

No. 694,458.

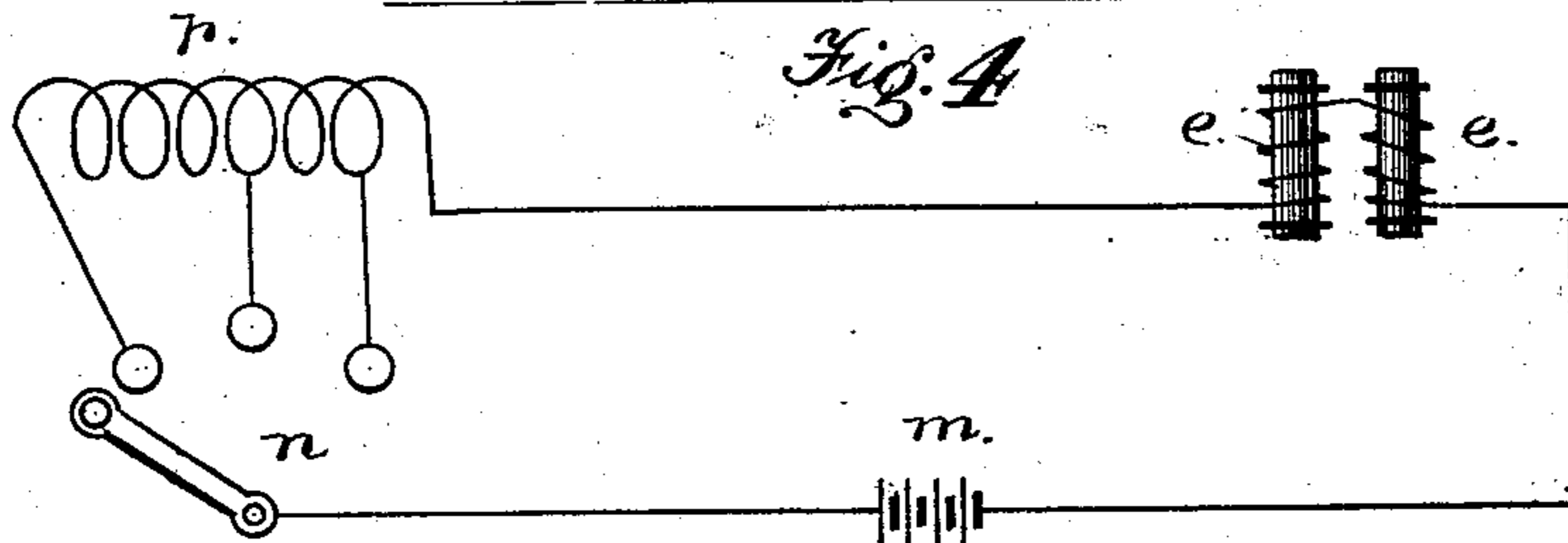
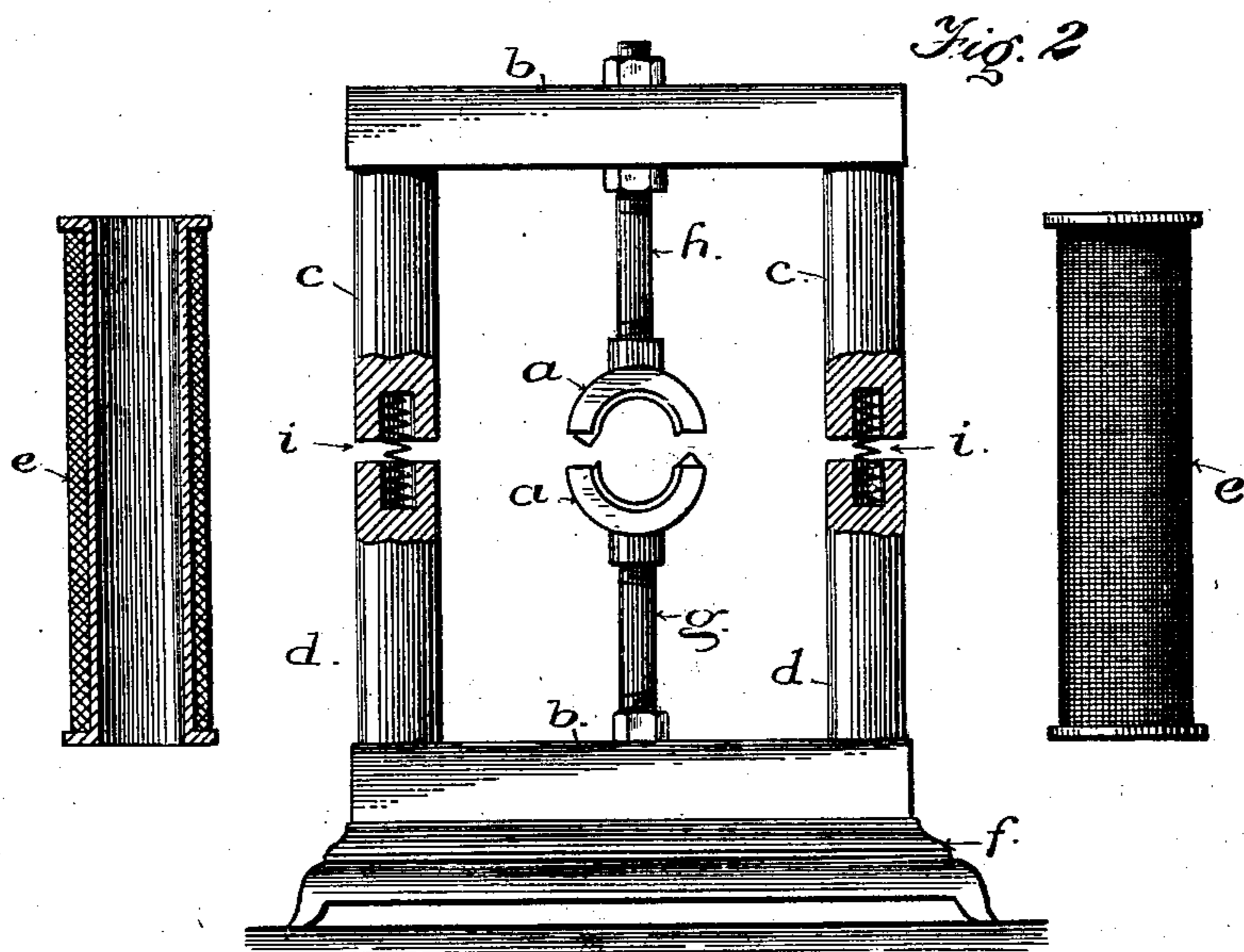
