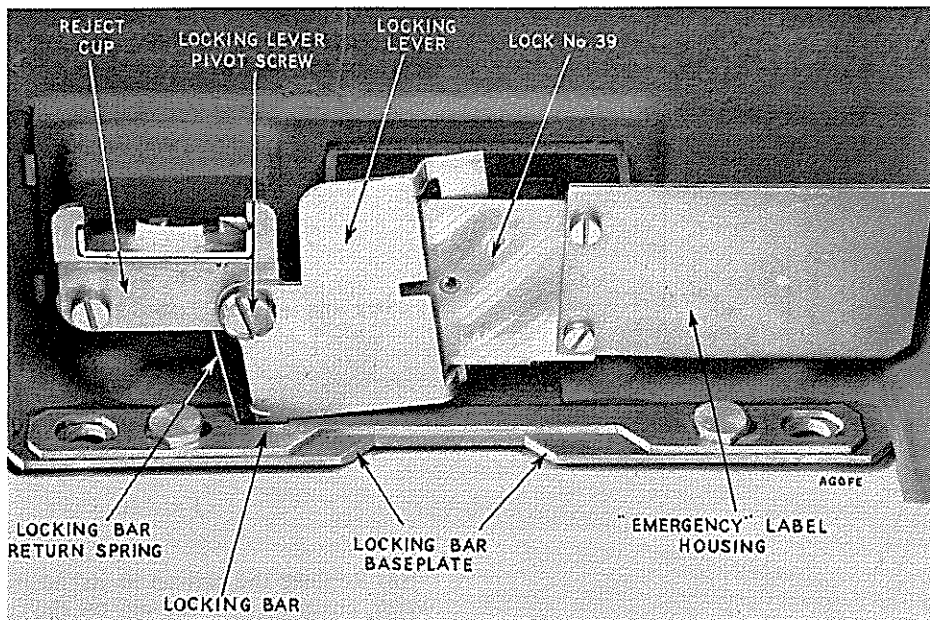


FIG. 12.

TELEPHONE NO. 705 (PAY-ON-ANSWER COIN BOX)

Maintenance at Public Call Offices and
Subscribers' Coin-Box Installations

(Additional par. 12.1)

12.1 To improve the locking mechanism an adjustable stop is fitted to the locking bars of covers now being manufactured. The small projection on the stop should lie between the spring and the locking lever. The locking bar should be straight throughout its length. Covers must be replaced in the unlocked position otherwise the locking bars will be damaged. Adjust as follows:-

- (a) Turn the lock to the unlocked position.
- (b) Loosen the locking-bar stop fixing screw and slide the stop until it rests against the locking lever.
- (c) Tighten the screw.
- (d) Replace the cover and check that the key can be turned to the locked position *without force* and the key removed.
- (e) Turn the key to the unlocked position. Raise the cover $\frac{1}{16}$ in. approximately and turn the key gently towards the locked position until resistance is felt. This occurs when the locking bar engages with the locking stud. Check that the key cannot be withdrawn with the lock in this position.
- (f) If difficulty is found in meeting condition (d) a small clearance between the stop and the locking lever is permissible provided condition (e) is satisfied.

(The main Instruction should be suitably annotated pending reissue)

THE BACKPLATE AND ITS ASSOCIATED COMPONENTS

14. Fig. 13 shows the backplate with the mechanism and the cash compartment cover removed.

15. To remove the mechanism from the backplate:—Depress the spring catch visible through the hole in the mechanism bottom plate, ease the bottom of the mechanism forward until the top plate disengages from the locating lugs on the backplate.

16. To replace the complete mechanism:—Offer the top of the mechanism to the backplate so that the locating studs and lugs enter the appropriate holes in the top plate, and then push the bottom of the mechanism home so that the spring catch latches.

The mechanism stop on the backplate (Fig. 13) is set to ensure that when the mechanism is fully home the coin plate fits snugly against the edges of the aperture in the mechanism cover. This stop should not normally require adjustment but, if necessary, slacken the locknut at the rear of the backplate and screw the stop in or out as required.

