Aug. 11, 1931. D. S. S. STEUART 1,818,654

MOUTHPIECE ARRANGEMENT FOR USE WITH TELEPHONES AND THE LIKE

Filed May 24, 1930 4 Sheets-Sheet 1

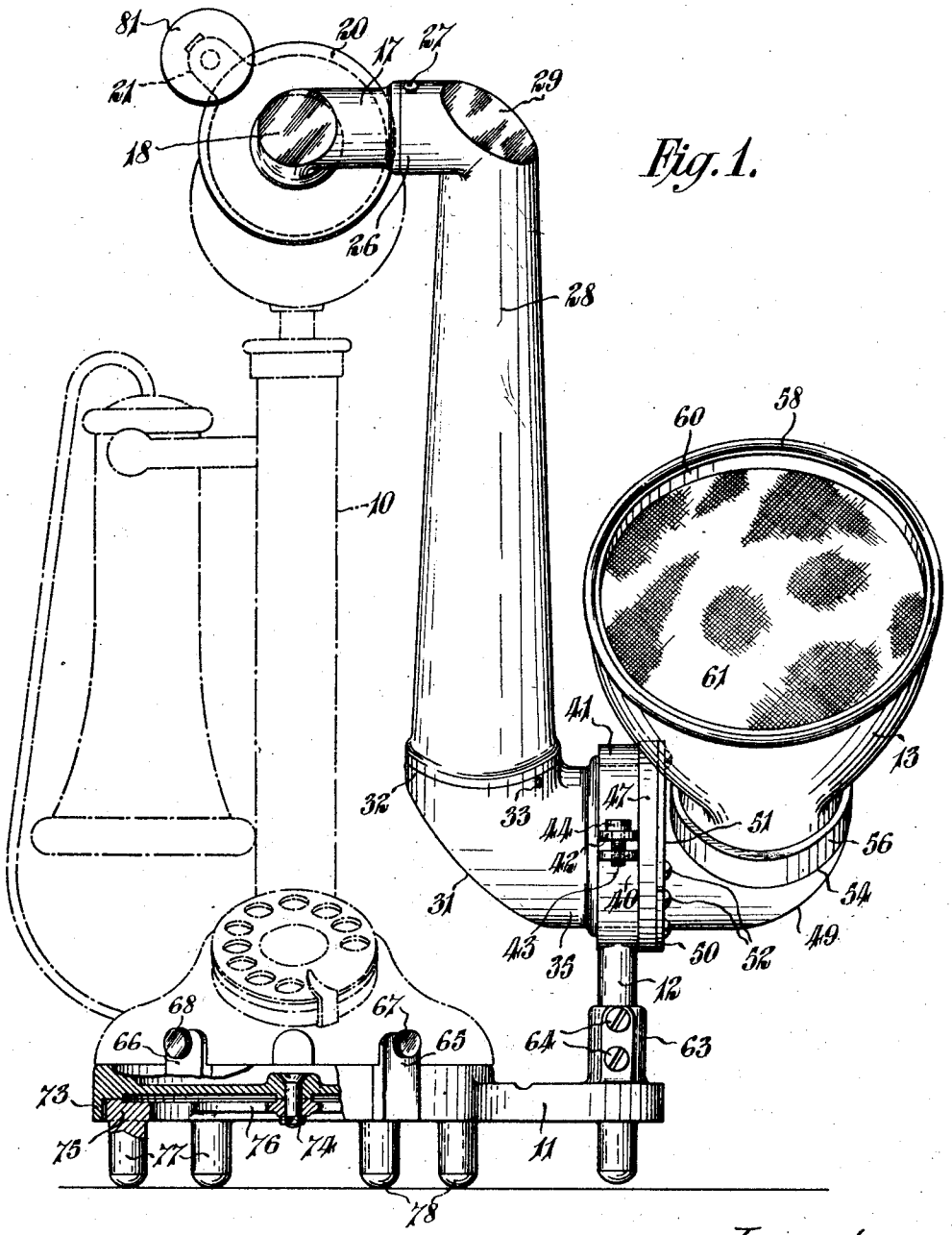


Fig. 1.