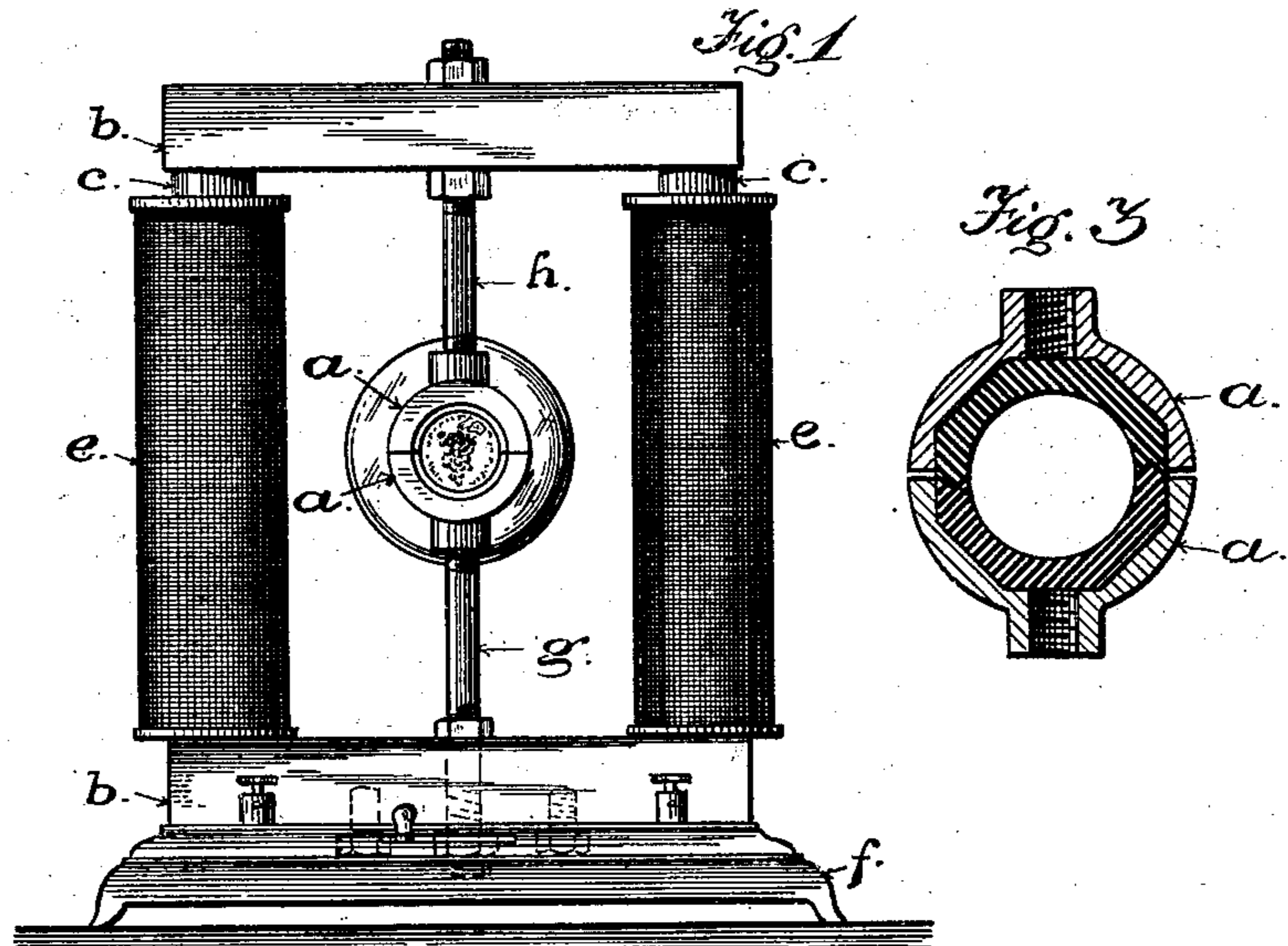
Patented Mar. 4, 1902.

