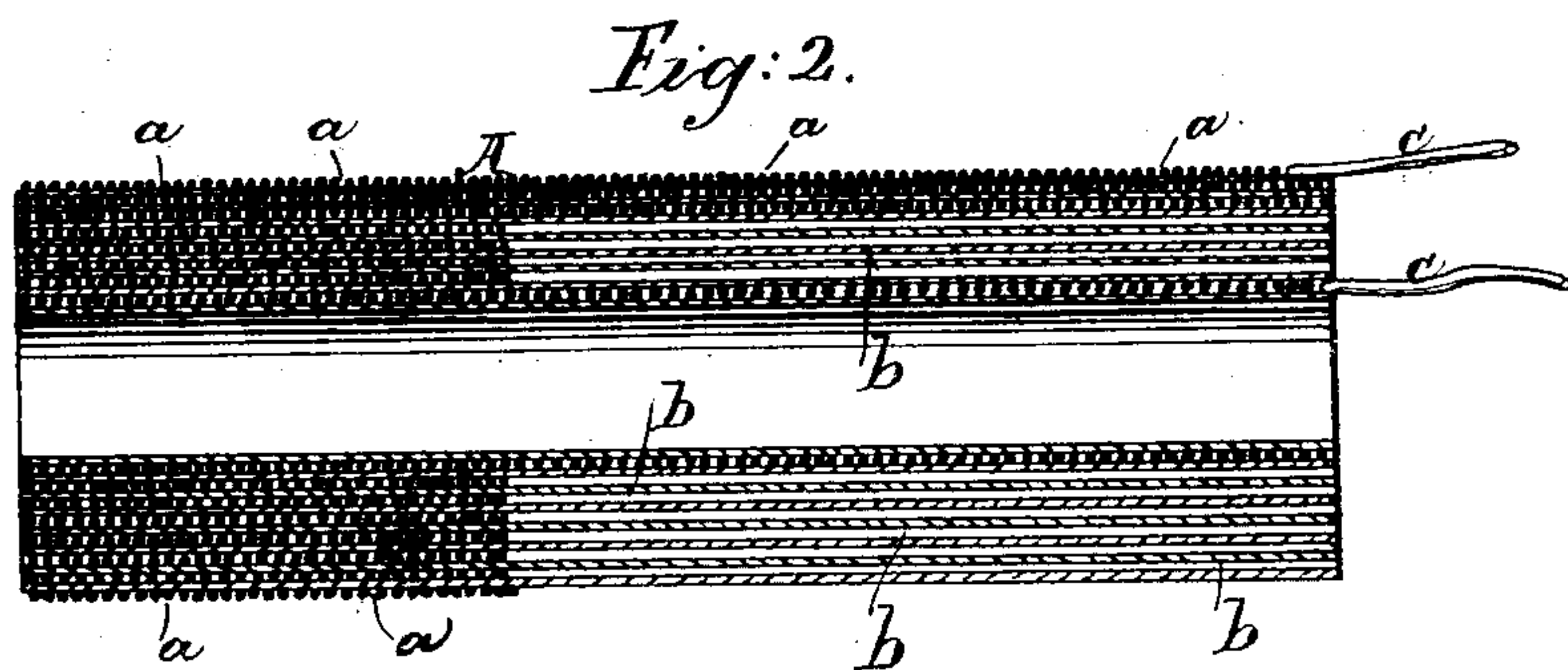
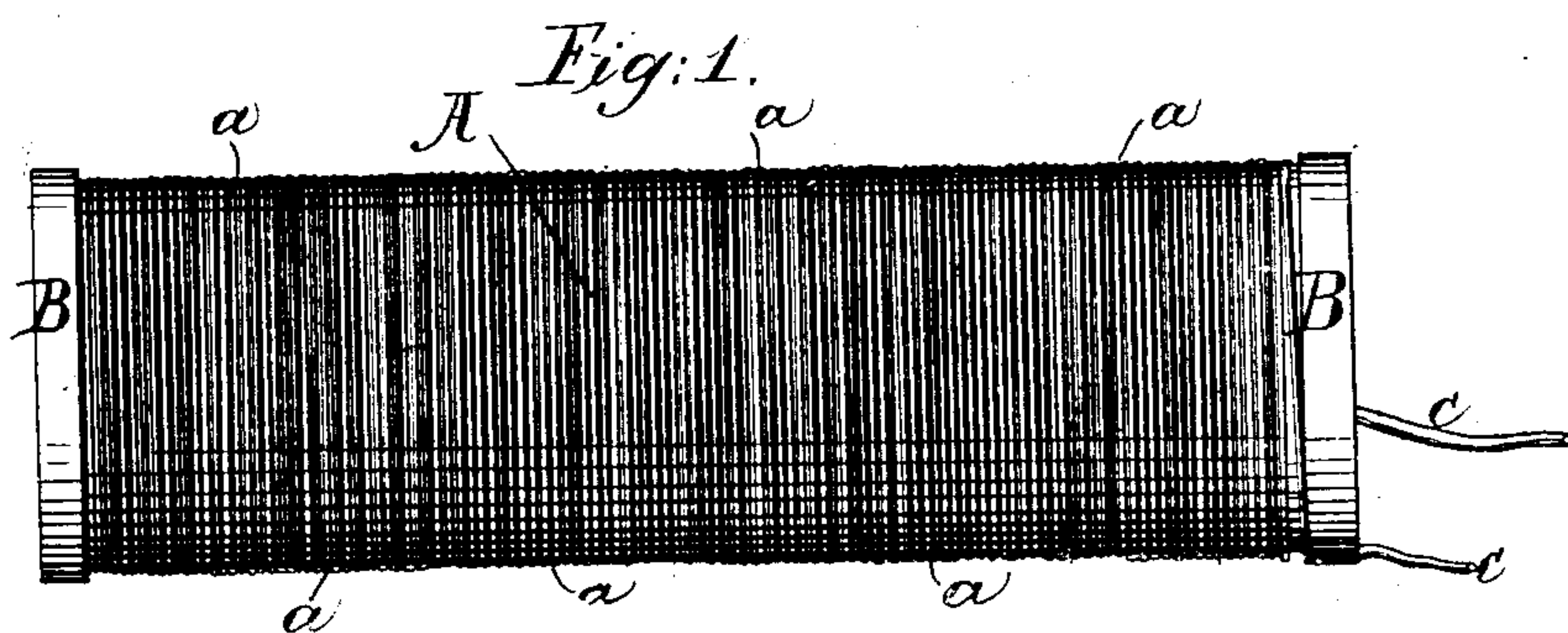


