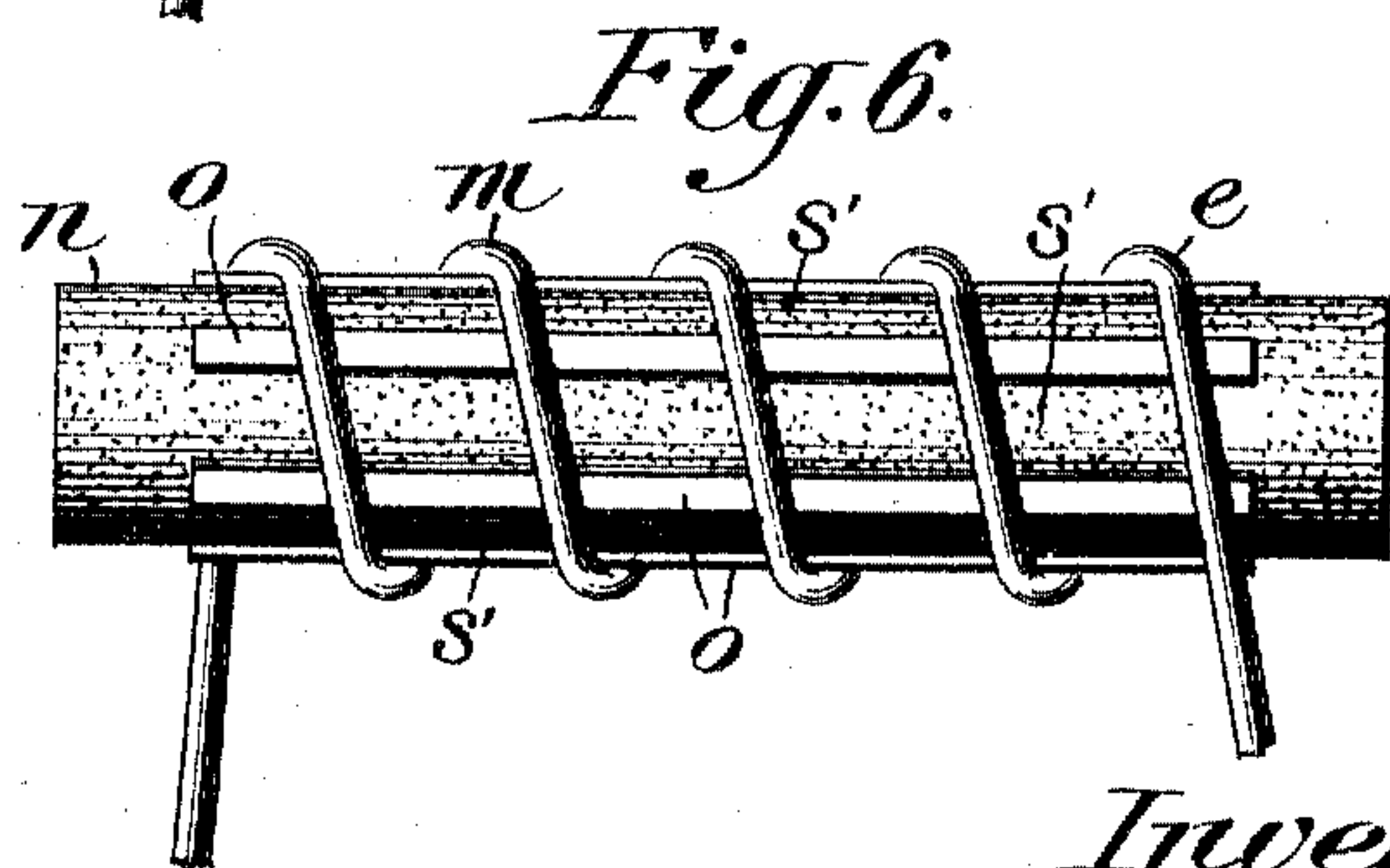
