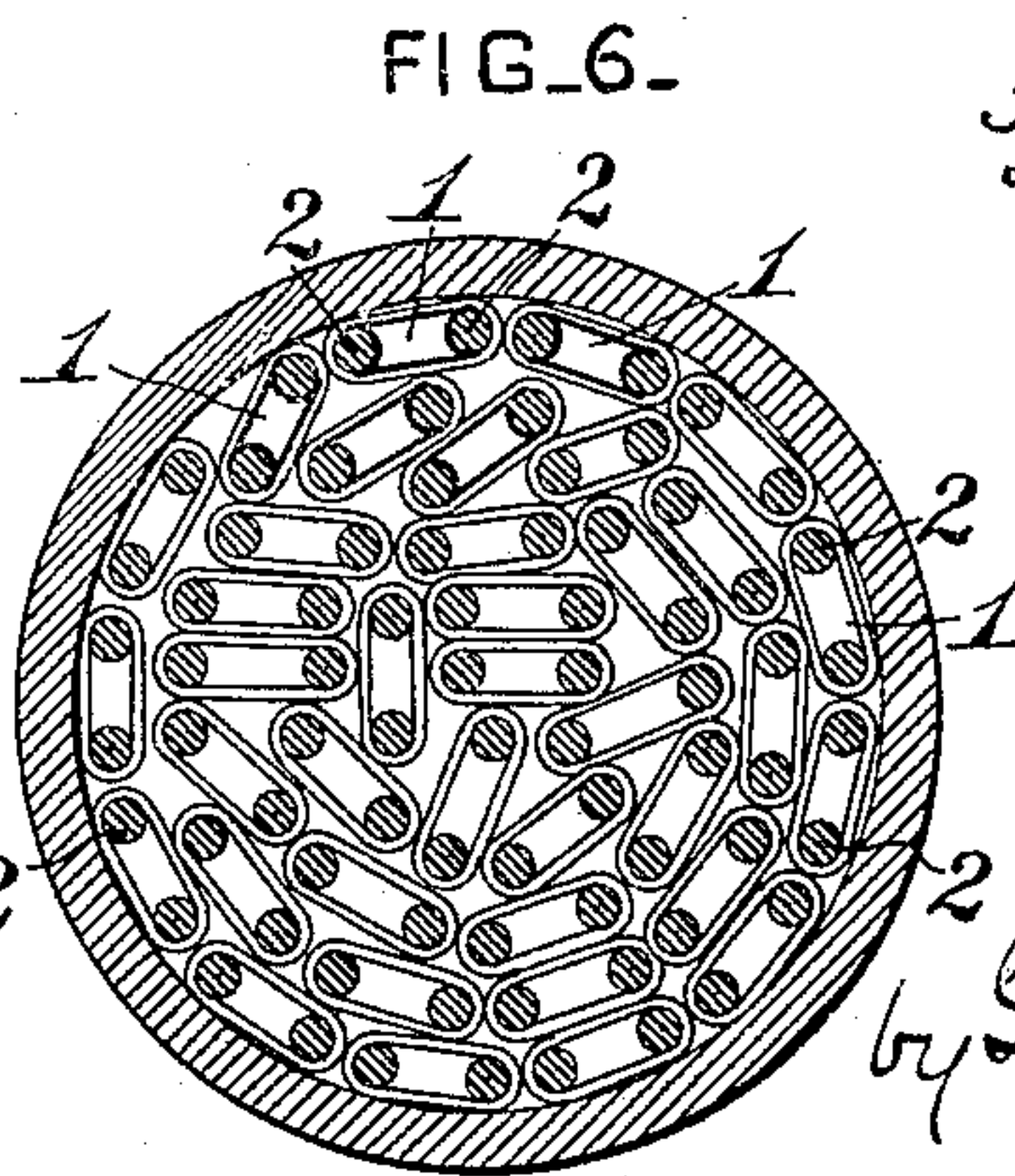
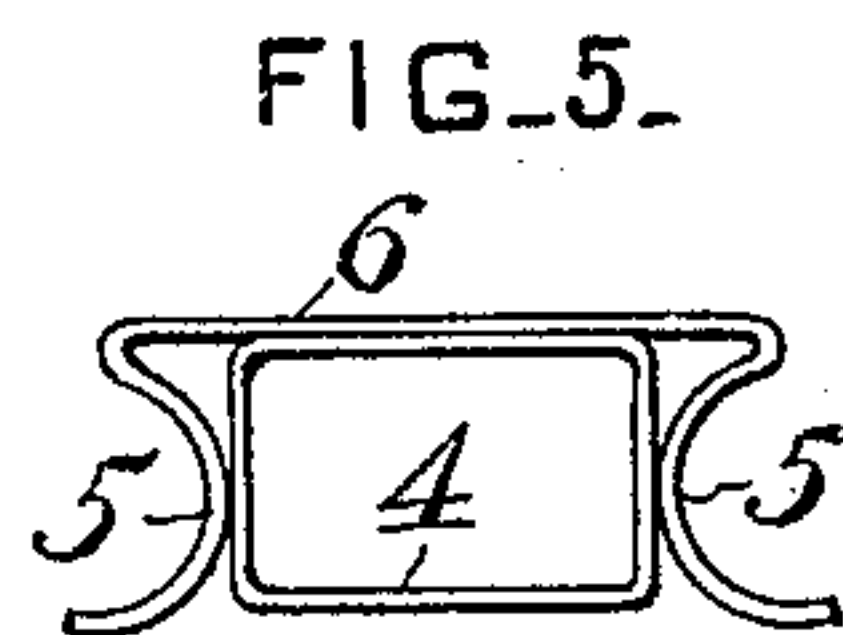
