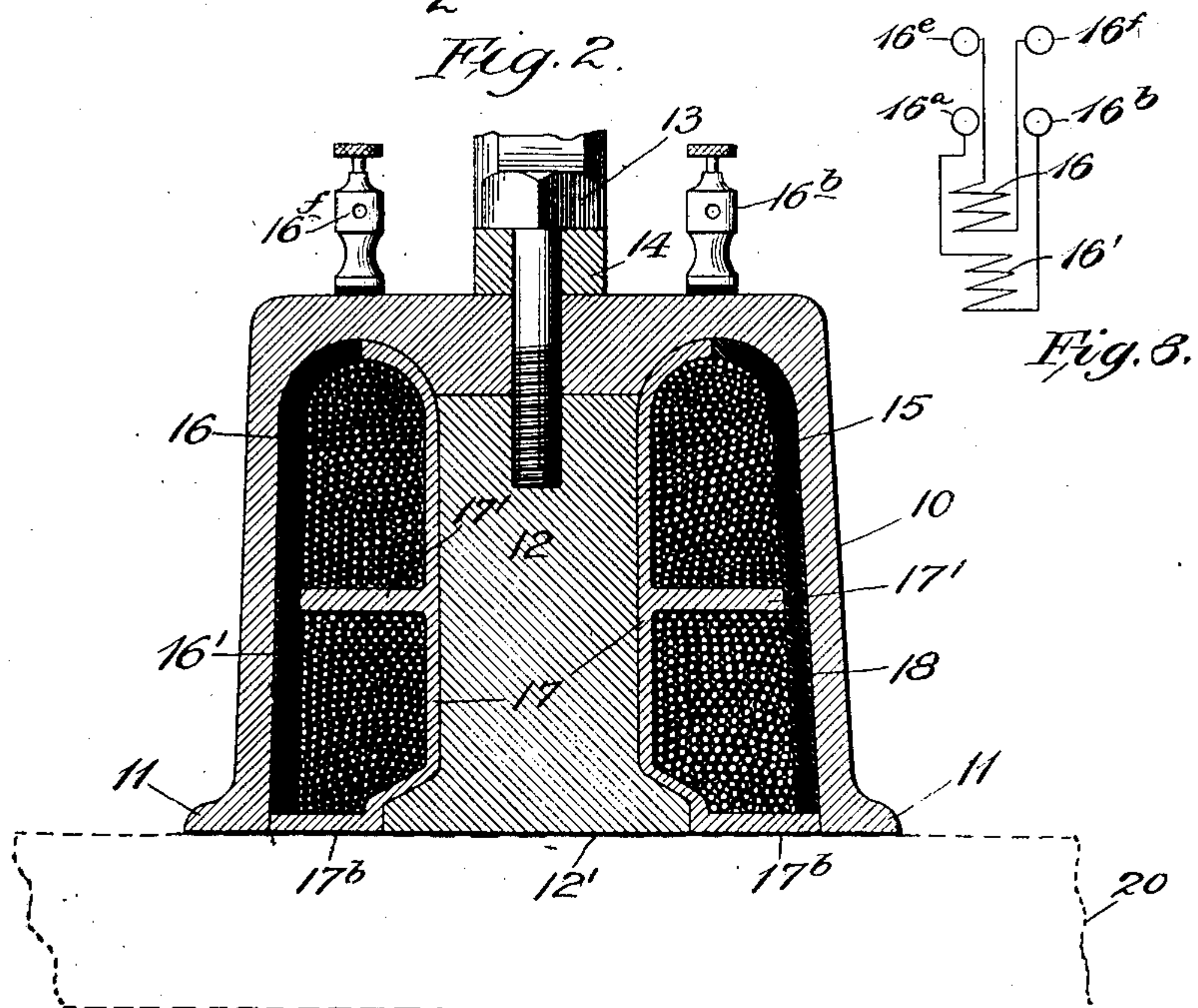
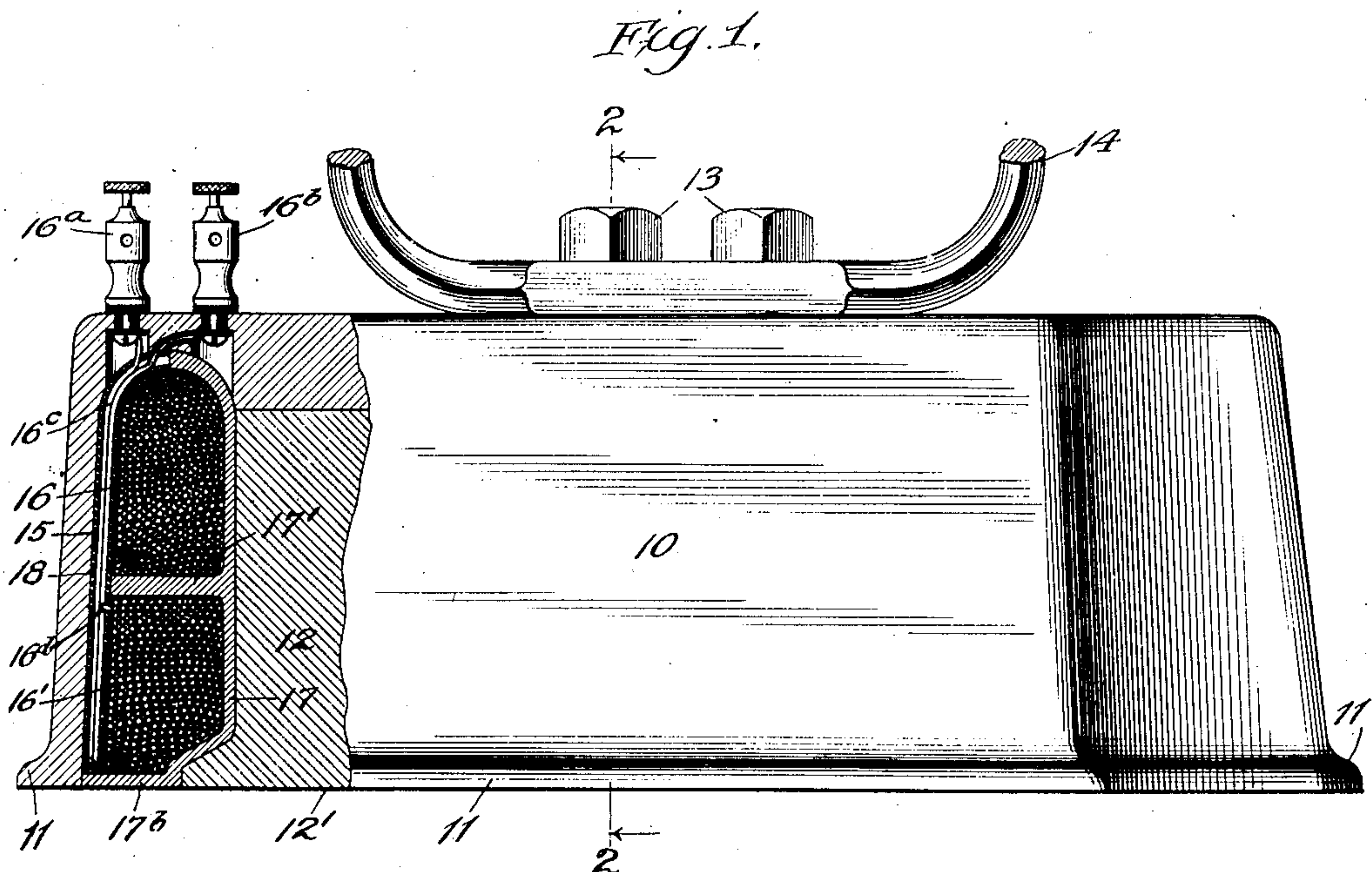


