

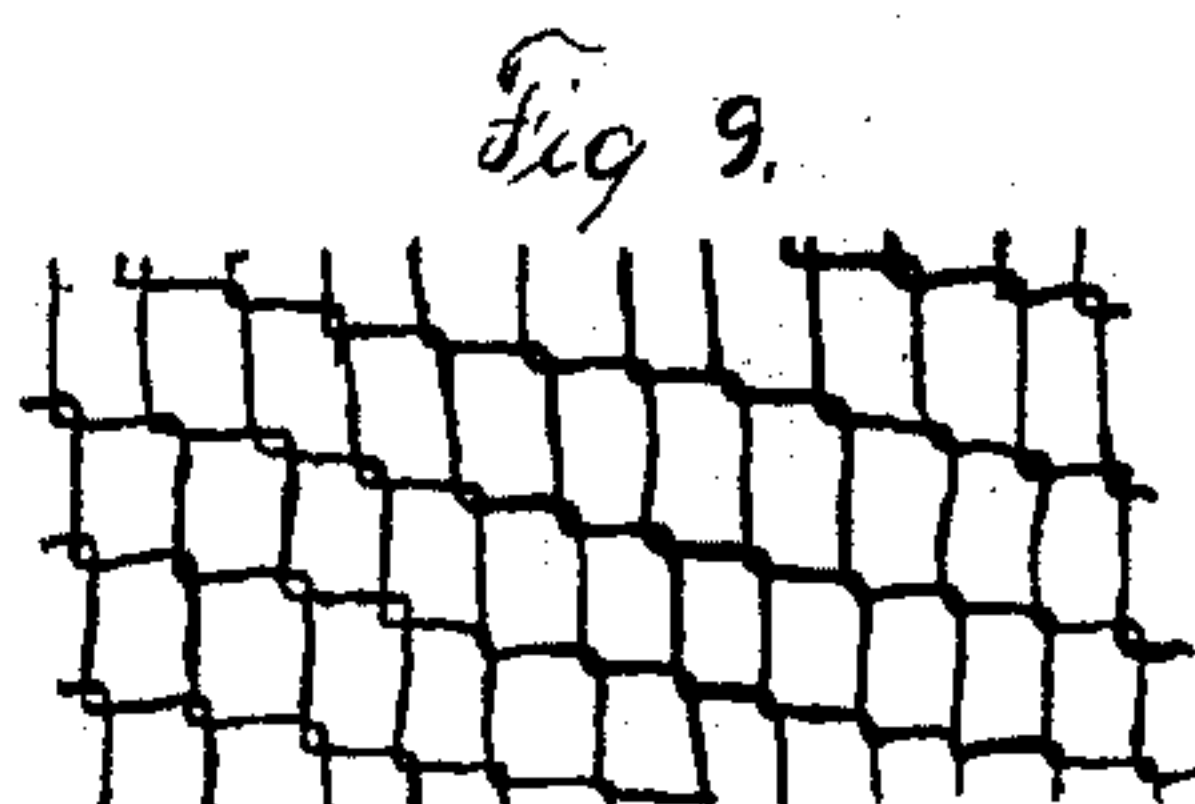
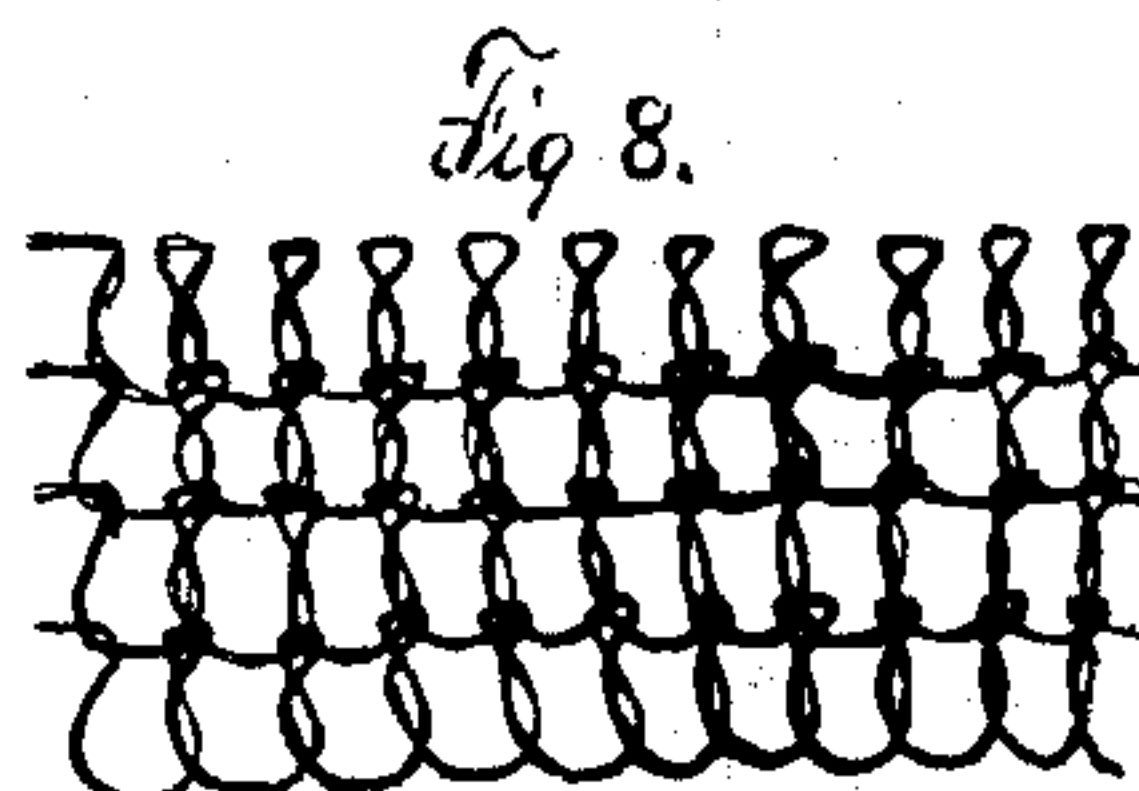
