

(No Model.)

E. B. HATCH & C. A. COLTON.
ELECTRO MAGNET BOBBIN.

No. 479,804.

Patented Aug. 2, 1892.

Fig. 1

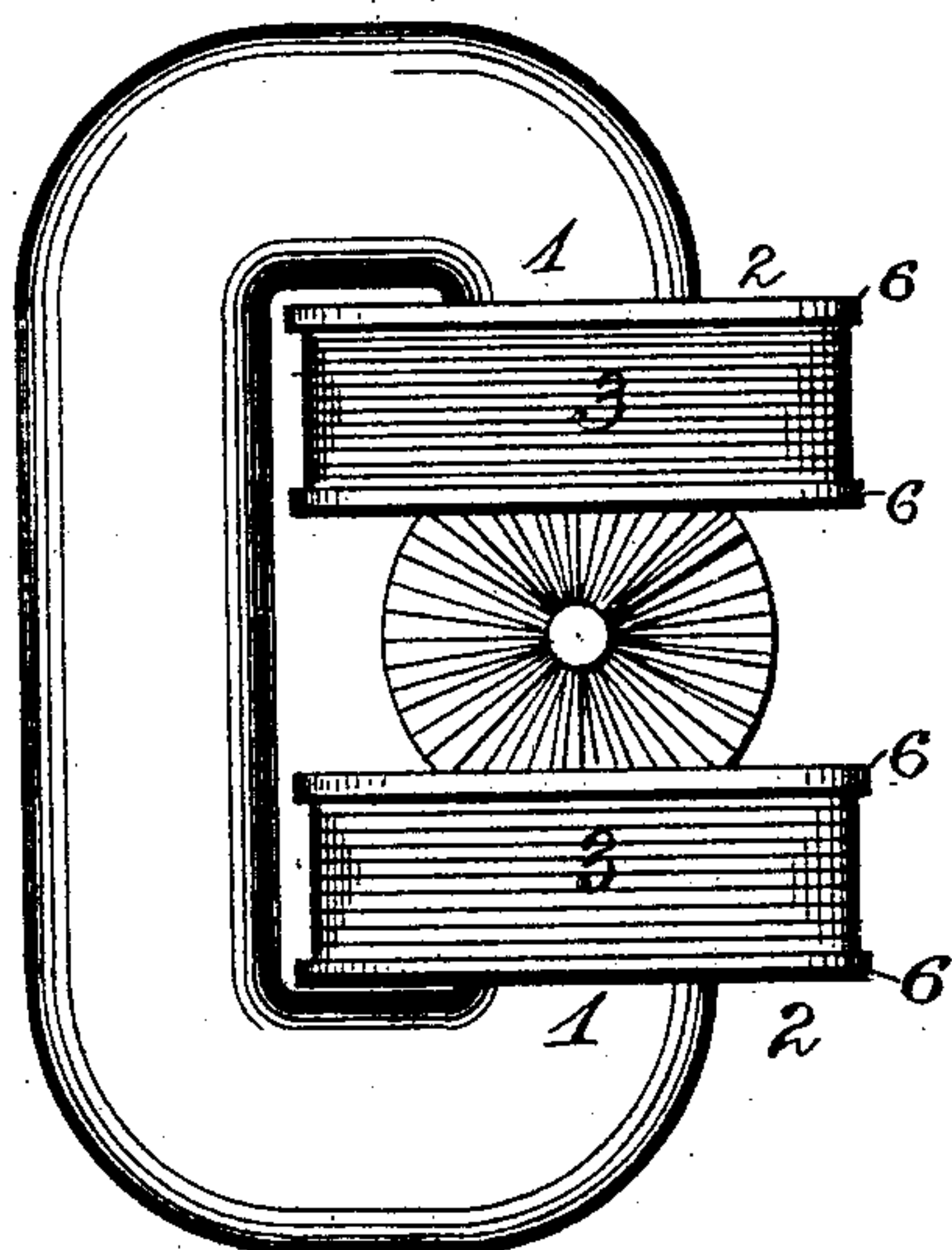


