

(No Model.)

H. S. THORNBERRY.

TELEPHONE.

No. 255,354.

Patented Mar. 21, 1882.

Fig. 1

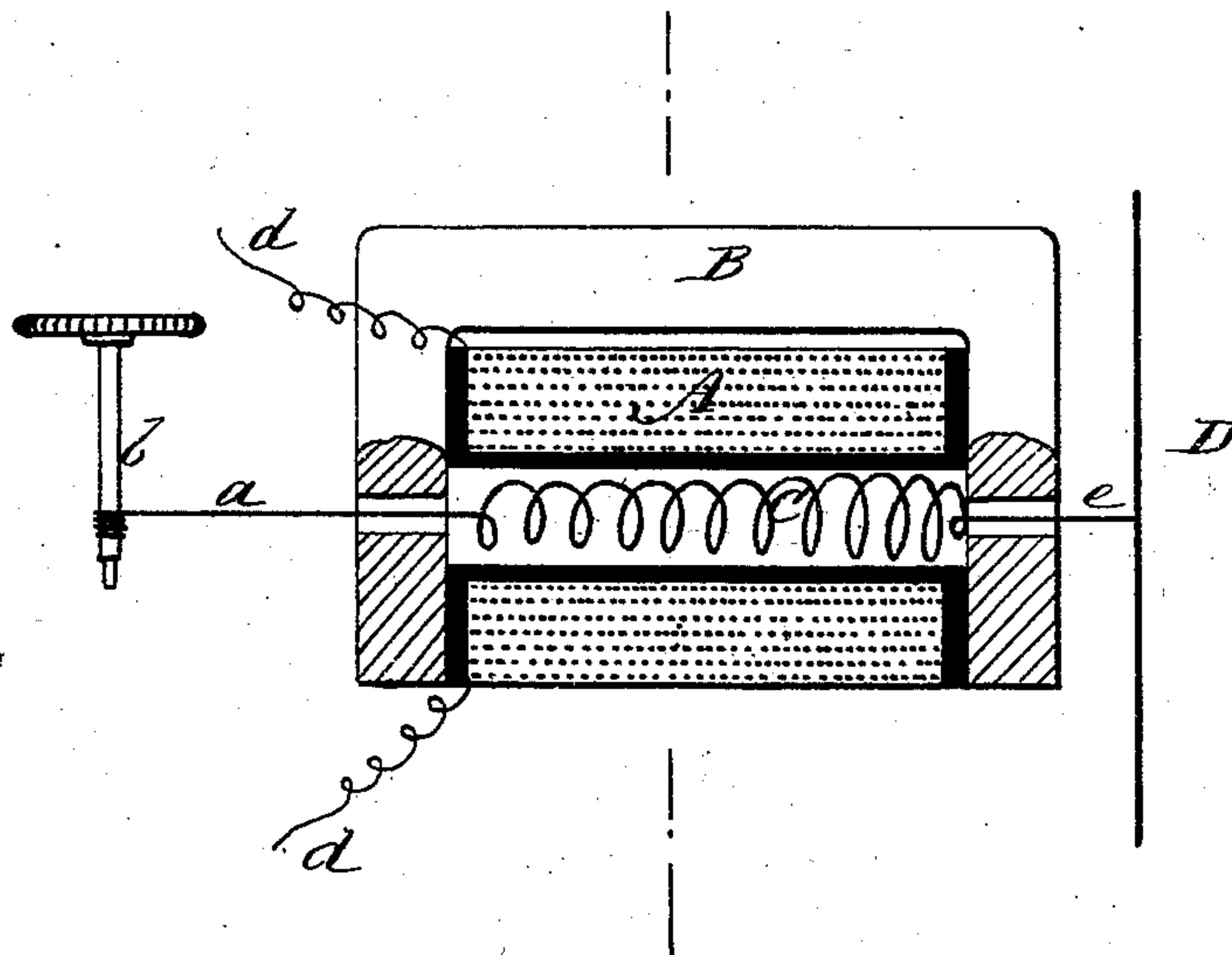
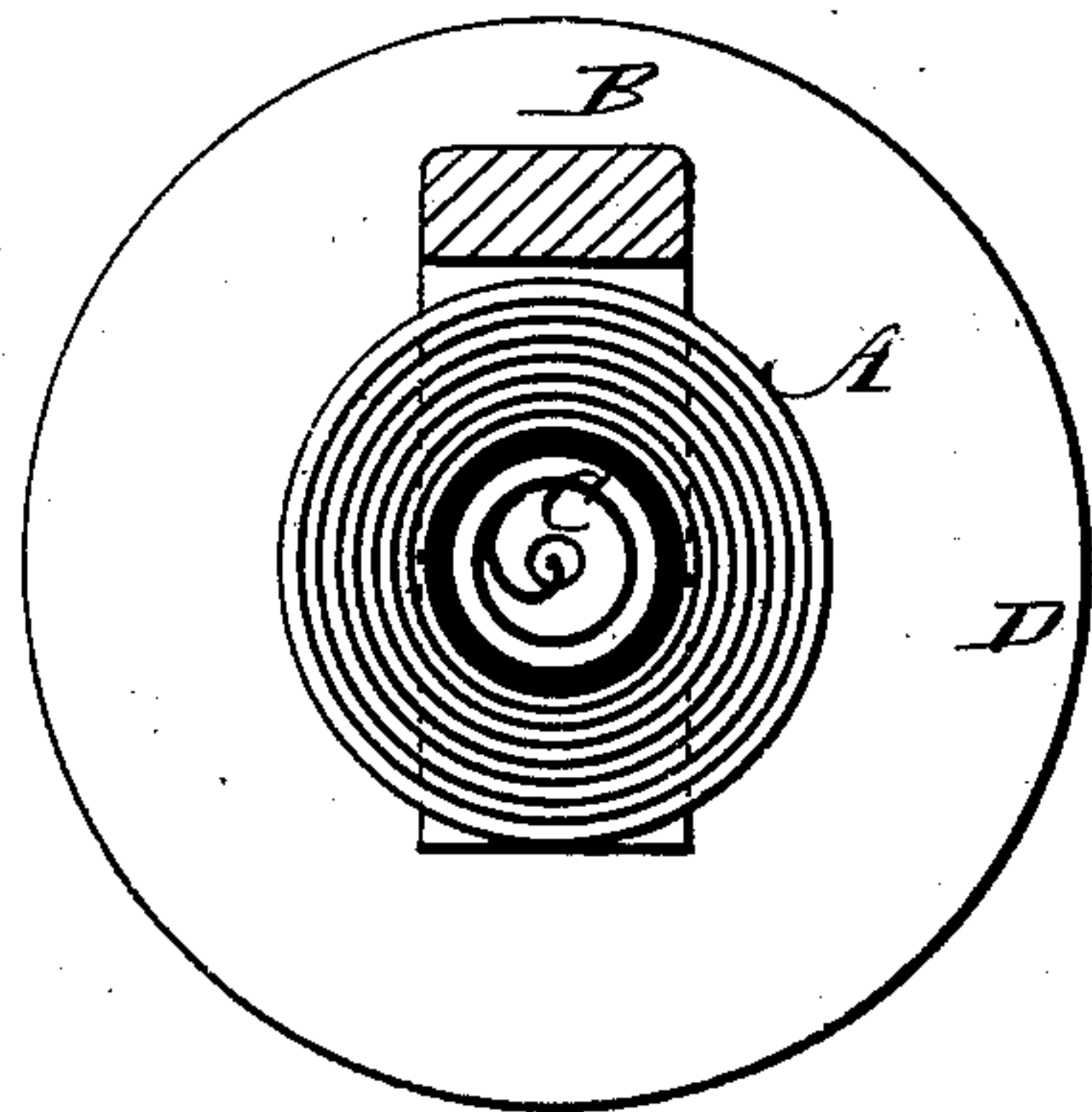


