(No Model.)

R. M. LOCKWOOD.

RECEIVER FOR TELEPHONES.

No. 249,064. Patented Nov. 1, 1881.

Fig. 1.

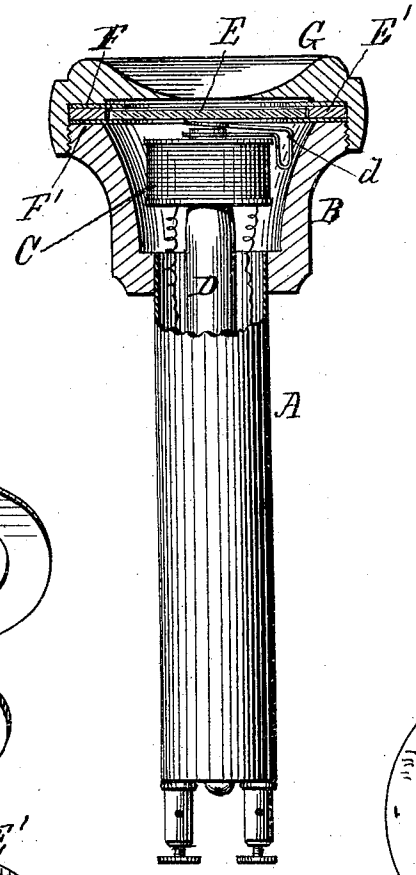


Fig. 2.

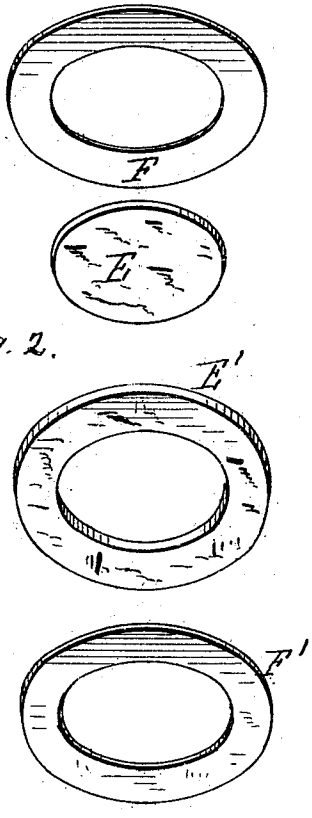
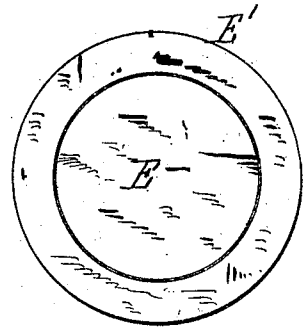


Fig. 3.



Witnesses.
Franck L. Durand
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Robt. M. Lockwood
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UNITED STATES PATENT OFFICE.

ROBERT M. LOCKWOOD, OF NEW YORK, N. Y., ASSIGNOR TO THE MOLECULAR TELEPHONE COMPANY, OF SAME PLACE.

RECEIVER FOR TELEPHONES.

SPECIFICATION forming part of Letters Patent No. 249,064, dated November 1, 1881.

Application filed September 10, 1881. (No model.)

To all whom it may concern:

Be it known that I, ROBERT M. LOCKWOOD, of the city, county, and State of New York, have invented new and useful Improvements in Receivers for Telephones, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a side view of my improved receiver, partly in section, showing the construction and arrangement of the diaphragm and its retaining devices. Fig. 2 is a perspective view of the diaphragm and its retaining-rings detached, and Fig. 3 is a plan view of the diaphragm.

My invention relates to a novel construction of the diaphragm of a telephone-receiver and to a novel means for retaining it in place; and it consists in making the diaphragm of a non-resonant and non-magnetic material and in two parts, consisting of a central disk or plate and of an annular portion surrounding said disk and preventing lateral displacement, and in the combination with such diaphragm of retaining-rings which overlap the outer edge of the central disk and serve to clamp the outer annular portion of the diaphragm, while at the same time preventing displacement of the central disk.