17. Removal of backplate at public call-offices.

(a) Remove the mechanism cover and the mechanism.

(b) Disconnect the leads from the terminal strip.

(c) Remove the two hexagonal securing bolts at the top of the backplate with a Wrench, Hexagon, No. 7.

(d) Lift the backplate up and off the two studs on which it is located at the bottom.

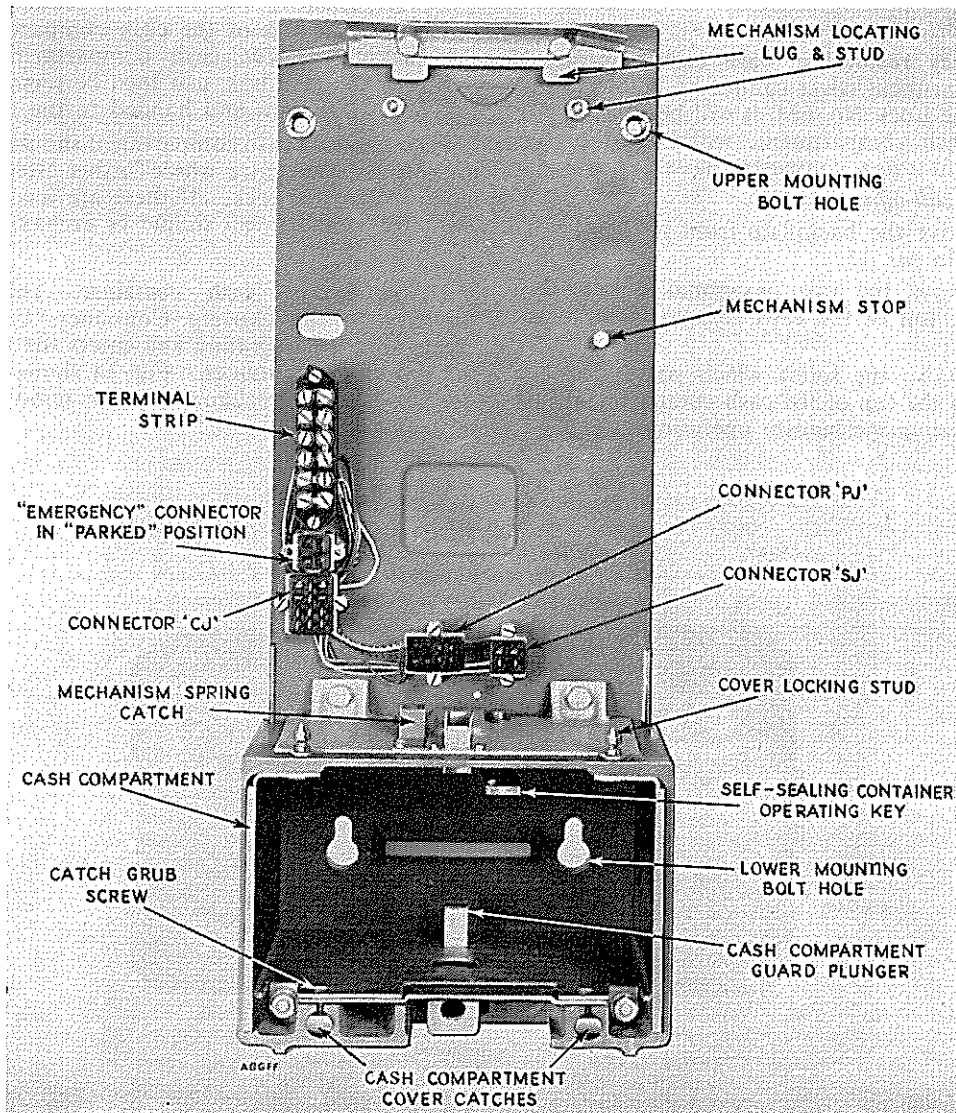


FIG. 13.