No. 854,431.

PATENTED MAY 21, 1907.

J. B. REPLOGLE.  
PRESS OR SAD IRON.  
APPLICATION FILED SEPT. 6, 1906.

2 SHEETS—SHEET 1.



Witnesses  
Ray White.  
M. H. Olsen

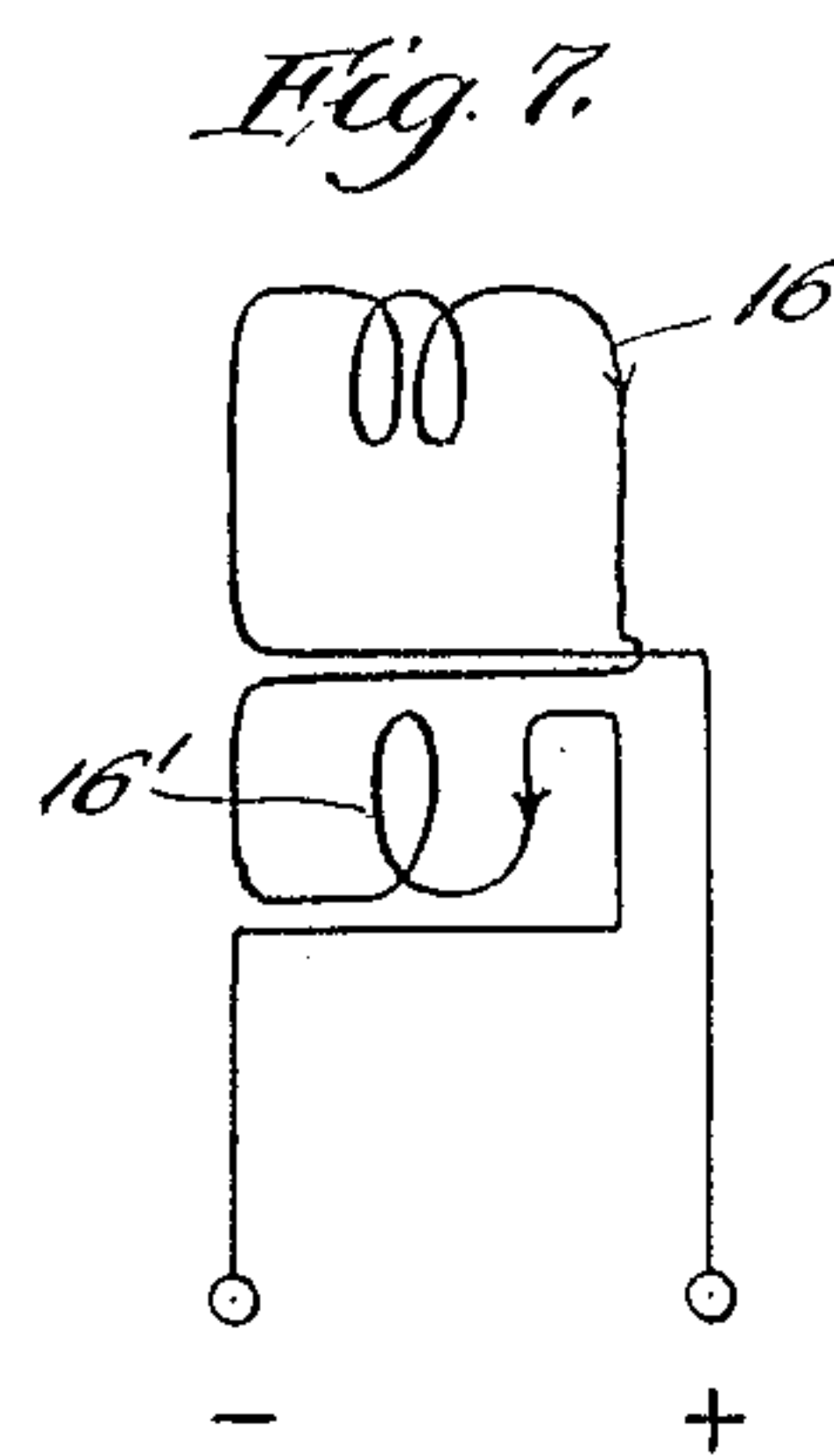
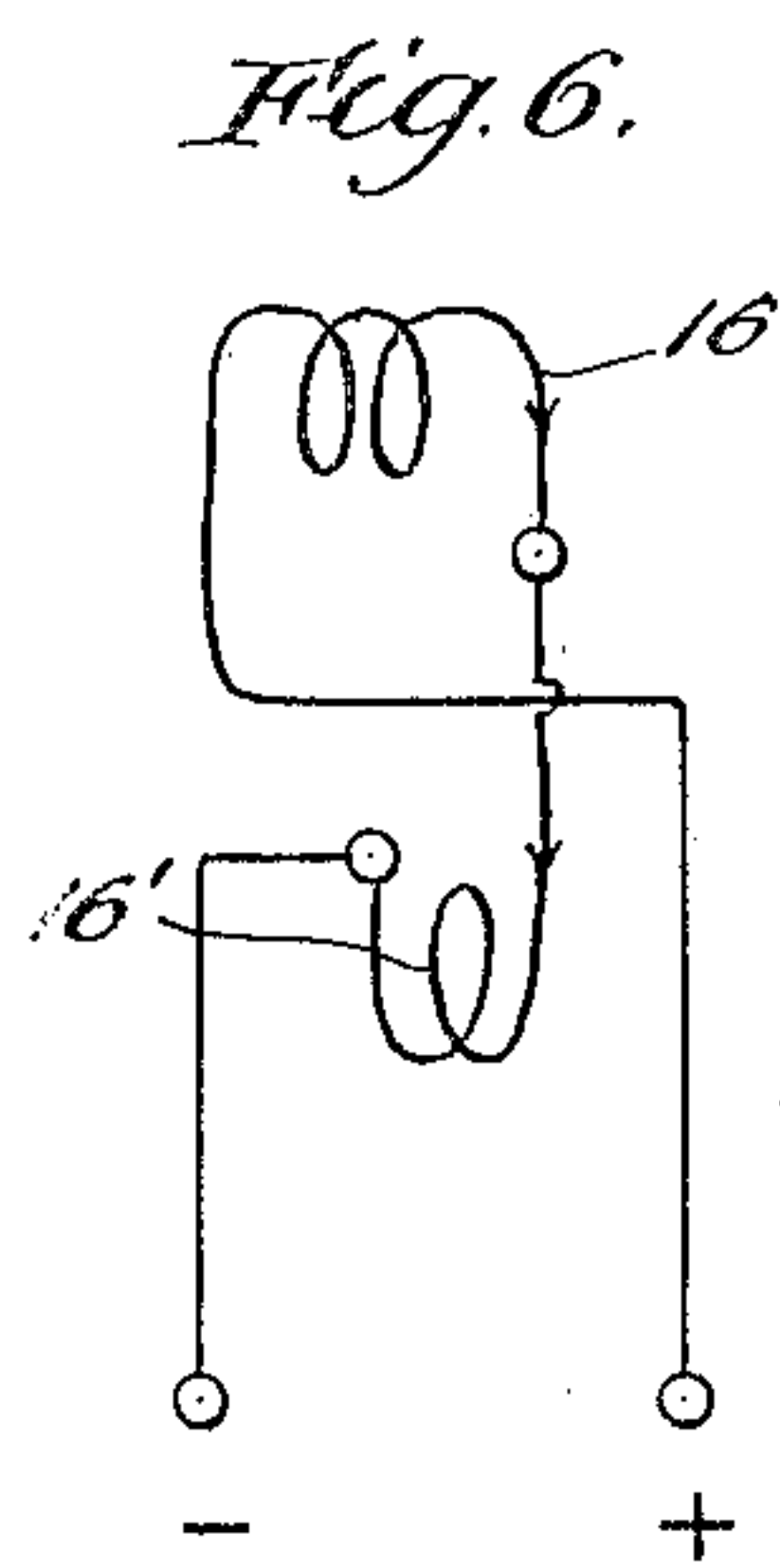
