

(No Model.)

H. W. LADD.
TELEPHONE LINE VIBRATOR.

No. 422,082.

Patented Feb. 25, 1890.

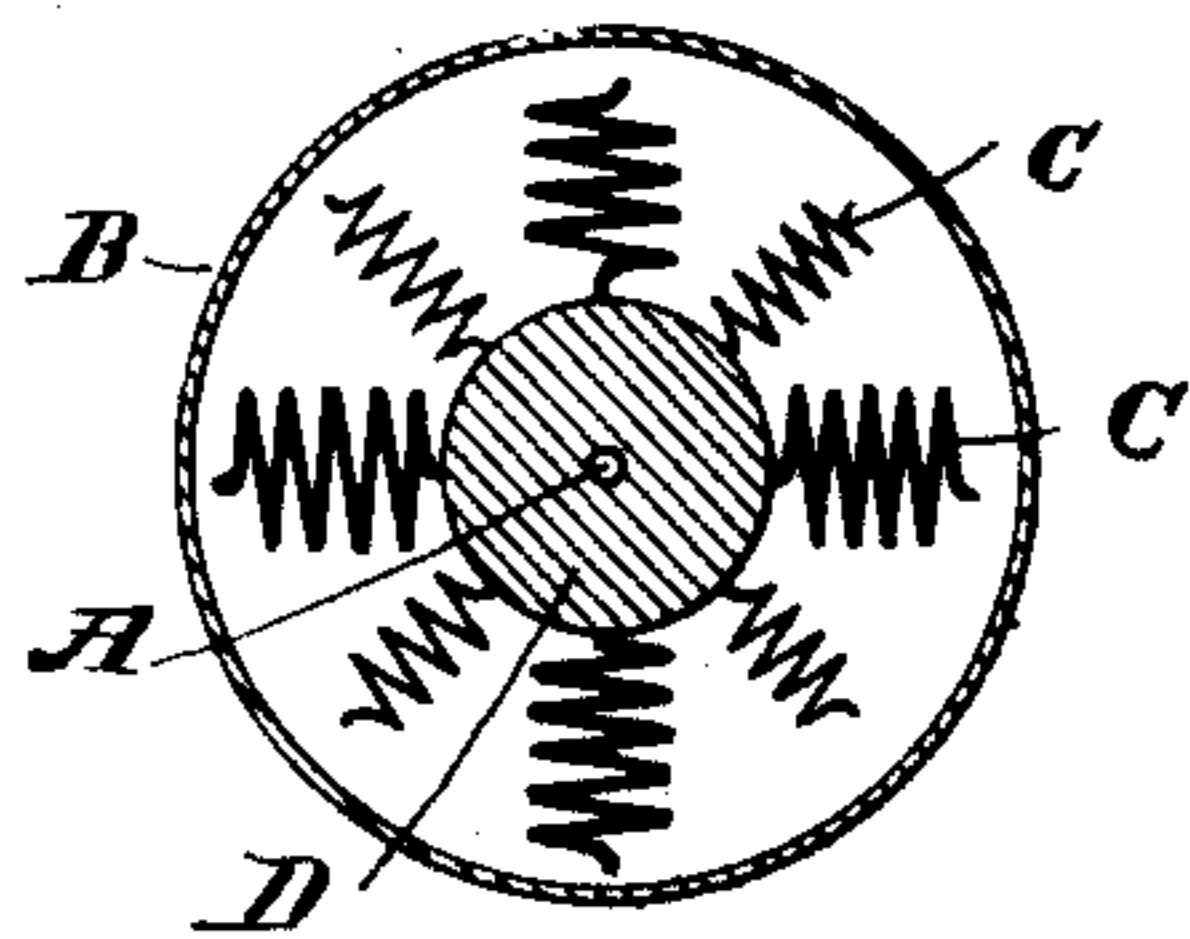


Fig. 2.