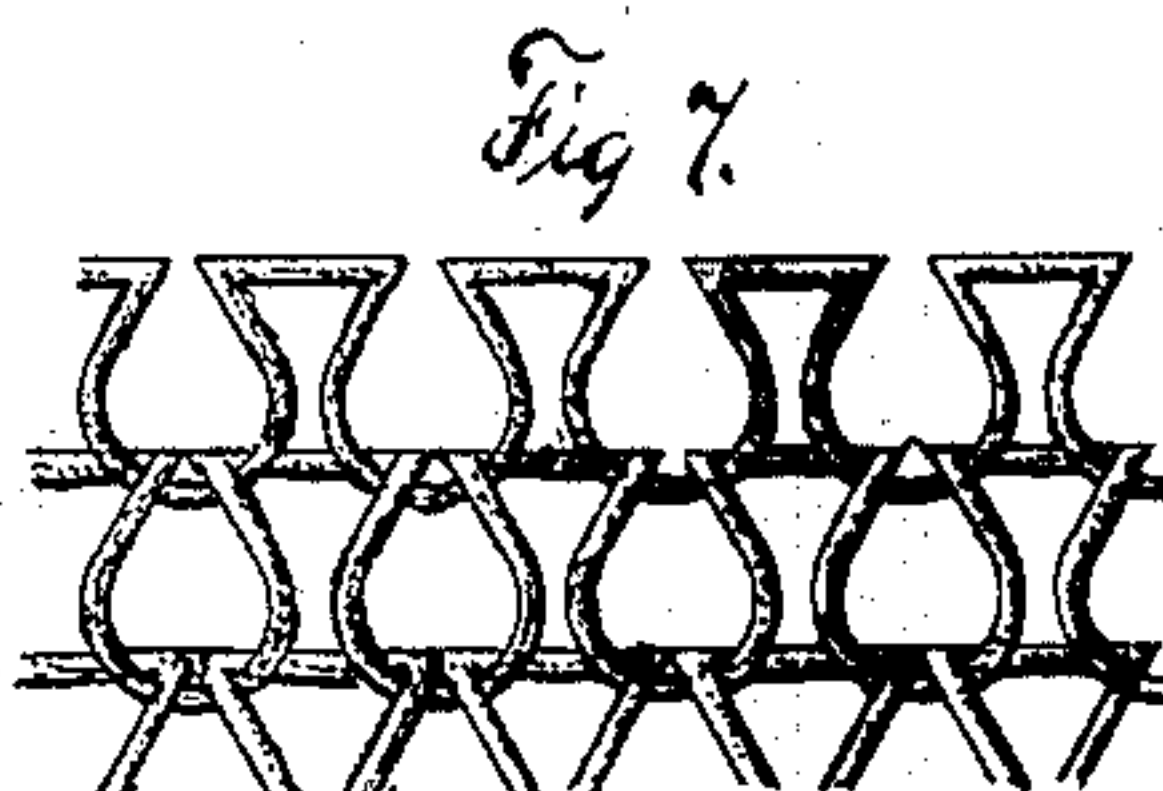