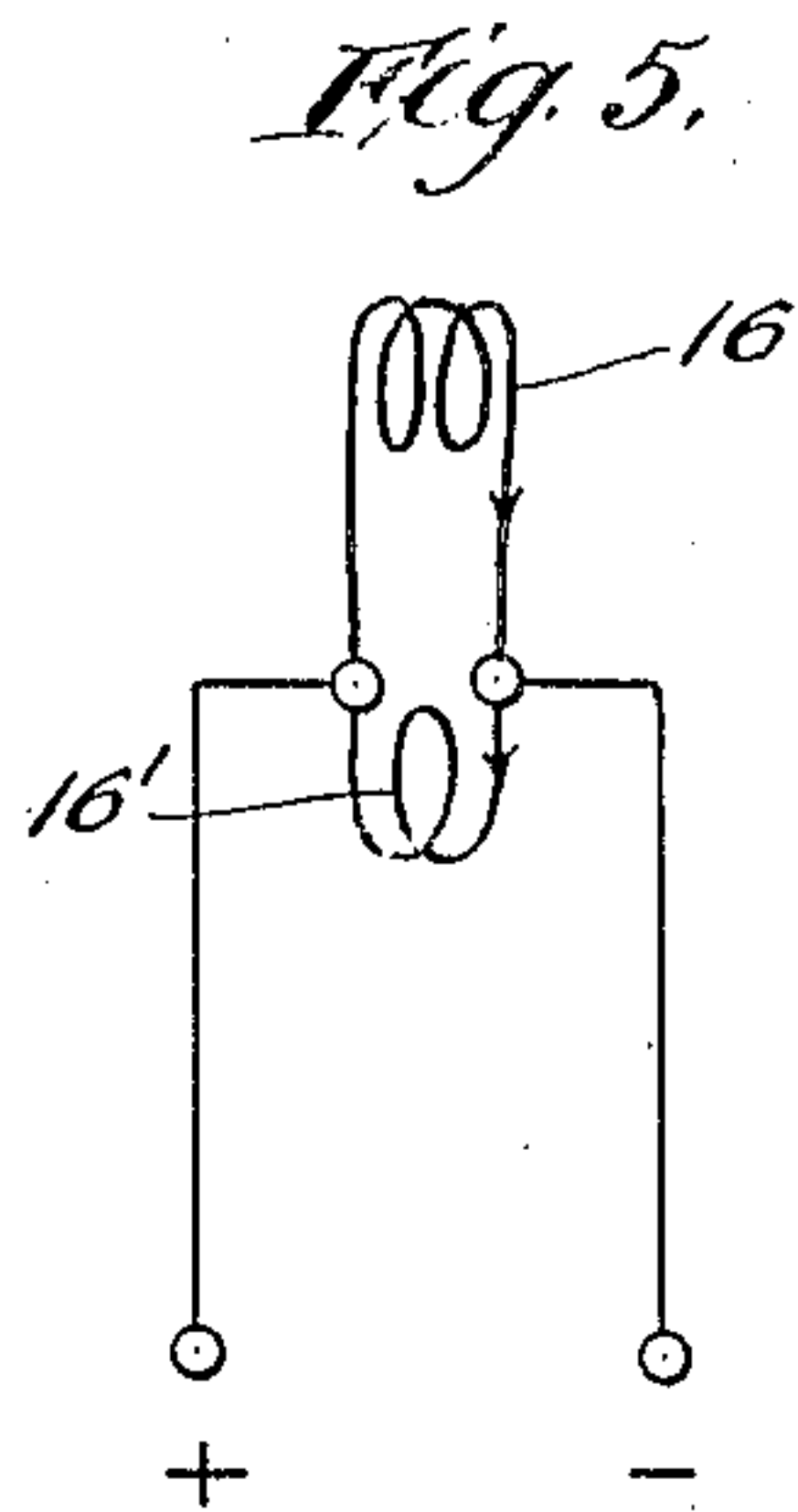
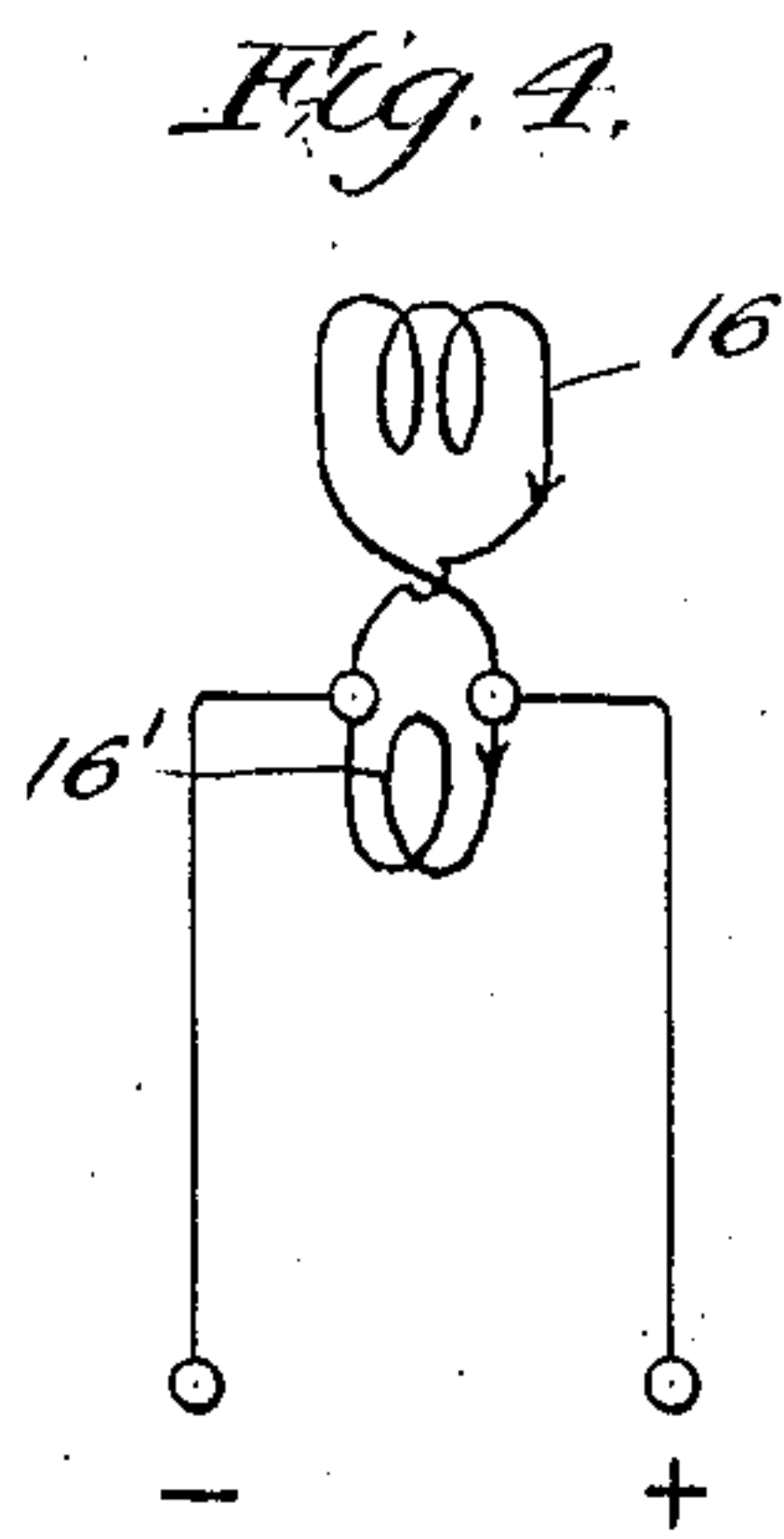
