(No Model.)

W. W. NICHOLS.

MECHANICAL TELEPHONE.

No. 403,547. Patented May 21, 1889.

Fig. 1.

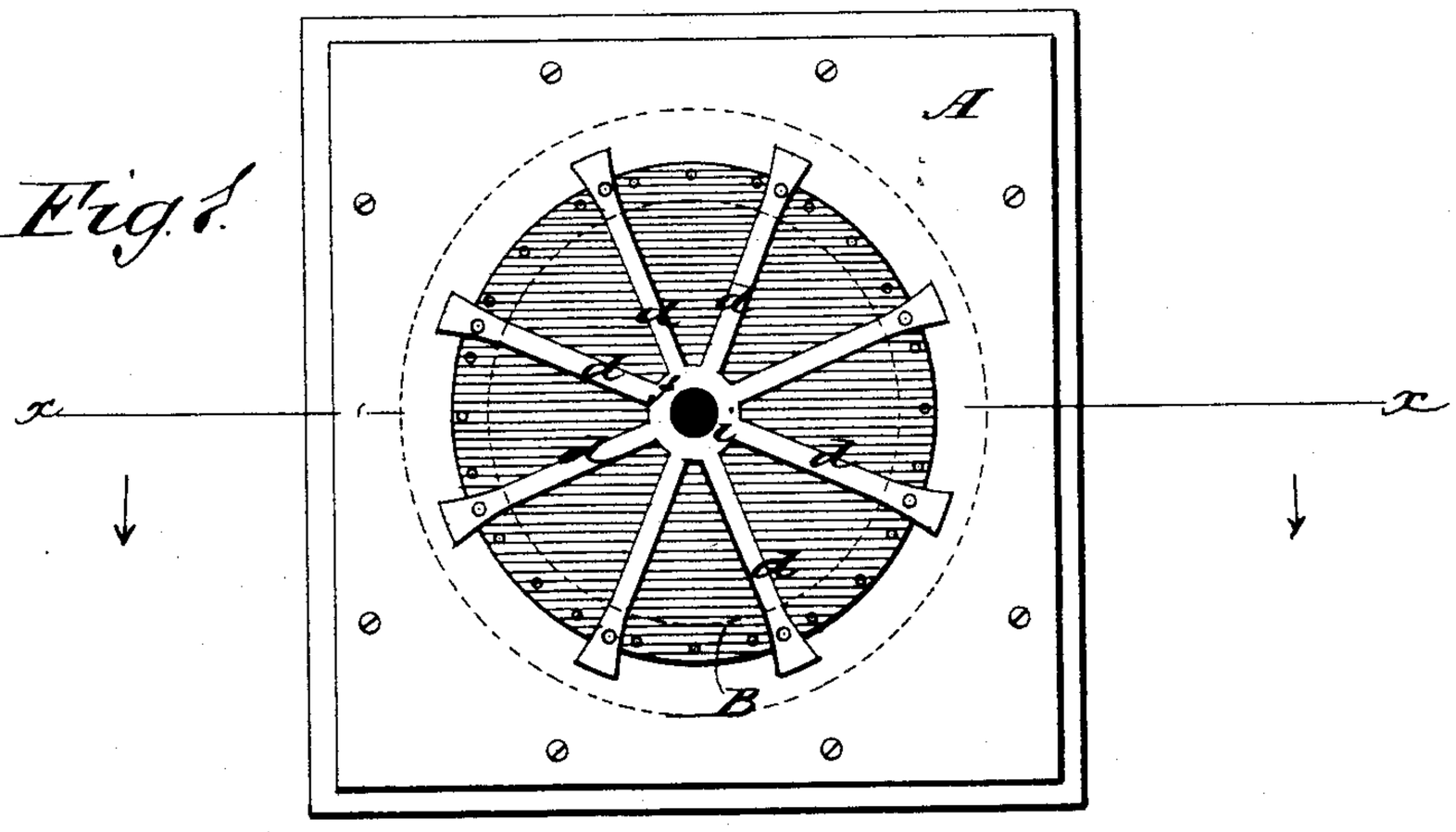


Fig. 2.

