

(No Model.)

W. C. LOCKWOOD.
TELEPHONE TRANSMITTER.

No. 283,123.

Patented Aug. 14, 1883.

Fig. 1.

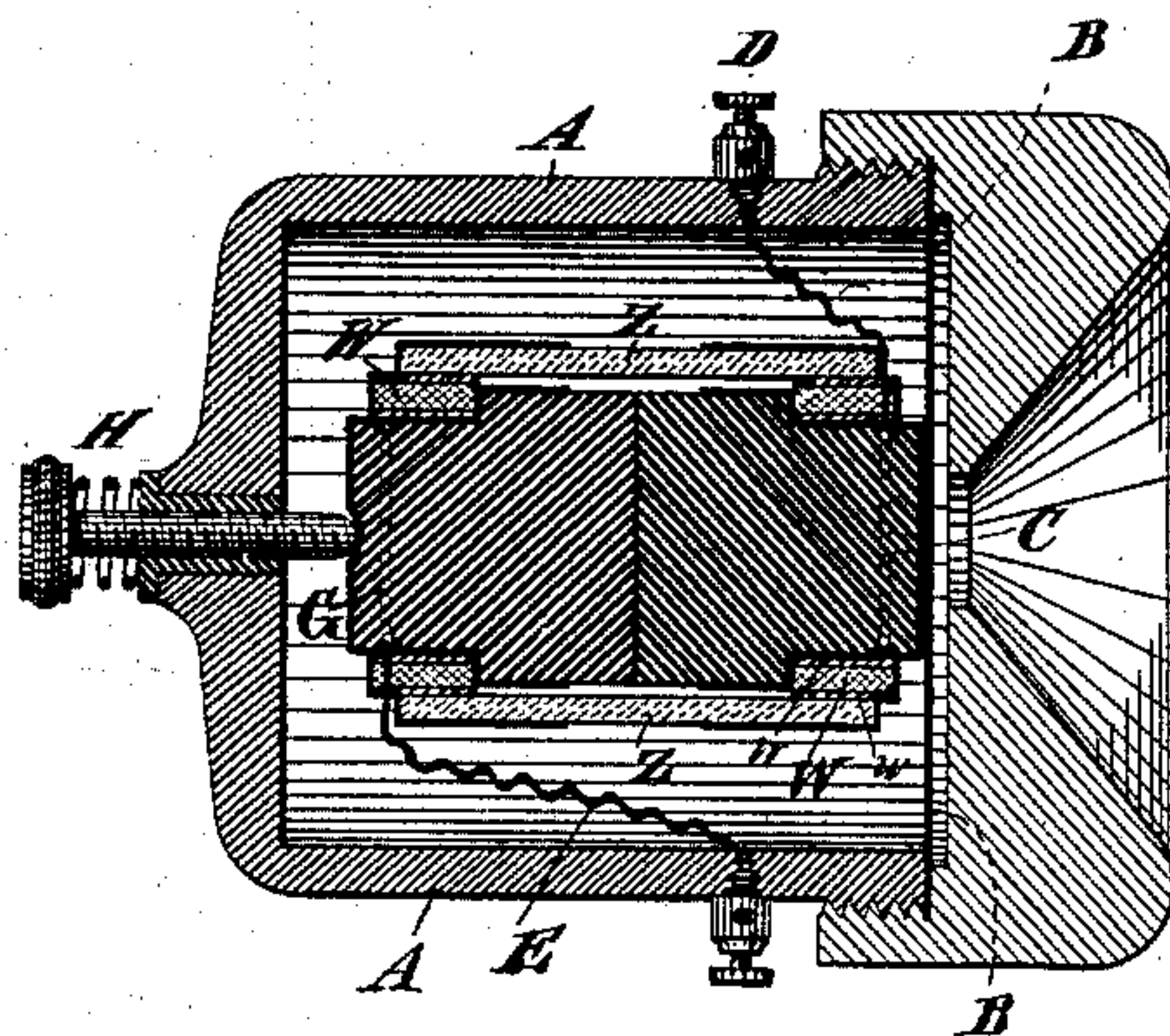
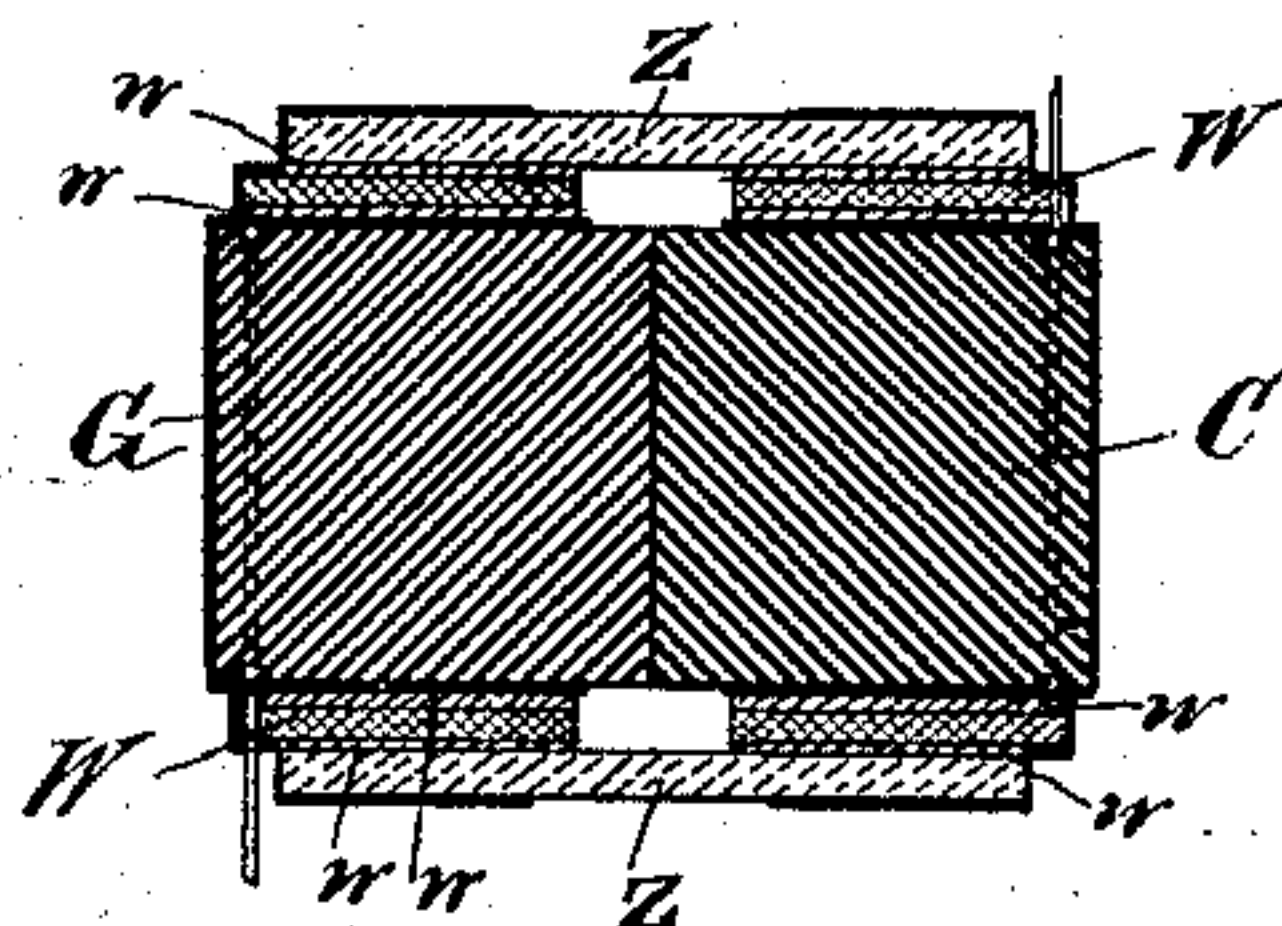