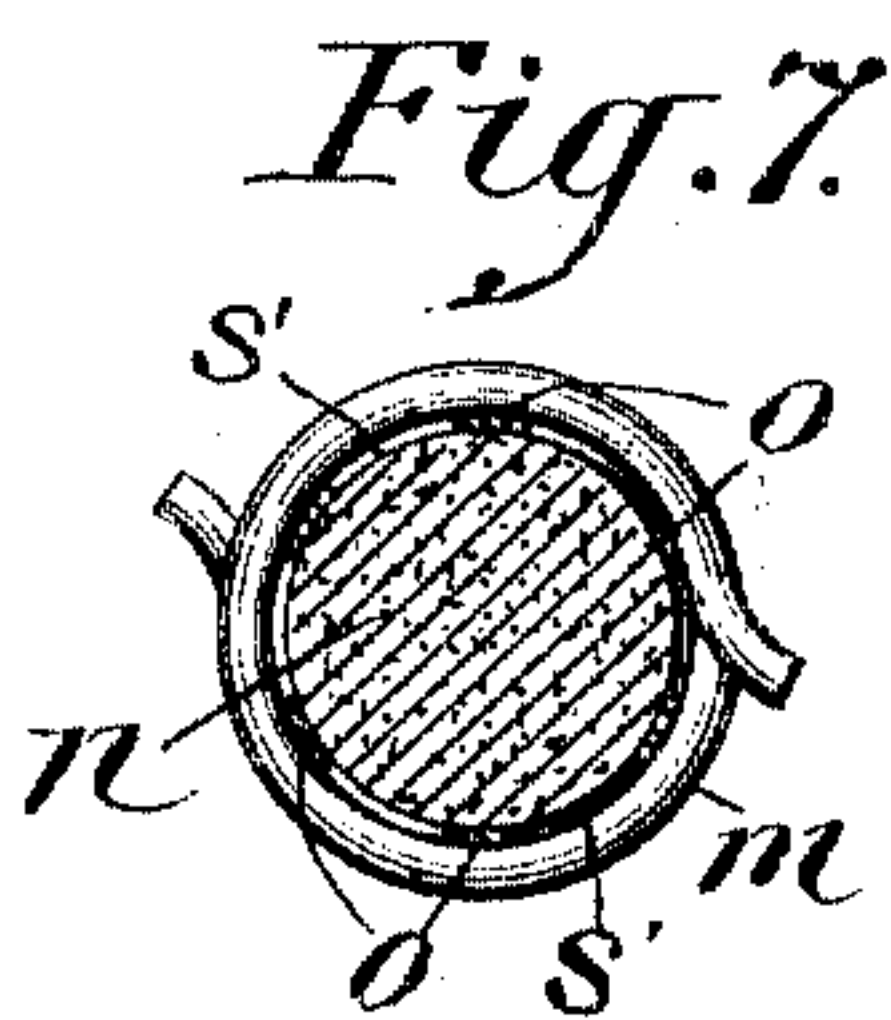