L. J. BORIE.

ELECTROMAGNETIC CAPPING MACHINE.

(Application filed Feb. 4, 1901.)

(No Model.)



Witnesses:
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UNITED STATES PATENT OFFICE.

LOUIS J. BORIE, OF SAN FRANCISCO, CALIFORNIA.

ELECTROMAGNETIC CAPPING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 694,458, dated March 4, 1902.

Application filed February 4, 1901. Serial No. 45,853. (No model.)

To all whom it may concern:

Be it known that I, LOUIS J. BORIE, a citizen of the United States, and a resident of the city and county of San Francisco and State of California, have invented new and useful Improvements in Electromagnetic Capping-Machines, of which the following is a specification.

This invention has for its object the production of a simple and effective machine or appliance for utilizing and applying the power derived from an electric current to fix metallic capsules on bottles and to do other similar work wherein compression between the jaws and dies enters as a feature of the operation; and to such end the invention consists in certain novel parts and combination of parts, as hereinafter described, and pointed out in the claims at the end of this specification.

In the production of this machine I make use of the well-known principle of converting electrical energy into magnetomotive force through the medium of electromagnets of the solenoid type, and in proceeding to construct a machine for fixing capsules on the necks of bottles by compression I combine with a pair of bobbins or tubes properly wound with covered wire and placed parallel with each other two heads or armatures, each having a pair of cores fitting loosely in the bobbins and extending into the tubes an equal distance toward the center, so as to bring the poles or ends of the cores in close operative relation to the corresponding ends of the cores on the opposite head. Between the two heads I place a pair of compression jaws or dies properly shaped to fit and embrace the neck of the bottle and arranged to open on a median line for the purpose of admitting and removing the piece of work. Either or both of the heads are arranged to move and be drawn toward each other under the mutual magnetic attraction of the cores and the action of the magnetomotive force set up in the coils as often as the same are connected in circuit with an electrical generator, and the jaws or dies carried by the two heads are thus drawn and pressed together upon the work.