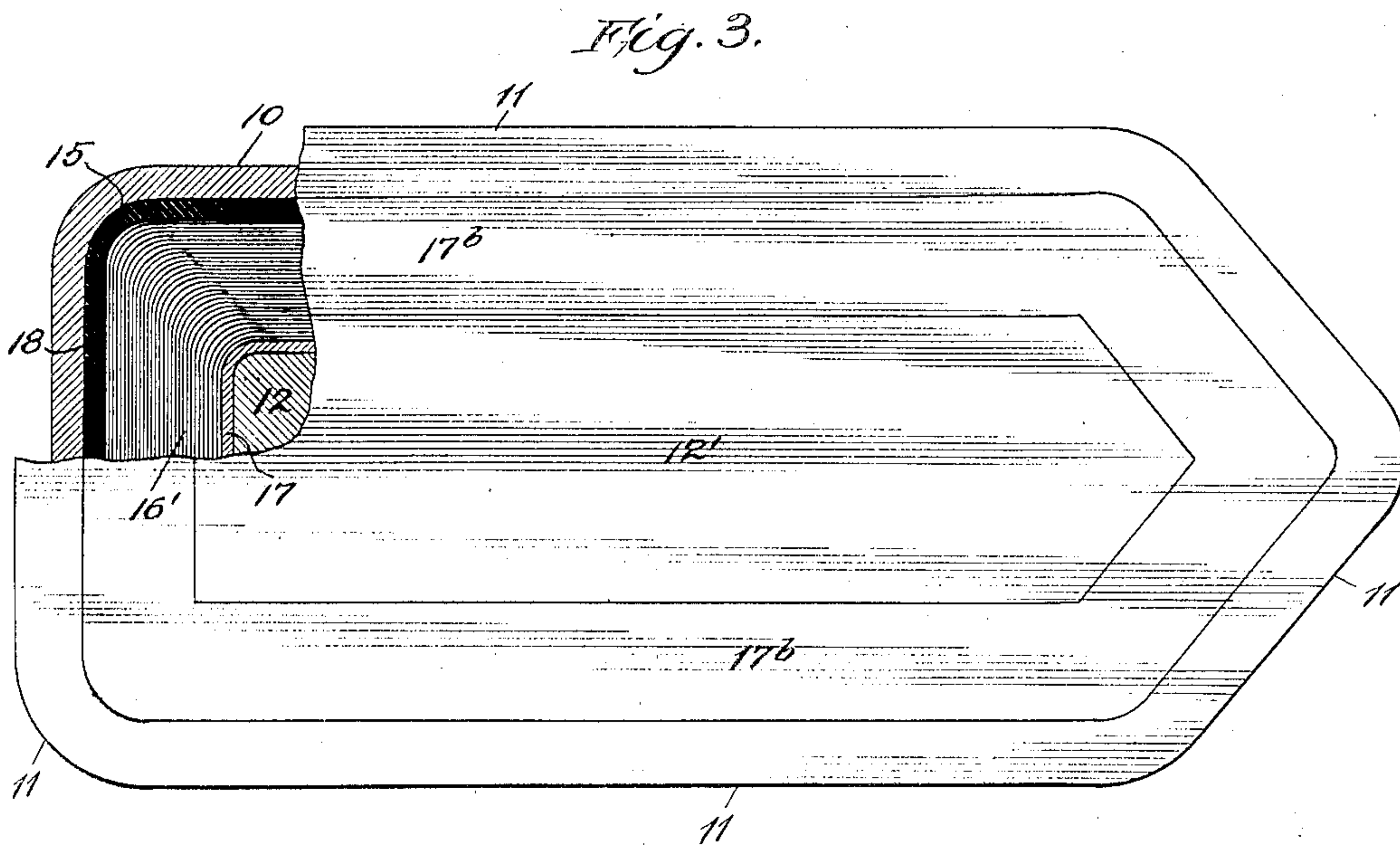
Inventor  
James Blaine Replogle  
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Attys