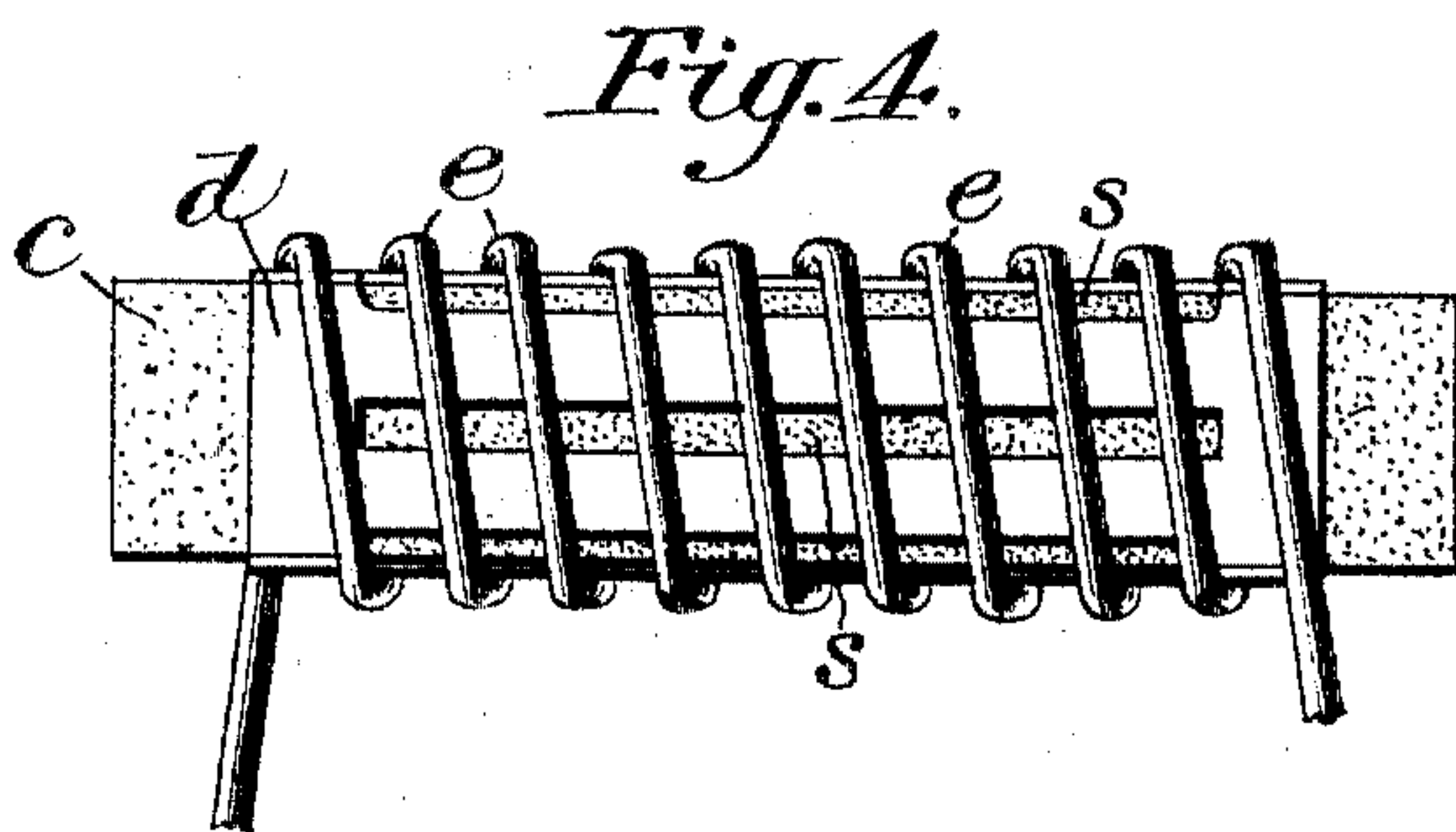
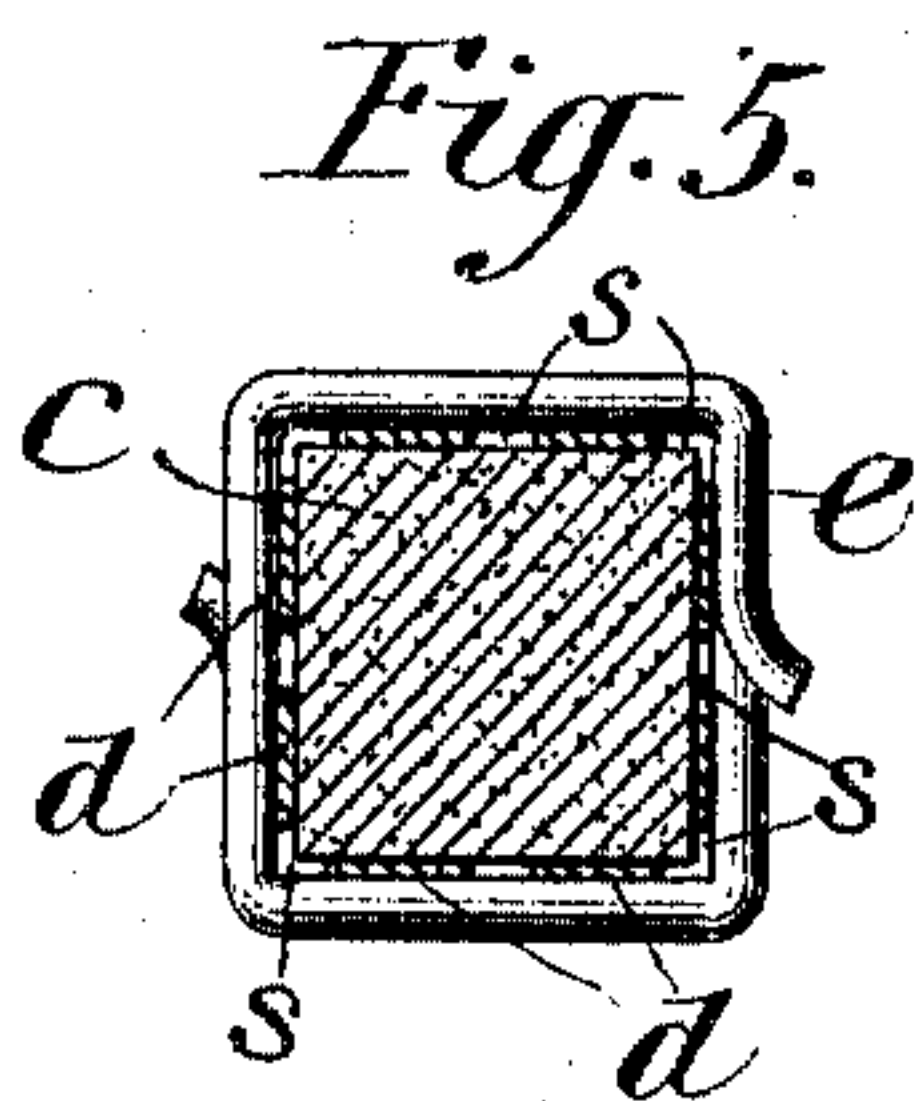