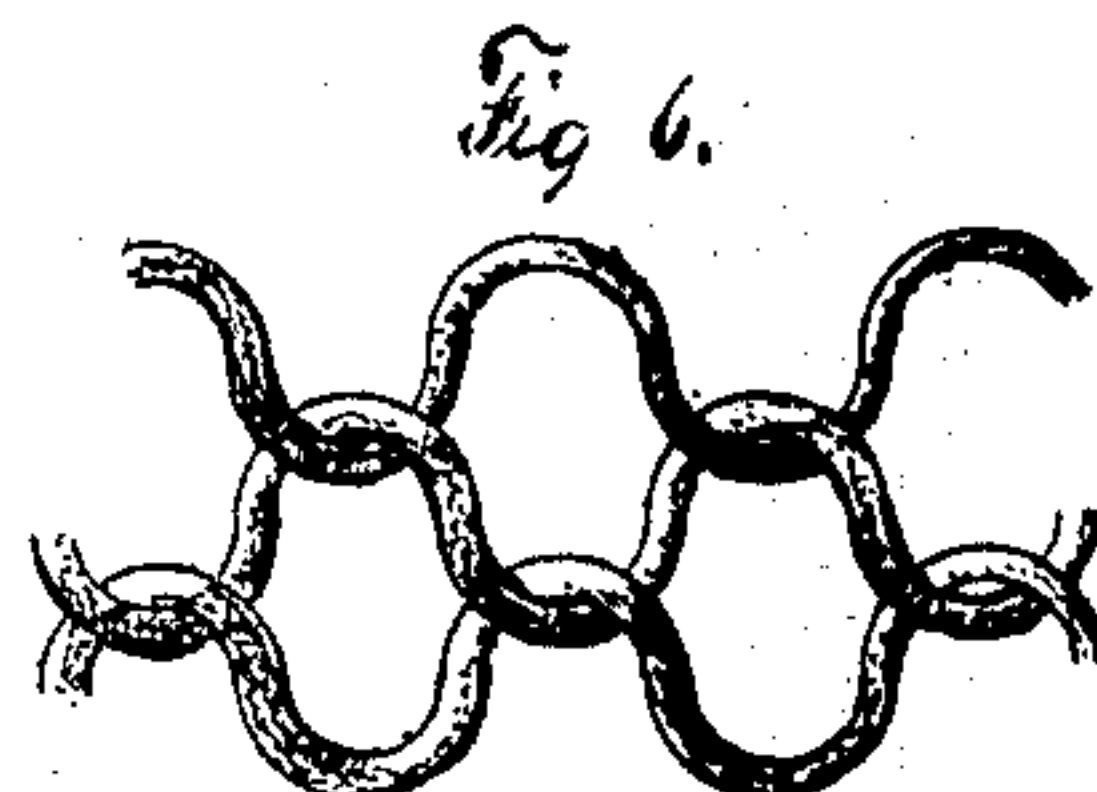
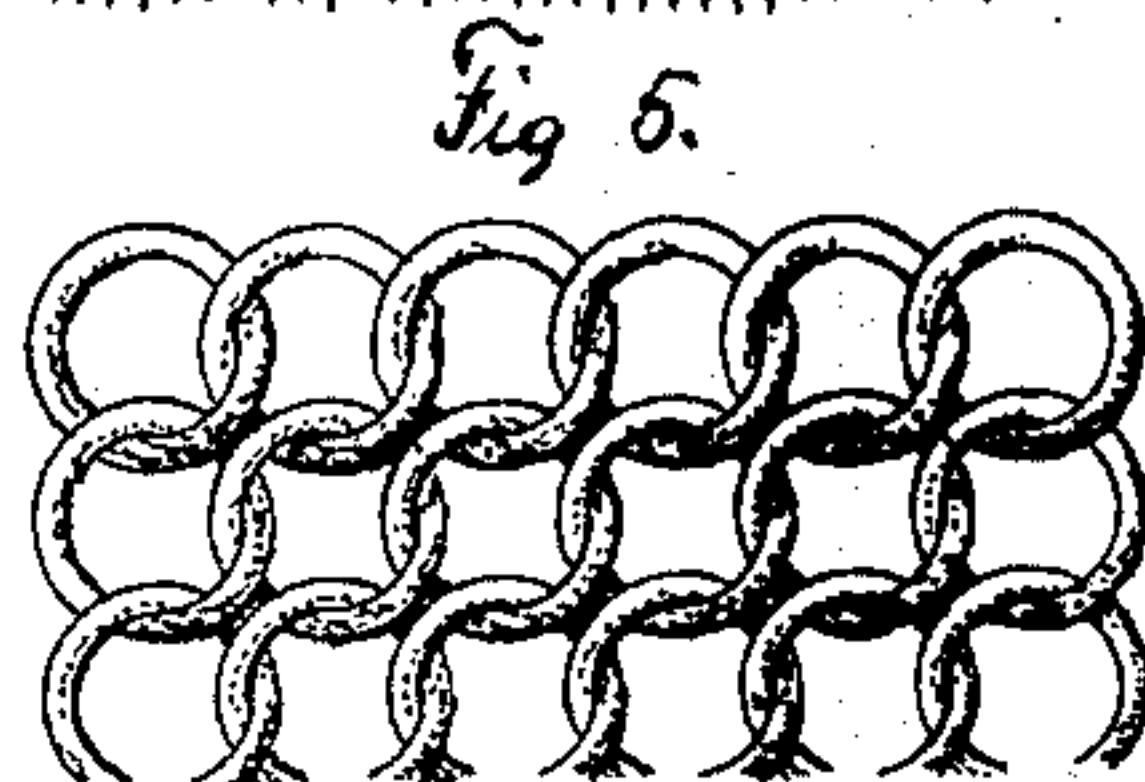