18. Removal of backplate at subscribers' installations.

- (a) Remove the mechanism cover and the mechanism.
- (b) Disconnect the leads from the terminal strip.
- (c) Ask the subscriber to unlock the cash compartment and remove the cash box.
- (d) Remove the four wood screws, two in the top of the backplate and two inside the cash compartment, by which the backplate is secured to the wallboard.

19. Complete removal of cash compartment cover.

- (a) Unlock the cover and lower it until it rests on the catches.
- (b) Release the catches by pushing the protruding grub-screws towards the rear and slide the cover off.
- (c) When replacing the cover the self-sealing cash container must be in place otherwise the cover will not close fully.

20. Emergency removal of cash compartment.—If the cash compartment cover cannot be unlocked due to failure of the Lock No. 6M, it will be necessary to remove the cash compartment, withdraw the cash container and fit a new compartment as follows:—

(a) *Public call-offices.*

- (i) Remove the backplate from its bracket as described in par. 15.
- (ii) Remove the two hexagonal bolts which secure the top of the cash compartment to the backplate.
- (iii) Remove the screw which passes through the slot in the top of the cash compartment into the self-sealing mechanism operating key.

(iv) Remove the two hexagonal nuts from the bottom rear corners of the backplate. The cash compartment, complete with the cash container, can then be removed from the backplate and the container withdrawn and handed to the collector.

(v) Fit a new cash compartment and replace the screw in the self-sealing mechanism operating key.

(b) *Subscribers' installations.*

- (i) Remove the mechanism cover and the mechanism.
- (ii) Remove the wallboard complete with the backplate.
- (iii) Remove the two hexagonal nuts, accessible through the holes at the back of the wallboard, which secure the lower corners of the cash compartment to the backplate.

(iv) Remove the two hexagonal bolts which secure the top of the cash compartment to the backplate. The cash compartment, complete with the cash box, can then be removed and the box withdrawn and handed to the subscriber.

The recovered cash compartment should be returned to the overhaul centre where further attempts may be made to free the lock. If these are unsuccessful the complete compartment should be exchanged.

21. Self-sealing cash container.—This operates similarly to the existing Container, Cash, No. 2, except that the operating key enters the side and not the top of the container. Fig. 14 shows the lid with the self-sealing mechanism cover removed and the parts annotated.

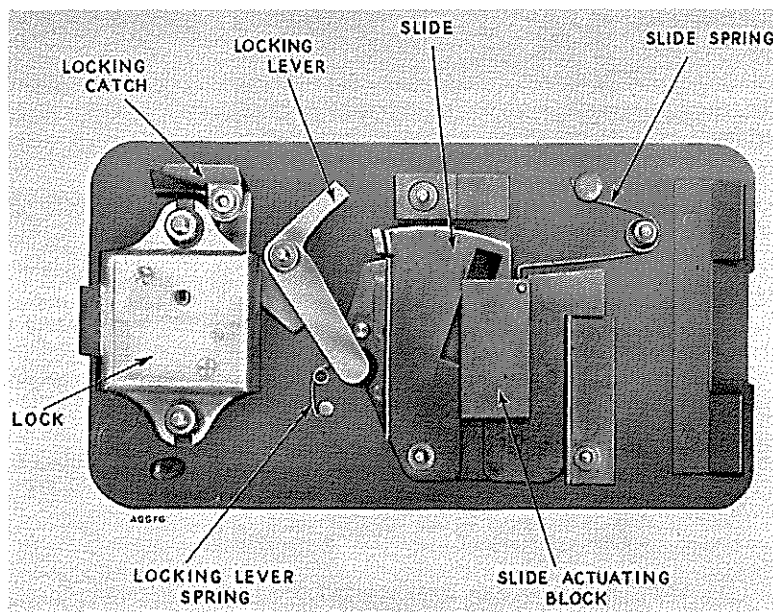


FIG. 14.