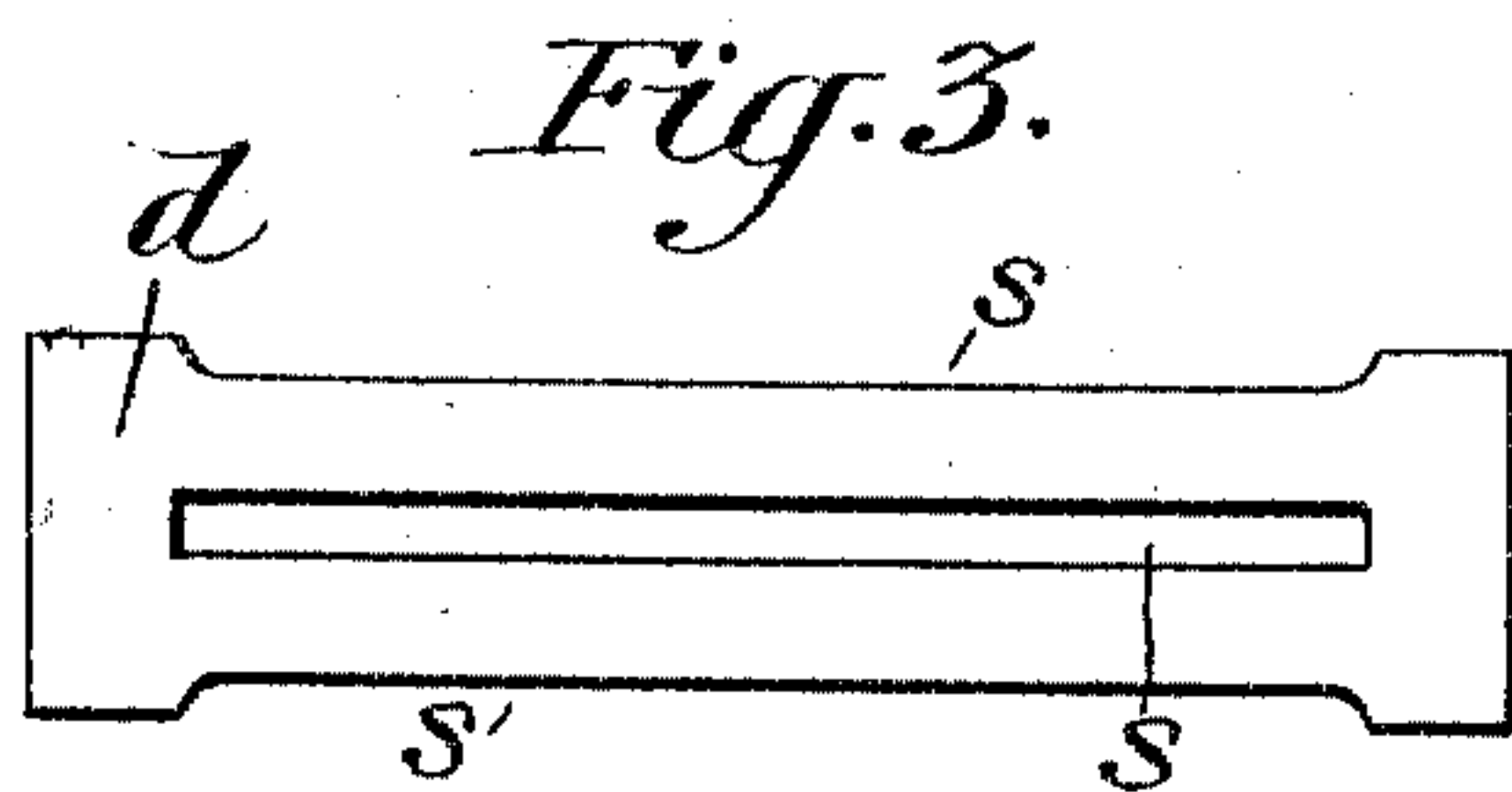