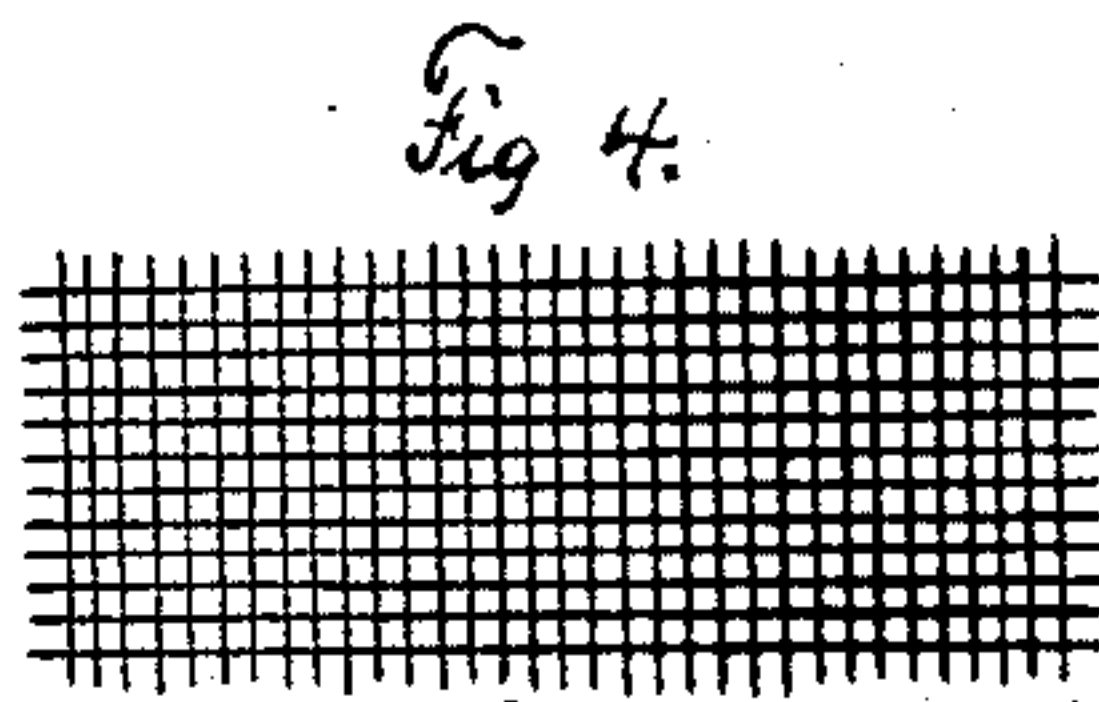
