

(No Model.)

J. H. ROGERS & C. G. SCHNEIDER.

TELEPHONE.

No. 251,465.

Patented Dec. 27, 1881.

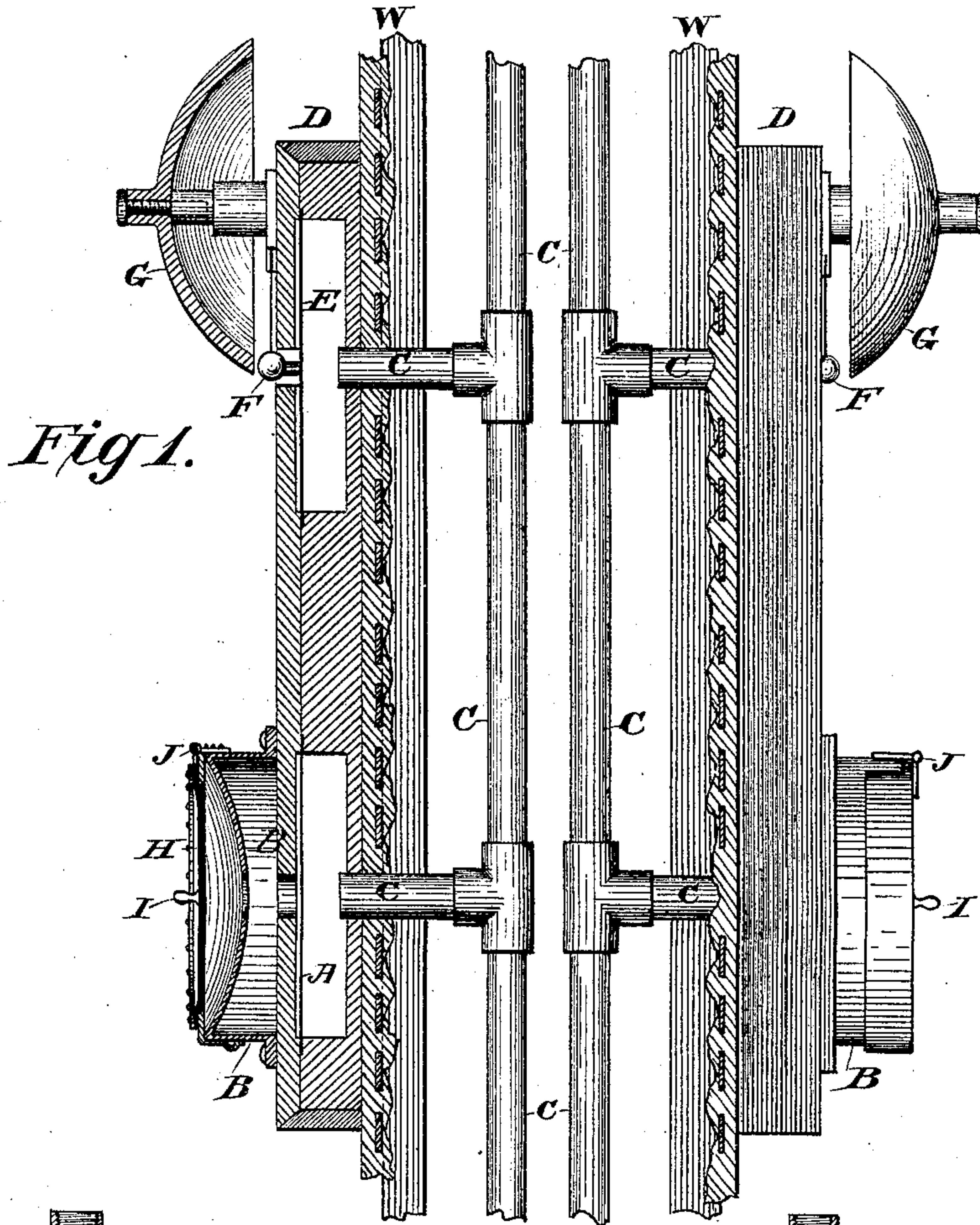


Fig 1.