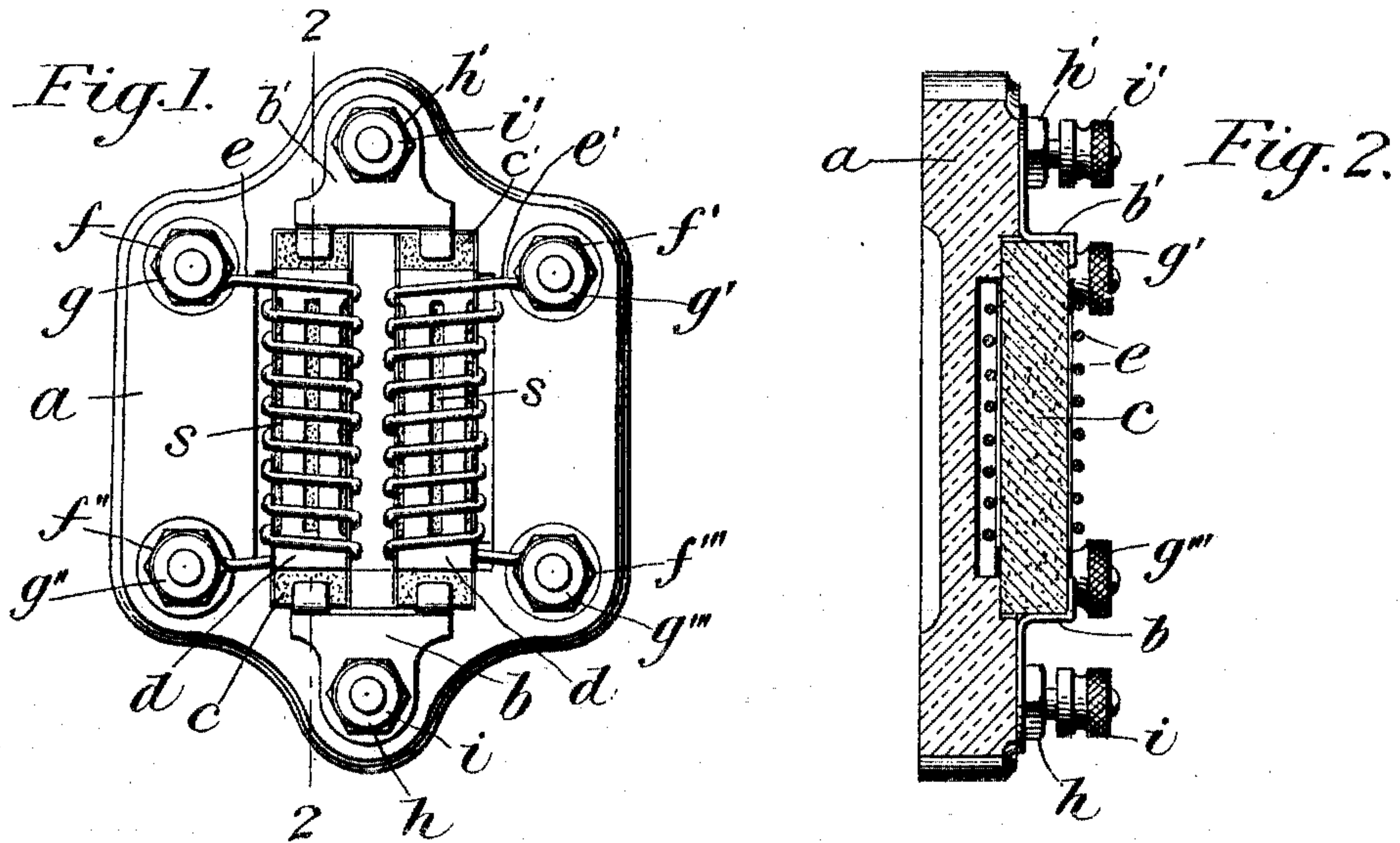