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2 SHEETS—SHEET 2.



Witnesses  
Ray White.  
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# UNITED STATES PATENT OFFICE.

JAMES BLAINE REPLOGLE, OF CHICAGO, ILLINOIS.

## PRESS OR SAD IRON.

No. 854,431.

Specification of Letters Patent.

Patented May 21, 1907.

Application filed September 6, 1906. Serial No. 333,519.

*To all whom it may concern:*

Be it known that I, JAMES BLAINE REPLOGLE, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Press or Sad Irons, of which the following is a specification.

My invention relates to improvements in press or sad irons, and has especial reference to an iron of the character described in which the heat and pressure necessary for its proper operation may be evolved and effected from and by an electric current.

One of the objects of my invention is to provide a press iron, which may be used in co-operation with a press buck, (an even plane presenting a smooth surface upon which the fabric is to be pressed or "ironed,") made preferably of para-magnetic material, and to cause the flux of magnetic lines of force therethrough to effect the necessary pressure.

Another object of my invention is the provision of a means for heating the sad-iron and buck, or either of them, by the evolution of an electric current supplied to the sad iron.

Other and further objects and purposes of my invention will become obvious to those persons who are skilled in the art from the drawings and description hereinafter.

In the drawings: Figure 1 is a side elevation, showing a part broken away in section, of my new improved sad-iron. Fig. 2 is a section taken on line 2—2 of Fig. 1. Fig. 3 is a plan view looking at the bottom of the iron, with the parts broken away, showing the magnetic coil and part of the insulation in position. Figs. 4, 5, 6 and 7 are diagrammatic representations of the manner in which the coils of the sad iron may be connected with respect to each other, for producing different effects. Fig. 8 is a diagram of the binding posts and coils.

