

The G.E.C. Muraphone

A New Telephone for Wall-mounting



Fig. 1.—G.E.C. Muraphone, Cat. No. 89, for automatic systems.

GENERALLY, the most convenient position for a telephone instrument is on desk or table, and consequently the desk-type has been most favoured. In a not inconsiderable number of instances, however, circumstances are such that telephones may most conveniently be fitted to walls or pillars. In providing for such circumstances, many Administrations have very simply achieved the aim of uniformity by fitting a desk-type instrument to a wall-bracket. This practice has been catered for by the special design of wall bracket that has been available for many years for use with the Gecophone. In consequence of its use, an Administration has been able to meet subscribers' needs for desk- or wall-type sets, but has, at the same time, had the benefits of simplification, both of indenting for and stocking sets and spares, that follows standardisation of one set.

In recent years, however, telephones have been increasingly applied in situations where wall-type sets throughout are favoured. Most notable of these is in passenger cabins on board ship, where equipment should preferably be fixed in position, table space, which implies floor space, is at a premium, and, in most cases, there is a fairly obvious position for a telephone to occupy.

With wall-sets thus used throughout, there is justification for an instrument designed specially for wall-mounting, if it can be produced at economic cost. The G.E.C. Muraphone, Cat. No. 89, has been designed with this in mind. It is a new telephone for wall-mounting and, with costs based on an assumed continuous quantity production and use made of many of the Gecophone components, it is offered at a favourable price.



Fig. 2.—Cover removed.

The Muraphone is illustrated in Fig. 1, from which it will be seen that the handset is vertical and the instrument case is shaped to form a cradle for the receiver case and a housing for the mouthpiece. The handset is thus held securely, a feature that is particularly appreciated aboard ship where a tendency to rattle is often found with the desk type of instrument.

The position of the handset enables it to be grasped fully, and, further, ensures that it shall be lifted before dialling is commenced.

The case is the complement of the vertical handset and presents a front surface of the correct width to accommodate a dial. The circular motif thus introduced is repeated at the sides of the moulding by segments which are concentric with the dial and provided with sound-outlet apertures for the bell. Ingress of

insects through these apertures is prevented by wire gauze of fine mesh.

With the handset in position, the receiver case depresses a lever that actuates switch springs inside the instrument. The lever is extremely positive in action and is provided with a shield to prevent the entry of dust through the aperture in which it operates.

A particularly useful feature, revealed when the case is removed as shown in Fig. 2, is that the dial is fixed to a special support, leaving the case free to be removed entirely for full access to be gained to the components. These are mounted on a steel base in the compact arrangement shown in the illustration.

A bracket fixed to the base carries the fulcrum screws for the cradle-switch lever, to which are fitted rollers that actuate the switch springs. The two "make" combinations required by the circuit are mounted one on each side of the ringer coils. The springs are provided with twin contacts, and the leverage obtainable allows the contact pressures to be greater than in a plunger-type cradle switch. With the insulators projecting beyond the springs, adequate spacing between the springs, and the assemblies coated with bakelite varnish, possibility of current leakage and consequent electrolytic action is removed.

The gongs to the ringer give different tones that result in a pleasing signal. The fixing screws of the gongs also secure the dial-mounting bracket, which is held rigid by a third attachment, made to the base. The terminal strip terminates line wires,

handset cord and dial cord on screw terminals that are separated from each other by moulded insulators to prevent surface leakage. Prevention of leakage is also the reason for the use of rubber coverings to the ends of the dial-cord insulation, which, since it may be in contact with the terminals, might form a conducting path by moisture absorption if textile coverings were used.

The handset cord passes through a tight-fitting rubber bush, which anchors the cord to the terminal strip (Figs. 4 and 6). Not only are the conductors thus relieved of the strain attendant upon any direct pull, but the point of entry into the telephone is effectively sealed and the cord is given maximum flexibility without any possibility of frayed braiding.

In many telephones the binding to the handset cord at the transmitter end tends to fray. The Gecophone itself has not

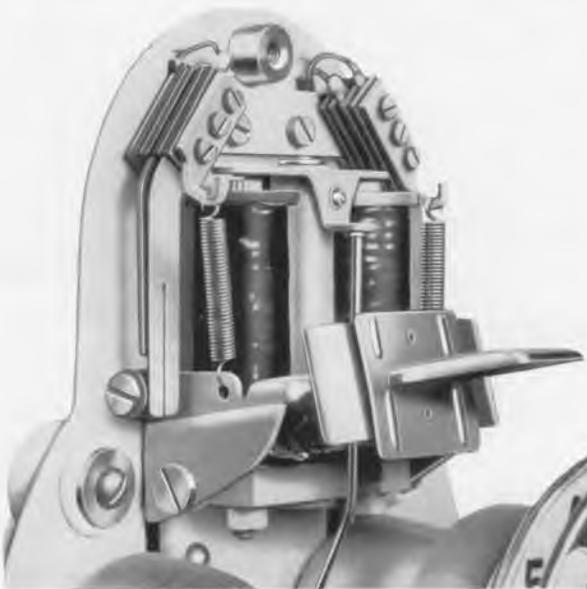


Fig. 3.—Cradle switch.