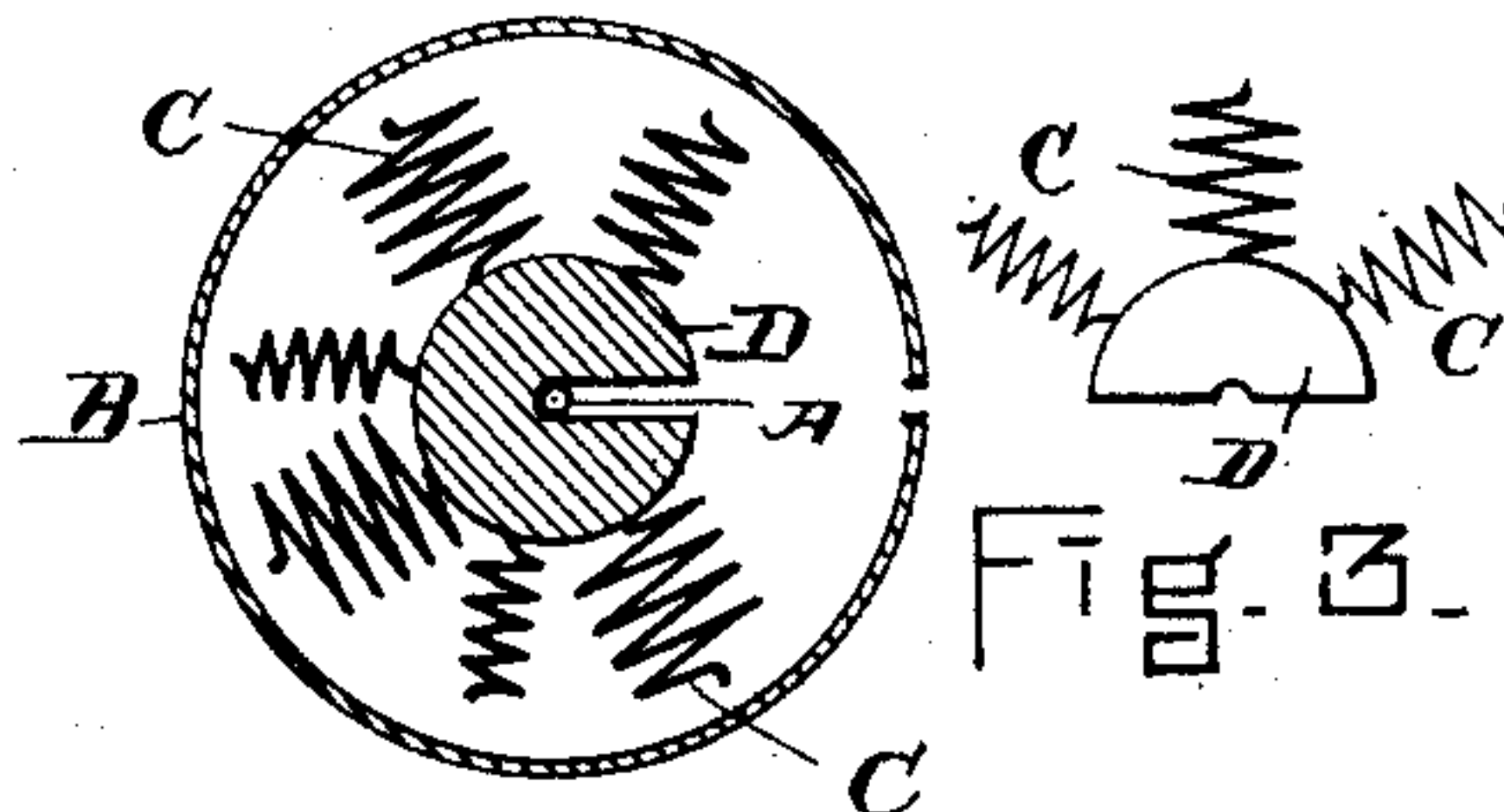


Fig. 3.