Fig. 3

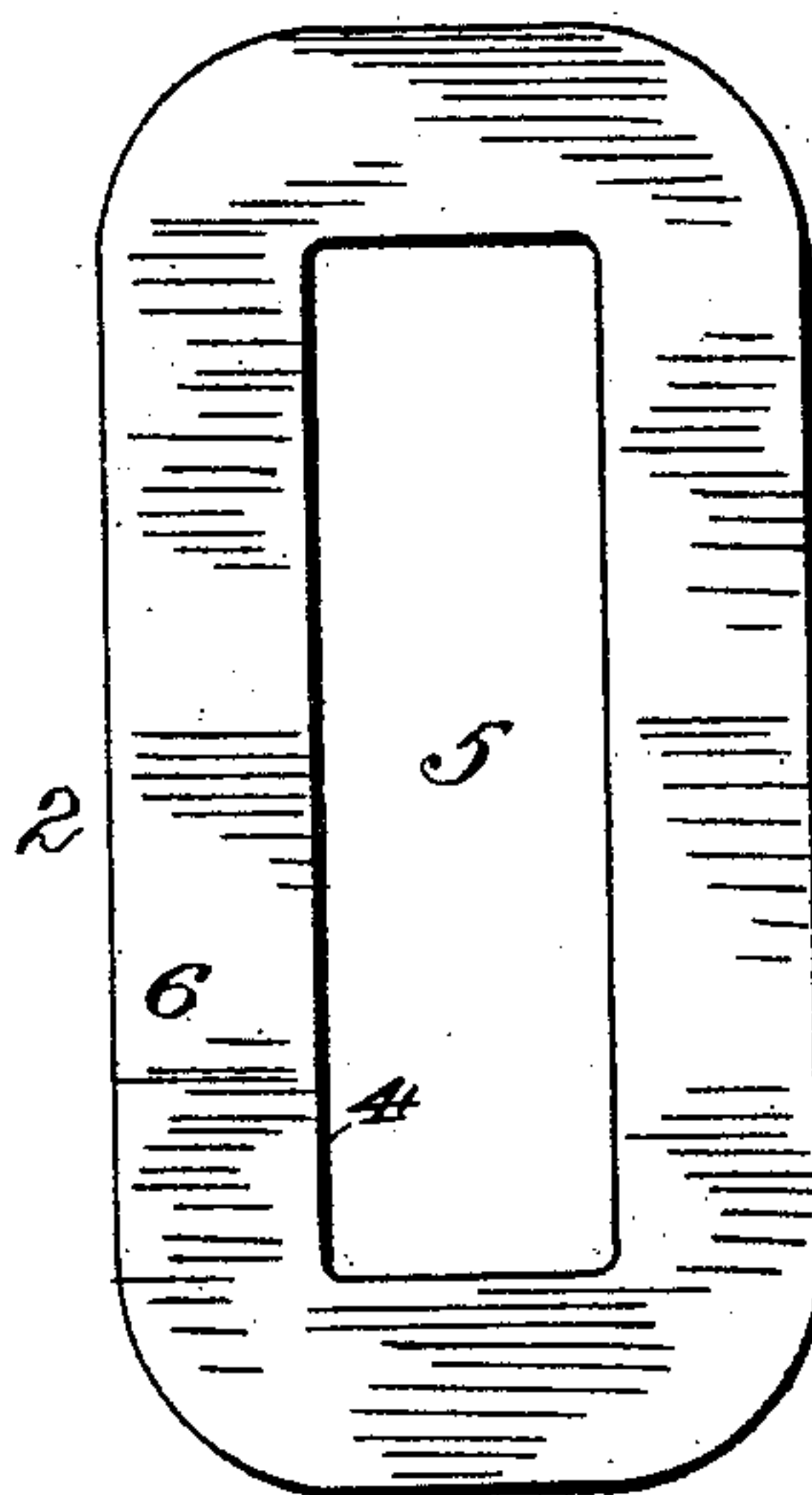


Fig. 2

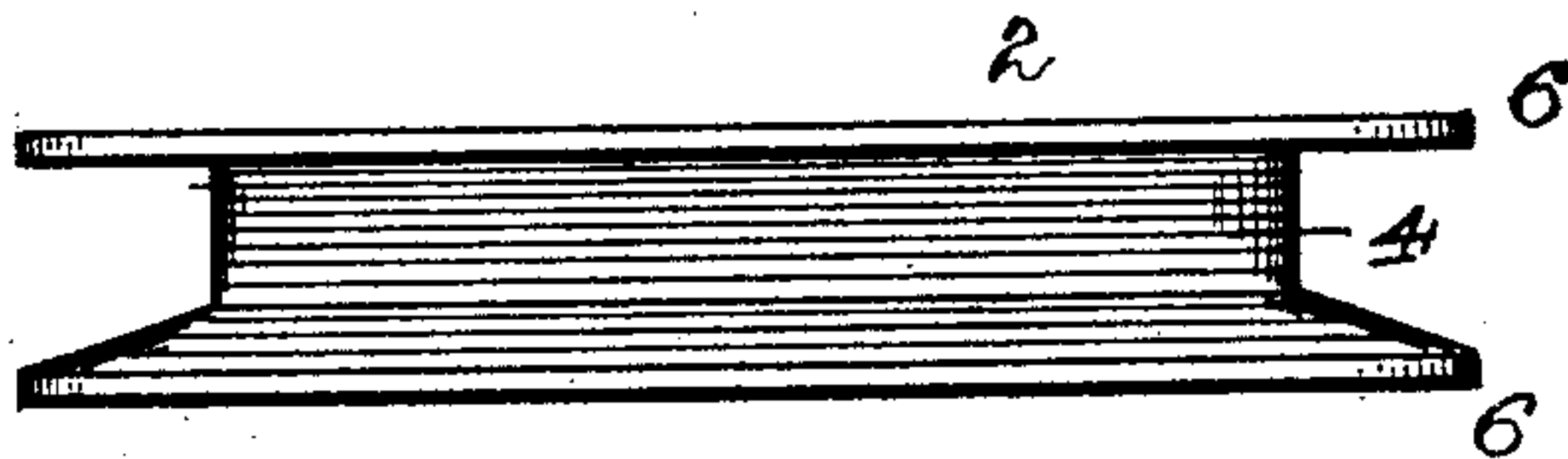