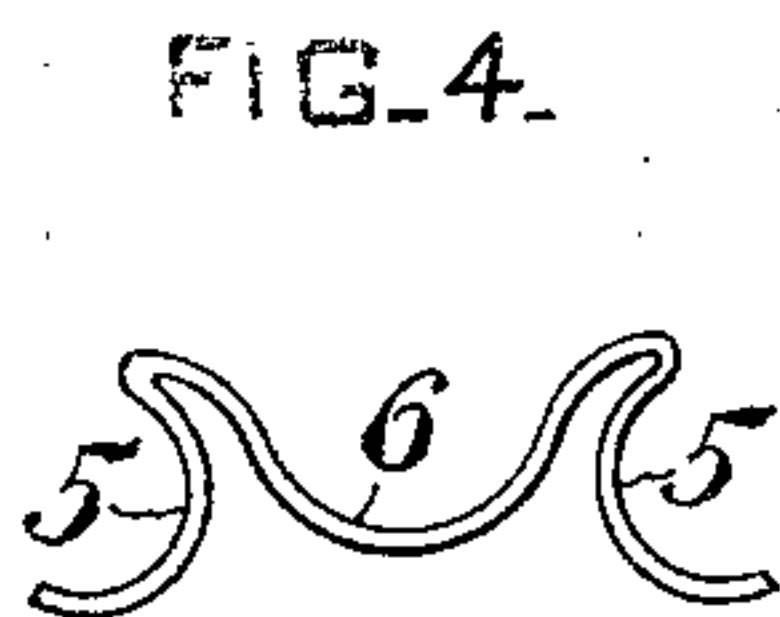