Fig. 2.



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UNITED STATES PATENT OFFICE.

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TELEPHONE-TRANSMITTER.

SPECIFICATION forming part of Letters Patent No. 283,123, dated August 14, 1883.

Application filed April 24, 1882. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM C. LOCKWOOD, of Brooklyn, Kings county, in the State of New York, have invented certain new and useful
5 Improvements Relating to Telephone-Transmitters, of which the following is a full and exact description, reference being had to the accompanying drawings, forming part of the same, in which—

10 Figure 1 is a central longitudinal section through the electrodes and the immediately adjacent parts, as also through the parts which sustain the electrode and constitute the principal parts of the transmitting-instrument. Fig.
15 2 is a corresponding section through a modification of the central parts, which involve the novelty.

Similar letters of reference indicate corresponding parts in both the figures.

20 The invention lies in the mode of mounting and connecting the gas-carbons or other pieces of material constituting the electrodes. I attain unusual security with the requisite mobility.

25 Referring to Fig. 1, C is the upper electrode, and G the lower electrode, connected to the respective wires, as usual, and fixed one to a diaphragm agitated by the wire and the other to suitable supporting means adjustable by the
30 turning of the screw H, as will be understood. The ends of the electrodes C and G are plane, and finished smoothly by grinding or otherwise. The sides or cylindrical surfaces of each are coated with rubber cement *w*. Upon each
35 is then slipped a ring, W, of vulcanized rubber of the ordinary grade, known as "soft," care being taken to slip each on from what is to form the inner end or the contact end of the electrode. This wipes or carries the cement
40 away from the contact point or line, or rather plane, leaving the soft rubber cemented to the electrode strongly at the outer end and less and less strongly toward the contact end. When
45 the cement has perfectly hardened, so as to not allow the displacement of the rings upon the electrodes, the exteriors of the rings are covered with a thin coat of cement, and each electrode, with its rubber ring, is pressed into the
50 Z—as hard rubber, brass, copper, iron, or other

dense casing—until the plane faces of the electrodes are in firm contact each with the other, and the cement is allowed to set with the parts in that condition, the soft rubber being a little strained inward by the force required to press
55 the electrodes home and ready to pull the electrodes apart, except for the adjusting means, when all is finished. The compound construction is now ready to be screwed, cemented, or otherwise joined to a diaphragm, B, inclosed
60 in a stout cup, A, of well-dried wood or other non-conducting material, joined by the wires D and E to the proper connections for operating, and when the electrodes are properly forced together by the adjusting-screw H, to
65 secure the proper contact of the surfaces of the electrodes, the device will serve in the usual manner, the rigid tube or ring Z giving a very strong support, and the rubber rings W W allowing the endwise motion of one electrode
70 relatively to the other, required for the proper varying of the force of contact. As the partial or complete making and breaking of contact induces heat and oxidation of some particles of the electrodes, the oxygen in the air
75 inclosed becomes combined, and the oxidation of the electrodes ceases because of the complete exclusion of further oxygen. The tight contact of the elastic rings W W with their
80 respective electrodes C and G on their inner faces, and with the rigid ring or tube Z on their outer faces, aided by the coating of rubber cement applied on both surfaces, makes the joint perfectly air-tight. I attach much importance
85 to the cement as a means of insuring not only great firmness of place of the several parts, except as the soft rubber W W shall yield to allow the very slight motions required, but also of insuring absolutely air-tight joints. The
90 shoulders formed by the reduction of the diameter of each electrode at the end farthest from contact allow considerable thickness of rubber W, while the air-space inclosed is still very slight. I do not esteem these shoulders absolutely indispensable. Fig. 2 shows a form in
95 which thinner rings W are employed, and the bearings thereof upon the respective electrodes are made longer, and no shoulders or contractions are made in the electrodes. It is
100 still more important with this form to apply

the soft-rubber rings W by slipping them on from the "contact" ends of their respective electrodes.

Further modifications may be made in the forms and proportions and in the materials employed without departing from the principle or sacrificing the advantages of the invention. I can have two or more planes of contact by employing one or more pieces of gas-carbon or other suitable material between the electrodes C and G, the latter being mounted sufficiently far apart. In such case each such intermediate piece should be enveloped in soft rubber, taking care to leave the portions at and near the contact-planes free from cement, and the exterior of the soft rubber should be cemented to the interior of the rigid tube. I prefer to use but two electrodes, as shown. I can, if desired, shellac-varnish the non-contact surfaces of the electrodes before they are put in position, and again varnish over the ends and partially up the outside of the tube, and I have so represented it. I can use factitious rubber and material in which no rubber is employed as the elastic material W W; but it is important that it be soft and elastic and capable of being cemented. It should also be a good non-conductor.

I claim as my invention—

1. The electrodes C and G, soft rings W, cement *w*, and rigid ring Z, combined and arranged as and so as to serve as herein specified. 30
2. The rigid cup A, diaphragm B, and adjusting-screw H, in combination with each other and with the electrodes C and G, and with the rigid ring or tube Z, elastic rings W, and cement *w*, arranged as herein shown and described. 35
3. In a telephone-transmitter, a non conducting tubular covering inclosing both electrodes and making an air-tight case therefor by the aid of cement *w*, which forms a tight seal at both ends, substantially as herein specified. 40
4. The combination, with the two electrodes in contact with one another, of a rigid ring or tube, Z, with which said electrodes are connected or united by a flexible elastic material. 45
5. The combination, with the two electrodes, the rigid tube, and the elastic connecting material, of the adjusting device bearing on said electrodes. 50

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Witnesses:

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