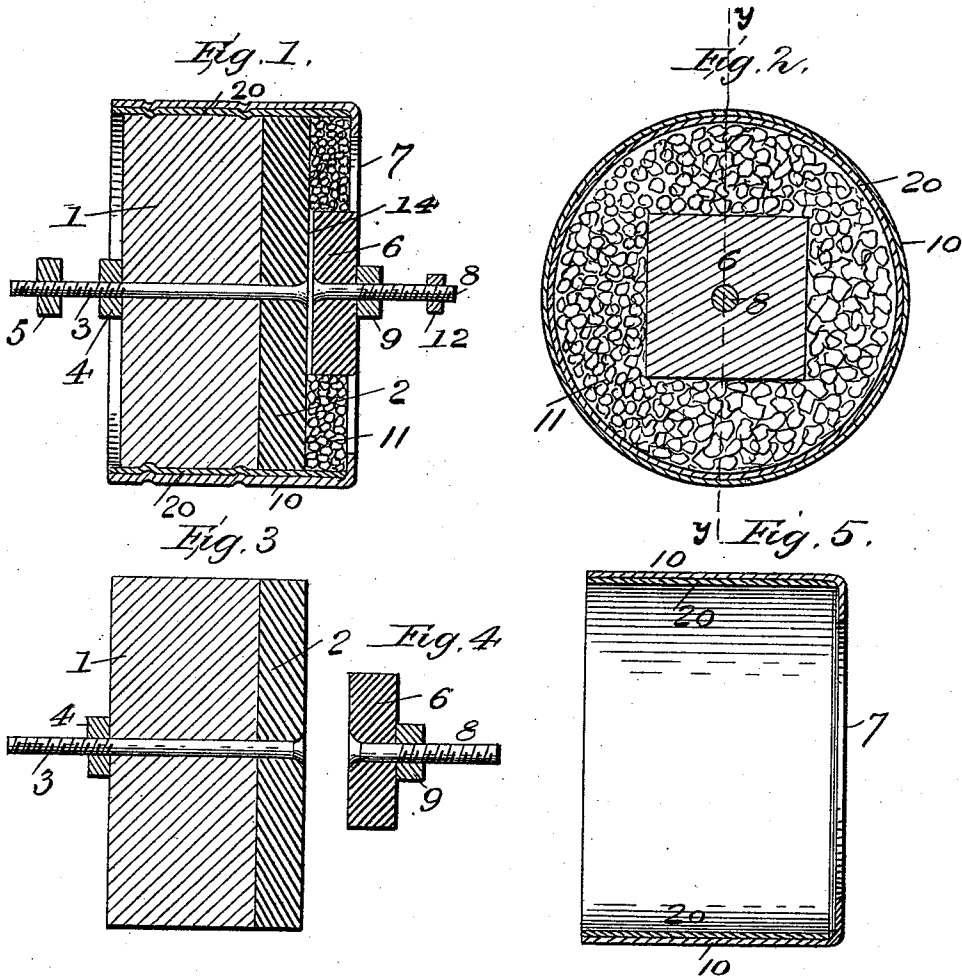


(No Model.)

W. C. & J. M. LOCKWOOD.
TELEPHONE.

No. 528,640.

Patented Nov. 6, 1894.



WITNESSES
F. L. Curand.
S. C. Bong.

INVENTORS,
Wm C Lockwood & John M. Lockwood
Theodore Mungen.
Attorney.

UNITED STATES PATENT OFFICE.

WILLIAM C. LOCKWOOD AND JOHN M. LOCKWOOD, OF BROOKLYN,
NEW YORK.

TELEPHONE.

SPECIFICATION forming part of Letters Patent No. 528,640, dated November 6, 1894.

Application filed June 14, 1894. Serial No. 514,564. (No model.)

To all whom it may concern:

Be it known that we, WILLIAM C. LOCKWOOD and JOHN M. LOCKWOOD, citizens of the United States, residing at Brooklyn, in the
5 county of Kings and State of New York, have invented certain new and useful Improvements in Telephones; and we do declare the following to be a full, clear, and exact description of the invention, such as will enable
10 others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

15 Our invention relates to telephones, and it consists in the novel construction and combination of the parts of the same as herein-after described and pointed out in the claims.