In all of the views the same reference characters indicate similar parts.

In its simplest form, and that illustrated, my new and improved sad-iron is in substance an iron-clad electro magnet, having its salient magnetic poles in juxtaposition to or forming a part of the smoothing surface of the iron.

Referring to the specific illustration, the body part 10 is a shell of steel, cast iron or other para-magnetic material, having the external appearance of an ordinary sad-iron.

It is, preferably, provided at its lower edge with an extended flange 11, for the purpose of increasing the smoothing area of the device.

The interior core 12, is composed of a material substantially similar to that of which the shell 10 is composed, and is secured to the shell, nearest the interior central area, by means of cap screws 13—13, or otherwise, and which cap screws, for convenience, may also pass through the handle 14, to secure the same in relation therewith; the core 12 being of such size and proportion as to leave a recess or channel 15 entirely around it, and of proper shape and size to contain the electro-magnetic coils 16 and 16'. The core 12 is flanged at the bottom as shown at 12'. A shell or spool, of aluminium, brass or other diamagnetic and heat conducting substance, fits snugly about the core 12, and is provided with a projecting rib, 17' which serves to conduct heat to the core from the interior of the divided coil or coils of wire, hereinafter to be described, and also to divide the channel, between the shell 10 and the core 12, into two annular chambers. The bottom end 17<sup>b</sup> of the shell or spool 17, is extended so as to exactly occupy the space between the shell 10 and the flange of the core 12, properly supported by each, the whole presenting a smooth and practically continuous surface on the bottom of the press iron.

After the coils 16 and 16' have been wound upon the spool 17, and placed in position, an insulation such as asbestos, or the like may be wound around the coils or otherwise placed on the exterior surface thereof as indicated at 18, between the said coils and the shell 10. The coils 16 and 16' are connected to terminal binding posts, such as 16<sup>a</sup>, 16<sup>b</sup>, which are shown connected to the coils 16' by means of the wires 16<sup>c</sup> and 16<sup>d</sup> respectively. Coil 16 has its terminals likewise connected to similar binding posts 16<sup>e</sup> and 16<sup>f</sup>. In winding the coils on the core it is treated so as to prevent contact of contiguous turns, or suitable insulating material such as micanite or the like, may be placed between the contiguous turns, or layers of wire for this purpose, or each strand of wire may be separately insulated. Any method, by which the coils or the separate turns may be sufficiently insulated to prevent short circuiting, is sufficient. Preferably the resistance of the coils shall differ somewhat with regard to each other,



and correspondingly the number of turns may differ, so that the magnetizing effect shall not be equal when the coils are connected in parallel or in series circuit relation to each other. This may be accomplished by varying the size of the wire in the coils with respect to each other or by varying the material of which the wire is composed, or otherwise, as by varying the average length of wire. It being desirable that the magnetizing effect of the two coils, when differentially connected shall not entirely neutralize each other. By this means four conditions of service are permissible.

When the device as a whole is connected between the terminals of a constant potential circuit and the coils are connected in the manner shown in Diagram 4, that is to say, connected in parallel for accumulative magnetic results, they will produce great magnetic strength and correspondingly heavy current consumption, and the density of the current being great the convection of heat due to the current will be correspondingly great. When the coils are connected in parallel, differentially, as shown in Fig. 5, they will produce much less magnetic strength, heavy current consumption and as much heat as in the instance illustrated in Fig. 4. When they are connected in series, cumulatively, as shown in Fig. 6, they will produce medium magnetic strength, minimum current consumption and less heat than in the former instances. When the coils are connected differentially in series, as shown in Fig. 7, they will produce very light magnetic strength and not so much current consumption as in Fig. 5, but the heat will be about the same as in the instance illustrated in Fig. 6. In all of the instances illustrated the size of the wire composing the coils shall be so related to the radiating surface of the iron that the electrical energy dissipated in the coil shall be sufficient to raise the temperature of the iron for pressing requirements.

I have shown the terminals of the coils on the upper surface of the iron and it is apparent that any convenient means, such as a suitable commutator may be employed for the purpose of conveniently changing the connections as illustrated in Figs. 4, 5, 6 and 7, to produce the results described. It is also desirable that a circuit closing switch shall be located near the handle of the iron for the purpose of closing the electric circuit at the time when the iron is employed, and for opening the circuit at the time when it is not employed, or for opening and closing the circuit at any time that it may be desirable to do so. These special features are not subjects matter of my invention, and, therefore, they have not been illustrated or described, as any conventional means for the purpose may be used.

The arrow heads in the Diagrams 4 to 7 in-

clusive, indicate the direction of the current through the respective coils when it is flowing in a direction to produce the maximum magnetic result.

