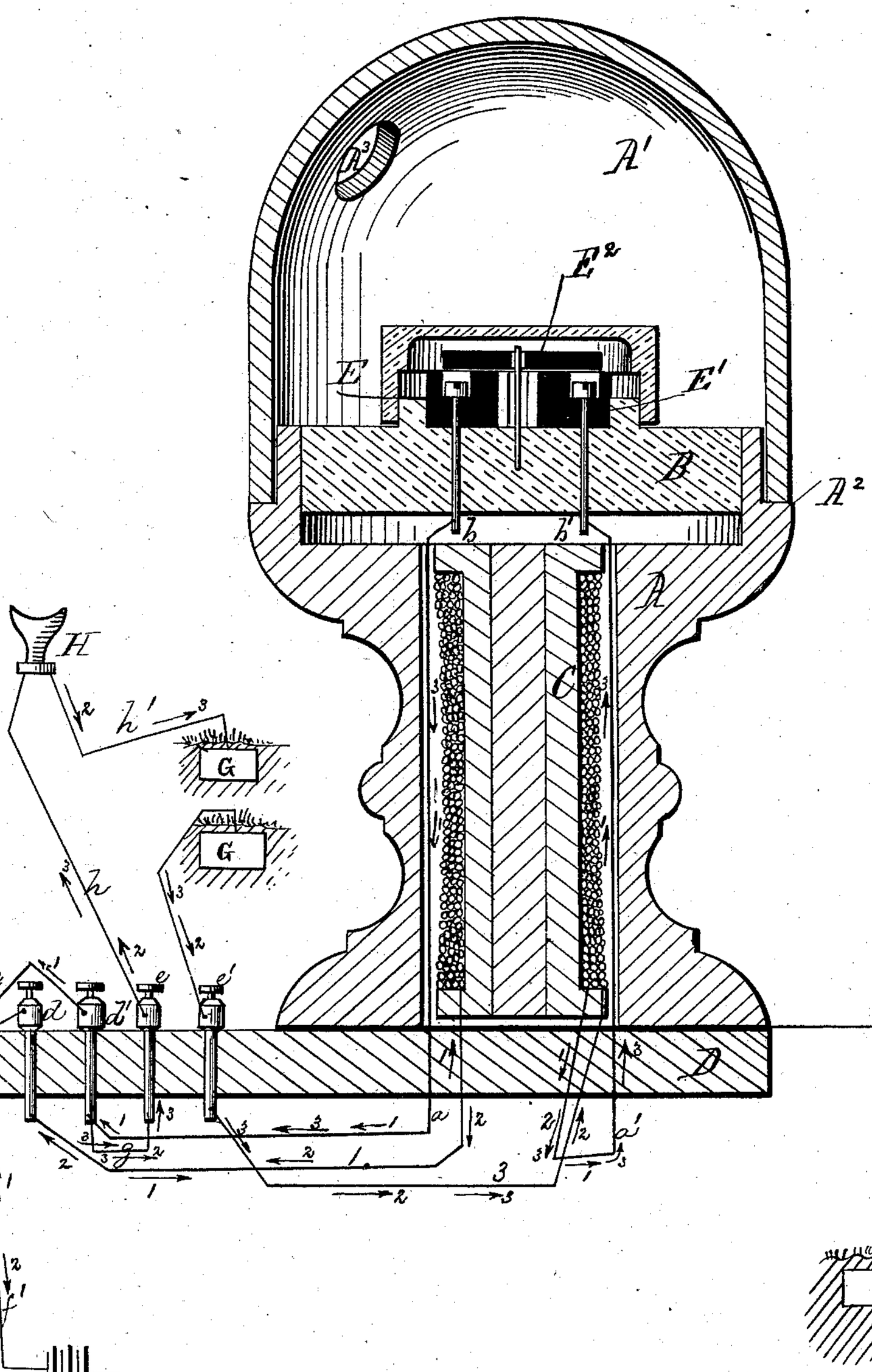
(No Model.)