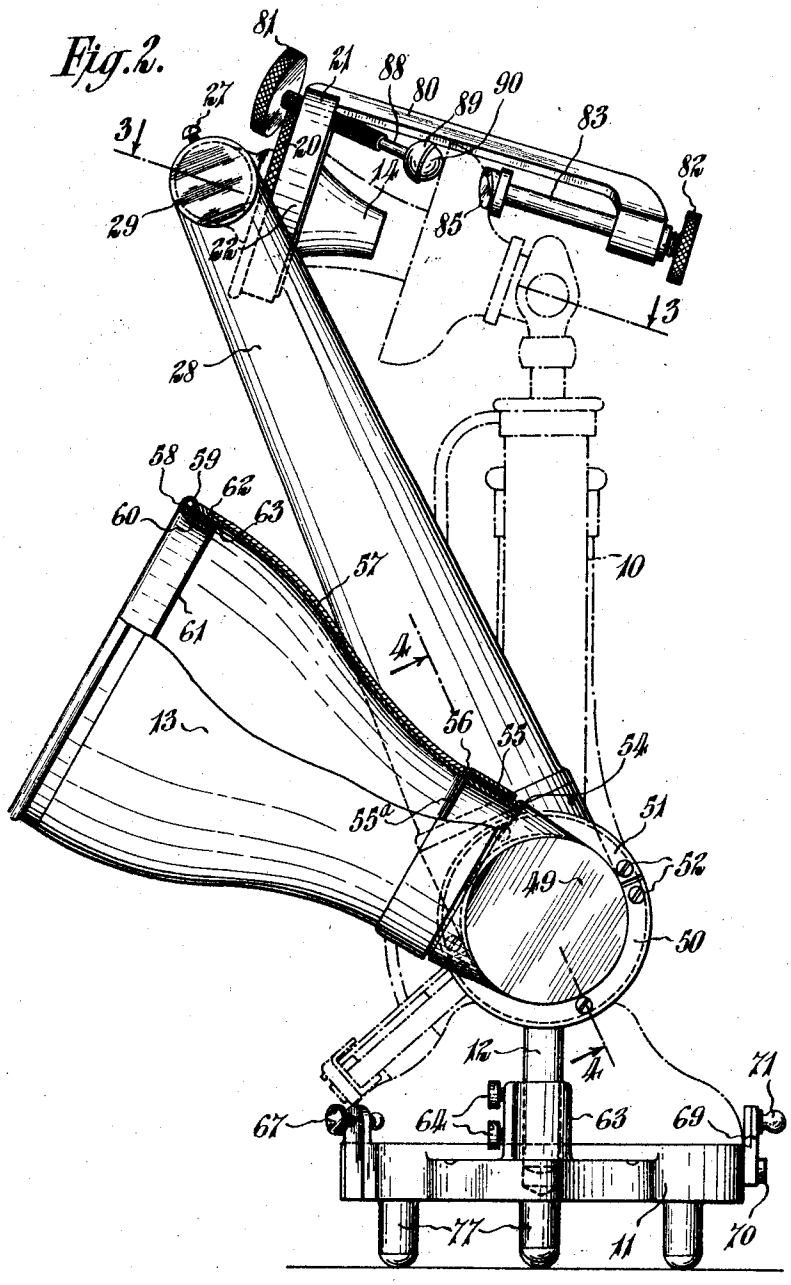
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MOUTHPIECE ARRANGEMENT FOR USE WITH TELEPHONES AND THE LIKE

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Fig. 2.



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MOUTHPIECE ARRANGEMENT FOR USE WITH TELEPHONES AND THE LIKE

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Fig. 3.

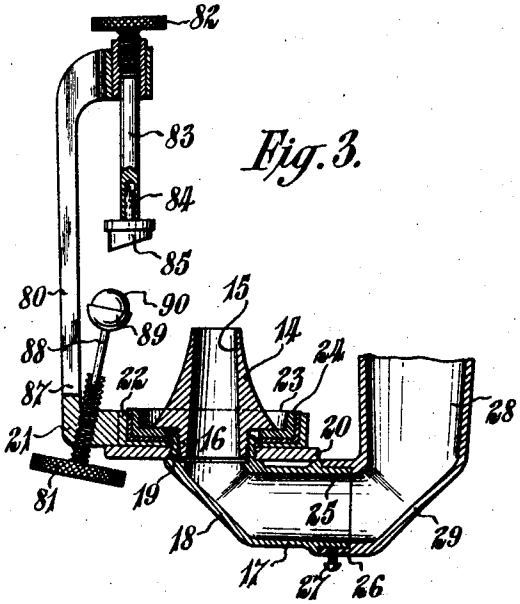


Fig. 4.

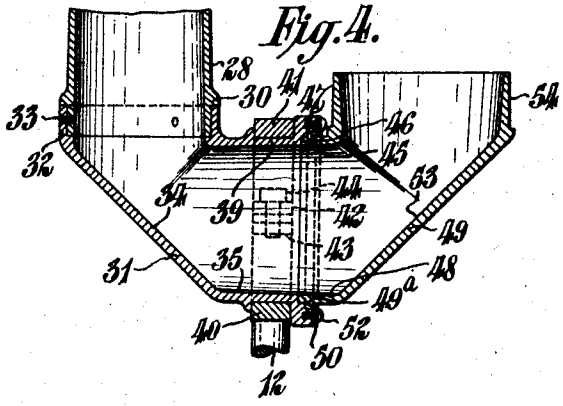


Fig. 5.

