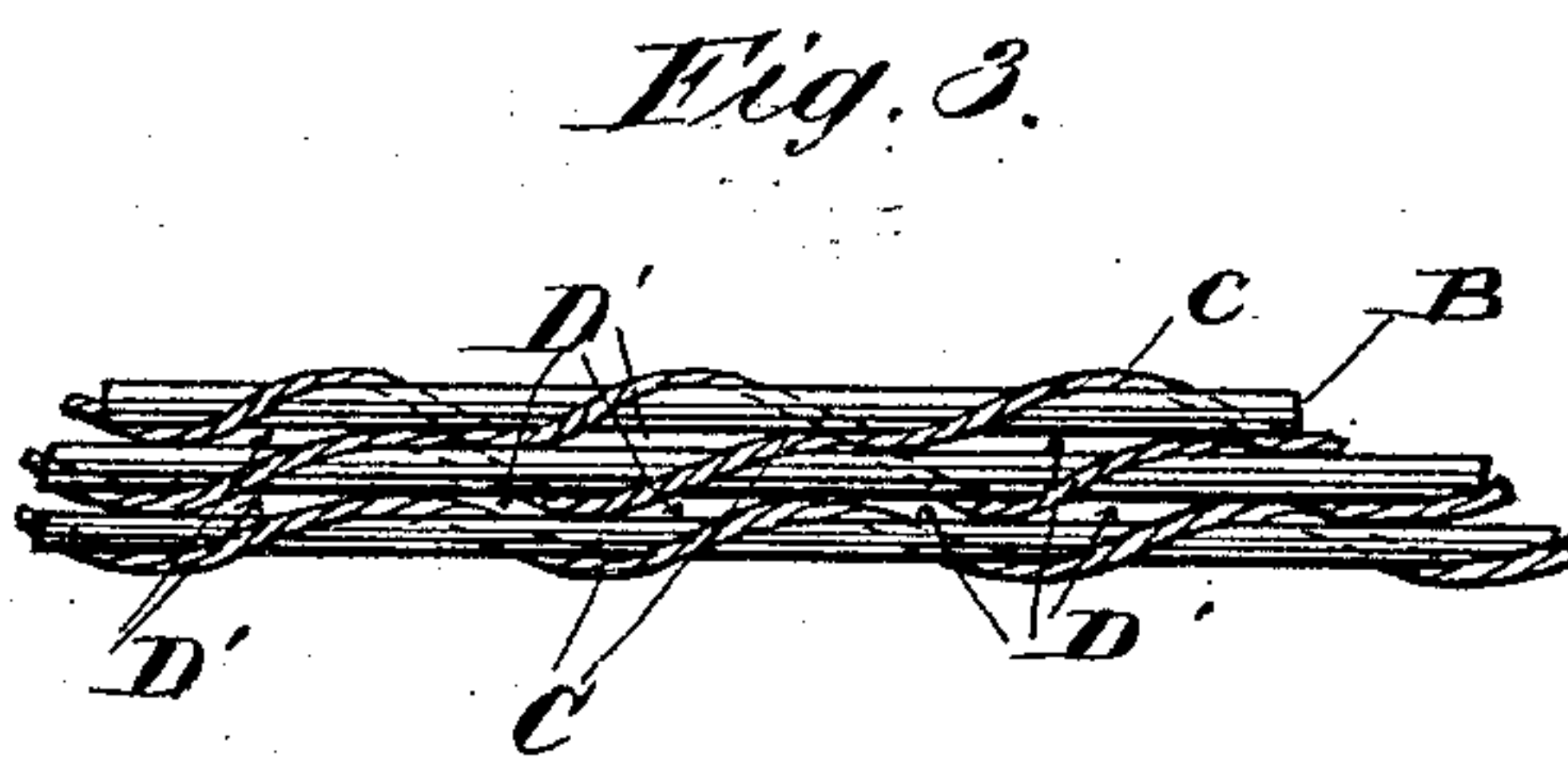
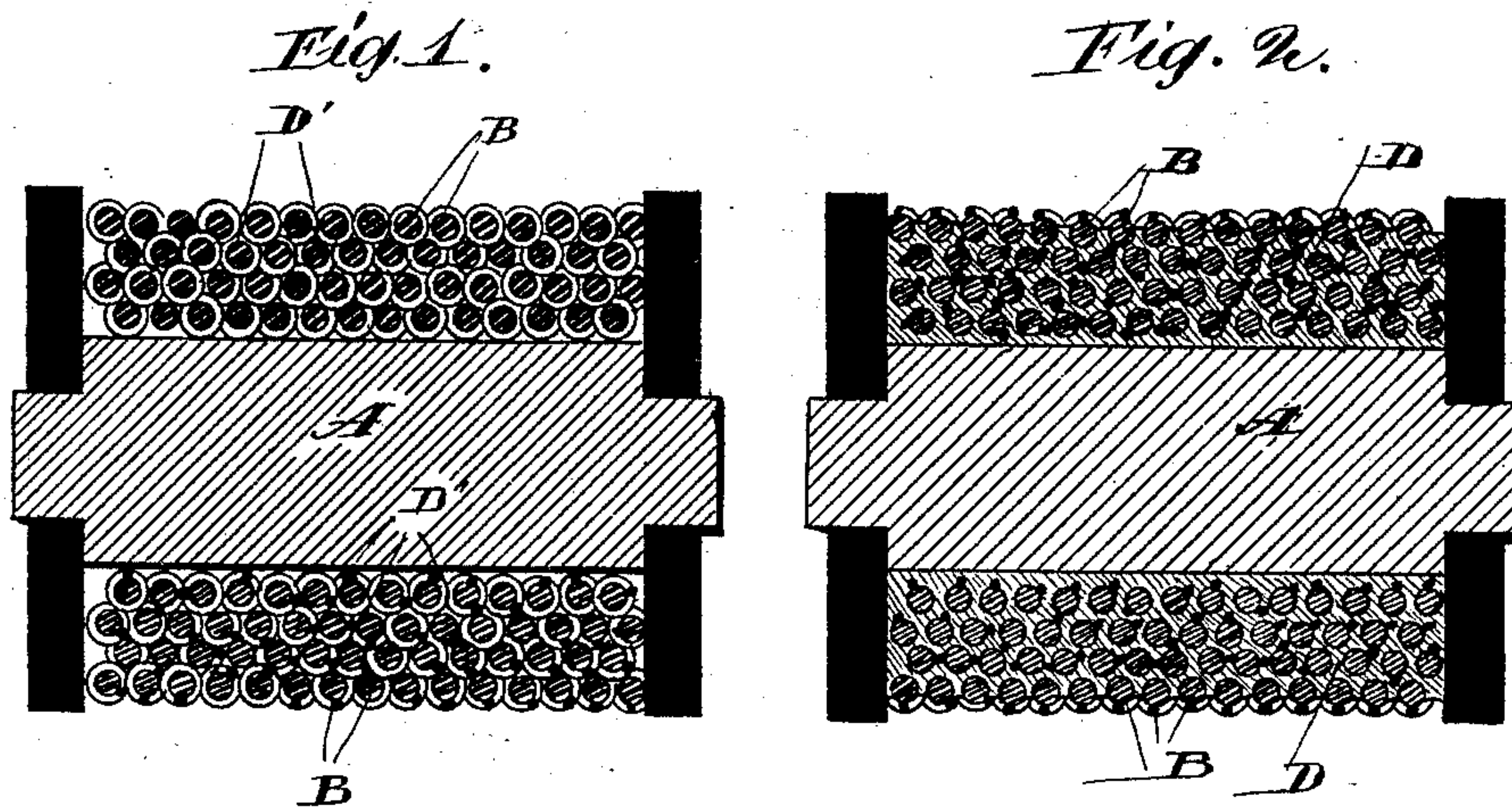