*L. Bradley.*  
*Electro Magnet.*

*N<sup>o</sup> 49,074.*

*Patented Aug. 1, 1865.*



*Witnesses;*

*W. D. Baldwin*  
*L. P. Myers*

*Inventor;*

*L. Bradley*

# UNITED STATES PATENT OFFICE.

LEVERETT BRADLEY, OF NEW YORK, N. Y.

## IMPROVEMENT IN HELICES FOR MAGNETS.

Specification forming part of Letters Patent No. 49,074, dated August 1, 1865.

*To all whom it may concern:*

Be it known that I, LEVERETT BRADLEY, of the city, county, and State of New York, have invented a new and Improved Helix for Electro-Magnets, Induction-Coils, and other Purposes, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 represents a helix embracing my improvement. Fig. 2 represents a longitudinal section through the same.

Helices for electro-magnets, &c., as heretofore constructed, generally consist of a copper wire covered with silk or other non-conductor of electricity, and wound uniformly and in regular tiers on a central core or bobbin, so that each turn of the wire will be in juxtaposition, as well as each layer of the coil forming the helix. The objection to helices thus formed is that the covering wound around the wire to insulate it (when small wire is used, and of which helices are generally made) almost doubles its size. Therefore the length of wire contained on a helix of a given size is diminished by the space occupied by the covering on the wire, with a proportionate decrease in the power of the helix, as the power of helices of the same size, as is well known, is in a great measure proportioned to the length of wire contained on the helix.

Another objection in constructing helices with covered wire is the expense of the covered wire over the uncovered, it costing nearly six times as much, and the consequent increase in the cost of the helix.

The object of my invention is to overcome these objections, and to produce a cheap and more powerful helix, and at less cost than those heretofore made.

My invention for effecting this object consists in constructing a helix of uncovered wire wound in regular layers, connected with each other around a core or center, with sufficient space between the several turns of the wire to perfectly separate or insulate them from each other, and also with the different spires or tiers of wire forming the helix separated by the interposition of paper or other non-conductor of electricity.

In the accompanying drawings is represented my improved helix, and which consists of a bobbin, A, of the proper length with flanges B at either end. This bobbin may be made of wood, paper, or any other non-conductor of electricity. On this bobbin is regularly coiled a small uncovered copper wire, c, which occupies the whole space between the heads. Between the several turns or convolutions of the wire a space, a, is left of sufficient width to insure the separation of the convolutions from each other. Between the several spires or tiers of the continuous coil of wire forming the helix is placed a strip of thin paper, b, or other non-conductor, so as to separate the different tiers of wire, leaving them only connected at the ends.

I have found by actual experiment that in helices of the same size, made with the same number of wire, nearly one-third more wire is contained in the helix when uncovered wire is used than when covered wire is used, and that the power of the helix is proportionally increased, while the cost of the helix is greatly diminished.

I do not confine myself to the precise form, construction, or material of the helix as described, as these may be varied as circumstances may require, provided, however, uncovered wire is used, with a space between the several turns, and with the different layers or tiers of the coil separated by some non-conductor of electricity.

Having thus described my improvement in helices for electro-magnets, induction-coils, and other purposes, what I claim as new, and desire to secure by Letters Patent, is—

A helix composed of two or more connected spires or tiers of uncovered wire with sufficient space between the several turns of the wire to perfectly separate them from each other, and with the different tiers of wire forming the helix also separated (except at the ends) by the interposition of some non-conductor of electricity.

In testimony whereof I have subscribed my name.

L. BRADLEY.

In presence of—

WM. D. BALDWIN,  
F. S. MYER.