# R. M. & W. V. LOCKWOOD.

## Transmitter for Telephones.

**No. 239,519.** **Patented March 29, 1881.**




Witnesses.
Franck L. Durand.
N. E. Chaffee

Inventors.
Robt. M. Lockwood
Wm. V. Lockwood
by A. M. Smith & Co.
Attorneys

# UNITED STATES PATENT OFFICE.

ROBERT M. LOCKWOOD AND WILLIAM V. LOCKWOOD, OF NEW YORK, N. Y., ASSIGNORS TO THE MOLECULAR TELEPHONE COMPANY, OF SAME PLACE.

## TRANSMITTER FOR TELEPHONES.

SPECIFICATION forming part of Letters Patent No. 239,519, dated March 29, 1881.

Application filed November 9, 1880. (No model.)

*To all whom it may concern:*

Be it known that we, ROBERT M. LOCKWOOD and WILLIAM V. LOCKWOOD, of New York, county of New York, State of New York, have invented new and useful Improvements in Transmitters for Telephones, of which the following is a full, clear, and exact description, reference being had to the accompanying drawing, making part of this specification, which represents a vertical section through our improved transmitter and stand or support, showing the arrangement of the spool or coil therein, and by diagram the relation of the several wires thereto.

The invention relates to a novel construction of hood or dome over the transmitter; to a novel construction of the base or support, said support being made in hollow cylindrical or barrel form, of metal or of other material lined with metal, and forming a sleeve or cylinder surrounding the spool or helix; and to the arrangement of said spool relatively to the base or support and to the microphone, as hereinafter explained.

In the accompanying drawing, A represents the base or stand, made in the form of a hollow cylinder, preferably of uniform bore or internal diameter, except near its upper end, where it is enlarged to receive the microphone or cork B, in which the microphone is embedded, and which fits snugly in said upper end, as shown. The stand or base is, by preference, made of metal; but it may be made of other suitable material and lined with metal, forming a cylinder or sleeve within the stand and surrounding the coil, for a purpose hereinafter explained. In either case any desired ornamental configuration can be given to the outer surface of the stand or base, as shown. Within the stand or support thus constructed is arranged the helix or coil C, constructed in the manner described in another application filed by us on or about October 7, 1880—that is to say, starting with the wire 1, the coil is wound about one-third, more or less, when a second wire, 2, is joined thereto by a "half-connection," and carried thence directly out at one end of the spool, and the winding of the first wire is then resumed until the coil is complete, terminating in the wire or outer end thereof, numbered 3. Thus it will be seen there are three wires or ends extending out from the coil, said ends passing, by preference, through perforations in the lower end flange of the spool, and also through the table or shelf D, on which the stand or support A is placed.

The microphone or transmitter is placed in the enlarged receptacle in the upper end of the barrel or support, as above stated, and may be of any suitable construction; but that shown is preferred, consisting of the carbon plates or bars E E′, arranged side by side in the same plane, but with their adjacent sides out of contact, and above these a button, $E^2$, also by preference of carbon, though other suitable conducting material may be used in lieu of the carbon for both the plates and the button, the latter overlapping the edges of the plates E E′ and forming the connection between them. The button rests by its own gravity on the carbon plates, and the microphone thus formed is embedded in a block, B, of cork or other non-resonant material, the latter fitting snugly in the socket in the upper end of the stand, as shown. The upper end of the stand has an annular rabbet, $A^2$, formed on its outer face or periphery, and upon this rests a metal hood or dome, A′, which, by preference, from the plane of the button $E^2$ upward, is made in the form of a hollow hemisphere, or approximating thereto, so that all sound waves or pulsations entering said dome, which constitutes the mouth-piece, shall be directed thereby to a common center—viz., the microphone. The dome thus formed rests on the rabbet or shoulder $A^2$, and may be rotated freely thereon, to bring the opening or mouth $A^3$ therein into convenient relation to the speaker.