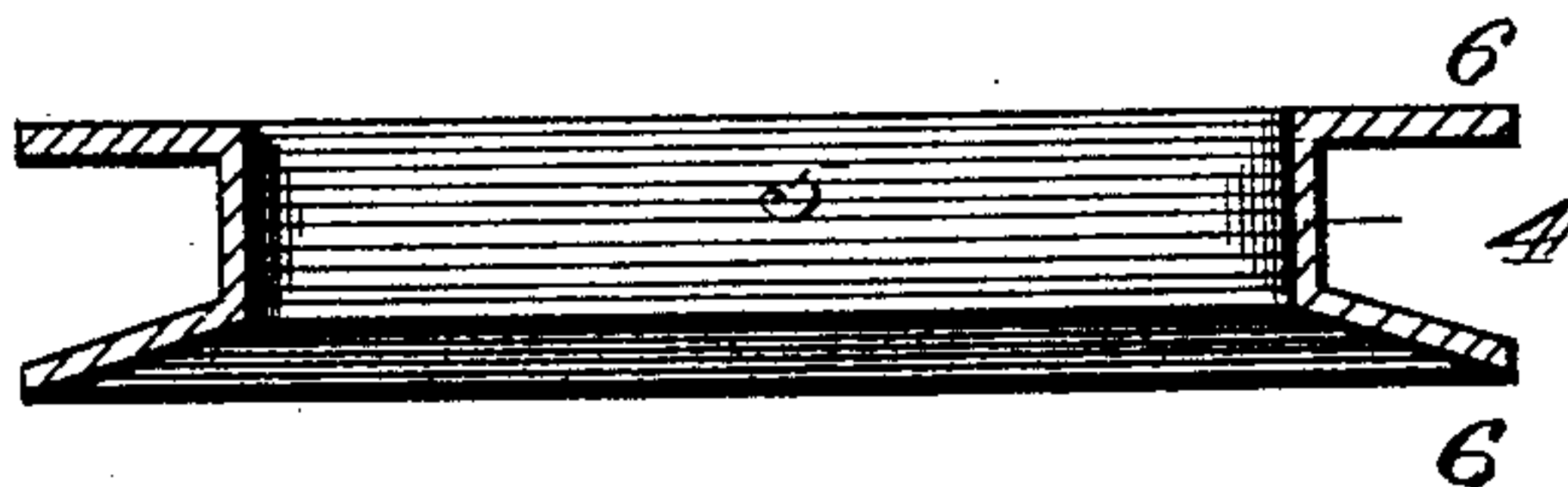


Fig. 4



Witnesses:
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UNITED STATES PATENT OFFICE.

