

(No Model.)

W. A. MOORE.
TELEPHONE TRANSMITTER.

No. 563,395.

Patented July 7, 1896.

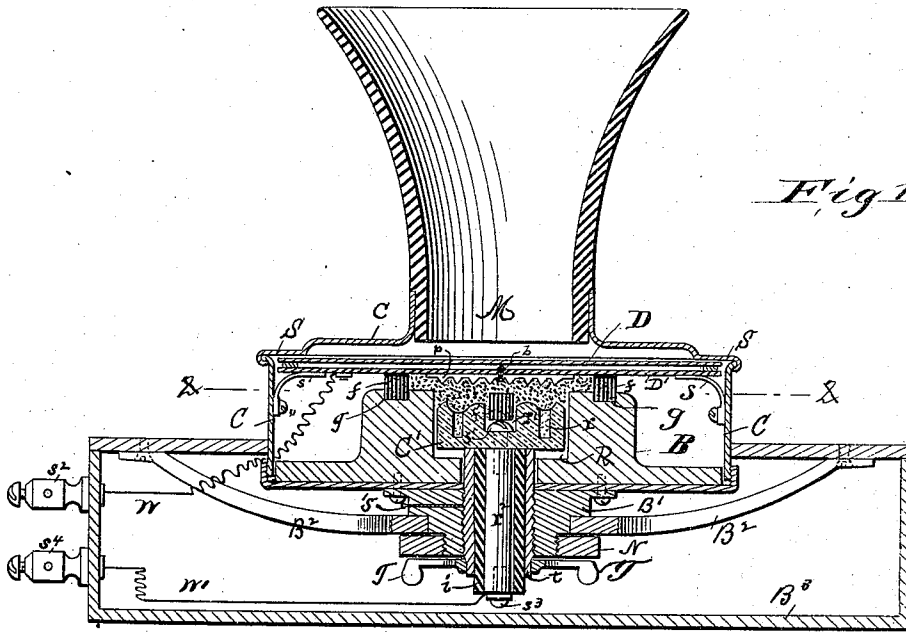


Fig. 1.

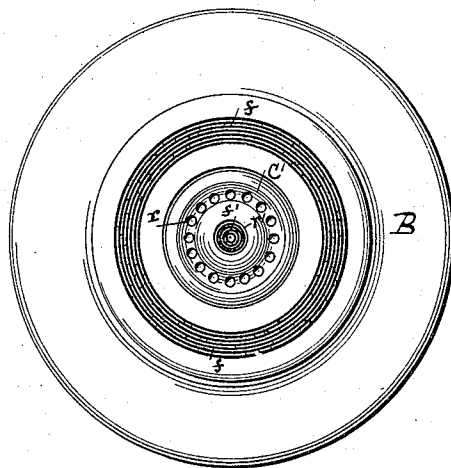


Fig. 2.

WITNESSES:

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WILLIAM A. MOORE, OF BROOKLYN, NEW YORK.

TELEPHONE-TRANSMITTER.

SPECIFICATION forming part of Letters Patent No. 563,395, dated July 7, 1896.

Application filed March 25, 1896. Serial No. 584,737. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM A. MOORE, a citizen of the United States of America, and a resident of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Telephonic Transmitters, of which the following is a specification, reference being had to the accompanying drawings, forming part of the same, in which—

Figure 1 is a central vertical sectional view through an apparatus embodying my invention; and Fig. 2 is a cross-sectional view on line *x x*, Fig. 1, the comminuted conducting material having been removed to more clearly exhibit the other parts.

My invention relates to telephone-transmitters; and it consists in the devices and combination of devices hereinafter described and claimed.

