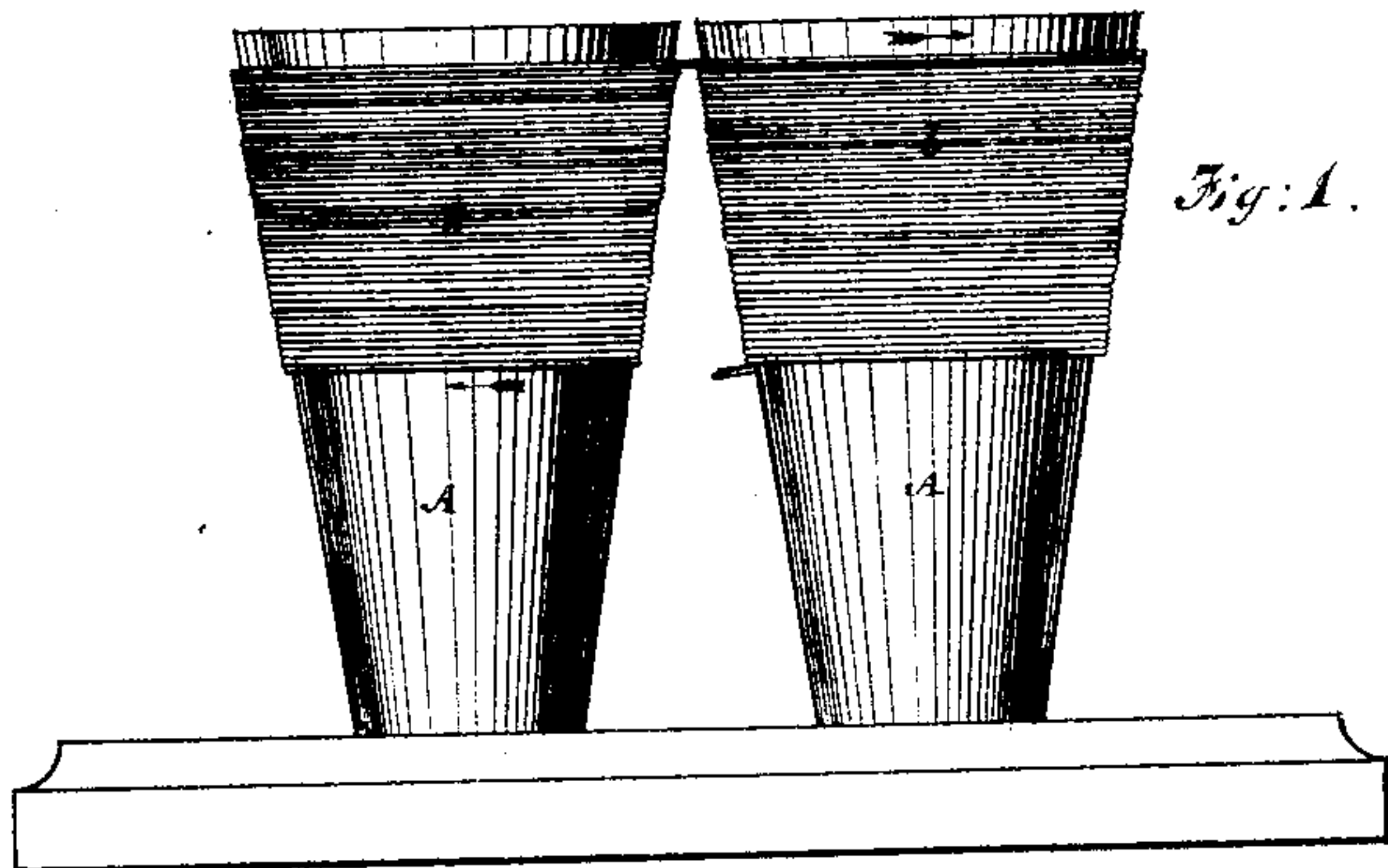


M. S. FROST.  