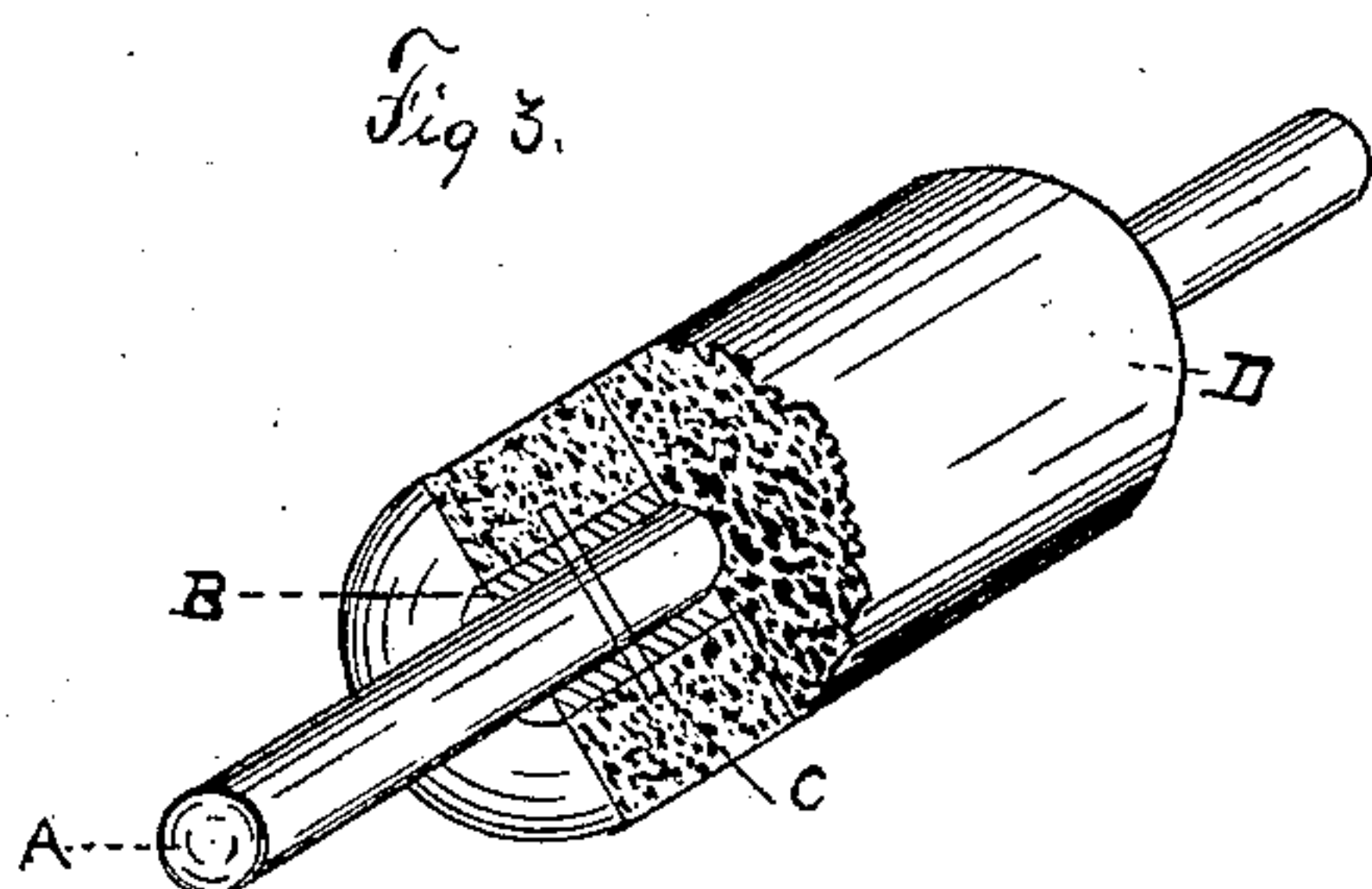
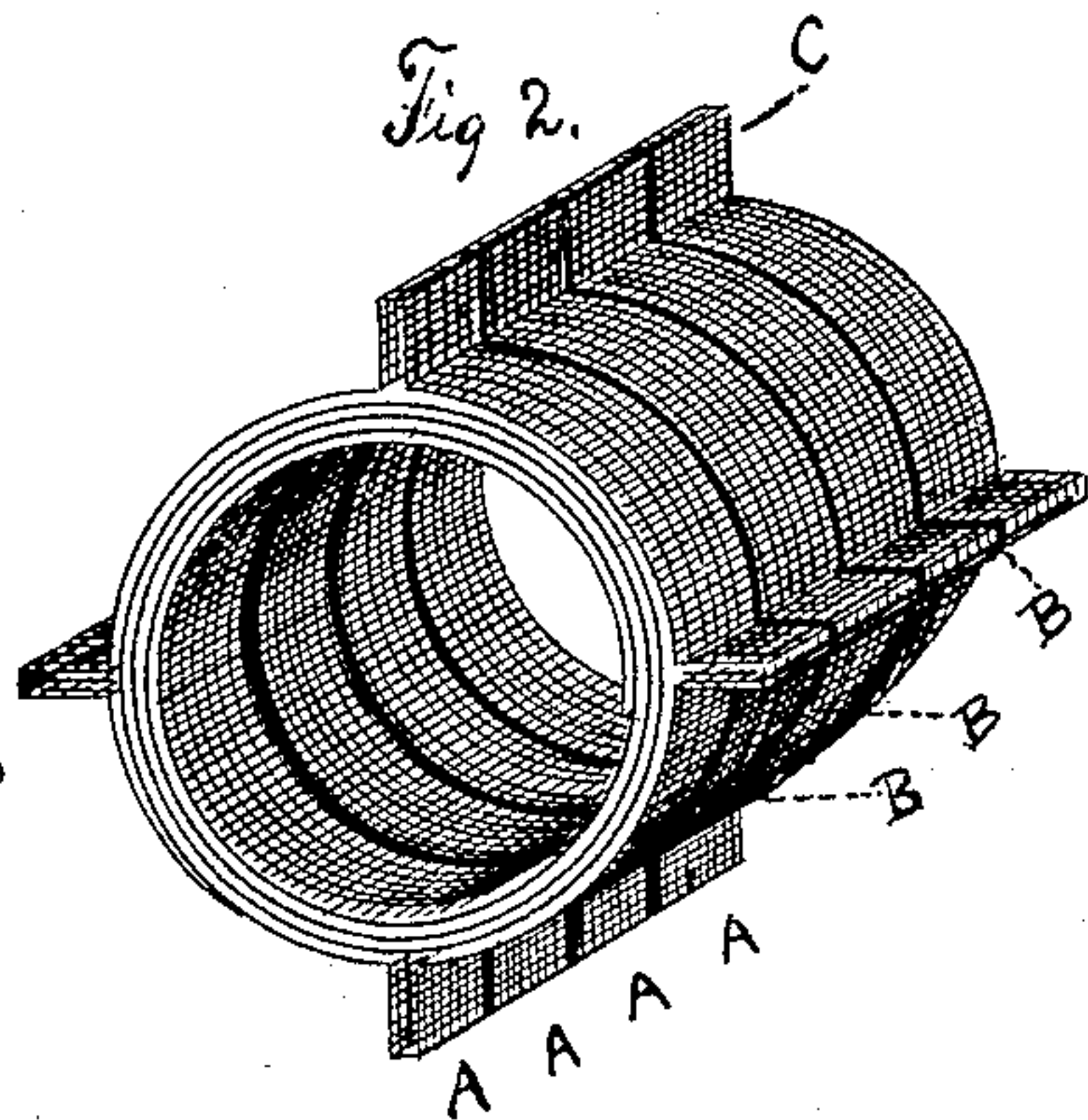
