

(No Model.)

S. H. SHORT.
ELECTRIC CONTROLLER.

No. 551,053.

Patented Dec. 10, 1895.

Fig. 1.

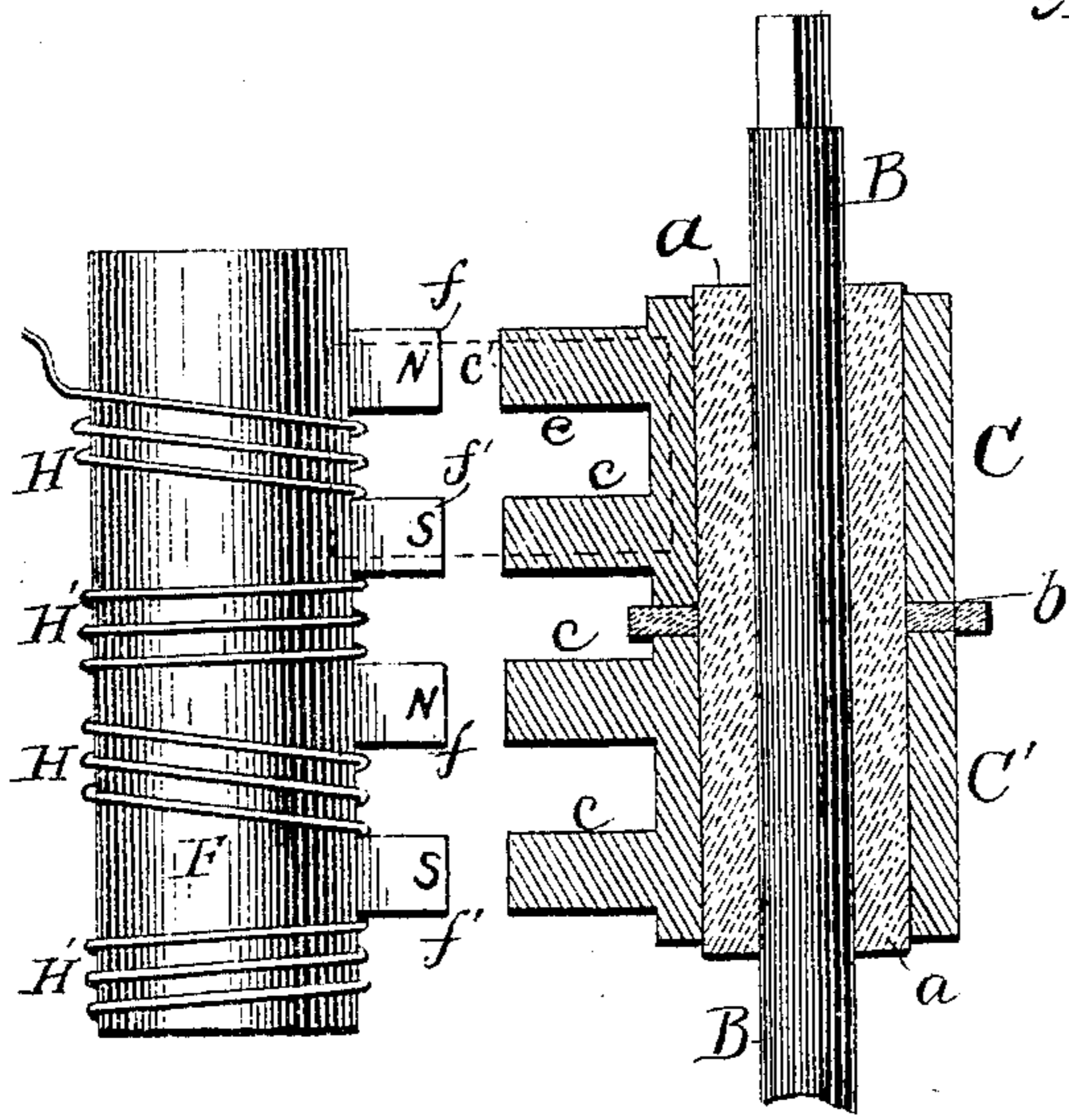