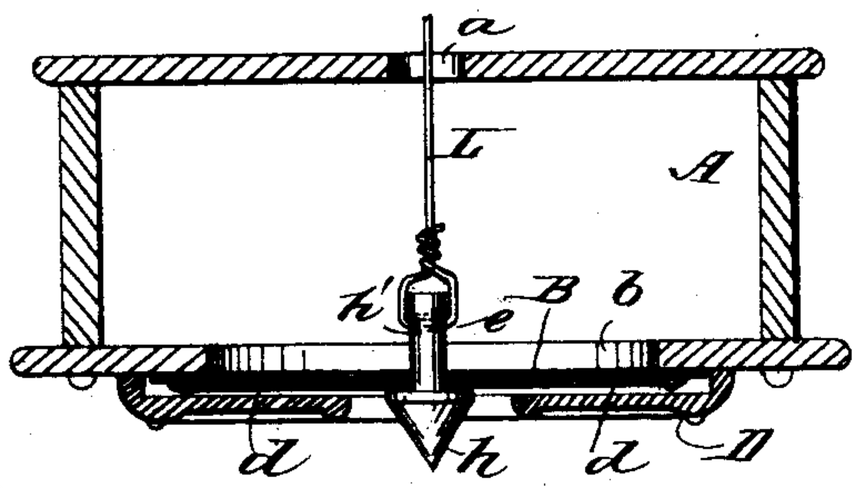
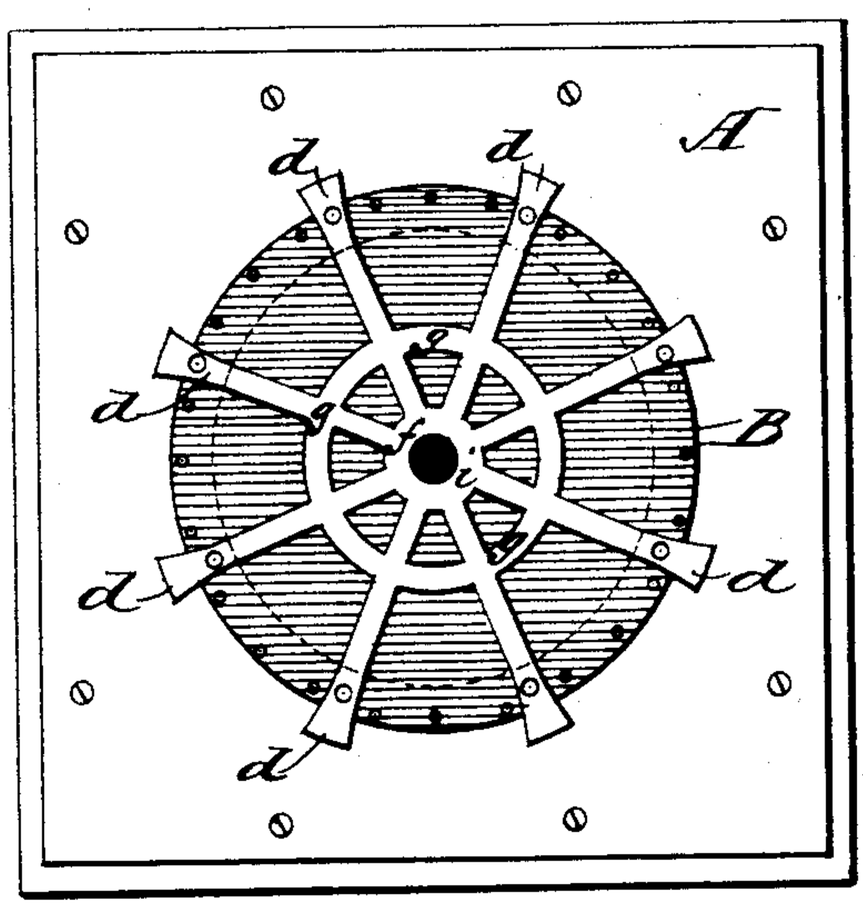


Fig. 3.