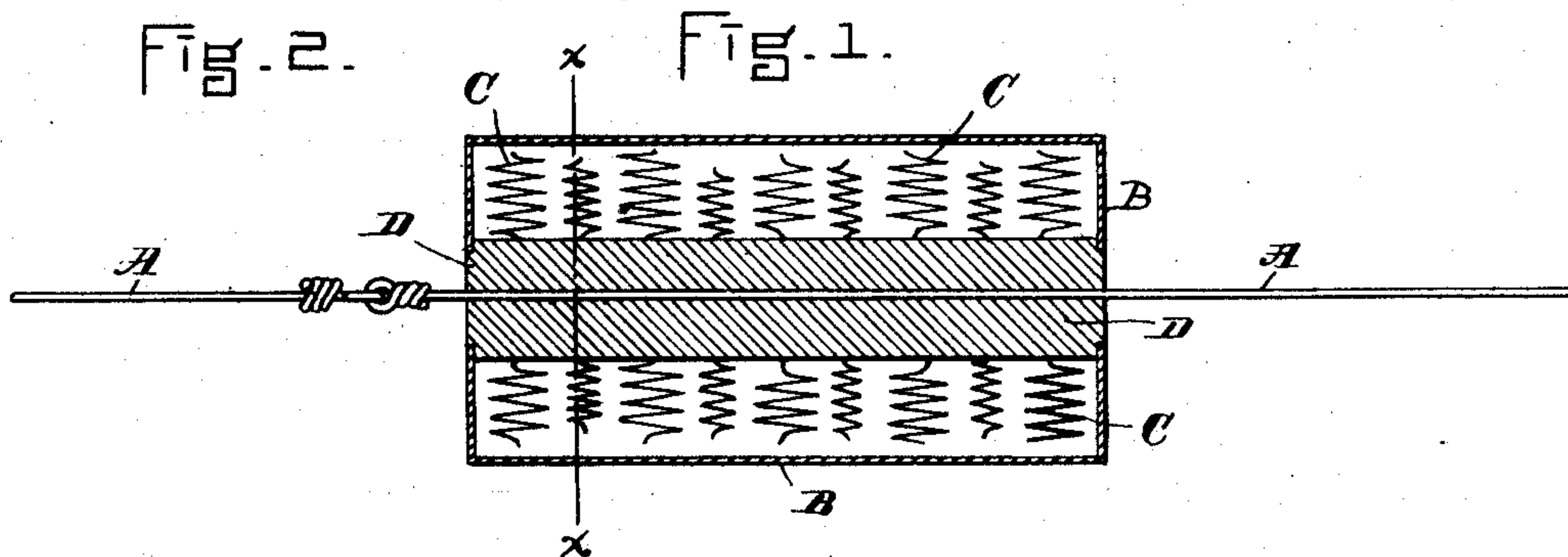


Fig. 1.