Fig. 2



WITNESSES:

C. Verux
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UNITED STATES PATENT OFFICE.

HARRY S. THORNBERRY, OF WINONA, MINNESOTA.

TELEPHONE.

SPECIFICATION forming part of Letters Patent No. 255,354, dated March 21, 1882.

Application filed November 4, 1881. (No model.)

To all whom it may concern:

Be it known that I, HARRY S. THORNBERRY, of Winona, in the county of Winona and State of Minnesota, have invented a new and useful Improvement in Telephones, of which the following is a full, clear, and exact description.

My invention consists of a telephone-instrument in which the movement on or against the diaphragm is given by the magnetic contraction of a spiral core in a helix, as hereinafter described and claimed.

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

Figure 1 is a longitudinal section of my improved telephone-receiver, and Fig. 2 is a vertical cross-section of the same.

A is a tubular helix, sustained between the ends of a U-shaped magnet, B, which is permanent and apertured on the line of its longitudinal axis.

C is a spiral of iron or steel contained in the hollow helix, and connected, one end by a rigid connection, *e*, to the diaphragm D, and the other end by a cord or wire, *a*, to an adjusting-screw, *b*. The connections from the ends of the spiral to the diaphragm and to the adjusting screw pass through the ends of magnet B, the magnet ends having apertures large enough to prevent any contact.

d d are the line-wires.

In operation the spiral is contracted by the action of the current passing through the helix,

and expands when the current ceases, thus vibrating the diaphragm.

It will be seen that the diaphragm is not attracted nor repelled by magnetic action directly upon it, and for that reason the diaphragm may be made of other material than iron or other magnetic metal.

The adjusting-screw allows adjustment of the tension of the spiral and regulation of the tension of the diaphragm thereby.

It will be observed that the magnet B is permanent and has its poles near the perforations through its legs. The varying line-current passes through the coil and magnetizes the spiral which forms its core, causing said spiral to be more or less drawn into the coil. The permanent magnet returns the coil to its normal position.

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

The combination, with the permanent magnet B, of a magnet-coil in the line-circuit between the legs of magnet and parallel to its yoke, and a spiral core, C, of magnetic material, within said coil, said core being connected at one end by a cord or wire with the adjusting-screw *b* and rigidly connected at the other end with the diaphragm, substantially as and for the purpose specified.

HARRY STUART THORNBERRY.

Witnesses:

B. L. ROBINSON,
J. S. RUFUS.