Fig. 4.—Terminal strip on Muraphone, Cat. No. 89.

been entirely free of this trouble, but a modification incorporated some time ago in the Gecophone is included also in the new wall set to remove this tendency. In the original design, the binding held the braiding and protected it at the point where it passed through the handset moulding. It inevitably, however, reduced flexibility at this point, which is that of maximum bending. By fitting a new anchor plate within the handset moulding, the binding has been brought entirely within the handset (Fig. 5), where it cannot fray. The cord has full flexibility where it passes through the bakelite, and this fact, together with the properties of the cotton used for the braiding, has been proved by life tests to render unnecessary the degree of protection against chafing previously given by the binding.

On sets intended for tropical service, the cord conductors are insulated with vulcanised indiarubber and are therefore moisture-proof. The tinsel is of the quality that withstands 200 000 reciprocations without fracture.

The line wires pass through a rubber-bushed hole in the base and are then secured to the screw terminals. In an alternative arrangement, however, which is incorporated in Muraphone Cat. No. 89A, plungers are fitted to the terminal strip as shown in Fig. 6, and are strapped to the line terminals. The line wires are connected to a terminal strip (Fig. 7), which may be fixed and wired in position on the wall. With the telephone itself then fixed, the plungers make connexion with the terminals, and the circuit is complete. The use of the terminal strip is particularly favoured on ships and by architects of new buildings because it enables concealed line wiring to be run and neatly terminated in positions where telephones may not be required initially but are expected to be required at a later date. An unused terminal strip is provided with a clip-on cover. The arrangement also permits, of course, a telephone suspected of faulty operation to be removed by unskilled labour and a spare



Fig. 5.—Anchorage of handset cord.



Fig. 6.—Plunger-type terminals of Muraphone, Cat. No. 89A.

substituted. This method of terminating the line wires is the only difference between Muraphone Cat. Nos. 89 and 89A.

An additional feature that finds favour on board ship in particular, is that rubber feet pass through the base and provide substantial mechanical insulation between fixing screws and base. When the telephone is fitted to a bulkhead, therefore, the sound from the bell (or the buzzer that may replace it) is not amplified by mechanical resonance and passengers in an adjoining cabin are not disturbed.

Circuit.

The circuit (Fig. 8) is that of the Gecophone, giving high transmission efficiency and maximum suppression of side-tone. The extent of the suppression is shown by independent tests that reveal sidetone in the Gecophone circuit to be less than



Fig. 7.—Terminal strip used with Muraphone, Cat. No. 89A.

British Post Office standards by at least 3 db and as much as 13.5 db, the actual figure depending upon the length and type of line. This suppression gives a corresponding increase in intelligibility, which is the real measure of efficiency in a telephone circuit.

The induction coil carries a special winding, which is connected as an inductive shunt across the transmitter. In thus regulating transmitter current the possible adverse effect of severe climatic or similar service conditions upon the granules is minimised and a contribution made to longer life than might otherwise be obtained. Owing to the nature of the winding and its position in the circuit, the effect is achieved without the degrading of transmission that would result if a purely non-inductive shunt were employed.

The induction coil also conveniently carries a non-inductive winding which is associated with the condenser to provide an effective spark-quench circuit across the dial impulse springs.

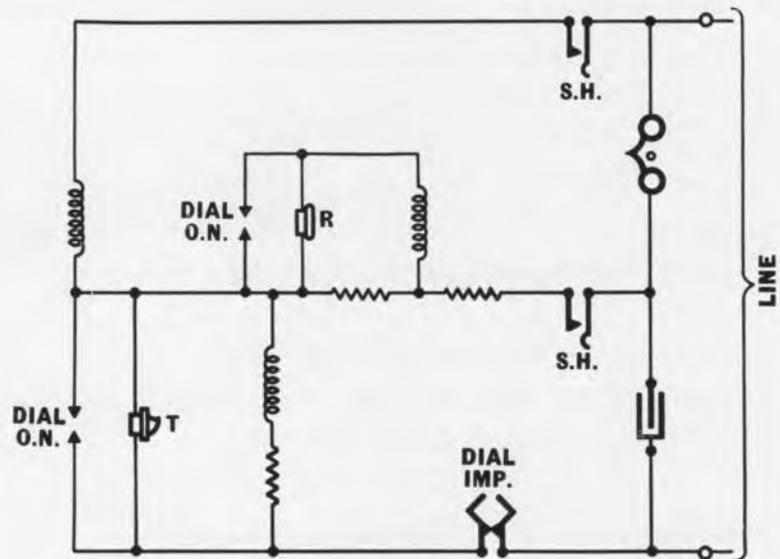


Fig. 8.

Alternative Types.

The Muraphone is available for automatic systems or C.B. manual systems. The removal of the dial dummy followed by the fitting of a dial and connexion of the dial cord converts the manual into an automatic telephone. When the mouldings are black, the dial finger plate is of stainless steel and the other external metal parts are chromium-plated. For use on board ship, and for other special purposes, ivory-coloured mouldings are often favoured, the finger-plate being then enamelled to match and the other metal parts being gold-plated.