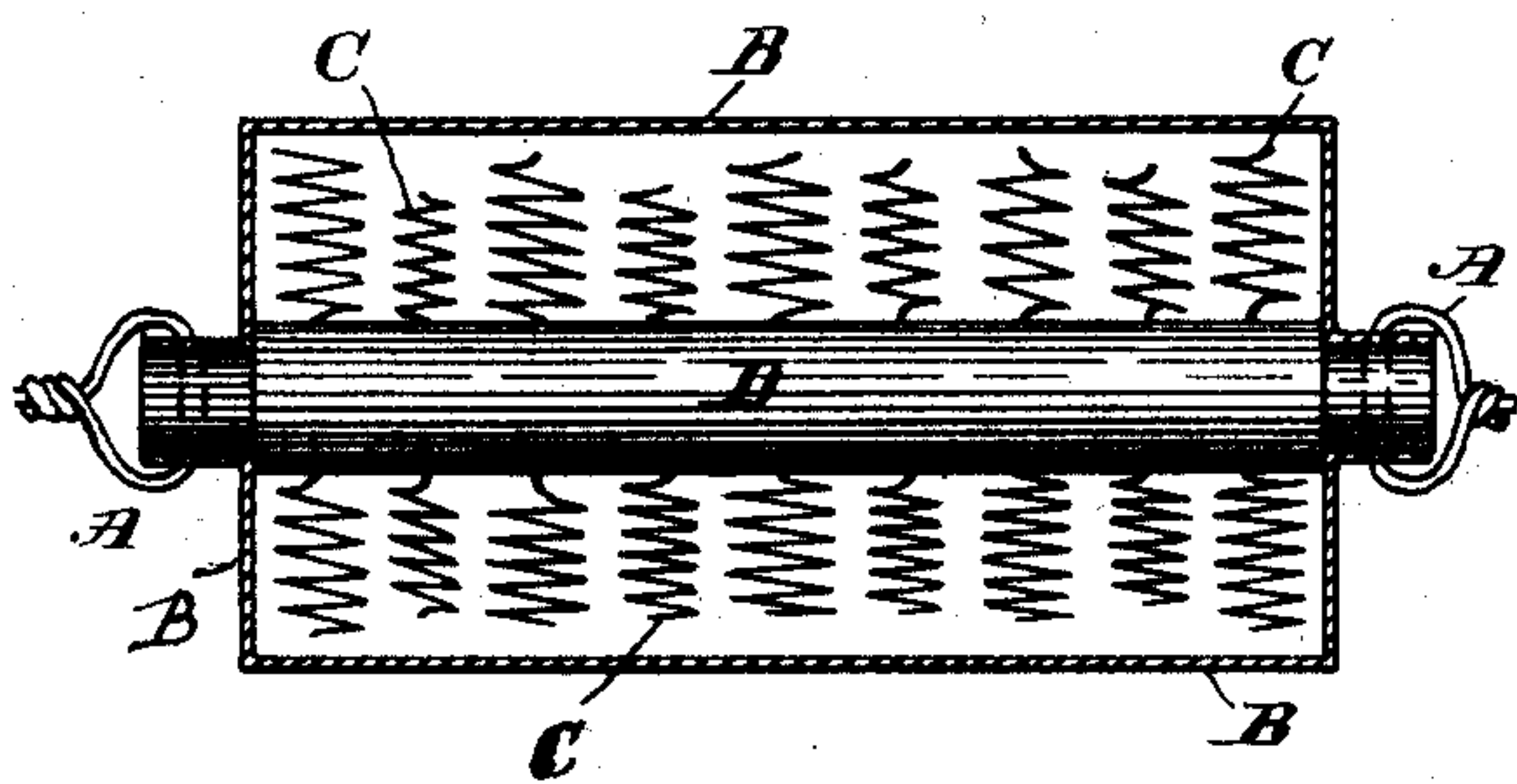


Fig. 4.