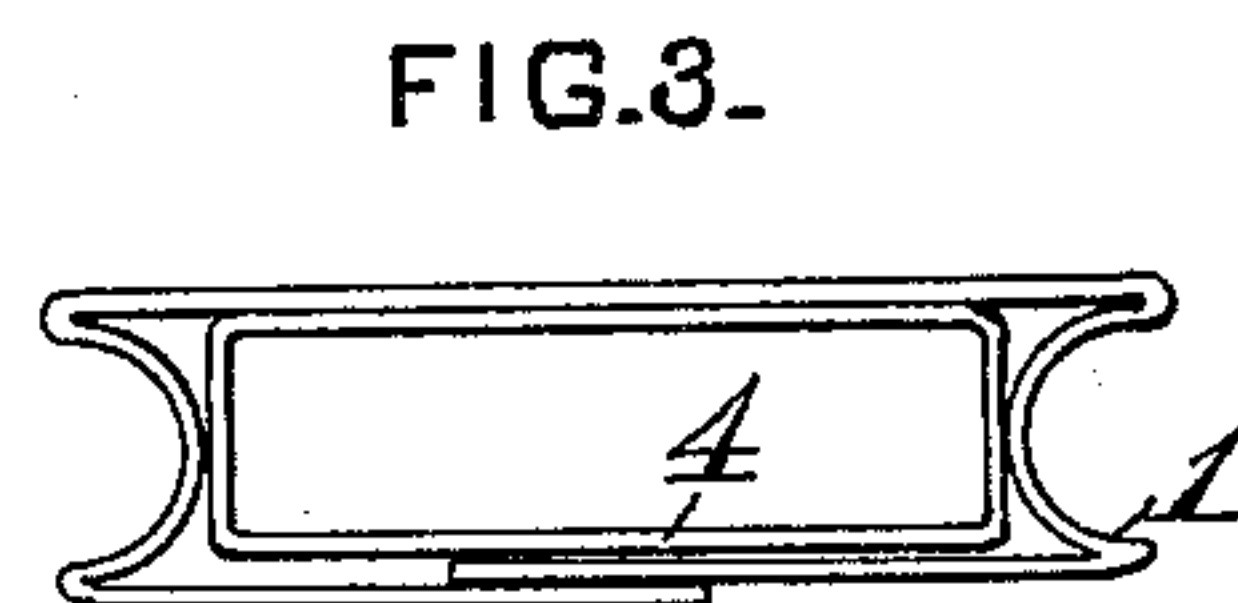
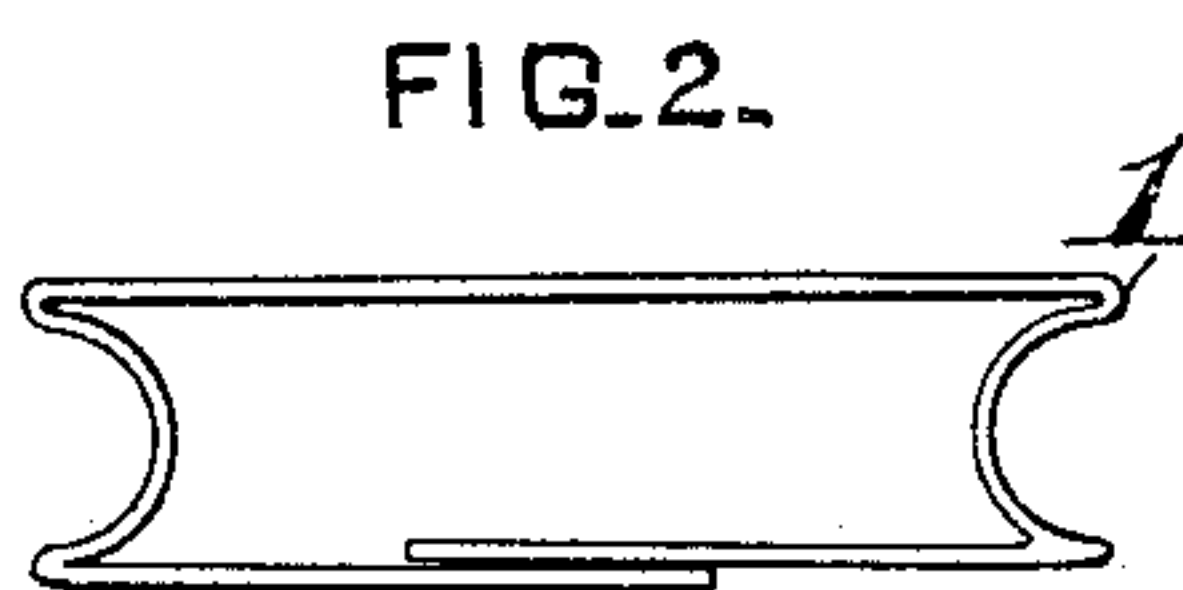