In Fig. 2 I have shown, in dotted lines, a phantom illustration of a press buck, which consists, in this case, of a plate or slab of iron or steel, having a smooth upper surface upon which the fabric, or goods, are to be placed in the process of ironing.

It will be apparent that when the coils and spool have been placed within the shell of the iron and the bolts 13—13' have been inserted through the upper portion of the shell and into the core 12, that by virtue of the extended surfaces 12' or the core 12, and the corresponding shape of the spool 17, the coils, the spout, the core and the handle will be held in their respective positions by means of the bolts 13—13', and that a smooth pressing surface on the bottom of the iron is provided by the parts 11, 12' and 17<sup>b</sup>.

It is apparent that if electric current of alternating direction is used, instead of a direct current, that a great deal of heat will be evolved in the core 12 and the shell 11 by virtue of the hysteresis of the iron, in addition to that produced by the thermal effect of the current owing to the high current density in the magnetizing coils of the iron. The current may produce all of the effects tending to augment the heat in the core of the device for the purpose of sufficiently raising the temperature for the requirements of the pressing process.

The use and operation of my device is as follows: The garment to be pressed is first placed upon the steel or iron buck 20 and the said iron, having been heated, by the passage of the current through the coils or by some external means, is placed upon the garment and the magnetizing current passed through the coil, by closing the electric switch which may be placed convenient to the manipulator. The iron-clad magnet, composed of the core 12 and the shell 11, closes its magnetic circuit through the iron or steel buck, causing a flux of magnetism therethrough, thus producing considerable magnetic attraction between the said iron and the buck, or iron surface, upon which the fabric is placed. When the iron is moved along over the buck it has the effect, by virtue of its heat and the magnetic attraction, to set the fibers of the cloth and this effect is produced in much less time than if the iron were applied without the pressure produced by the magnetic effect thereof.

The magnetic pressure, and also the heat supplied by the effect of the electric current is variable at will by altering the relative direction of the current in the coils in the manner heretofore described. In some instances the magnetic pressure is increased, and coincidentally the heat produced by the



coils decreased. In other cases the heat may be increased and the magnetic pressure decreased according to the manner in which coils are connected with respect to each other and the direction of flow of the electric current in the electric circuit.

It is apparent that a smooth continuous surface may be made of or placed upon the bottom of the iron, in which case it should be a thin sheet of diamagnetic material so as not to close the magnet poles of the iron.

For the purpose of illustration I have described a single embodiment of my invention, but it is evident that considerable latitude of variation may be made therefrom without departure from the spirit and scope thereof.

Having thus described my invention, what I claim and desire to secure by Letters Patent, of the United States is:

1. A press or sad-iron, the smoothing surface of which is composed in part of both poles of an electro-magnet.

2. A press or sad iron comprising a body of paramagnetic material comprising a core and a shell, each terminating at substantially the smoothing surface of the iron, and at said terminal portions magnetically separated, and an electro-magnet-coil mounted on said core.

3. A press or sad iron comprising a bipolar electro-magnet having a peripheral pole and an opposite pole included within the confines of said peripheral pole, and a coil operatively associated with the inner pole.

4. A press or sad iron, comprising an electro-magnet having two separated poles presented toward the smoothing surface of the iron, and a coil, combined with a diamagnetic separator for the poles constituting part of the smoothing surface of the iron.

5. A press or sad-iron, comprising a shell of magnetic material such as iron, a hollow electro-magnet coil within said shell and a central core of magnetic material within said

coil, the edges of the shell and the free end of the core forming the poles on an electro-magnet and being presented toward the smoothing surface of the iron.

6. A press or sad-iron comprising a shell of magnetic material, such as iron, a hollow electro-magnetic coil within said shell, a central core of magnetic material within said coil, a handle and a fastening means taking into the handle, shell and core for securing said core and handle to said shell.

7. In combination, a press or sad-iron and a buck, both composed of para-magnetic material, such as iron, and a means for completing a magnetic flux through both devices to produce pressure upon fabric that may be contained therebetween.

8. In combination, a press or sad iron and a buck, the iron comprising a hollow magnetic body, presenting its edge, constituting a magnetic pole, to the smoothing surface, a pole within the body presenting its end to the smoothing surface and constituting an opposite magnet pole, a coil arranged to magnetize said body and core, and a diamagnetic separator between the core and body, and the buck being of paramagnetic material and of size sufficient to bridge from the core to the body of the iron.

9. A press or sad-iron, comprising in part the core of an electro-magnet, a plurality of magnetizing coils arranged for ready connection in parallel or series relation to vary the ampere turns thereof.

10. A press or sad-iron, made of paramagnetic material, and means for causing magnetic attraction between said iron and a buck of similar material with which it may be used.

In testimony whereof I hereunto set my hand in the presence of two witnesses.

JAMES BLAINE REPLOGLE.

In the presence of—

GEO. T. MAY, Jr.,  
MARY F. ALLEN.