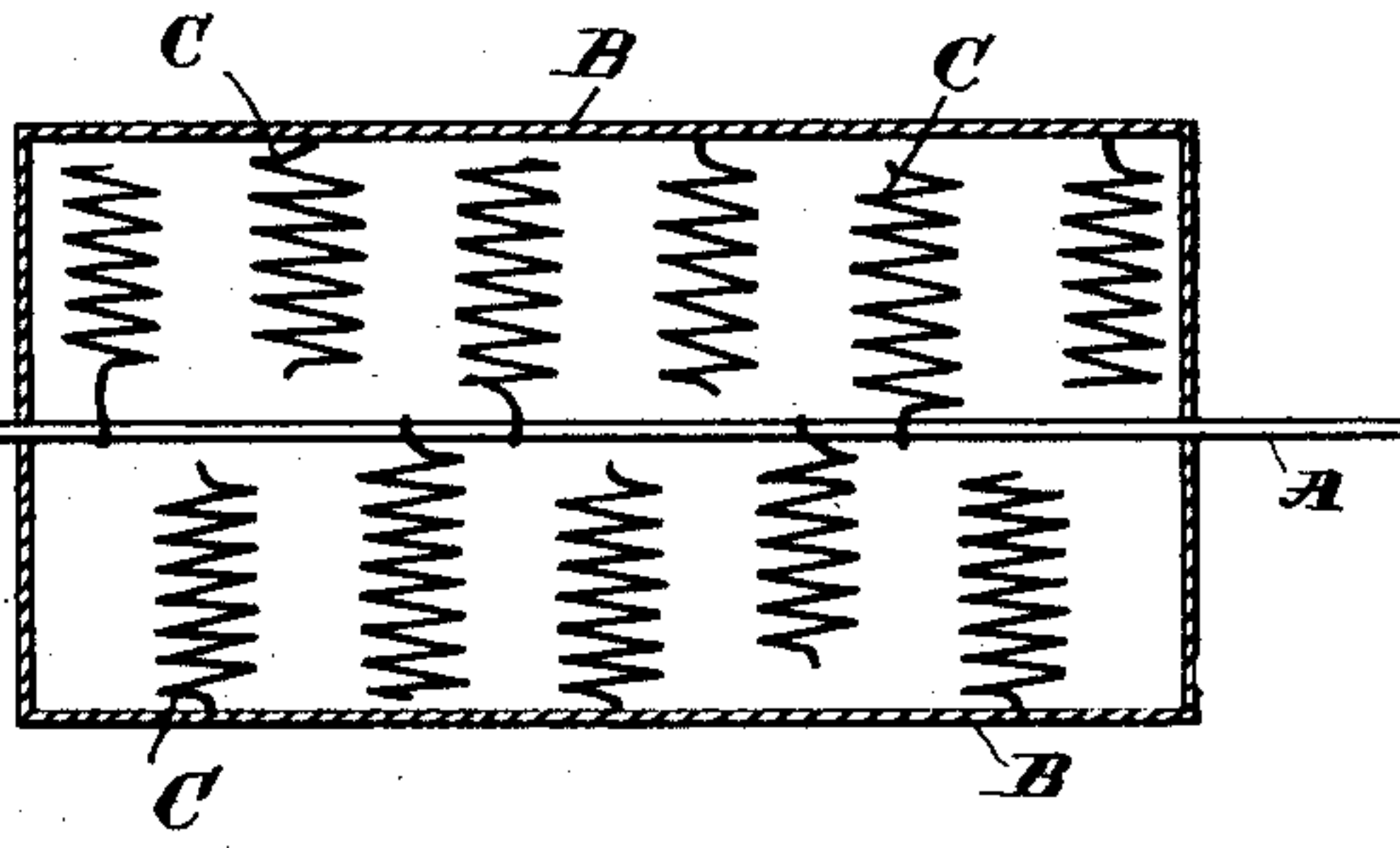


Fig. 5.