No. 767,002.

PATENTED AUG. 9, 1904.

C. T. MASON.
LIGHTNING ARRESTER.
APPLICATION FILED APR. 9, 1904.

NO MODEL.



Witnesses:

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UNITED STATES PATENT OFFICE.

CHARLES T. MASON, OF SUMTER, SOUTH CAROLINA.

LIGHTNING-ARRESTER.

SPECIFICATION forming part of Letters Patent No. 767,002, dated August 9, 1904.

Application filed April 9, 1904. Serial No. 202,319. (No model.)

To all whom it may concern:

Be it known that I, CHARLES T. MASON, a citizen of the United States, residing at Sumter, county of Sumter, State of South Carolina, have invented certain new and useful Improvements in Lightning-Arresters; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The invention relates to lightning-arresters for protecting electric circuits and their connected instruments or machines from the injurious effects of overcharges of atmospheric electricity.

As herein illustrated the invention is designed more particularly for use with all-metallic circuits; but it is obviously adapted also for grounded circuits.

The instrument is characterized by the fact that a choking-coil offering an irregular path for the current, with its proportionate resistance, is combined with a grounded conductor, so formed and disposed with relation to the coil and an intermediate insulation that the conductor is exposed to the coil at a multiplicity of successive points at which the current in its passage along the coil may jump to the conductor and pass to ground, and thus be gradually dissipated.

The invention is illustrated in the accompanying drawings, wherein—

Figure 1 is a front elevation of the instrument complete. Fig. 2 is a longitudinal section of the same on the line 2 2. Fig. 3 is an elevation of the core-insulating jacket detached. Fig. 4 is a similar view showing the core, the jacket, and the choking-coil detached. Fig. 5 is a cross-section of Fig. 4. Fig. 6 is a view similar to Fig. 4, but showing a modification in the form of the core and the arrangement of the insulation; and Fig. 7 is a cross-section of Fig. 6.

Referring to the views, *a* denotes a base-plate, of porcelain or other non-conducting material.

c c' indicate a pair of conductors, that are preferably parallel with each other and are secured to the plate *a* by means of metal clamps

b b'. These clamps are conveniently secured to the plate *a* by nuts *h h'* on the binding-screws *i i'*, by means of which the conductors are connected to the ground, and the clamps which secure the conductors in place thus form part of the ground connection for the conductors.