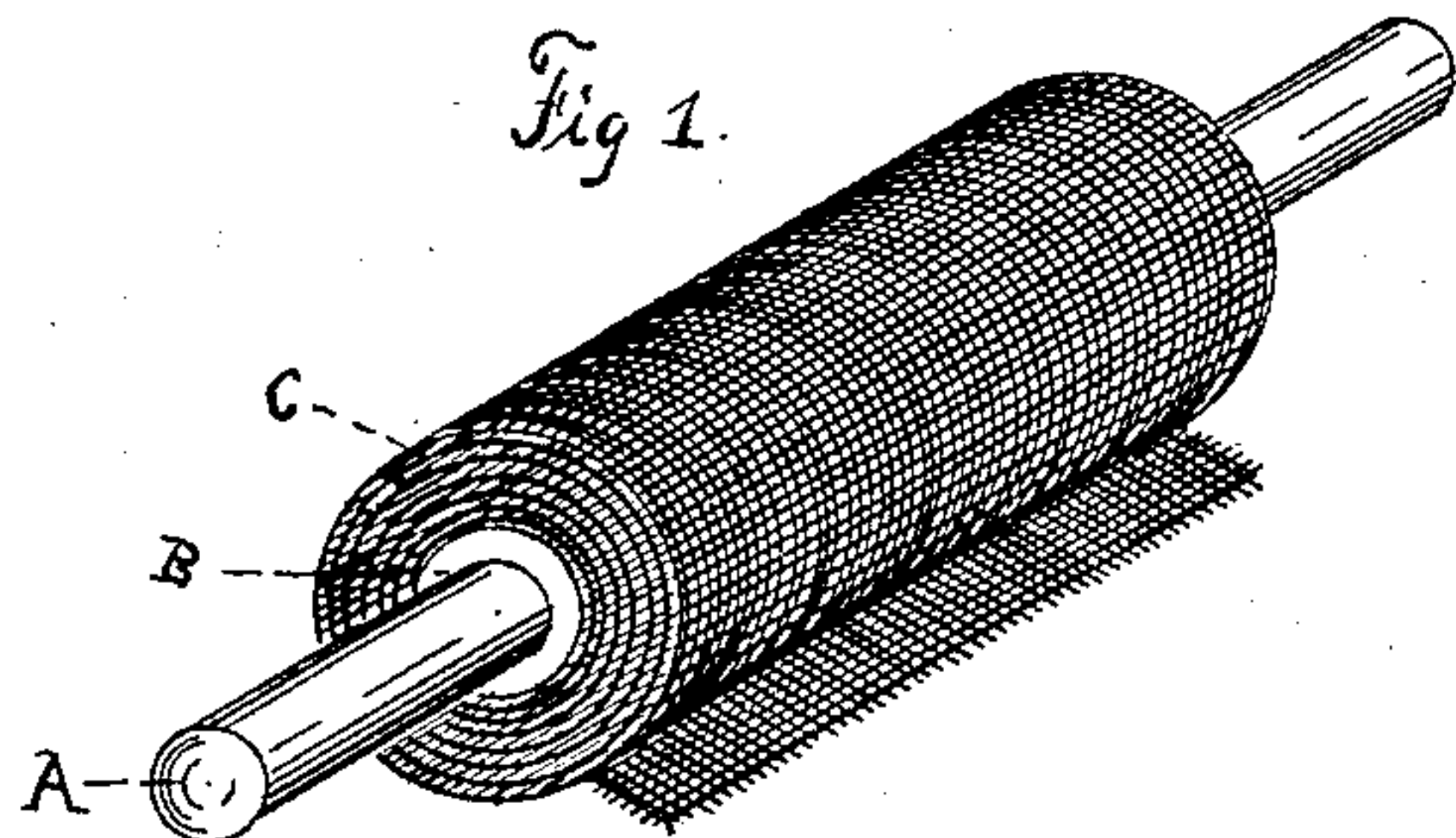
(No Model.)