In an application filed by myself and Samuel H. Bartlett on or about March 9, 1880, the diaphragm of the receiver was described as made of cork or other non-magnetic material, and in the practical application and use of such cork diaphragm it was found that under certain conditions it failed to give satisfactory results, which, after considerable experimenting and repeated tests, I have found arose mainly from the rigid manner in which said diaphragm was grasped and held, such manner of holding tending to impair or interfere with molecular action or disturbance in the cork.

The object of the present improvement is to remedy this difficulty, and by a construction of the disk or diaphragm, in connection with the arrangement of devices for grasping and holding it, to adapt it to be held or grasped lightly, while at the same time guarding it against displacement.

In the accompanying drawings, A represents the hollow cylindrical handle; B, the hollow metallic head forming the sound-chamber and also a receptacle for the coil C on the end of the bar-magnet D, and *d* the reduced, recurved extension of the latter, said parts being arranged, by preference, in the manner described in Letters Patent granted to Samuel H. Bartlett and myself June 15, 1880, No. 228,825, though any usual or preferred form and arrangement may be given to them.

E E′ represent the diaphragm, made of cork or equivalent non-resonant and non-magnatic material—such, for instance, as highly compressed cotton or other fiber—and consisting of a central disk or plate and a flat annular piece surrounding and preventing lateral or edgewise movement of the central disk. The ring portion E′ is made, by preference, a little thicker than the central disk, E, for a purpose which will be explained.

F and F′ are two thin metal rings, designed to be placed on opposite sides of the ring E′ of the diaphragm, covering and clamping the same between them, and of sufficient width to overlap the edge of the central disk, E, of the diaphragm. The ear-piece G has an internally-threaded annular flange or rim matching a corresponding screw-thread on the outer face of cup or head A′, adapting it to be screwed thereon, or it may be secured to the head in any usual or preferred manner, adapting it to clamp the rings F, F′, and E′ against the head B. Where the ring E′ is made slightly thicker than the disk E, said ring being of a yielding or compressible material, it can be slightly compressed until the overlapping edges of the rings F and F′ rest in contact with the central disk, E, touching it lightly upon opposite sides and preventing end movement or displacement thereof; or the rings F F′ may be made very thin and elastic, so as to clasp the central disk very lightly between them. In this case it will not be necessary to give an increased thickness to the ring F, as the central disk is not of sufficient diameter to cause it to be grasped between the clamping-faces of the head or cup A and ear-piece G. By this arrangement it will be seen that the central disk, E, or diaphragm proper is held lightly, but securely, in place and will be free to expand and contract under atmospheric changes without interfering with the slight grasp of the retaining de-

vices upon it, and thus the action or disturbance of its molecules under the disturbances in degree of polarity of the magnet D, the yielding or recurved arm *d* of which rests in contact with the inner face of said disk, will not in any way be impaired or interfered with, and such disturbances or variations in degree of polarity will be conveyed to the ear through molecular action or disturbance in the cork diaphragm in the form of articulate sound with great distinctness.

Connection with the line or telephone circuit may be made in any usual or preferred manner, and the form of the parts referred to may be varied so long as the principle of construction of the diaphragm and its retaining devices is preserved.

Having described my invention, I claim—

1. A diaphragm of cork or equivalent non-resonant and non-magnetic material, made in two parts, consisting of a central disk and a ring surrounding said disk and holding it against lateral movement.

2. A diaphragm composed of a central disk and an annular portion surrounding said disk, in combination with clamping-rings overlapping the outer edge of the central disk and preventing its displacement.

In testimony whereof I have hereunto set my hand this 9th day of September, A. D. 1881.

ROBT. M. LOCKWOOD.

Witnesses:

GEO. BELL,

CHRIS. SCHULTZ.