The following description explains at length the nature of the said invention and the man-

ner in which I proceed to construct and produce a machine or appliance for carrying out and applying the same, reference being had therein to the drawings that accompany and form part of this specification.

In the said drawings, Figure 1 is a front elevation of a bottle-capping machine embodying this invention, and representing the jaws on dies closed on the neck of a bottle. Fig. 2 is an elevation of parts in detail separated from one another and partly in section. Fig. 3 is a vertical section, on an enlarged scale, of the jaws or dies. Fig. 4 is a diagram of the electrical circuit-closing key and current-regulating means, such as a rheostat.

The principal parts of this machine are described and referred to herein as the jaws or dies *a a*, heads or armatures *b b*, cores *c c d d*, and bobbins *e e*. One of the heads is fixed on or forms part of a base *f*, from which the cores *d d*, extending perpendicularly upward, receive and support the bobbins *e e*, while the other head is supported across the tops of the bobbins by the cores *c c*, which are fitted loosely in the ends of the bobbins. These members constitute electromagnets of the solenoid type by virtue of the bobbins being wound according to the well-known principle of forming electromagnets to generate the required degree or power of magnetomotive force in the oppositely-set cores, and as often as a current is directed through the coils the two armatures are mutually attracted. One of these being stationary on the frame or base the other has a limited movement through the play or extent of longitudinal motion afforded by the distance between the ends of the two sets of cores. Between the two heads are interposed the jaws or dies, composed of two parts or members properly shaped to fit and embrace the neck of the bottle and separable on a median line, so as to open for inserting and removing the work. One jaw is fixed to the end of a post or stand, rising from the base of the machine, and the other jaw is attached to the movable head above by a shank *h*.

Provision can be made for removing jaws or dies of one kind and substituting others of different forms or styles, so as to adapt the same to the shape of the piece to be op-

erated on; in the present construction the dies are secured by screw-threaded joints to the ends of their supports *g h*.

Between the ends of the cores in each bobbin a coiled spring *h* is interposed for the purpose of lifting the movable head and separating the dies to facilitate the insertion and removal of the work. These springs have proper strength to separate and hold apart the dies when the magnets are not energized. The function of these springs is to hold the dies apart for the convenience of the workman, as otherwise the movable head would have to be raised by hand whenever the piece to be acted on by the dies was to be inserted or removed; but by inverting the machine, so as to reverse the position of the movable head, this spring could be dispensed with, and the movable jaw would drop by gravity away from the stationary jaw as often as the current was cut off.

The machine thus constructed is connected in circuit with a generator *m* through a switch or key, as illustrated in Fig. 4, where a three-point switch *n* and a rheostat *p* furnishes means for varying the power, and thereby regulating the movement and force with which the jaws are drawn together.

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

1. The herein-described capping-machine, comprising a suitable base, the solenoids,

fixed cores secured to the base, the loosely-fitted cores having their ends in working relation to the fixed cores, the cross-head uniting the loosely-fitted cores, an electric circuit including a source of electric energy, a circuit-closing device and the winding of the solenoids, and a two-part die one part of which is mounted on the base and the other part secured to the cross-head, for operation as set forth.

2. In a capping-machine the combination of a pair of solenoid-magnets each comprising a bobbin a fixed core inserted from one end and stationary therein and a movable core inserted from the opposite end and longitudinally movable therein, a cross-head connecting the two movable cores, a base rigidly joining the stationary cores, a two-part die having one part mounted on the base and the other part secured to the movable cross-head, springs interposed between the movable cross-head and the stationary base, and an electrical circuit including a source of electrical energy the windings of the solenoids and a circuit-closer, substantially as specified.

In testimony that I claim the foregoing I have hereunto set my hand and seal.

LOUIS J. BORIE. [L. S.]

Witnesses:

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