Electro Magnet.

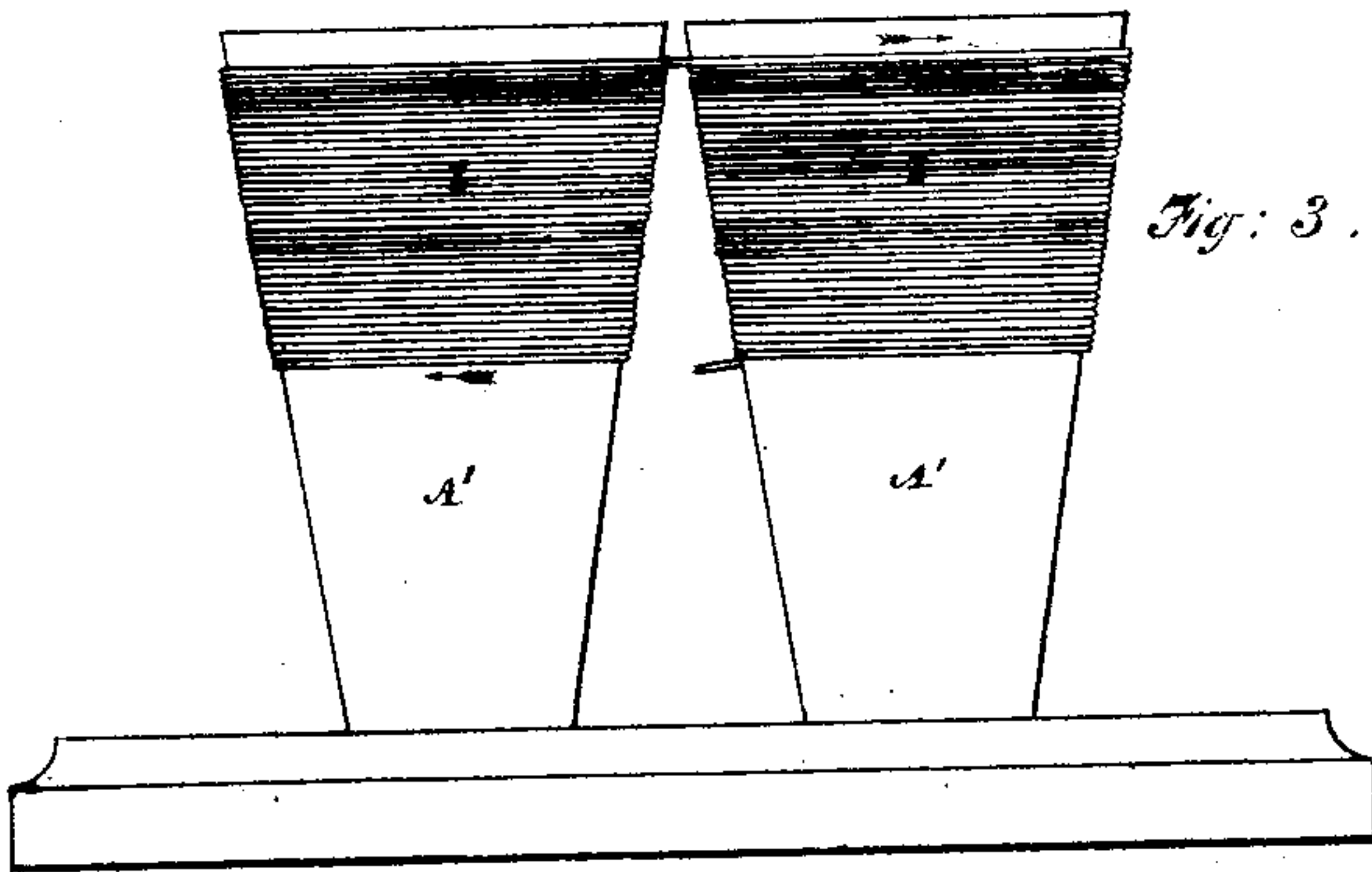