(No Model.)

C. C. GERLACH.  
ELECTROMAGNET.

No. 529,325.

Patented Nov. 13, 1894.



*Witnesses*  
*Charles Jones*  
*Sam'l J. Baker*

*Inventor*  
*Carl C. Gerlach*  
*by M<sup>rs</sup> M. Monroe*  
*Attorney*

# UNITED STATES PATENT OFFICE.

CARL C. GERLACH, OF CLEVELAND, OHIO, ASSIGNOR OF ONE-HALF TO  
RUDOLPH P. GERLACH, OF SAME PLACE.

## ELECTROMAGNET.

SPECIFICATION forming part of Letters Patent No. 529,325, dated November 13, 1894.

Application filed December 9, 1893. Serial No. 493,242. (No model.)

*To all whom it may concern:*

Be it known that I, CARL C. GERLACH, a citizen of the United States, and a resident of Cleveland, county of Cuyahoga, State of Ohio, have invented certain new and useful Improvements in Insulation, of which I hereby declare the following to be a full, clear, and exact description, such as will enable others skilled in the art to which the invention appertains to make and use the same.

My invention relates to improvements in insulation for electro-magnet coils and its objects are to provide absolute insulation between the strands of wire wound upon the magnet core, and at the same time obviate all possibility of short circuiting or burning out of the coil. I attain these objects by means of the peculiar method of winding hereinafter described, shown in the accompanying drawings and more specifically pointed out in the claim.

In the accompanying drawings Figure 1 is a central sectional view of a magnet showing one form of winding. Fig. 2 is a similar view illustrating a second variety. Fig. 3 is a detail view of wires on the exterior of the coil showing their relation when wound in position upon a magnet. Fig. 4 is a detail of one wire similarly insulated.

In the figures A is the core piece of a magnet. B, B, are the strands of the winding coil. C is the insulation of fibrous thread. D is an insulating filling of hard or plastic material.

D' represents the air space between the strands when separated by the wound fiber; in other words the air insulation.

In the detail figures the insulating fiber is shown as wound diagonally in open spiral about the wire, some distance being left be-

tween the strands, and it will be seen that with this method of winding no two wires in the coil on the magnet can be brought close enough together to come in contact at any point, nor will the insulation at any point be found close enough to prevent free air circulation through every portion of the coil. It is obvious that no heating of the core could take place with such ventilation, nor could the current be short circuited between the coils of wire.

A second form of insulation may be employed for some purposes, namely, a filling of hard insulating substance between the strands, such as cement, &c. The advantages of this addition will be found in case of fire when the coil will be so well protected that no amount of heat could destroy its operative power; also by the use of the insulating filling deposits may be prevented in the coil of dust or other rubbish. It will be seen that the same result could be accomplished by means of a circular insulating coil placed at intervals upon the wires, but sufficiently near to prevent adjacent wires from touching.

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

A magnet coil consisting in a series of coils of wire the surface of which is partially wound with flexible non-conducting material, in such a manner as to present alternately the covered and bare wire, and to admit an insulating medium between the strands, substantially as set forth.

CARL C. GERLACH.

Witnesses:

WM. M. MONROE,  
E. C. GREEN.