A. J. LEHMAN.

ARMATURE CORE FOR ELECTRIC MOTORS AND DYNAMOS.

No. 485,284.

Patented Nov. 1, 1892.



WITNESSES:

C. W. Perry
R. J. Zimmerman.

INVENTOR

Anton J. Lehman.

UNITED STATES PATENT OFFICE.

ANTON J. LEHMAN, OF NEW YORK, N. Y.

ARMATURE-CORE FOR ELECTRIC MOTORS AND DYNAMOS.

SPECIFICATION forming part of Letters Patent No. 485,284, dated November 1, 1892.

Application filed January 30, 1891. Serial No. 379,738. (No model.)

To all whom it may concern:

Be it known that I, ANTON J. LEHMAN, a citizen of the United States, residing at 150 East Houston street, in the city, county, and State of New York, have invented a new and useful Improvement in Methods of Making Armature-Cores for Motors, Dynamos, and other Electro-Magnetic Machines; and I do hereby declare that the following is a full, clear, and exact description of the invention, such as will enable others skilled in the art to make and use the same.

Up to the present time armature-cores have been made by casting the core of one solid piece of iron. The cores have also been cast with slots or holes in them. Other cores again were made of thin sheets of iron built upon the armature-shaft in the form of disks or washers. Still other armature-cores were composed entirely of iron wire.

The object of my invention is to form a core of such material that, first, the core will be a light one; secondly, that the core expose a large radiating-surface, so that it will not heat, and, thirdly, a core in which the induced circuits are reduced to the minimum if not destroyed entirely.

Figure 1 of the drawings represents a drum-armature. A is the shaft. B is a tube or collar of any insulating material—as, for example, wood—and C represents a roll of wire cloth wound on said tube. Fig. 2 represents a Gramme armature-core composed of narrow strips of magnetic cloth A A A A, insulated or separated from each other by the washers or disks B B B, which may be waxed paper, hard rubber, or the like. It also shows the magnetic cloth bent on itself to form projections or lugs, as at C. Fig. 3 represents an armature-core composed of scrap magnetic cloth mixed with iron filings and a binder. A represents the shaft, B the insulating-tube, and C a metallic non-magnetic pin which passes through the collar or tube and shaft, and which pin prevents the shaft from rotating in the core D. Fig. 4 represents one type of magnetic material or cloth which can be made use of in the construction of armature-cores. The wires or fibers composing the cloth can be of wrought-iron, soft steel, or other magnetic material. In Fig. 5 the magnetic material is composed of rings linked together. Figs. 6,

7, 8, and 9 show still other forms of magnetic cloth or netting.