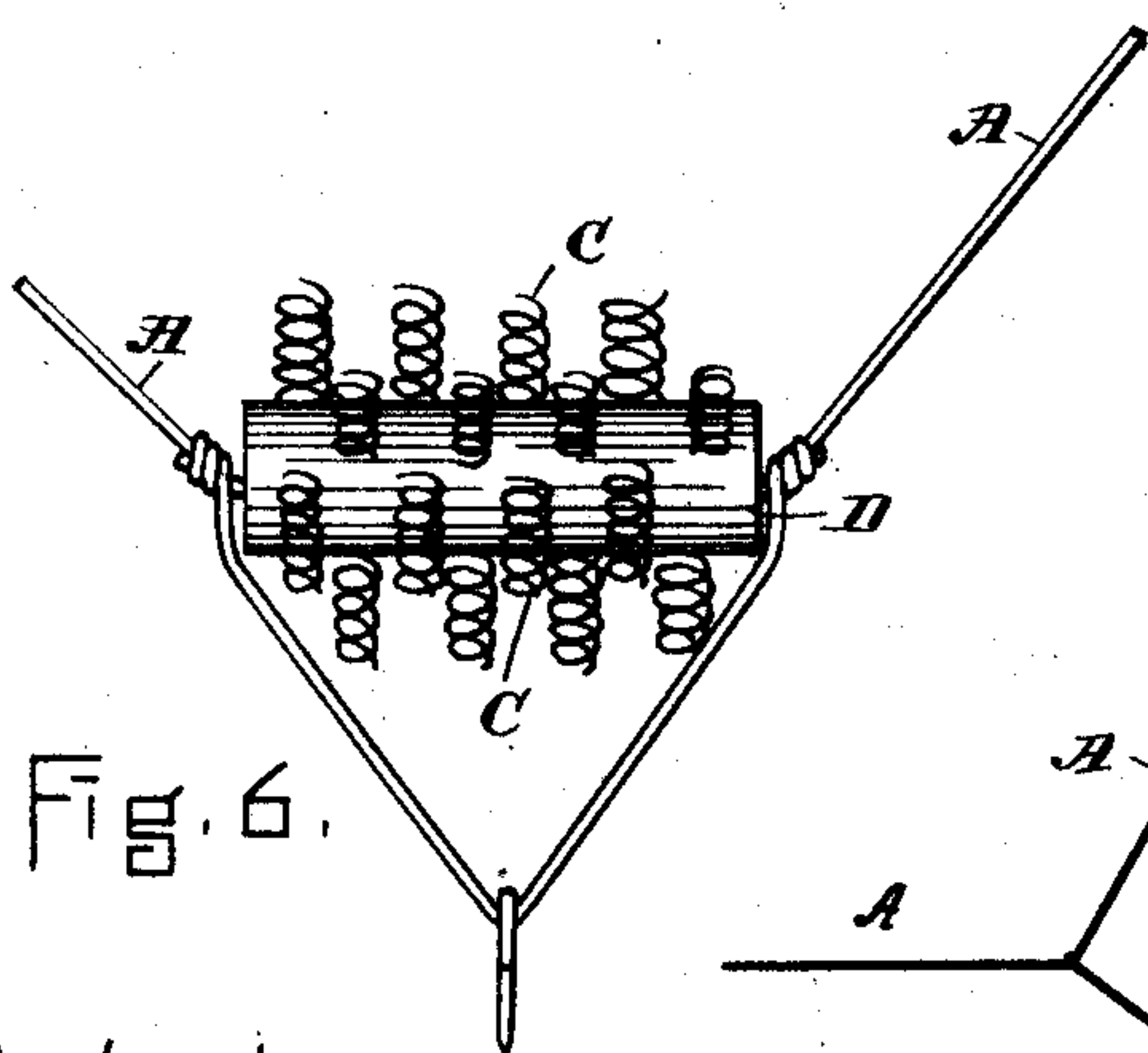


Fig. 6.

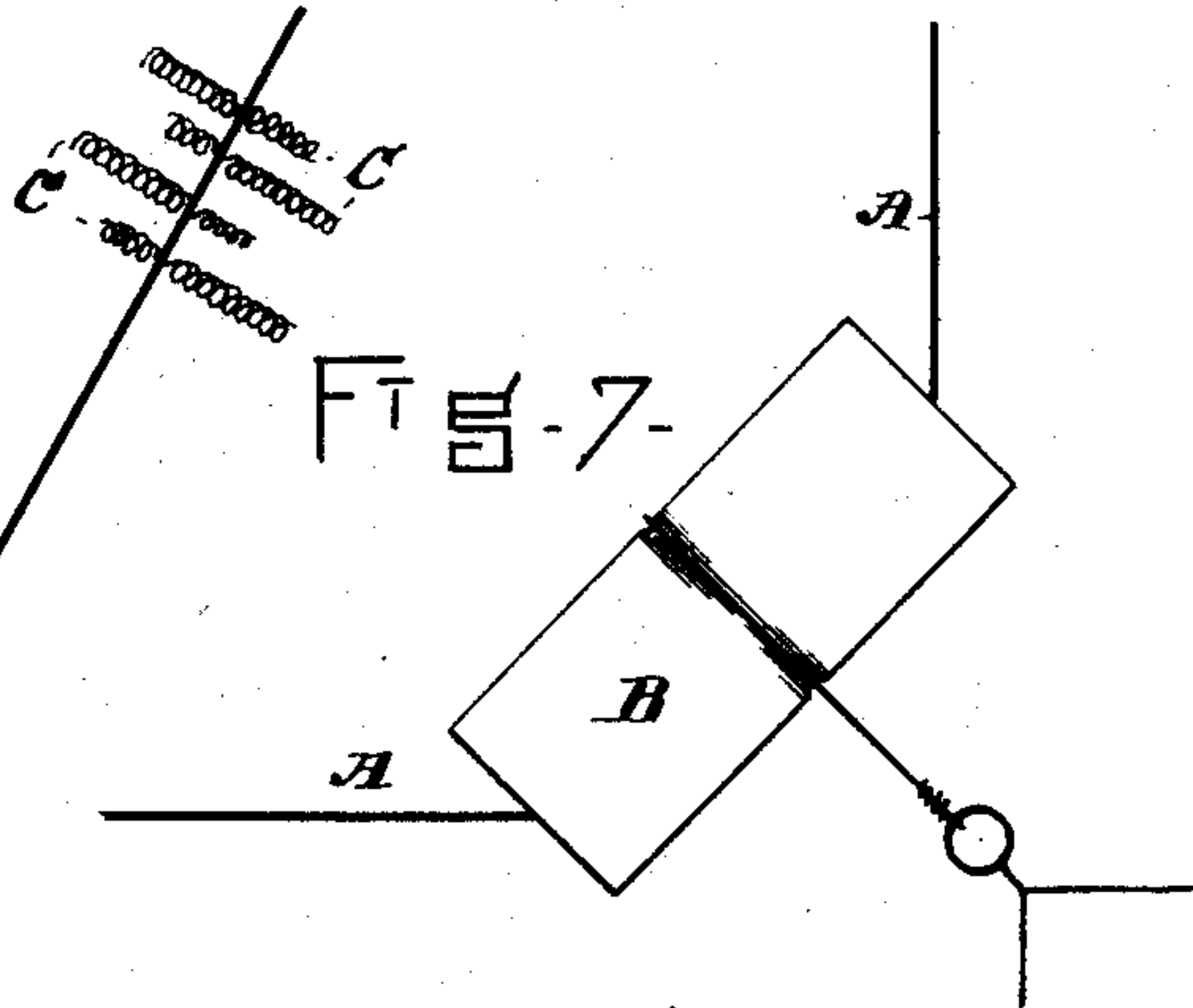


Fig. 7.