C is the case, the forward portion coming to a suitable size to hold the mouthpiece M, and within the case (which is preferably circular in form) there is a shoulder S. Against this shoulder rests the first diaphragm D, which I prefer to make of oiled silk. At a very slight distance therefrom, measured by a ring of any suitable substance, interposed between, I place the second diaphragm D', both being held in place by yoke-springs *s*, secured to the side of the case and bearing upon the second diaphragm. This second diaphragm I also provide with a series of projections *p*, on the side farthest from the mouthpiece, and at the center on the opposite side I put a button *b*, of such size that it will rest against the first diaphragm D. This button, however, might be secured to the first diaphragm and rest against the second, although I prefer the arrangement shown. The projection *p* I prefer to arrange within the periphery of a circle concentric with the center of the diaphragm and extending over a comparatively small portion of its surface, say about one-third its diameter. The rear portion of the case I prefer to fit to the other part by providing each with suitable screw-threads, as shown in Fig. 1. To the rear part I secure a block E, preferably of non-conducting material. On the side nearest the diaphragm this block is provided with a circular recess R, the cross-area of which substantially cor-

responds in size to or a little exceeds the area of the surface covered by the projections *p*. This block is also provided on the same face with a groove or a rabbet *g*, in which I seat a ring of non-conducting material, preferably felt, *f*, which bears lightly against the diaphragm D'. The degree of pressure, as is manifest, may be easily regulated by turning the rear part of the case farther on or off the sides of the case by means of the screw-threads already named. In the recess R, I place a solid carbon C', usually corresponding in size with the width of the recess, but preferably not so thick as the depth of the recess. Its face is channeled, as shown, and it is also provided with a series of small recesses *r*, one, *r'*, being preferably arranged in the center. In this center recess I place a screw *s'*, which extends through the carbon and into a rod of conducting material *r*², thereby securing the carbon to said rod. In the recess *r'* and over the screw I seat a small piece of conducting material *f'*, to prevent short-circuiting. About the rod *r*² I place a tube of insulating material *i*, and about it a tube of brass or other suitable material *t*, the other face of which for some distance intermediate its ends is screw-threaded, as shown, the other end being preferably squared to receive a thumb-piece T.

Rising from the rear face of the case or secured to it is a boss B'. It has two steps, the first, a circular one; over which may be passed the suspending bracket B². The next step is screw-threaded, and on it I place a nut N, the thumb-piece T being placed on the tube *t* and secured after the nut N has been turned to place. It will thus be seen that the bracket B² is held between the step on the boss and the nut N, so that the instrument is suspended. At the same time it may readily be turned about in the aperture in said bracket B², as may be desired. It is also manifest that by holding the case fixed and turning the thumb-piece T the carbon C' may be advanced toward or withdrawn from the diaphragm D' for adjustment independently of any adjustment of the block E. A set-screw S' may be seated in the boss B' for holding the tube *t* and thereby the carbon C' in its suitably-adjusted position. One circuit-wire *w* leads from the diaphragm D' to

and through the case and to a binding-screw s^2 , or it may lead to the case, and that being made of conducting material may be otherwise conducted to its binding-screw. Another conducting-wire w' leads from the screw s^3 , set in the rod r^2 , to the second binding-screw s^4 . The whole is preferably mounted in a box B^3 , the case being inserted through a circular hole in its face and the bracket B^2 , secured to the inner side of said box, that side being preferably arranged as a door.

Between the diaphragm D' and the solid carbon C , I place a quantity of finely-divided conducting material, such as powdered carbon, and the purpose of the recesses r in the face of said carbon is that in filling in the powdered material it may enter in these recesses, and therefore when the device is turned up on its side, by falling out of said recesses into the space between the face of the solid carbon and the diaphragm D' , it will furnish a sufficient quantity to well fill said space without requiring such care and exactness in filling before adjustment, and yet will leave the powdered material somewhat loose that it may not pack between the parts.