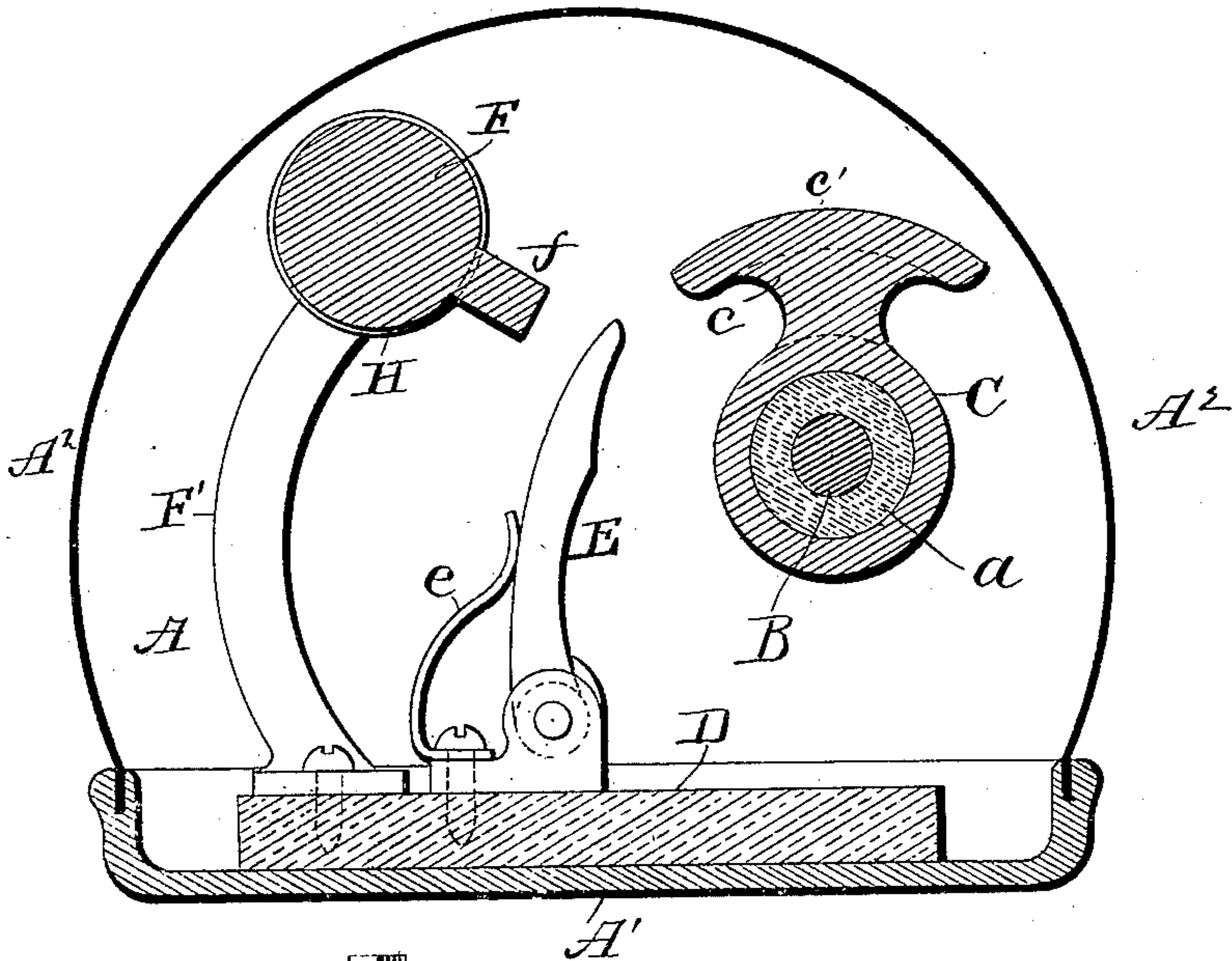
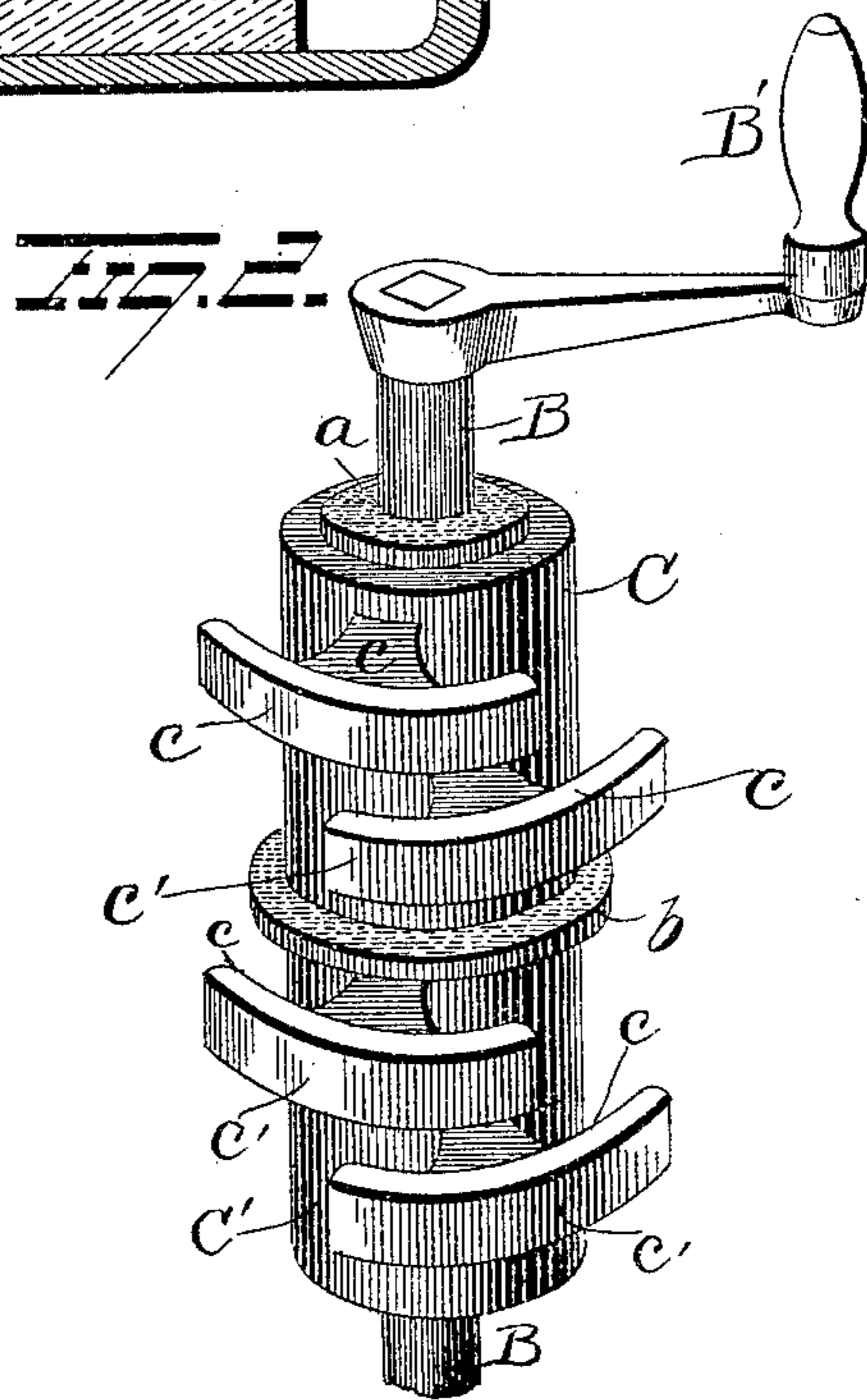