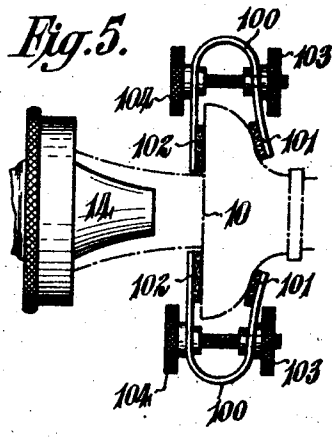


Fig. 6.

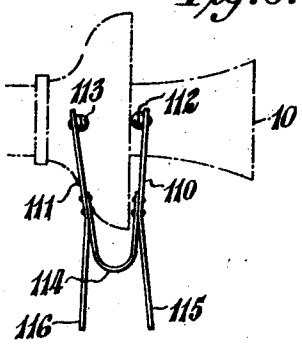
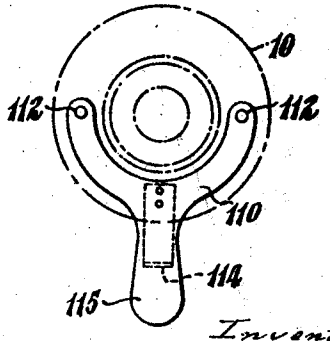


Fig. 7.



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MOUTHPIECE ARRANGEMENT FOR USE WITH TELEPHONES AND THE LIKE

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Fig. 8.

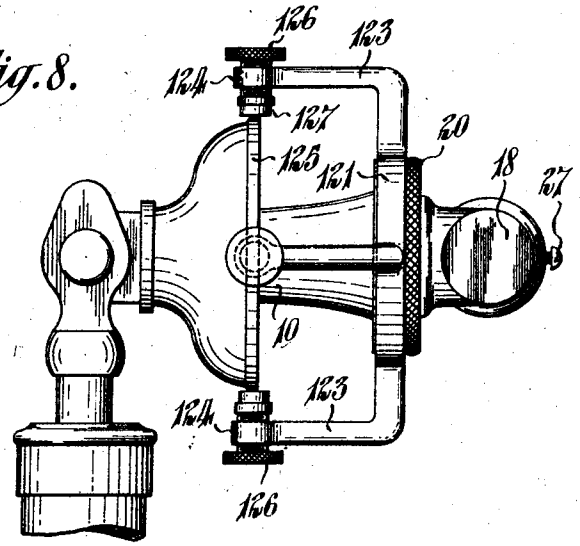
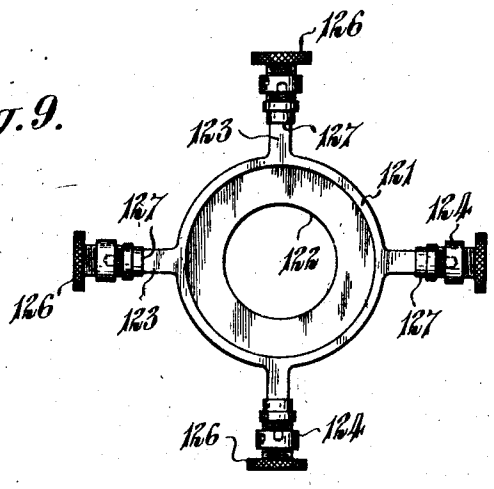


Fig. 9.



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Patented Aug. 11, 1931 1,818,654

UNITED STATES PATENT OFFICE

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MOUTHPIECE ARRANGEMENT FOR USE WITH TELEPHONES AND THE LIKE

Application filed May 24, 1930, Serial No. 455,419, and in Great Britain May 28, 1929.

The present invention concerns improvements in or relating to arrangements for use with telephone instruments and, more particularly, telephone instruments of the desk or wall types. The usual types of telephone instrument, as used in the public telephone service, are those known as the wall type and pillar type desk set and, while the invention will be described with relation to the pillar desk set, it will be understood that the features of the invention are equally applicable to other constructions of telephone of the type having a fixed transmitter. At present it is usual in these types of telephone to bring the mouthpiece of the instrument very close to the lips of the user and as only a short mouthpiece is provided it is necessary to bring the instrument right in front of the user.

The present invention has in view an arrangement to enable a user to speak into the telephone without bringing the telephone in front of him or bringing his lips to the mouthpiece, so that the mouthpiece can be at a convenient distance away to enable him to write down messages received over the telephone or to dictate messages over the telephone from papers on his desk.

A further object of the invention is to avoid the mouth of the user being brought near the mouthpiece and to thereby reduce the danger of infection, while at the same time it ensures efficient sound transmission so as not to interfere with the efficiency of the public telephone service. In fact, it is found to increase the efficiency.

One of the features of the invention is that a tapering passage extends from an adaptor which fits into the mouthpiece of a pillar type telephone having a bell or cup-shaped opening, said passage being formed with a number of straight parts and having an inner surface which will not absorb sound to any marked extent.