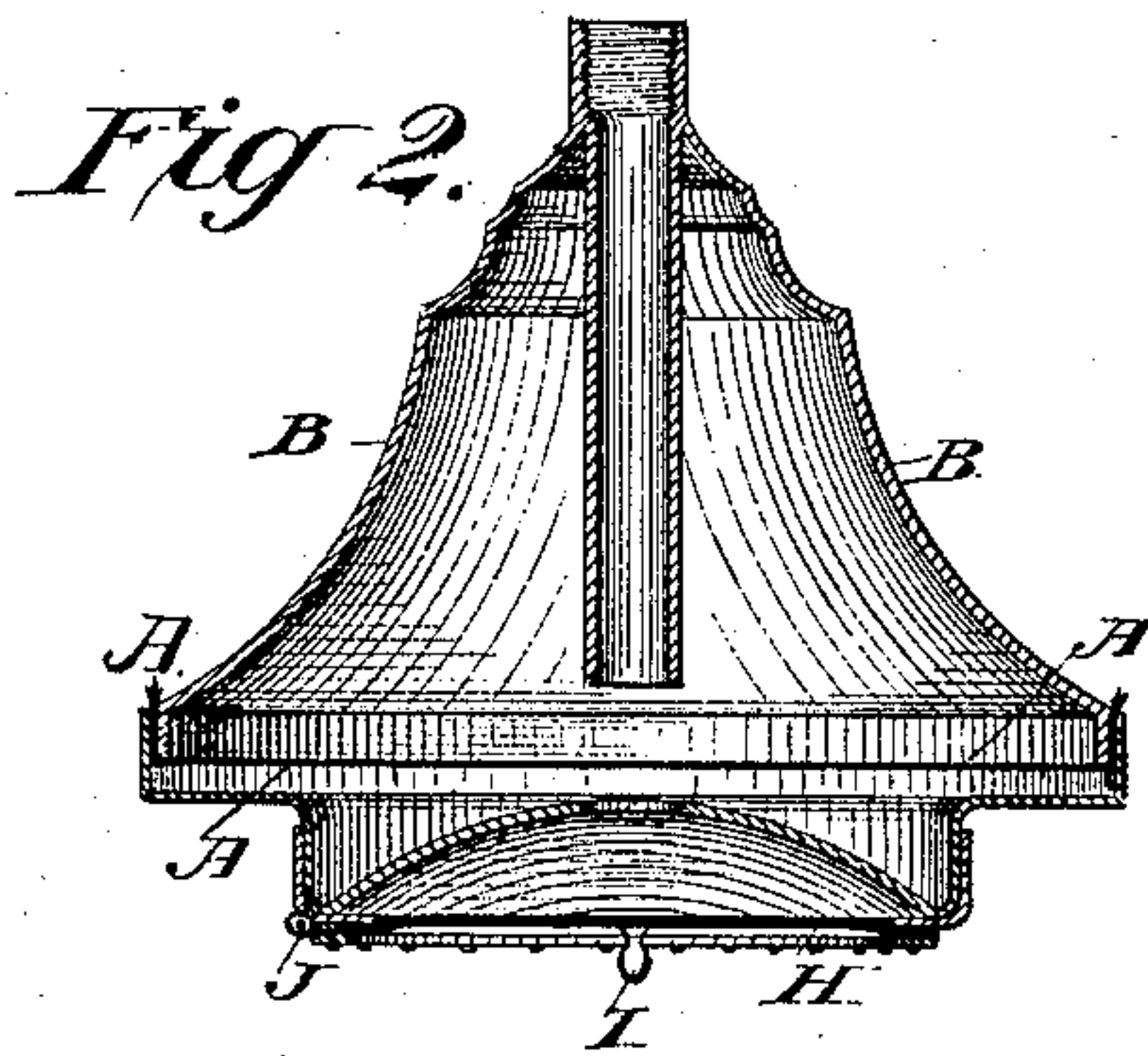


Fig 2.