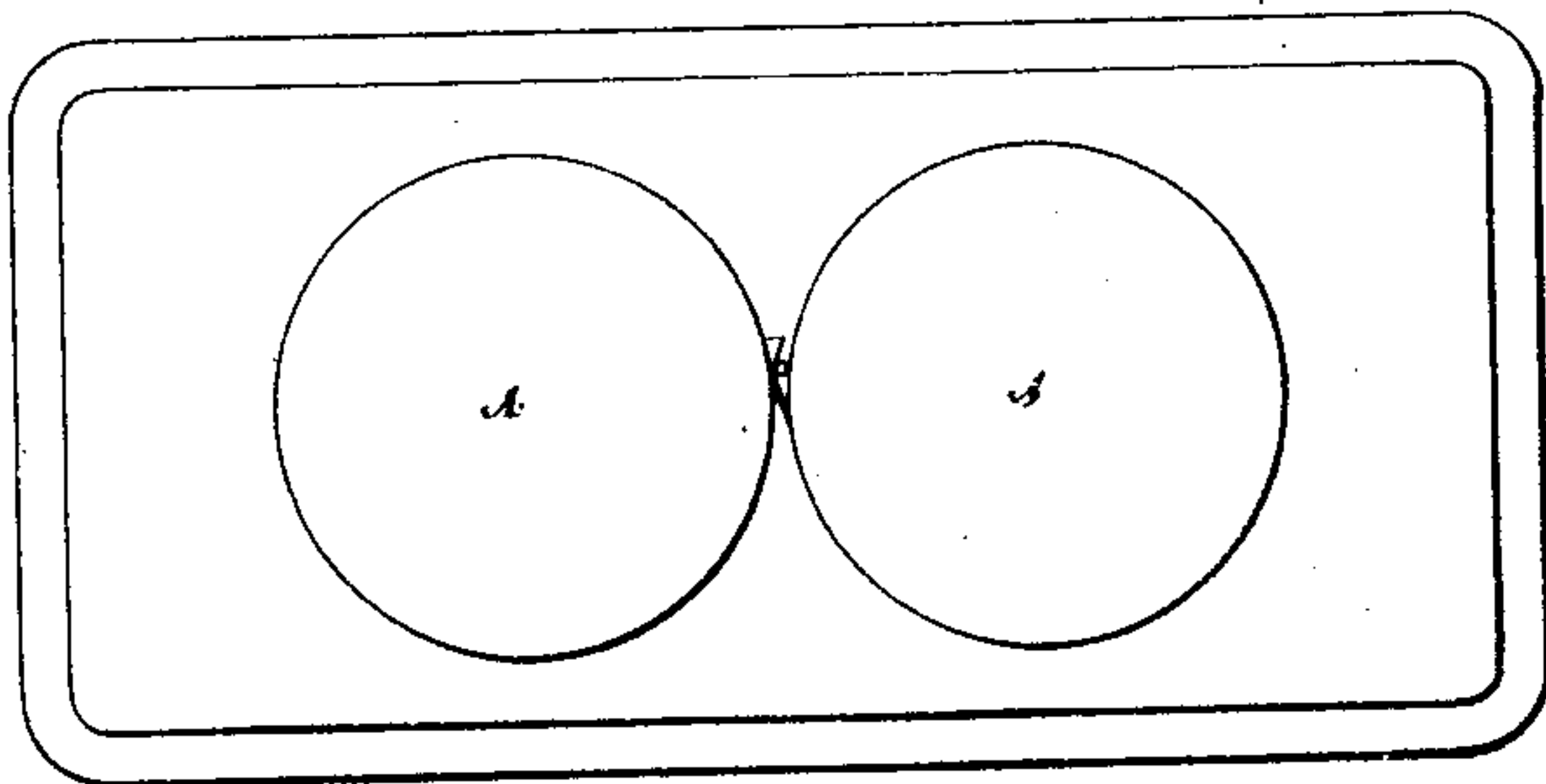
No. 103,440.