Fig. 8.

WITNESSES.

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UNITED STATES PATENT OFFICE.

HERMON W. LADD, OF BOSTON, MASSACHUSETTS.

TELEPHONE-LINE VIBRATOR.

SPECIFICATION forming part of Letters Patent No. 422,082, dated February 25, 1890.

Application filed June 12, 1889. Serial No. 314,064. (No model.)

To all whom it may concern:

Be it known that I, HERMON W. LADD, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Relay-Vibrators for Telephone-Lines, of which the following, taken in connection with the accompanying drawings, is a specification.

The object of this invention is to increase the transmitting-power of mechanical telephone-lines, so as to make such lines effective over longer distances than they have been adapted to heretofore.

My invention consists in a telephone-line having, distinct from the instruments, suitable spring-vibrators, and it is embodied in its best form in a re-enforcing chamber connected to the line-wire outside of the transmitting-instrument and provided with one or more inclosed vibrators which co-operate with and give continuity to the vibratory currents traversing the line-wire. The vibrators may be attached to the line-wire at will, or to the walls of the chamber, or to the line-wire within the chamber, or to a core concentric with it, and the core or chamber may constitute a section of the line or a support or hanger at a terminus of or bend in the line.

Vibrators have heretofore been employed within the chambers of telephonic instruments to give continuity to the longitudinal vibrations of the line-wire; but I am not aware of any such vibrators distinct from the instruments and intermediate between them prior to my invention.

In the drawings, Figure 1 is a longitudinal section, and Fig. 2 a cross-section, of a shell and core mounted on a line-wire with a series of vibrators attached to the core. Fig. 3 illustrates split and slotted cores for convenient application of vibrators to existing lines. Fig. 4 shows the core as a section of the line, and Fig. 5 a shell without inclosed core. Figs. 6 and 7 are side views of the line and hangers. Fig. 8 represents part of the line with free vibrators thereon.

A represents the line-wire, B the chamber

mounted thereon, and C the vibrators inclosed in the chamber, so as to be free from the action of storms and wind.

D is a wooden or other core, which I prefer to employ, surrounding the wire A, or constituting a section of the length of the line.

The vibrators are preferably spiral springs of various sizes, each having one free end, and affixed at its other end either to the core D or wire A, so as to extend radially therefrom, or to the interior of the chamber D, to project inwardly toward the wire. Fig. 5 illustrates both these forms, the other figures showing a projection outwardly. These re-enforcing devices are to be applied at intervals along the line or at supporting-points, as in Figs. 6, 7, and 8.

In applying to existing lines the vibrators C may be attached at desired points, as in Fig. 8, or the line-wire A may be cut and passed through the cylinder and solid core, as in Figs. 1 and 2, or secured to each end of the chamber or core, as in Fig. 4, or the parts may be slotted or made in halves, as indicated in Fig. 3, to be brought together to embrace the unbroken wire.

The vibrators may be advantageously employed, as in Fig. 6, radiating from the spool or core D, which forms part of the hanger, the line-vibrations being thus re-enforced instead of being weakened at these supporting-points.

In Fig. 7 the vibrators are inclosed in the shell B.

I claim as my invention—

1. The combination, with a properly-supported telephone line-wire, of suitable spring-vibrators connected thereto distinct from the instrument, substantially as set forth.

2. The combination, with a properly-supported telephone line-wire, of spring-vibrators mounted on said line and extending outwardly therefrom at points intermediate between the instruments, substantially as set forth.

3. A telephone line-wire provided with a series of spring-vibrators at intermediate

points, in combination with a core or body to which said vibrators are secured, substantially as set forth.

4. A telephone line-wire provided with a
5 series of spring-vibrators independent of and external to the instruments, in combination with a chamber or shell inclosing such vibrators, substantially as set forth.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, on this 5th day of June, A. D. 1889.

HERMON W. LADD.

Witnesses:

A. H. SPENCER,
JAMES P. PRINCE.