Fig. 3.



Witnesses
G. J. Nottingham
G. J. Downing

Sidney H. Short ^{Inventor}
By H. A. Seymour _{Attorney}

UNITED STATES PATENT OFFICE.

SIDNEY H. SHORT, OF CLEVELAND, OHIO.

ELECTRIC CONTROLLER.

SPECIFICATION forming part of Letters Patent No. 551,053, dated December 10, 1895.

Application filed August 26, 1895. Serial No. 560,579. (No model.)

To all whom it may concern:

Be it known that I, SIDNEY H. SHORT, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and
5 useful Improvements in Electric Controllers; 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
10 same.

My invention relates to an improvement in electric controllers, the object of the invention being to provide an efficient and simple construction of parts for disrupting and suppressing arcing between the movable and stationary contacts of a controller-switch; and with these ends in view my invention consists in certain features of construction and combinations of parts, as will be hereinafter described, and pointed out in the claims.
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In the accompanying drawings, Figure 1 is a view in cross-section of one construction of controller embodying my invention. Fig. 2 is a detached view in perspective of the controller-shaft, contact-sleeves thereon, electromagnet, and contact-fingers; and Fig. 3 is a part sectional view in side elevation of the same.
25

A represents the casing of the controller, consisting of the back A' and sheet-metal cover A². Controller-shaft B is suitably journaled at its ends in the casing and is furnished with the usual detachable crank-handle B'. Upon the shaft are mounted the sleeves C C', &c., which are insulated from the shaft by the insulating-sleeve *a* and are insulated from each other by the interposed insulating-washers *b*. Sleeves C C', &c., are made of magnetic material and preferably of
35 cast-iron and have cast integral with them the segmental contacts *c*, the peripheral surfaces *c'* of which are finished smooth and true to afford good and efficient contact-surfaces.
40

Upon the wooden strip D or other suitable insulated support are mounted the contact-fingers E, the free ends of which are kept in engagement with the rotary contacts *c* by means of the springs *e*. The electrical connections of the contacts are not shown, as
45 they may be of the well-known construction and arrangement and constitute no part of my improvement.
50

F represents the core of an electromagnet supported by brackets F', which are secured to the ends of the core and are fastened to
55 the wooden base D.

Core F is constructed with a series of pole-pieces *f f'*, which are so spaced that each one of these pole-pieces will be located opposite and in close proximity to one of the segmental contacts carried by the controller-shaft. Around core F are wound a series of coils H H', each of which is composed of a few turns of comparatively slow-resistance conductor which is included in the main circuit of the motor. As will be observed, each adjacent coil is wound in an opposite direction, whereby an opposite polarity is given the adjacent pole-pieces, as is indicated by the letters N S. When current flows through
60 the coils H H', &c., the core is magnetized, with the result that a series of complete magnetic circuits are formed, each complete circuit including two adjacent poles N and S and the two segmental contacts on the adjacent insulated sleeve, as is indicated in dotted lines in the drawings. There is thus produced a magnetic field in the air-gap between each one of the rotary contacts and one of the poles of the electromagnet F. When the
65 controller-shaft is rotated so as to move the segmental contacts carried thereby out of contact with the contact-fingers and thereby break the circuit through which a current is flowing, an arc would form between the two
70 contacts thus separated were it not for the presence of the magnetic field, which envelops the point of rupture and serves to disrupt and suppress any such arcing.
75

Owing to the fact that the rotary contacts serve in effect as armatures to the series of electromagnets and form part of the complete magnetic circuits, the lines of force are concentrated within the comparatively narrow air-gaps within which the circuits are
80 broken, and hence small magnet-cores and a few turns of conductor of low resistance will be ample to maintain a series of magnetic fields of sufficient strength to prevent arcing between any of the series of contacts.
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It is evident that my improvement is susceptible of being widely modified in the construction and arrangement of parts of an apparatus embodying it without involving
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95
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a departure from the essence of the invention, and hence I would have it understood that I do not limit myself to the particular construction and arrangement of parts shown and
5 described; but,

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

1. In an electric controller, the combination with the controller shaft, of sleeves of magnetic metal mounted on and insulated from said shaft, contact arms of magnetic metal projecting from said sleeves, a magnet having a series of poles arranged in pairs,
10 the poles of each pair being of opposite polarity whereby a magnetic circuit will be completed between the poles of each pair and through corresponding contact arms, and

contact fingers disposed within said magnetic circuits, substantially as set forth. 20

2. In an electric controller, the combination with a series of rotary contacts made of magnetic material and a series of magnet poles arranged with relation to said contacts whereby a complete magnet circuit comprises
25 two of said magnet poles and two of said contacts, and contact fingers having their free ends located within the magnetic fields thus produced, substantially as set forth.

In testimony whereof I have signed this
30 specification in the presence of two subscribing witnesses.

SIDNEY H. SHORT.

Witnesses:

M. A. KENSINGER,

R. T. BONE.