The conductors are preferably of carbon, but may be of any other good conducting material. In the preferred form of the invention they are rectangular in cross-section; but they may be of any other angular or irregular section or may be circular, as shown in Figs. 6 and 7.

The choking-coils are indicated at *ee'*. They are of wire of any suitable section and are connected up in the circuit by means of the binding-screws *f f''* for the coil *e* and similar screws *f' f'''* for the coil *e'*.

The conductors *c c'* are surrounded by the coils, as shown in all the figures, and thus constitute central cores for the coils around which the current travels as it traverses the coils in an irregular path, and interposed between the coils and cores is an insulation which fits the cores, but covers part only of their surfaces, leaving said surfaces at other parts exposed, so as to permit the current traversing the coils to jump to the cores at the exposed points, and so pass to ground. As shown in all the figures except the sixth and seventh, this insulation is preferably in the form of a jacket or covering *d*, of mica, that covers nearly the whole surface of the cores, but is cut away or slotted longitudinally, as at *s*, so as to leave narrow strips of the cores exposed, as best shown in Fig. 4. These exposed strips or spaces are isolated from each other and are crossed by the windings of the coils.

In Figs. 6 and 7, where the carbon core *n* is shown cylindrical, the insulation consists of separate pieces of mica *o*, laid at suitable intervals around the cores and extending lengthwise thereof, these pieces being held to the core by the windings of the coil *m* and the spaces *s'* between the pieces corresponding with the slots in the mica jacket shown in the other figures.

The construction of my improved arrester

being as thus described, it is to be noted that the coil provides an irregular path for the current around and lengthwise the cores and that a multiplicity of points are provided to carry the current to ground instead of a single point, as heretofore usually employed. These points are arranged successively in the length of the coil, and the irregular or sinuous arrangement of the coil is such that it favors the jumping of the current to the cores, whence it passes to ground. This is particularly true of the preferred form of the cores and coils shown in Figs. 1, 4, and 5, where the rectangular section of the core is combined with angular turns for the coil at the corners, introducing abrupt changes of direction and a correspondingly unfavorable path for the lightning-current.

The exposed parts of the carbon cores are isolated from each other by the insulation, as before described, and are only connected through those portions of the coils which cross them and to which the cores are exposed. These portions of the coils of course represent resistance, and as the insulation holds the coils slightly away from the cores at these points it will be understood that a series or multiplicity of small spark-gaps are provided and that a more gradual dissipation of the current is insured than where one large gap only is provided.

Having thus described my invention, what I claim is—

1. In a lightning-arrester, the combination of a wire coil having a line connection, a grounded core of conducting material encircled by the coil, and an insulating-jacket interposed between the core and the coil said jacket being omitted or cut away at intervals

so as to leave the core exposed at such intervals to the coil.

2. In a lightning-arrester, the combination of an elongated core of conducting material, inclosed by an insulating jacket or covering and having a ground connection, and a wire coil having a line connection and encircling the core, the insulating-jacket being omitted or cut away at intervals around the core so as to leave isolated portions of the core exposed to the conductor.

3. In a lightning-arrester, the combination of a grounded core of conducting material angular in cross-section, an insulating jacket or covering inclosing the core, and a wire coil having a line connection and angularly bent around the core, the insulating-jacket being omitted or cut away at the corners or angles of the core so as to expose the core at such points to the coil.

4. A lightning-arrester, consisting of a plate of non-conducting material, a pair of elongated cores of conducting material rectangular in cross-section and having ground connections, clamps *b, b'* overlapping the ends of the cores and securing them to the plate, wire coils wound around the cores and having line connections at their ends, and insulating jackets or covers inclosing the cores, said jackets being slotted lengthwise the cores so as to expose isolated lengths of the core-surfaces to the transverse windings of the coils.

In testimony whereof I affix my signature in presence of two witnesses.

CHARLES T. MASON.

Witnesses:

MURO HALL,
C. G. ROWLAND.