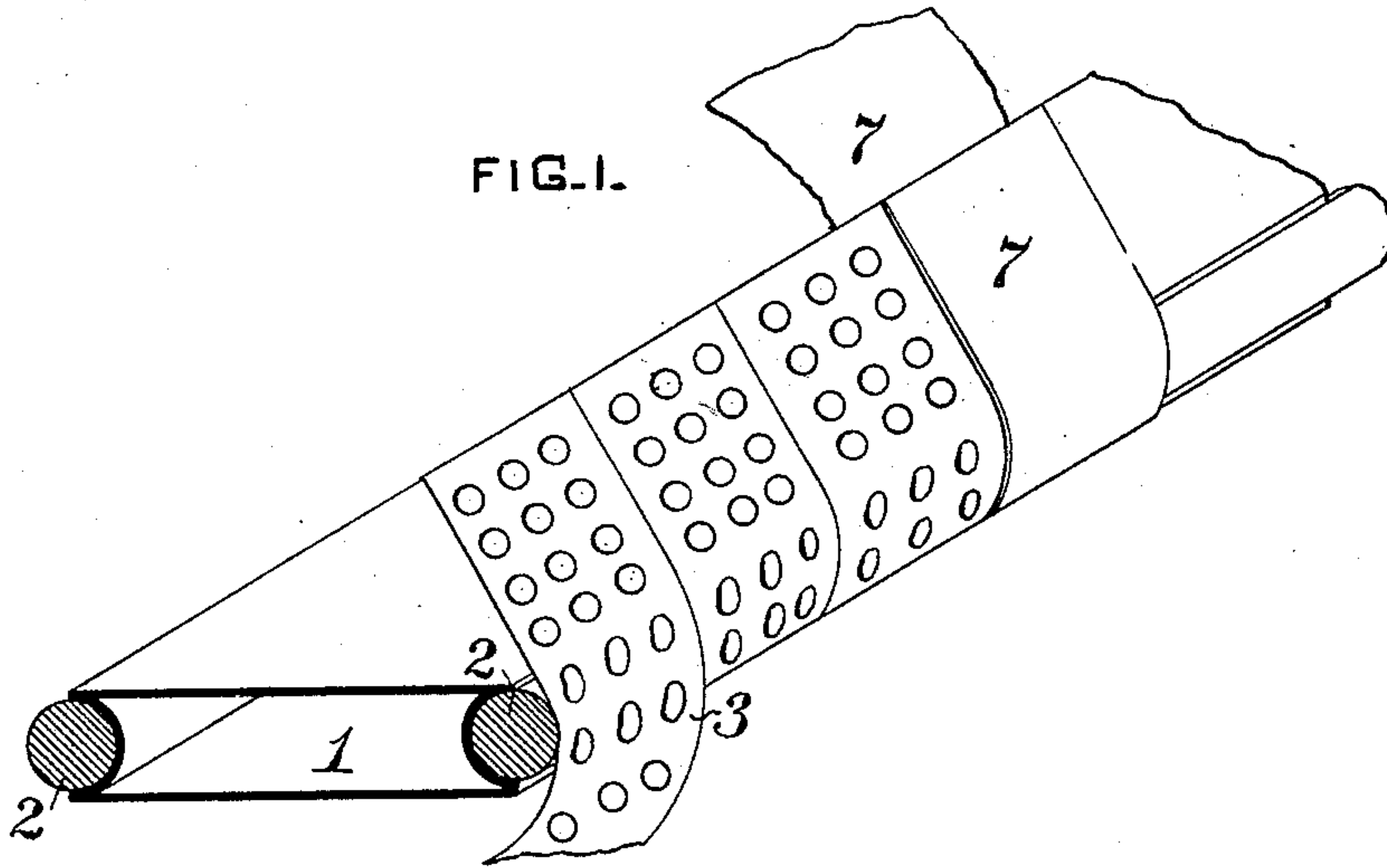