22. 'Sticking' container.—When a report is received from a collector that a container cannot be removed from the cash compartment, the following action should be taken, *with the collector present*:—

- (a) Remove the mechanism cover.
- (b) Remove the screw which passes through the top of the cash compartment into the self-sealing mechanism operating key.
- (c) Remove the screw which secures the operating key to the backplate. Access to this screw can be obtained through the front of the cash compartment and over the top of the container.
- (d) The container, complete with the operating key, may then be withdrawn. If it is still not possible to free the key, a replacement key should be fitted, and an empty container, carried by the collector, inserted. When the lid is eventually removed at the collection centre it should be handed to the engineering staff for attention, and if the fault cannot be rectified the lid should be exchanged.

23. Locks.—The procedure detailed in A 5902 should be followed.

MECHANISM

24. Site maintenance.—Attention to the mechanism on site should be restricted to cleaning and clearing of obstructions in coin slots, tubes, runways and chutes, and changing the complete coin runway unit if faulty or damaged.

Attempts must never be made to adjust the mechanism on site. It requires accurate setting, and this can only be done at the overhaul centre where the necessary facilities exist. A faulty mechanism should be replaced as a whole, the faulty one being returned to the overhaul centre for attention.

25. Emergency working.—If it is necessary to take away the mechanism for any purpose and a replacement is not immediately available, the telephone may be adapted to give emergency service, i.e. '999' and 'Operator' non-chargeable calls, by transferring the 'Emergency' connector from its 'parked' position to the connector SJ (Fig. 13). The emergency label (Fig. 15) normally housed in the recess to the right of the Lock No. 39 should be fitted into the coin-plate aperture in the cover.

26. The coin runway unit. (Fig. 16).

(a) *To remove the runway unit*:—Slacken the captive screw situated below the front end of the 3d. runway, and draw the unit forward and out of engagement with its guide.

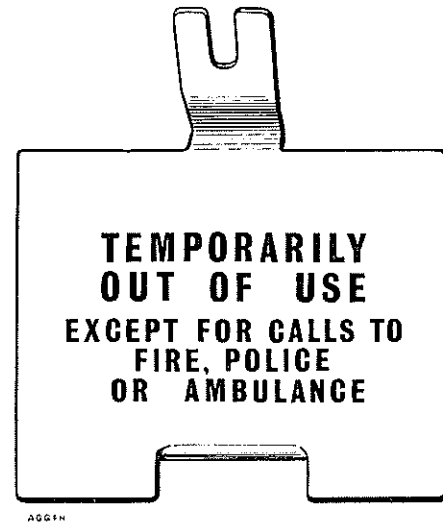


FIG. 15.

(b) *Cleaning.*

(i) The coin slots should be cleaned with Tape, Bank Cleaning, No. 1, moistened with white spirit, and threaded through the slots. Particular attention should be paid to the exposed portions of the coin rollers, and the parts should then be rubbed over with dry tape to remove any residue.

(ii) The coin tubes should be cleaned with a Brush, Uniselector, Cleaning, moistened with white spirit, and then rubbed over with a dry brush.

(iii) The coin runways and coin chutes should be cleaned with a cloth moistened with white spirit, and then rubbed over with a dry cloth.

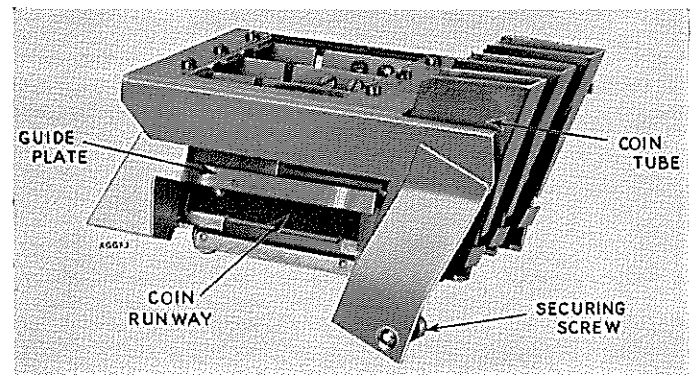


FIG. 16.

Reference:—A 5902, D5510
(TPM 2/3) Automatic, B 5144
Stations, A 5905

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