Wires *a a′* are connected with the carbon plates E E′, either directly or through conducting-pins *b b′*, passing down therefrom through the block B, and thence down through the stand or support A by the side of the coil C, one of them, *a′*, connecting directly with wire 2 of the coil, as shown. The other wire, *a*, passes through the shelf or table D, and connects with the lower end of a battery binding-post, *d′*.

The battery-posts are indicated by the letters *d d'* and the line binding-posts by *e e'*, and these posts extend through the shelf or bracket D, and through suitable insulators therein, and have the wires connected to and through them, as will now be explained.

The battery is indicated in the diagram by the letter F, the ground by G, and the receiver by H. The transmitter has been described above. The battery is connected by wires *f f'* with the binding-posts *d d'*, and the latter is connected by wire *a* with the transmitter or microphone, as above explained, and the binding-post *d* is also connected with the transmitter through the wire 1, the half-connection wire 2, and the wire *a'*. The line binding-posts are connected with the battery and the transmitter and receiver as follows, viz: The battery-post *d'*, which is connected with the transmitter by wire *a*, as explained, is also connected by a wire, *g*, with line-post *e*, from which a wire, *h*, extends to the receiver, and thence, by wire *h'*, to the ground. The post *e'* is connected to wire 3 of the spool and to the ground. By this arrangement of wires and construction of coil we obtain the following three circuits, viz: first, the first battery or transmitter circuit, indicated by arrow 1, viz: starting from post *d*, through wire 1 to the coil, out through wire 2 and wire *a'* to the transmitter, thence through *a* to battery-post *d'*, through wires *f* and *f'* and battery to post *d*—the starting-point—which circuit, it will be seen, is not grounded and is in continuous action; second, the line, battery-circuit, indicated by arrow 2: starting at post *d'*, thence by wire *g* to line-post *e*, through the receiver and ground to post *e'*, thence to and through wire 3 of the coil to wire 1, thence to battery-post *d*, and through the battery, by wires *f'* and *f*, to post *d'*—the starting-point; and, third, a talking or telephone circuit, indicated by arrow 3: starting at post *d'*, thence by wire *g*, through line and line-post *e*, to the receiver, through ground-circuit to line-post *e'*, thence through wire 3 and coil to wire 2, through *a'*, the transmitter, and *a*, to post *d'*—the starting-point—cutting out the battery, over which latter circuit a current is produced by the combination of the two battery-circuits, one passing through the transmitter and not through the line, and the other through the transmitter and the line.

The base or support A, being of metal, or lined with metal in the form of a sleeve or cylinder, is connected with the ground by a wire, as shown, or in other suitable manner, and, surrounding the coil or spool, as it does, acts as an escape for induction, and greatly improves the action of the apparatus.

The action of the coil in forming the "split circuit," enabling us to obtain the third or telephone circuit, is described in our former application referred to, and need not be further described here.

What we claim herein as new is—

1. The fixed metal cylinder or base supporting the microphone and inclosing the coil, substantially as described.

2. The dome or mouth-piece to the transmitter, made in the form of a hollow hemisphere, or approximating thereto, forming a cover for the transmitter, substantially as described.

3. The dome or hemispherical cover or mouth-piece to the transmitter, made adjustable or susceptible of being rotated on its base or support, substantially as described.

4. The fixed cylindrical metal stand supporting the microphone and inclosing the coil, in combination with the hollow dome covering the transmitter, as described.

5. The fixed hollow metal stand or base supporting the microphone and inclosing the coil, in combination with a wire or conductor connecting said fixed base with the ground, substantially as and for the purpose described.

In testimony whereof we have hereunto set our hands this 5th day of November, A. D. 1880.

ROBERT M. LOCKWOOD.
WILLIAM V. LOCKWOOD.

Witnesses:
C. H. HANKINSON,
FRANK O. CLARK.