EDWARD B. HATCH AND CHARLES A. COLTON, OF HARTFORD, CONNECTICUT,
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ELECTRO-MAGNET BOBBIN.

SPECIFICATION forming part of Letters Patent No. 479,804, dated August 2, 1892.

Application filed January 13, 1892. Serial No. 417,921. (No model.)

To all whom it may concern:

Be it known that we, EDWARD B. HATCH and CHARLES A. COLTON, citizens of the United States, residing at Hartford, in the county of
5 Hartford and State of Connecticut, have invented certain new and useful Improvements in Magnet-Bobbins, of which the following is a full, clear, and exact specification.

The invention relates to the class of arti-
10 cles which are intended to be slipped upon cores for holding the helices or windings of wire of electro-magnets, the object being to provide a cheap bobbin of this class made
lightly in a single piece of the exact size to
15 receive the correct amount of winding and be easily slipped on the core, more particularly of a field-magnet, which will have strength to resist fracture or rupture and sustain considerable weight, have high-insulating and
20 heat-resisting qualities, will not change shape or buckle under the heating effects nor when subjected to moisture, be capable of standing the deleterious action of water, acids, and alkalis without special treatment, and will
25 offer no attractive path for the passage of a current from one coil to another to burn out the winding.

Referring to the accompanying drawings, Figure 1 is a view of a magnet with bobbins
30 holding the helices. Fig. 2 is an edge view of a bobbin embodying the improvements. Fig. 3 is a face view, and Fig. 4 is a section, of the same.

In the views, 1 indicates the leg or core of
35 any species of permanent or electro magnet, and 2 the bobbin which holds the helices 3, of wire, through which passes the magnetizing-current. This bobbin is made in a single piece, of an india-rubber and asbestos
40 composition, with a body 4, having an opening 5, of a size and shape that permits the bobbin to be slipped on the core, and thin flanges 6 at the ends of the body of a proper height to receive and hold the desired number of turns of the wire.

In the processes of manufacture asbestos, preferably long-combed fibers, with or without a body or filling, is thoroughly incorporated with a binder composed of a mass of gum,

as india-rubber, shellac, or a similar resinous
50 substance, with or without a hardening agent. Usually asbestos, india-rubber, and sulphur thus incorporated is molded to the shape of the bobbin, and then placed in dies and subjected to a high heat and great pressure, which by vul-
55 canization and pressure solidifies, hardens, and strengthens the mass. The whole bobbin may be molded at first in a single piece or the body and the flanges molded separately and joined by a vulcanizable cement
60 and then united into a single integral piece by vulcanization in molds under heat and pressure. Bobbins thus formed, although efficient for all classes of magnets, are particularly applicable for the field-magnets of rail-
65 way and other large motors which are exposed and subjected to the action of the elements and at times run through water that in mines often contains solutions of acids and alkalis, for the reason that moisture,
70 acids, and alkalis have no effect upon the asbestos and rubber composition, and thus do not affect the insulating qualities so as to afford a path for the magnetizing current from one coil to another, nor will the flanges
75 soften so as to let down the wire which is very heavy, nor will they buckle and throw the coils out of shape and place. A bobbin made of this material in this manner is very
80 light, is cheaply made in dies in a single piece of an exact size to closely fit upon the core or leg of the magnet for which it is designed, and so that the exact amount of wire may be wound upon a number from a winding apparatus without change when once ad-
85 justed, while the asbestos fibers make the bobbin very strong, rigid, and capable of sustaining the weight of a large amount of wire, which is necessary when the magnet is put in certain positions and the weight of the wire
90 comes on the thin flanges of the bobbin. This bobbin is strongly made in a single piece. There are no cemented parts to give way when subjected to moisture, nor are there any openings in which moisture can collect and stand.
95 It is of very high insulating capacity, does not absorb moisture and become soft, neither does it become soft nor warp, buckle, or twist

under heat, and it will stand a high degree of heat without affecting its non-conductivity, allowing it to be used in places where metal bobbins or bobbins made up of pieces could
5 not be placed.

We claim as our invention—

In an electro-magnet, in combination, a metallic core, a bobbin with projecting flanges of partially-vulcanized india-rubber and asbes-

tus composition in a single piece, and helices 10 of wire wound about the bobbin between the flanges, substantially as specified.

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Witnesses:

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