The use of the two diaphragms with the button between enables me to secure more powerful vibrations than would otherwise be the case, for as I use and must use some material placed between the block B and the diaphragm D' (here the felt ring f) to complete the inclosure of the space to be occupied by the finely-divided material, the vibrations of that diaphragm D' , if it were itself exposed to the immediate action of the sound-waves would be somewhat deadened, but by placing the first diaphragm D in front of that I preserve the full action of a diaphragm of that size, and communicate the full effect of its vibrations directly to the center of the second diaphragm (the place where that will have most effect) through the medium of the button b .

I have heretofore wrapped the piece of felt about the solid carbon, with its edge arranged to bear upon the diaphragm similar to diaphragm D' ; but this I find objectionable in that when adjusting the solid carbon the felt is also moved to or from the diaphragm, and may therefore press too lightly or too strongly upon it when the carbon has been properly adjusted. The arrangement now shown enables me to adjust each independently, and thereby secure exactly such results as I seek.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a telephone-transmitter the combination of a recessed block, a diaphragm whose rim is supported independently of said block, and an annulus of soft non-conducting material whose interior diameter is greater than the diameter of the inclosed solid carbon interposed between the two and completing the inclosure of a space bounded by the diaphragm, the walls of the recess in the block and the annulus, a solid carbon seated in

said recess in the block and a quantity of finely-divided conducting material interposed between the face of the solid carbon and the interior face of the diaphragm substantially as set forth.

2. In a telephone-transmitter the combination of a recessed block, a diaphragm whose rim is supported independently of said block, and an annulus of soft non-conducting material whose interior diameter is greater than the diameter of the inclosed solid carbon interposed between the two and completing the inclosure of a space bounded by the diaphragm, the walls of the recess in the block and the annulus; a solid carbon provided with recesses extending inwardly from its interior face seated in said recess in the block and a quantity of finely-divided conducting material interposed between the face of the solid carbon and the interior face of the diaphragm substantially as set forth.

3. The combination in a telephone of a recessed block the side walls of which recess extend laterally beyond the line of the projections on the diaphragm, a diaphragm whose rim is supported independently of said block and provided on its inner face with a series of projections, a ring of soft non-conducting material whose interior diameter is greater than the diameter of the inclosed solid carbon placed intermediate the block and the diaphragm, a solid carbon seated in the recess in the block and a quantity of finely-divided conducting material interposed between the projections on the diaphragm and the face of the solid carbon within the space inclosed by the diaphragm, the block and the ring.

4. In a telephone-transmitter the combination of a diaphragm, a recessed block set opposite said diaphragm a ring of soft non-conducting material intermediate the diaphragm and the block and surrounding the recess therein, a solid carbon placed in the recess, a quantity of finely-divided conducting material placed intermediate the diaphragm and the carbon and means substantially as described for independently adjusting the position of the block and the position of the carbon with relation to the diaphragm.

5. The combination of a telephone-transmitter of a case, an oiled-silk diaphragm supported at its rim within said case and opposite the mouthpiece, a second diaphragm supported within the case beyond the first and held in position by springs secured to the case, a button located at the center of the second diaphragm and making contact with the first, a series of projections extending inwardly from the second diaphragm, a recessed block secured to the rear face of the case, which said face is screw-threaded to the sides of the case, a ring of soft non-conducting material placed intermediate the second diaphragm and the block, a solid carbon placed in the recess in said block and supported on a tube extending through a screw-threaded

boss on the rear face of the case, a conducting-rod extending from the solid carbon through the tube, from which it is insulated, to a suitable connection, a bracket with a circular aperture in which the boss of the case is seated, a nut placed upon said boss but beyond the bracket, a thumb-piece secured to the tube but beyond the nut a connection leading from the diaphragm, a series of recesses extending inwardly from the face of the solid carbon and a quantity of finely-

divided conducting material interposed between the diaphragm and the solid carbon all combined substantially as set forth.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of two witnesses, this 7th day of March, 1896.

WILLIAM A. MOORE.

Witnesses:

RALPH W. GLOAG,
JNO. JOLINS ROSS.