Conveniently, the passage between the adaptor and the mouthpiece may be formed of a series of straight intermediate tubes provided with sound reflecting surfaces adapted to reflect sound waves which are received from one tube in longitudinal direction down the next tube.

A second feature of the invention is that the enlarged mouthpiece is arranged to have its open end facing upwards towards the mouth of the user, and for this purpose the lower end is supported just above the base of the telephone so that, when placed on a desk, the user need not lift up his hand when reading or writing, the mouthpiece being so situated as to efficiently catch the sound waves proceeding from his mouth.

In using instruments with large mouthpieces according to the invention it is important that foreign noises should be cut out and it is found that this can be effected, according to a further feature of the invention, by providing adjustable means for exerting pressure on selected parts of the front and back of the transmitter casing.

According to a further feature of the invention a stand mounted on a base is provided which carries the mouthpiece and the interconnecting tubes extending to the adaptor, the mouthpiece being adapted to rotate in a vertical direction with relation to the tubes, while the stand is adapted to rotate in a horizonal direction so as to permit of the mouthpiece being adjusted to any desired position.

A further feature of the invention consists in the provision of adjustable means by which the adaptor which fits into the mouthpiece of a known type of telephone can be caused to connect therewith in an air-tight manner, without necessarily being attached thereto.

These and other features of the invention will be better understood by referring to the accompanying drawings in which:

Figure 1 shows the front view of the novel mouthpiece and stand according to the invention with the stand partly in section.

Figure 2 shows a side view of the mouthpiece partly in section.

Figure 3 shows a section on the line 3—3 of Figure 2, looking in the direction of the arrows, which also illustrates one form of side tone eliminator.

Figure 4 shows a part section on the line

4—4 of Figure 2, with the mouthpiece parallel to the vertical tube.

Figures 5, 6 and 7 show alternative arrangements for eliminating side tone to that shown in Figures 2 and 3.

Figures 8 and 9 show an alternative arrangement which may be used either for amplifying speech sound waves or for eliminating side tones.

Referring to Figures 1 and 2, a pillar type telephone 10 of well known construction is shown resting on a stand 11 from which a pillar 12 is supported, the pillar 12 serving as a support for the mouthpiece 13 and a tubular arrangement which terminates at its upper end in an adaptor 14 for engaging with the usual mouthpiece of a pillar type telephone such as 10 without its being attached thereto.

The construction of the adaptor 14 and the manner effecting its engagement with the mouthpiece of a pillar type telephone will be better understood by referring to Figure 3. The adaptor 14 which is shown in section is made of metal, bakelite, ebonite or any similar material shaped on its outside so as to conform to the inside of the mouthpiece of a pillar type telephone so that when fitted in the mouthpiece it fits snugly. Passing through the adaptor 14 is a hole 15 which tapers slightly so as to be slightly larger at the outside than at the transmitter end.

The adaptor on the outside of the mouthpiece is provided with an extension 16 which is threaded on the outside. On this threaded portion 16 a tubular member 17 is screwed. This tubular member has a cross section as shown in Figure 3, the wall 18 being inclined at an angle of approximately 45° to the axis of the hole 15 so that sound coming from the right of the tubular member 17 and striking against the wall 18 would be reflected in a direction parallel to the axis of the hole 13 of the adaptor 14 so as to affect the transmitter.

The inner surface of the hole 15 and the tubular member 17 are made substantially continuous so as to avoid any losses due to irregular surfaces. At the same time there is a gradual contraction of the cross sectional area as will be seen from the comparative diameters of the horizontal portion 17 and of the lower end of the hole 15.

The portion 19 of the tubular member 17 which is threaded on its inner portion to engage with the extension 16 is also threaded on its outer side as shown and on which is screwed a milled edged washer 20. A casing 21 of aluminium or the like is provided with a cup-shaped portion 22 having a hole which passes over the outer thread 19, and in which is adapted to be placed a metal cup 23 containing a rubber member 24 of cross section as shown.

It will be understood that the milled washer 20, the casing 21, the metal cup 23 and the rubber 24 are placed over the outer thread 19 before the adaptor 14 is screwed by its extension 16 to the portion 19 of the tubular member 17. It will be readily appreciated that this amount of screwing can be varied as desired so as to permit of adjustment. This adjustment serves to ensure that when the adapter 14 is placed in the mouthpiece as will be described later, the adjustment of the milled washer 20 serves to render the contact between the adaptor and the mouthpiece, both sound-proof and air-tight, thus avoiding any loss in the efficiency of sound transmission which would ensue if there was a leak to the atmosphere.

It has been found that the ordinary telephone transmitter is most efficient when inclined at an angle of 25° to the vertical with the mouthpiece facing upwards. The arrangement just described enables the adjustment of the adaptor to the mouthpiece to be readily made with the transmitter at this angle.