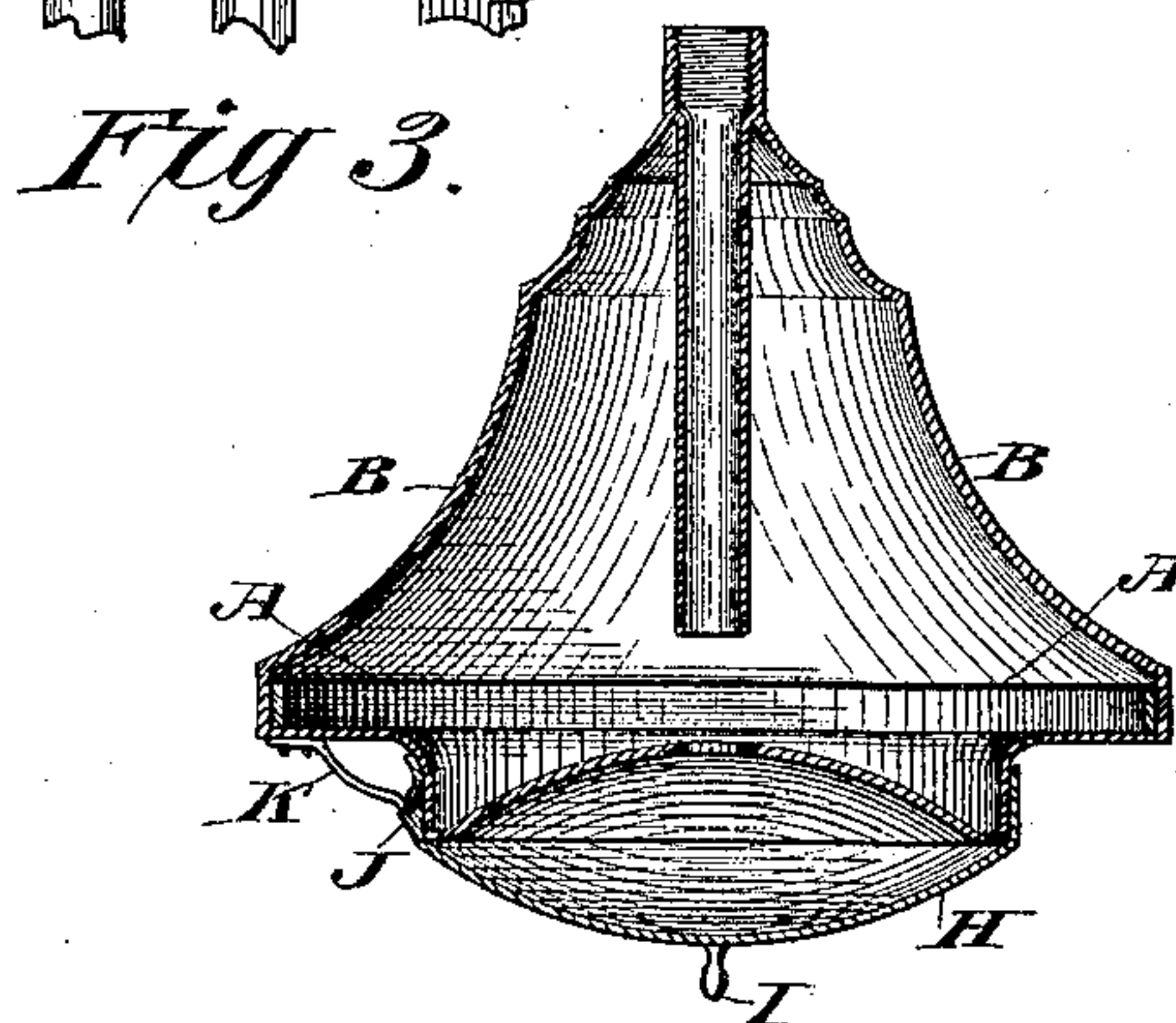


Fig 3.

Attest:
Geo. T. Smallwood Jr.
L. M. Hopkins

Inventor:
James Harris Rogers
Christian G. Schneider
BY
Wright Bros
Atty.

UNITED STATES PATENT OFFICE.

JAMES H. ROGERS AND CHRISTIAN G. SCHNEIDER, OF WASHINGTON, D. C.,
ASSIGNORS TO HAYWARD M. HUTCHINSON, OF SAME PLACE.

TELEPHONE.

SPECIFICATION forming part of Letters Patent No. 251,465, dated December 27, 1881.

Application filed June 14, 1881. (No model.)

To all whom it may concern:

Be it known that we, JAMES HARRIS ROGERS and CHRISTIAN G. SCHNEIDER, citizens of the United States, both residing at Washington, in the county of Washington and District of Columbia, have invented Improvements in Telephones, of which the following is a specification.

Our invention relates to telephones in which audible signals are conveyed by sound-waves or similar vibrations or undulations in a gaseous fluid confined within pipes or tubes of moderate size—as, for example, the gas-pipes of a building.

The first part of our invention is a call-signal device consisting of a receiving-membrane actuating a bell-hammer or equivalent sounder, a transmitting-membrane so arranged as to adapt it to be actuated by a sudden concussion of air or of a solid body, and a pipe or pipes connecting the transmitter and receiver, containing gas through which sound-waves or equivalent vibrations can be communicated from the transmitting to the receiving membrane, so as to actuate the bell-hammer, as hereinafter described.