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WILLIAM W. NICHOLS, OF NEW YORK, N. Y., ASSIGNOR TO THE AMERICAN PRIVATE LINE TELEPHONE COMPANY, OF SAME PLACE.

MECHANICAL TELEPHONE.

SPECIFICATION forming part of Letters Patent No. 403,547, dated May 21, 1889.

Application filed October 1, 1887. Serial No. 251,204. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM W. NICHOLS, of the city, county, and State of New York, have invented a new and useful Improvement in Mechanical Telephones, of which the following is a full, clear, and exact description.

The object of my invention is to improve the transmitting and sensitive properties of mechanical or acoustic telephones and to provide a cheap and practical connection of the line-wire with the diaphragm, whereby a perfectly-uniform tension will always be exerted upon all parts of the diaphragm.

The invention consists, first, in combining, with the diaphragm, diverging or radial flat plates of metal or other resonant material, held under constant tension by the line-wire and in close contact with the diaphragm, and which serve to distribute the vibrations and relieve the diaphragm of the strain of the line-wire. These plates are by preference formed integral with a central flat plate, to which the line-wire is connected by any suitable connection, or by a button of special construction.

The button itself forms the second feature of my invention, the same being formed with a small stud or shank to pass through the center of the diaphragm and adapted to have the line-wire connected to it back of the diaphragm.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a front elevation of my improved mechanical telephone with the front apertured plate or mouth-piece and button removed. Fig. 2 is a sectional plan view of the telephone, taken on the line $x\,x$ of Fig. 1, showing the mouth-piece in place; and Fig. 3 is a front view with the mouth-piece removed, showing a modification.

The frame A of the telephone may be of any approved construction, with an aperture, a, at the back for the line-wire L, and a large front aperture, b, over which a diaphragm, B, of parchment or metal, is secured. In front of and against the diaphragm B are secured the thin flat plates d, preferably of metal. These plates are by preference made integral with a cental plate, f, from which the said plates radiate, the whole being stamped out of thin sheet-copper or other suitable material. In the center of the plate f is formed the small aperture i, which coincides with a similar orifice in the center of the diaphragm to enable the line-wire to be connected with the diaphragm B and plate f. This connection is effected by a button, h, formed with a reduced stud or shank, h', which passes through said orifices and is pierced at its inner end at e, for the passage and fastening of the line-wire, as shown in Fig. 2. The head of the button is made conical, and it is drawn in close contact with the central plate, f, by the strain of the line-wire, so that the said plate f and the radial plates d are held in close contact with the diaphragm, and also to put a constant tension upon the plates d and f, furnishing a rigid lateral support for the button, so that all tension and unequal strain upon the diaphragm is obviated. This construction of the button h also facilitates the work of connecting the line-wire to the diaphragm, and it is cheap, practical, durable, and not liable to get out of order.

In front of the diaphragm is secured the apertured plate or mouth-piece D in the usual manner.

By the use of the plates d and f in front of the diaphragm, the former being firmly secured to the frame of the telephone and the line-wire connected to the plate f, the strain of the wire puts a constant tension upon the plates d, which renders them very sensitive to sound-waves, and they supplement the vibration of the diaphragm and increase the transmitting-power of the telephone. Furthermore, the plates $d\,f$ relieve the diaphragm of the strain of the line-wire.

In Fig. 3 I have shown a second annular plate, g, surrounding the central plate, f, and connecting all the diverging plates d, so that still greater contact of the flat plates with the diaphragm B is produced, which tends to augment the transmitted vibrations.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a mechanical telephone, the combina-

tion, with the diaphragm B, of radial plates *d*, held in front of the diaphragm and secured at their ends to the casing and held under constant tension by the line-wire, substantially as described.

2. The combination, with the diaphragm B and the radial plates *d*, and central apertured plate, *f*, held in front of the diaphragm, and the plates *d*, secured at their ends to the casing, of the button *h*, formed with a reduced shank, *h'*, pressed at *e* and adapted to pass through the center of the plate *f* and diaphragm and to be connected to the line-wire, so that the latter will exert a constant tension upon the plates *d f*, substantially as described.

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Witnesses:
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