The horizontal portion of the tubular member 17 is provided with a flanged extension 25 over which fits a recessed portion 26 of a second tubular member 28. The tubular members fit fairly tightly together and a screw 27 prevents relative rotation after the requisite adjustment has been made. This tubular member 28 has a section at its upper end as shown in Figure 3, the lower end 28 being shown in section in Figure 4, the outside view being clearly visible in Figure 1. This tubular member 28 is provided with a flattened surface 29 inclined substantially at an angle of 45° to the horizontal portion of the tubular member 17 so that sound transmitted parallel to the axis of the tubular member 28 will strike the surface 29 and be reflected in a horizontal direction along the tubular member 17 to the surface 18. The tubular member 28 is tapered as shown so that there is a contracting cross section for the sound waves and at its lower portion the tubular member is provided with a flanged extension 30, Figure 4, similar in general design to the flanged member 25.

The third tubular member 31 having a recessed portion 32 is arranged to fit over the extension 30 in the manner shown and is secured against rotation by a screw 33. This tubular member 31 has another flat surface 34 arranged substantially at an angle of 45° to the axis of the tubular member 28 so as to reflect sound waves received from the right along the member 28 to the surface 29.

The horizontal portion 35 is especially shaped having a grooved portion 39 which is adapted to fit into a half annular portion 40 integral with the pillar 12 and is secured therein by a half annular member 41, the two half annular portions being provided with flanges 42 and 43 through which screws 44

pass to secure the two half annular portions together. The portion 35 in addition to the grooved portion 39 on its outer side is provided with grooved portions 45 and 46 on the inner side of an extension 47 having an enlarged diameter. Into these grooves the portion 48 of a fourth tubular member 49 is fitted, this portion 48 having a stepped ring 49a on its outer surface adapted to engage in the groove 46. The tubular member 49 is secured to the tubular portion 31 by two portions 50 and 51 of a split washer. These portions serve to embrace the stepped portion 49a and are secured by screws 52 to the enlarged portion 47 of the tubular member 31. The arrangement is such as to permit the tubular member 49 to rotate with a certain amount of friction relatively to the tubular member 31. The tubular member 49 is also provided with a flat surface 53, which flat surface is inclined approximately at right angles to the surface 34 so as to reflect sound waves received parallel to the axis of the mouthpiece 13 in a horizontal direction to the surface 34. The upper portion of the member 49 is provided with a flanged extension 54. Over this extension is fitted a rubber or cork ring 55 which can best be seen from the sectional view in Figure 2. On the outside of the rubber or cork ring and stretched across the opening in the tubular member 49 is an openly woven silk diaphragm 55a which is rendered taut when the portion 56 of the mouthpiece 13 is forced over the outside.

The effect of the forcing of the member 56 over the rubber or cork ring and the silk is to ensure the mouthpiece sufficiently tightly in position on the flanged extension 34 and it also serves to prevent undue resonance of the mouthpiece. The mouthpiece 13 is shaped as shown so that at its inner end the cross section expands in a similar way to the manner in which the cross section has been expanding from the transmitter itself. At a distance along the mouthpiece there is a change, however, so that at the actual outer end of the mouthpiece the taper is not as great as at the intermediate portion.

For convenience such a shape of mouthpiece is termed bell shaped or cup shaped from its somewhat resembling these articles at its outer end, and it will be appreciated that this description only applies to the outer part of the mouthpiece and not to the whole of the mouthpiece.

The mouthpiece is conveniently made of spun metal and, as shown, is provided with an outer lining 57 of cork or like sound-proof material, the object being to ensure that there will not be "blasting" due to sound resonance and side tone penetration affecting the metal mouthpiece 13.

It might be desirable to have a still further inner lining of cork so as to prevent any possible "blasting" due to speaking too loudly and too close to the mouthpiece.

It will be understood that while cork is mentioned any other suitable sound insulating lining could be provided. An alternative arrangement is that the aforesaid tubular members are made of bakelite, and the mouthpiece member 13 and the member 49 may then be moulded in one piece.

On the outer end of the tubular mouthpiece is provided a ring 58. The ring has a curved edge 59 and an inner cylindrical portion 60, a diaphragm 61 of openly woven silk similar to the diaphragm 55a is secured in position on the ring by a second metal ring 62 which just fits over the ring 60 and in being placed in position draws the diaphragm 61 taut.

On the outer side of the ring 62 is a rubber or cork ring 63 which, being interposed between the outer side of the ring 62 and the inner surface of the mouthpiece 13 serves to secure the ring 60 in position and prevents undue resonance of the mouthpiece. The purposes of the diaphragms 61 and 55a are to reduce echo and "blasting".

The pillar 12 extends into a socket 63 forming part of the casting of the stand 11. The arrangement is such that the height of the pillar 12 can be adjusted, screws 64 being provided for securing the pillar 12 in the best position.