The method of making an armature-core by my method is as follows: A shaft suitably insulated is wound with a strip of wire gauze, cloth, netting, or the like of the required breadth in one continuous strip to the required external diameter of the core. Any gauze, cloth, netting, or the like made of any magnetic substance where the wires, rings, or links composing it cross each other at any angle can be thus wound on the armature-shaft in one continuous strip or in sections. It is not necessary that the wires composing the magnetic substance run in two opposite directions and are composed of straight wires, as in Fig. 4; but the cloth or magnetic material can also be composed of complete rings, Fig. 5, solely of rings, or in combination with straight or crimped wires or bands crossing at any angle, Fig. 7, or the rings or links or parts of rings or links can be placed in a mold with any binder mixed with or without any magnetic substance and pressed into the shape of an armature-core.

The theory on which this invention is based is that the wire, Fig. 3, band, fiber, ring, or links composing the magnetic substance and running in one direction has the current induced in it neutralized when crossed at any angle by the wire, band, fiber, ring, or link running in the opposite direction. The meshes or openings formed by the wires crossing each other at angles act as ventilating-spaces by means of which air can find ingress to the whole interior of the core, as in Fig. 1. If, on the other hand, it is desired to have a core containing a greater mass of magnetic material, the meshes or openings in the cloth can be made as small as it is practical to weave or make them, or the meshes can be filled with a cement or paste made of any pulverized magnetic substance mixed with any binder, as shellac, glue, &c., and applied to the openings or meshes, as the gauze, cloth, or netting is wound upon the insulated shaft.

When it is desired that a cheap and good armature-core be produced, in the making of which the time and skilled labor be reduced to the minimum, any waste or scrap magnetic cloth, rings or parts of rings, chains or parts of chains, whether linked together or separate,

mixed with any powdered or pulverized magnetic substance to fill up the spaces or interstices, and a sufficiency of any binder are, after being placed in a suitable mold, subjected
 5 to a sufficient pressure to cause the whole to be compacted together and squeeze out the excess of the binder, when it is taken out of the mold and mounted on the insulated armature-shaft; or it can be pressed on the armature-shaft by placing the insulated shaft in a
 10 suitable mold, filling same, and pressing or compressing, as before mentioned, Fig. 3.

Fig. 2 shows a Gramme-ring armature-core. The last layer or layers of cloth are bent on
 15 themselves at suitable intervals, thus forming lugs or arms that project at right angles to the core proper, and which lugs or arms project to the outer periphery of the armature when complete, said lugs forming spaces in which
 20 the wire to be used on the armature is wound.

The armature-cores shown in Figs. 1, 2, and 3 can before the non-magnetic wire is wound on them be immersed in hot paraffine or wax, in shellac, or any varnish, and allowed to dry
 25 or harden, so as to insulate each fiber composing the armature-core and thereby increase the electrical insulation of the same.

I do not limit myself to any particular form of armature-core. Neither do I limit myself
 30 to any particular form of magnetic gauze, cloth, netting, or the like. Neither do I limit myself to the use of the cloth all in one length, for if one length should not be sufficient to form a core as many pieces can be added as
 35 are necessary. Two or more lengths can be

placed one over the other and all wound up simultaneously. Neither do I limit myself to the use of the magnetic material all in one piece, for I can use scrap magnetic material and press it into shape, mixed with iron filings
 40 and a binder.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. An armature-core for motors, dynamos, or electro-magnetic machines, composed of
 45 magnetic gauze, cloth, netting, or the like rolled upon itself, the last or peripheral layer or layers of which are bent on themselves at an angle to the core-body to form lugs or projecting arms, substantially as described. 50

2. An armature-core for motors, dynamos, or electro-magnetic machines, composed of magnetic gauze, cloth, netting, or the like rolled upon itself, the meshes of which are filled with a paste composed of any magnetic
 55 powder, combined with a binder, the last or peripheral layer or layers of which are bent at an angle to form lugs or arms that project, substantially as described.

3. An armature-core for motors, dynamos, 60 or electro-magnetic machines, composed of magnetic gauze, netting, or the like rolled upon itself and soaked in a solution of shellac or hot ozocerite or the like, substantially as described.

ANTON J. LEHMAN.

Witnesses:

ISAIAH L. ROBERTS,
 E. W. PERRY.