(No Model.)

J. W. MARSH.
ELECTRIC CONDUCTOR.

No. 466,250.

Patented Dec. 29, 1891.



WITNESSES:

Danwin B. Wolcott
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INVENTOR,

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Att'y.

UNITED STATES PATENT OFFICE.

JOSEPH W. MARSH, OF PITTSBURG, PENNSYLVANIA, ASSIGNOR TO THE
STANDARD UNDERGROUND CABLE COMPANY, OF SAME PLACE.

ELECTRIC CONDUCTOR.

SPECIFICATION forming part of Letters Patent No. 466,250, dated December 29, 1891.

Application filed September 30, 1891. Serial No. 407,228. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH W. MARSH, a citizen of the United States, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented or discovered certain new and useful Improvements in Electric Conductors, of which improvements the following is a specification.

The invention described herein relates to certain improvements in electric cables, and has for its object the arrangement of the wires for metallic circuits in such relation to each other as to obtain the maximum efficiency, and it is further an object to provide for the more efficient insulation of the wires of a circuit from each other and also from the wires of adjoining circuits, all as more fully hereinafter particularly described and claimed.

In the accompanying drawings, forming a part of this specification, Figure 1 is a perspective view showing the manner of arranging the wires in pairs for a metallic circuit. Figs. 2, 3, 4, and 5 are end views of different forms of hollow or air-retaining cores for the circuits, and Fig. 6 is an end view of a cable having my improved form of conductors arranged therein.

In the practice of my invention I provide a frame 1, having grooves along opposite sides thereof, in which I place the bare conducting-wires 2, which are bound in place by one or more perforated strips 3 of paper or other fibrous material. As shown in Fig. 1, the frame 1, preferably of stiff paper or other suitable material, is made hollow, thereby forming a comparatively large air-space between the two wires or conductors employed in a metallic circuit. The perforations in the strips 3, binding the wires in their grooves, form pockets of air between the adjacent wires of two adjoining circuits, as will be readily understood by reference to Fig. 6.

The walls of the frame shown in Fig. 1 are made continuous or integral, while in Figs. 2 and 3 the frame is formed by properly folding a strip of sufficient width into the desired form. Ordinarily the frame 1 would

be sufficiently rigid to withstand usual treatment; but when the frame 1 is made of light material it may be re-enforced by a tube or shell 4, arranged inside of the frame, as shown in Fig. 3.

In Figs. 4 and 5 the frame consists of the curved walls 5, supporting the wires, and a single connecting-web 6, the latter being curved longitudinally in Fig. 4, so as to hold the walls 5 in proper relation to each other, while in Fig. 5 a strengthening or re-enforcing tube or shell 4 is placed between the walls 5 to hold them in proper relation to each other.

It will be observed by reference to Fig. 6 that the wires of a circuit are separated from each other a considerable distance, and that the most efficient of insulation—*i. e.*, air—is inclosed between, and also that the air inclosed in the pockets formed by the perforations in the binding-strip efficiently insulates each wire of a circuit from the wires of adjoining circuits.

When the paired wires are arranged in a cable, as shown in Fig. 6, it is preferred to cover them with an imperforate cover 7, consisting of a braid or plain tape, as shown in Fig. 1, if the cable is to be filled with a sealing material, as paraffine or other suitable insulating material; but when an unfilled or dry cable is desired the imperforate covering may be omitted.

I claim herein as my invention—

1. The combination of an open frame formed of non-conducting material, wires arranged on opposite sides of the frame, and a perforated strip of fibrous material surrounding the frame and wires and binding the latter in position on the frame, substantially as set forth.

2. The combination of an open frame formed of non-conducting material, a re-enforcing tube or shell arranged with the frame, conducting-wires arranged on opposite sides of the frame, and a perforated strip surrounding the frame and wires, substantially as set forth.

3. The combination of an open frame formed

of non-conducting material and provided with
grooves along opposite sides, conducting-
wires arranged in said grooves, and a perfo-
rated strip of fibrous material surrounding
5 the frame and wires, substantially as set forth.

4. The combination of an open frame formed
of non-conducting material, wires arranged
on opposite sides of the frame, a perforated
strip surrounding the frame and wires, and

an imperforate covering, substantially as set
forth.

In testimony whereof I have hereunto set
my hand.

JOSEPH W. MARSH.

Witnesses:

WILLIAM A. CONNER,
JAMES W. SMITH.