The stand 11 is provided with two vertical extensions 65 and 66 provided with milled headed and rubber-tipped positioning screws 67 and 68 respectively and with a pivot arm 69 which is secured by a screw 70 and is provided with a knob 71 to facilitate it being moved up and down as required.

While the pillar type telephone is being placed on the stand it is convenient to have the arm 69 lying flat with the stand 11, but before positioning the pillar type telephone it would be raised to the position shown in Figure 2 of the drawings and would serve as a back stop for positioning the telephone when the positioning screws 67 and 68 are in contact therewith. By this means it will be appreciated that the pillar type telephone will always tend to be maintained in one definite position on the stand without its being attached thereto.

The stand 11 is also provided with a downwardly depending wall 73 and with a central pivot 74. About this central pivot 74 a wheel shaped base 75, having spokes 76 and carrying on its outer rim elongated legs 77, is adapted to rotate. These legs are provided at their lower extremities with rubber buffers 78 so as not to damage the furniture and to give a friction tight grip on the table.

In this construction as no ball race is provided there is sufficient friction in the relative movement of the stand 11 to the base 75 as to ensure that during dialling there will be no movement of the instrument, although it

is quite feasible to turn the instrument right round without any difficulty on its stand.

On the casing 21 it will be noted that there is a bracket member 80, see Figure 3, and secured at each end of the bracket there are milled headed screws 81 and 82 respectively. The milled headed screw 82 has an extension 83 carrying an insert 84 at its lower end which is provided with a rubber buffer 85. The lower milled headed screw 81 is hollow at its lower end and in this hollow is fitted a spring 87 and a rod 88 having a cup-shaped extension 89 containing a rubber ball 90. These rubber members 85 and 90, as shown in Figure 2, are arranged to press on the front and the back of the transmitter casing. It is found that when these are placed in a suitable position and suitably adjusted as regards pressure on the casing that foreign sounds are prevented from reaching the transmitter microphone without affecting the efficiency of the speech transmission proper and consequently the overall efficiency of speech transmission is increased considerably, particularly when one endeavors to speak in noisy situations where there is traffic, moving machinery, or the like.

An alternative arrangement for bringing about this result is shown in Figure 5, which consists of a **C** or **U** shaped steel spring 100 having rubber pads 101 and 102 adapted to press on the front and rear of the transmitter casing, the pressure of the spring being normally such as to exert an excess of pressure on the transmitter casing.

The milled headed screws 103 and 104 are provided for permitting the adjustment of the pressure to that found most suitable according to the particular locality and the particular instrument employed. Such an adjustment would, of course, readily be made by simply listening to the side tone on the receiver when no conversation is proceeding. It is found that in certain positions amplification of the side tone and of the actual speech may be effected and this may be of advantage in quiet locations. It will be understood, therefore, that the easiest adjustment for any location can best be determined in the location itself by actual test of the different positions and pressures.

It has been found that a pair of springs arranged diametrically opposite to each other as shown in Figure 5 produce enhanced effects.

An alternative device to that shown in Figure 5 is illustrated in Figures 6 and 7. This side tone eliminator consists of a pair of forked arms 110, 111, the ends of which are provided with rubber pads 112, 113, the arms are hinged together by a spring 114 which exerts pressure so as to tend to bring the rubber padded ends 112 and 113 together. Handles 115 and 116 are provided for opening the forked arms as normally held closed by the spring 114.

The device is slipped on the transmitter casing, as shown, so that the pads 112 and 113 are at diametrically opposite points, the best position must, of course, be found by trial as before described.

An alternative device which may be used either for amplifying speech sound waves or for eliminating side tones is shown in Figures 8 and 9. The device comprises a flanged disc 121 having a central hole 122 and two pairs of arms 123 positioned at right angles to one another. Each arm 123 is bent at right angles and terminates with a screw-threaded boss 124, each boss is provided with a knurled headed screw 126, the terminal end of which is provided with a rotatable cup containing a rubber pad 127.

In use the device is fitted to the tubular member 17 by means of the milled washer 20 and the adaptor 14 in a similar manner to casing 21, see Figure 3.

When the telephone mouthpiece 10 is placed in position over the adaptor 14 the rubber pads 127 of the screws 126 at the ends of the arm 123 are in position around the rim 125 of the transmitter casing. The disc is now rotated until each pad 127 of a pair of diametrically disposed arms are adjacent the ends of the transmitter bridge in the casing 125, and the other two pads are positioned at right angles thereto.

When it is desired to amplify the speech sound waves, the pads at the ends of the transmitter bridge are tightened to exert the necessary pressure on the rim 125 of the casing at the point supporting the bridge, and when it is desired to eliminate extraneous noises, the pads at the ends of the bridge are screwed back and the remaining pair of pads are tightened instead, so as to exert pressure at points at right angles to the former pair.