Patented May 24, 1870.



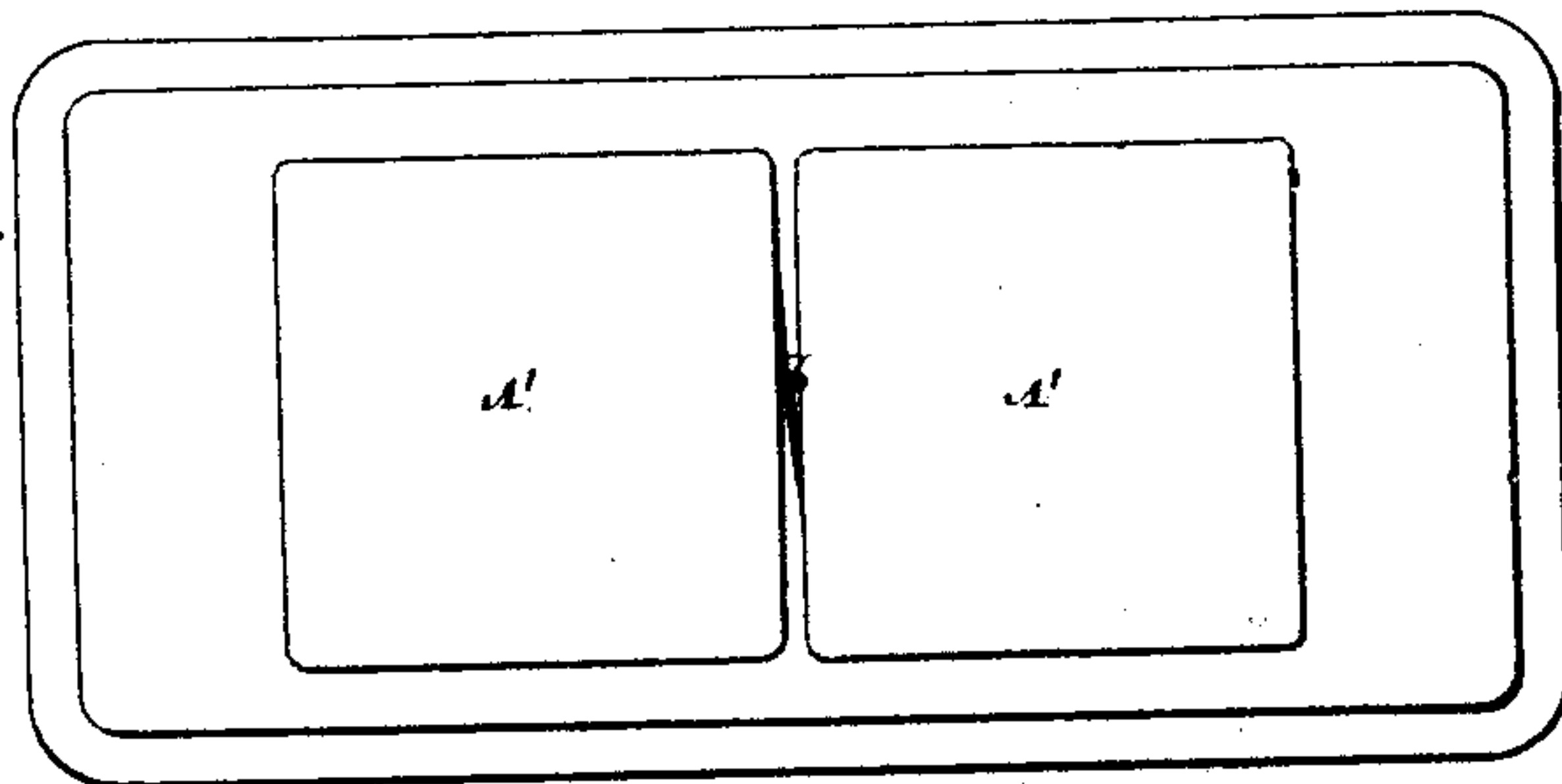
*Fig: 1.*

*Fig: 2.*



*Fig: 3.*

*Fig: 4.*



Witnesses.  
*Geo. Haynes*  
*Henry J. Brown*

*M. S. Frost*

# United States Patent Office.

MAHLON S. FROST, OF NEW YORK, N. Y.

*Letters Patent No. 103,440, dated May 24, 1870.*

## IMPROVEMENT IN ELECTRO-MAGNETS.

The Schedule referred to in these Letters Patent and making part of the same

*To all whom it may concern:*

Be it known that I, MAHLON S. FROST, of the city, county, and State of New York, have invented a new and useful Improvement in Electro-Magnets, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings forming part of this specification, and in which—

Figures 1 and 2 represent a longitudinal view or elevation and end view or plan of the two legs of an electro-magnet, constructed in accordance with any improvement, with the current-wire wound on them.

Figures 3 and 4 are similar views of said magnet under a modified form of construction.

Similar letters of reference indicate corresponding parts.

It has previously been proposed to construct electro-magnets with their legs formed of flat plates of a sector-like shape, which construction allows of the envelopment of the iron by the current wire under conditions that secure a closer approximation of the passing currents to the molecules of the iron than is attained by straight legs.

In such improved magnet the current-wire is wound around the one leg, commencing at a narrow portion of its structure, and continued to the required distance up or along said leg toward its broadest end, from whence it is passed to the broader portion of the adjacent leg, and wound in a reverse direction around such second leg toward the narrow end thereof, to complete the circuit.

My invention is based upon the same theory or principle of action, and has for its object still further enhancing the dynamic value of the electrical current, by causing it to move at right angles with the axis, and with its greatest sweep in the vicinity of the poles.

To this end I construct the legs of the magnet of a truncated pyramidal or conical form, or, in other words, solid and of a tapering shape in all directions from the poles, as contra-distinguished from one of a flat plate construction of sector-like form.

Referring to the accompanying drawings—

A A, in figs. 1 and 2, represent the two legs of my above-described improved electro-magnet, when said legs are of a truncated conical form, and A' A', in figs. 3 and 4, a similar magnet when its legs are of pyramidal form, (here shown as made up of four sides,) but which may be of any other number, or the legs may be of an oval form in their transverse section, yet tapering in all directions from the poles.

In each of these constructions the current-wire *b* should be wound first round the one leg, commencing at its smaller end, and, passing from the larger end thereof, be next wound in a reverse direction round the other leg, commencing at its larger end, and afterward the wire or wires, suitably connected to complete the circuit.

Of course there may be any number of such magnets in a series, according to the size of the battery required, and it is immaterial, so far as my improvement is concerned, to what purpose the magnet or magnets is or are applied.

What is here claimed, and desired to be secured by Letters Patent, is—

An electro-magnet, the legs of which are of conical, pyramidal, or other form, tapering in all directions from the poles, substantially as specified.

M. S. FROST.

Witnesses:

HENRY T. BROWN,  
FRED. HAYNES.