

The present invention relates to telephone instruments and more particularly to the transmitter parts used in telephone instruments. It is especially applicable to the transmitter parts used with hand micro-telephones.

In order to obtain efficient transmission of speech the diaphragm of the transmitter and consequently the mouthpiece should be as large as is practicable and at the same time the transmitter with its mouthpiece requires to be close to the user's mouth. A limit is thereby imposed on the size of the transmitter chamber and in order to permit the use of the largest practicable diaphragm, the provision of means for fixing the mouthpiece must not involve any substantial increase in diameter over that of the chamber housing the transmitter. Other considerations governing this size are the desirability for providing means to prevent rotation of the mouthpiece and the desirability from the maintenance point of view of avoiding as far as possible the use of fixing screws.

In the present invention the transmitter chamber is provided with a metal guard ring over which the mouthpiece is fitted, the ring being provided with parts which engage with the interior of the mouthpiece. The mouthpiece is correspondingly formed to receive the engaging parts.

In carrying out the present invention the transmitter chamber is provided with a short metal cylinder or ring having circumferential tongues of hard and springy material projecting from its periphery adapted to enter grooves in a mouthpiece of insulating material when the latter is pushed over the ring which is a close fit inside the face of the mouthpiece.

The grooves in the mouthpiece are L or T-shaped, the longer limb being a circumferential groove in the wall of

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the mouthpiece base of a less depth than the other limb which the projecting tongues on the ring enter so that on rotating the mouthpiece they are sprung slightly inwards to hold the mouthpiece rigidly on the ring. The length of the grooves is such as to provide locating means for the mouthpiece. One of the grooves may be deepened at its end, the increase in depth being in the nature of a step and the corresponding tongue in the ring may have a square shoulder so as to engage the step and lock the mouthpiece in its correct position. A small hole in the mouthpiece opposite this point may be provided for the insertion of a metal stud to free the tongue when it is desired to remove the mouthpiece. Alternatively the mouthpiece may be locked to the ring by means of a screw passing through the mouthpiece into a tapped hole in the ring.

In the preferred modification the locking tongue faces the opposite direction to the other tongues, the tongues being circumferential, and when the mouthpiece is in its correct position for use, this tongue enters a recess in the corresponding groove, the recess having a sharp shoulder which prevents rotation of the mouthpiece in the backward direction.

In the application of the invention to a hand micro-telephone in which the transmitter chamber is of insulating material the metal ring may be moulded into the chamber wall.

The projecting tongues which are conveniently three in number, are preferably formed by pressing them out from the ring and where the locking tongue engages the stepped grooves, the insulating material of the mouthpiece may be strengthened by a metal insertion moulded in.

The axis of the transmitter chamber may be set at an

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angle with the centre line of the handle portion of the set, the angle being somewhat less than a right angle. The sound receiving chamber or horn may be cup-shaped and set at an angle of approximately  $45^{\circ}$  with the transmitter chamber. The cup has preferably a base integral with the walls and perforated with holes in a suitable manner.

Using the method of the present invention the external diameter of the mouthpiece is substantially the same as that of the transmitter chamber and there are no exposed metal parts on the outside of the set.

Reference will now be made to the accompanying drawings which should be taken in conjunction with the following description in order that the invention may be better understood.

The drawings show one embodiment of the invention as applied to the transmitter of a hand micro-telephone set. The transmitter of the present example is one wholly composed of insulating material, there being no external metal parts.

The application of the invention to such an instrument enables the length of the hand micro-telephone to be kept short as there are no large flanges necessitating an increased length in order that they shall not come into contact with the user's chin, thereby removing the transmitter to a greater distance from the mouth with consequent loss of efficiency.

In the drawings, Fig. 1 shows a side view of a hand micro-telephone, Figs. 2 and 3 both show the same view of the transmitter looking down upon it with only the flange of the mouthpiece in place, but Fig. 3 shows the method of unlocking the mouthpiece. Fig. 4 shows a perspective view of the transmitter with the mouthpiece in a position for attachment.

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The numeral 1 denotes the transmitter end; 2 the receiver and 3 the connecting handle. 4 is a cylindrical metal ring which is secured inside the wall of the transmitter chamber 5, or it may be moulded into the chamber and stands up from it. A number of circumferential tongues are pressed out from the ring. These are designated 6, 7 and 8 in the figure.

One of the tongues 6 faces in the opposite direction to the others and forms a locking tongue.

In the inside of the wall of the mouthpiece are formed grooves, adapted to receive these tongues. The grooves are L shaped, the longer limb 9 being circumferential and of a less depth than the other limb 10. The grooves corresponding to the locking tongue 6, has a recess 11 at its end of substantially the same depth as the shorter limb of the groove.

To attach the mouthpiece to the transmitter chamber, it is held over the transmitter chamber so that the grooves 10 are over the tongues pressed out from the ring 4. It is then pushed over the ring 4 so that the projections 6, 7, 8 enter the parts 10 of the grooves in the mouthpiece flange. The mouthpiece is now rotated in a clockwise direction, and the tongues are sprung inwards and enter the shallower parts 9 of the grooves. On continued rotation, the tongues 7 and 8 come against the ends of the grooves preventing further rotation. At the same time the tongue 6 springs into the deeper recess 11 of the groove 9 and is engaged by the sharp shoulder 12 which prevents backward rotation of the mouthpiece. The mouthpiece is now locked in its operating position.

To remove the mouthpiece a pin or similar object is inserted in a hole in the mouthpiece wall opposite recess 11 and on pushing the pin with the finger as

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shown in Fig.3 the tongue 6 may be pressed into the portion 9 of the groove, clear of the shoulder 12 and the mouthpiece may be then rotated in an anti-clockwise direction, until all the tongues spring into the deep part 10 of the groove, when it may be pulled off the ring. It is not essential that there should be only three tongues. Any other convenient number may be provided, and there may be more than one locking tongue.

The mouthpiece has a base integral with the walls and perforated with holes.

The axis of transmitter chamber is set at an angle with the centre line of the handle portion 3 the angle being somewhat less than a right angle and the mouthpiece is cup-shaped and set at an angle of approximately  $45^{\circ}$  to the transmitting chamber.