In order to explain the operation and the method of using the instrument, it will be assumed in the first case that the pillar type telephone is not on the stand. To apply the pillar type telephone to the instrument, all that is necessary is to position it in the stand in the manner already described by means of the positioning screws 67, 68 and the arm 69. The adaptor 14 is then placed in the mouthpiece of the instrument and adjusted so as to lie snugly in the mouthpiece and, if any adjustment is required of the pillar 12, this can be made. To secure an efficient sound-proof contact the milled headed nut 20 is then tightened up. It is assumed during this time that the screws 81 and 82 are screwed well back so as not to interfere with the operations which have been described. It is then possible to adjust the pressure of the members 85 and 90 on the transmitter casing by simply lifting the receiver, listening to the side tone in the locality, and turning the screws 81 and 82 accordingly.

It will be understood that the instrument

according to the invention can be applied to any pillar type telephone in any situation and each telephone and each situation will require its own adjustment.

Having placed the telephone into position without in any way affecting the public exchange instrument, it will now be possible to use the instrument. The pillar type telephone may be placed with the mouthpiece 13 about a foot away from the speaker and adjusted so as to face towards the mouth of the speaker. While a foot is mentioned as the best distance, this will depend upon the individual speaker and, furthermore, it should be noted that speech has been found to be effectively transmitted from as far as the receiver cord will reach, if not further. It is possible, therefore, to have the telephone about a foot to 18 inches away from the user while leaving the desk in front of him quite free. The sound waves from the speaker's voice which reach the mouthpiece pass down the mouthpiece, resonance and "blasting" effects being prevented by the cork lining and rubber or cork pressure rings, and these sound waves strike against the surface 53 of the tubular member 49. As this surface is substantially at an angle of 45° to that of the sound waves, these will be reflected on to the surface 18 and thence down the opening 15 to the orifice of the telephone.

This arrangement is found to transmit speech very efficiently and, therefore, enables the speaker to speak at a considerable distance from the telephone.

It will be noted that the arrangement of the surface 53 is such that whatever the relative positions of the mouthpiece 13 and the tubular member 28 it will always reflect the sound waves received from the mouthpiece on to the surface 34 in such a direction that the surface 34 will again reflect them along the tubular member 28. This secures the most efficient and pure transmission of speech.

It is possible with the instrument to adjust the mouthpiece to any desired position. If adjustment is required in a vertical plane, this can be done simply by rotating the mouthpiece 13 with the tubular member 49 in a vertical plane, for instance, the mouthpiece 13 can be turned towards a speaker at the other side of the table or desk to the speaker usually using the instrument. On the other hand, if the one who is to use the telephone is at the side of the table, then it is possible to make the required adjustment by rotating the whole instrument on the stand 11.

If a speaker who is at the side is also standing by a table, a double adjustment becomes necessary as will be readily understood, this is possible by means of the invention in this case moving both the mouthpiece 13 and the stand 11.

It is possible with an instrument such as has been described, to have the instrument located between two persons who are using the same desk and it is not necessary for either of the persons to move the telephone from the position in which it may be fixed. This has the advantage that both parties can each speak on the telephone and can both read and write at the same time, and the only manner in which the hands are bound is to place the receiver to the ear.

It will be understood that the invention has been described by way of example only, but considerable modifications can be made in the constructional details without departing from the spirit of the invention.

What I claim is:

1. An arrangement for enabling a pillar or wall type telephone to be used efficiently while enabling the user to speak at a distance, comprising an adaptor for fitting into the mouthpiece of the telephone, an enlarged mouthpiece having a bell or cup-shaped opening and a tube connected at one end to the adaptor and at the other to the enlarged mouthpiece and having a non-sound absorbing inner surface forming a tapering passage between the adaptor and the enlarged mouthpiece, said tube being formed of a number of straight parts.

2. An arrangement for enabling a pillar or wall type telephone to be used efficiently while enabling the user to speak at a distance comprising an adaptor for fitting into the mouthpiece of the telephone, an enlarged mouthpiece having a bell or cup-shaped opening and a tube connected at one end to the adaptor and at the other to the enlarged mouthpiece and having a metal inner surface forming a tapering passage between the adaptor and the enlarged mouthpiece, said tube being formed of a number of straight parts.

3. An arrangement for enabling a pillar or wall type telephone to be used efficiently while enabling the use to speak at a distance, comprising an adaptor for fitting into the mouthpiece of the telephone, an enlarged mouthpiece and a series of straight inter-connected tubes connecting the adaptor to the mouthpiece and provided with sound reflecting surfaces adapted to reflect sound waves which are received from one tube in a longitudinal direction down the next tube.

4. An arrangement for use with a desk or table telephone transmitter comprising an enlarged mouthpiece, a tube connecting said mouthpiece to said transmitter and having a passage for efficiently transmitting sound and means for supporting said mouthpiece so that its lower end is supported just above the base of the telephone and its open end faces upwards towards the mouth of the user.