Figure 1 of the drawings is a vertical sectional view taken on the line *yy* in Fig. 2. Fig. 2 is a plan view with the top disk and the portions in the same horizontal plane removed or cut away. Fig. 3 is a vertical sectional view nearly diametrical in cross-section of the wooden carbon-faced plug or filling and the centrally disposed connecting and holding screw and securing-nut. Fig. 4 is a detail view in sectional elevation or vertical section of the solid carbon electrode, the diaphragm, the upper screw and the nut for securing the electrode and the diaphragm upon the upper screw; and Fig. 5 is a vertical diametrical sectional view of the shell which encircles or incases the carbon-faced plug or
35 filling.

Referring by numerals to the accompanying drawings, 1 designates the axially-bored wooden block which is circular in form in outline, and 2 the solid carbon facing which
40 is axially bored to align with the wooden block 1 and which is of the same diameter, but of lesser thickness than the wooden block 1 upon the upper face of which it rests and to which it is secured by the longer connecting screw 3, which is held in place by a nut 4 turned up against the rear face of the wooden portion or block 1 of the plug or filling.

50 5 is a second or clamping nut which assists in securing the telephone in place upon its rest or backing when it is placed in position ready for use.

6 is a block of carbon which is rectangular

in form in outline, is centrally bored, and is secured to the lower face of the diaphragm 7 by the upper screw 8 and a nut 9. The electrode 6 is of solid carbon and is of such a size
55 as to leave ample space around it within the shell 10 in which to back the broken carbon 11 which owing to its broken and irregular form cannot become crowded to any point, but will remain in its first position no matter
60 how the instrument may be handled, or how it may be placed at rest.

12 is a nut on the shorter screw 8 which in connection with the nut 9 forms one of the
65 fastenings by which the operative parts of the instrument are held in place in the incasement or jacket of the telephone.

14 is an air-space between the upper face of the solid carbon portion of the plug or filling and the solid carbon electrode 6. This
70 air-space 14 may be increased from its normal dimension by pulling or drawing upon the shorter screw by any suitable mechanical means and by so pulling and enlarging the air-
75 space 14 the resistance in the transmitter is varied by friction caused by the electrode 6 cutting in or cutting out more or less pieces of the broken carbon surrounding it, thereby causing said friction instead of pressure, said
80 friction being caused by the in and out motion of electrode 6, as aforesaid, the broken carbon making contact on the margin only, making the opposite contact on the exposed surface of the electrode 2, and not between their
85 broad surfaces. The unexposed portion of electrode 2 is in such close proximity with the much smaller electrode 6 that none of the broken carbon can get between. Therefore it is obliged to make its contact on the surrounding
90 surface of electrode 2.

The parts are first secured together by brass brads and afterward dipped in japan or heavy thick shellac and then baked in an oven which is kept heated at a temperature of about 200°
95 Baumé, which will cause them to assume extreme hardness and dryness, so that they will not be affected by atmospheric changes.

20 is a paper shell or any other insulating substance which is interposed between the
100 plug, solid carbon, broken carbon and the outer metal ring or shell to serve as an insulator.

Having thus fully described our invention,

what we claim, and desire to secure by Letters Patent, is—

1. The combination with the axially bored wooden plug surmounted by the axially bored
5 solid carbon face and connected by a centrally disposed longer screw having a tightening nut, of the rectangular solid carbon electrode mounted upon a centrally disposed shorter screw and secured in place by a binding
10 nut, an outer metal shell having an inwardly projecting top flange, a filling of broken carbon surrounding the rectangular carbon electrode and an air space between the carbon faced plug or filling and the solid
15 carbon electrode, substantially as specified.
2. The combination with an open end inwardly flanged shell or incasement, an axially bored plug partly of wood and partly of solid

carbon, of a carbon electrode secured upon a screw, a surrounding of broken carbon for
20 said carbon electrode and a variable airspace between said plug and the solid carbon electrode, substantially as specified.

3. The herein described process of treating the connected parts of telephones consisting
25 in dipping them in japan or heavy thick shellac and then baking them in a highly heated oven until they assume extreme hardness and dryness, as set forth.

In testimony whereof we affix our signatures
30 in presence of two witnesses.

WM. C. LOCKWOOD.

J. M. LOCKWOOD.

Witnesses:

HENRY G. WESTON, Jr.,

G. H. BOSTWICK.