Our invention further consists in a spring-cap covering and protecting the transmitting-membrane and adapted, when drawn and released, to impart the required impulse to the membrane through the medium of the air confined between said cap and membrane, as hereinafter described.

In the accompanying drawings, Figure 1 is a sectional diagram of a telephonic apparatus, illustrating the invention. Fig. 2 is a section on a larger scale of the transmitting-instrument and its spring-cap. Fig. 3 is a section illustrating a modification in the construction of the spring-cap.

A represents a transmitting-membrane stretched within a suitable mouth-piece, B, connected with a pipe, C, to contain a confined body of any aeriform fluid—as, for example, illuminating-gas—the invention being well adapted for use in connection with the ordinary gas-pipes of a house, as described in an earlier application of J. H. Rogers.

The signaling-instrument is shown at D, consisting of a membrane, E, the interior surface of which is in contact with the gas within the pipe C. On or against the exterior surface of

the membrane E rests the hammer F of a bell, G, so that a sudden impulse imparted to the membrane E will be communicated to the hammer and cause it to strike the bell.

In operation the transmitting-membrane A is actuated by concussion, which may be produced through the confined body of air within the mouth of the bell B by striking the palm of the hand over said bell; or it may be produced by striking the membrane itself with the end of the finger or with any suitable instrument. The effect of this sudden concussion against the membrane A is to impart vibrations to the gas confined within the pipe C similar to sound-waves, and these vibrations are communicated to a receiving-membrane, E, with sufficient force to actuate the bell-hammer, as above described, or any other suitable mechanical sounder which may be employed instead thereof.

Compression of air in tubes has been used to start an alarm or to give a signal at a distant point. Our invention differs essentially from this in that we produce vibrations similar to sound-waves, and thereby deliver, by means of the hammer in contact with the receiving-diaphragm, a sudden blow. The fact that compression of the air fails to effect this result may be explained by the elasticity of the medium.

The invention is applicable not only to gas-pipes, but to any pipes or tubes of moderate size wherein any aeriform fluid may be confined.

The transmitting-membrane A is preferably made from the entrail or bladder of a hog or other animal, as we have described in another application for Letters Patent of even date herewith.

The receiving-membrane E may be of metal, this material being sufficiently sensitive to act on the bell-hammer with good effect, and being preferable for use in a call-signal on account of the necessity of its being in constant communication or contact with the gas, and being constantly depended on to confine the latter within the pipes, owing to the necessity of the call-signal being at all times at the command of parties desiring to communicate from a distant point.

A suitable cap, H, is employed to cover the membrane A and protect it from injury. In Fig. 2 we have shown such a cap composed of

soft rubber, with a knob, I, by which it may be drawn out and suddenly released so as to impart a sudden vibration to the membrane A. The cap H is provided with a hinge, J, for turning it out of the way to give access to the membrane when it is to be used for speaking or hearing. Fig. 3 shows a cap, H, provided with a similar hinge, J, and a separate spring, K, by which the same effect may be produced with a rigid cap.

It will be observed that Fig. 1 represents two stations supposed to be located in different apartments, with walls W W between them, each having a speaking and hearing instrument, A B, and a signaling-instrument, D, shown in section at one station and in elevation at the other. The instrument A B is in each case used for transmitting call-signals as well as for speaking and hearing, and the adjacent instrument, D, at each station for receiving call signals.

Having thus described our invention, the following is what we claim as new therein and desire to secure by Letters Patent:

25 1. In a telephonic apparatus in which sig-

nals are conveyed by sound-waves or analogous undulations in gas confined in pipes or tubes, the combination of a transmitting-membrane to impart the required vibrations or undulations to the gas, a receiving-membrane acted on by such vibrations, and a bell-hammer or other mechanical sounder actuated by the impulse imparted to the receiving-membrane by the undulations produced in the gas by the transmitting-membrane, substantially as set forth. 35

2. In a telephonic apparatus in which signals or communications are conveyed by gas confined in pipes or tubes, the combination of a transmitting membrane and a cap having a spring to adapt it, when pulled and released, to impart a sudden impulse to the transmitting-membrane, so as to produce vibration in the confined gas. 40

J. H. ROGERS.

CHRISTIAN G. SCHNEIDER.

Witnesses:

OCTAVIUS KNIGHT,
HARRY E. KNIGHT.