5. An arrangement for use with a pillar type telephone comprising a stand, a pillar extending from said stand, an enlarged

mouthpiece, an arrangement of interconnected tubes terminating at one end in said mouthpiece and arranged to be supported by said pillar, an adaptor in which the other end of said tubes terminate and shaped so as to fit into the mouthpiece of a pillar type telephone mounted on said stand and means for enabling said mouthpiece to be rotated in a vertical plane.

6. An arrangement for use with a pillar type telephone comprising a stand, means for positioning a pillar type telephone on said stand, a support connected to said stand, an adaptor, an enlarged mouthpiece and an interconnecting tube having a passage for efficiently transmitting sound from said mouthpiece to said adaptor, all carried by said support and adjustable means by which the adaptor can be caused to connect with the mouthpiece of the telephone in an air-tight manner.

7. An arrangement for enabling a pillar or wall type telephone to be used efficiently while enabling the user to speak at a distance, comprising an adaptor for fitting into the mouthpiece of the telephone, an enlarged mouthpiece having an elbow, a series of straight interconnected tubes connecting the adaptor to the mouthpiece and provided with sound reflecting surfaces adapted to reflect sound waves which are received from one tube in a longitudinal direction down the next tube, and means for rotatably mounting said elbow on a horizontal tube of said series so as to permit of said mouthpiece being moved in a vertical plane.

8. An arrangement for use with a desk or table telephone transmitter comprising an enlarged mouthpiece having an elbow, a tube connecting said mouthpiece to said transmitter and having a passage for efficiently transmitting sound, means for supporting said mouthpiece so that its lower end is supported just above the base of the telephone and its open end faces upwards towards the mouth of the user, and means for rotatably mounting said elbow in a horizontal plane at the end of said tube so as to permit of the mouthpiece being moved in a vertical plane.

9. An arrangement for use with a pillar type telephone comprising a stand, a pillar extending from said stand, an enlarged mouthpiece, an arrangement of interconnected tubes terminating at one end in said mouthpiece and arranged to be supported by said pillar, an adaptor in which the other end of said tubes terminate and shaped so as to fit into the mouthpiece of a pillar type telephone mounted on said stand, means for enabling said mouthpiece to be rotated in a vertical plane, a base for said stand and means for rotatably supporting said stand on said base to enable the mouthpiece to be moved in a horizontal plane.

10. An arrangement for use with a desk or table telephone transmitter comprising an enlarged mouthpiece having an elbow and a tube connecting said mouthpiece to said transmitter and having a passage for efficiently transmitting sound, means for supporting said mouthpiece so that its lower end is supported just above the base of the telephone and its open end faces upwards towards the mouth of the user, means for rotatably mounting said elbow in a horizontal plane at the end of said tube so as to permit of the mouthpiece being moved in a vertical plane, a stand for supporting said mouthpiece and tube and a base on which said stand is rotatably mounted.

11. An arrangement for enabling a pillar or wall type telephone to be used efficiently while enabling the user to speak at a distance, comprising an adaptor for fitting into the mouthpiece of the telephone, an enlarged mouthpiece, a series of straight intermediate tubes connecting the adaptor to the mouthpiece and provided with sound reflecting surfaces adapted to reflect sound waves which are received from one tube in a longitudinal direction down the next tube, and a sound absorbing material such as cork lining inserted in said mouthpiece to prevent blasting and distortion.

12. An arrangement for use with a desk or table telephone transmitter comprising an enlarged mouthpiece, a tube connecting said mouthpiece to said transmitter having a passage for efficiently transmitting sound, means for supporting said mouthpiece so that its lower end is supported just above the base of the telephone and its open end faces upwards towards the mouth of the user, and a sound absorbing material such as cork lining inserted in said mouthpiece to prevent blasting and distortion.

13. A telephone transmitter, a casing for said transmitter, means for exerting pressure on parts of said casing at opposite sides and means for exerting pressure on parts of said casing at right angles to the parts on which pressure is exerted by said first means.

14. An arrangement for use with a pillar type telephone comprising a stand, means for positioning a pillar type telephone on said stand, a support connected to said stand, an adaptor, an enlarged mouthpiece and an interconnecting tube having a passage for efficiently transmitting sound from said mouthpiece to said adaptor, all carried by said support and adjustable means by which the adaptor can be caused to connect with the mouthpiece of the telephone in an air-tight manner, compriisng a cup of rubber fitting over the outside of the adaptor and a washer adapted to be rotated on a screw thread so as to cause the cup to press against the mouthpiece of the telephone when the adoptor is in position in the mouthpiece.

15. An arrangement for enabling a wall or desk-type telephone to be used efficiently

while enabling the user to speak at a distance, comprising an adaptor for fitting to the telephone and an enlarged mouthpiece having a long passage extending to the adaptor and including a number of sound deflecting surfaces suitably arranged and designed for transmitting sound efficiently to the telephone.

In testimony whereof I affix my signature.

DOUGLAS STUART SPENS STEUART.