

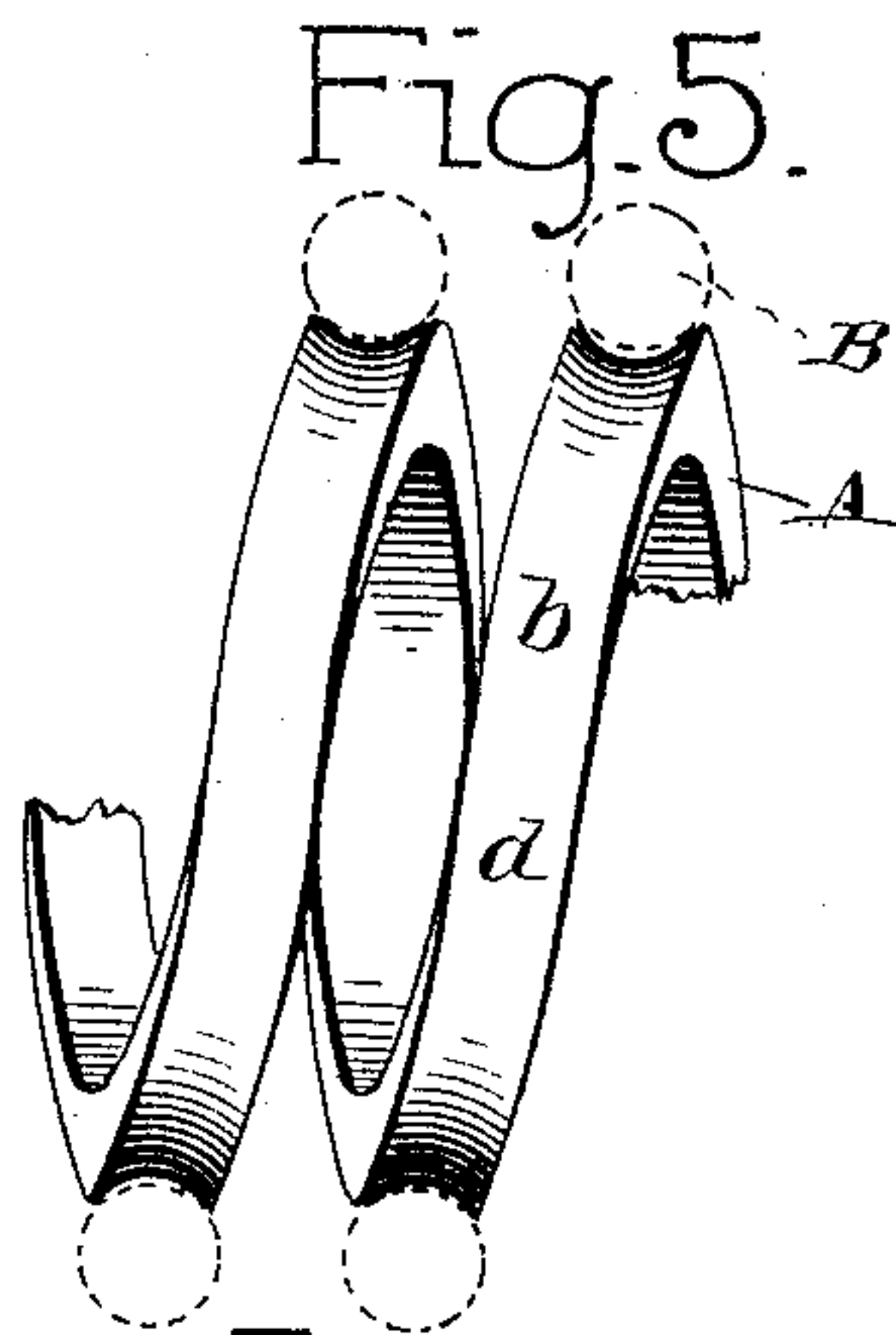
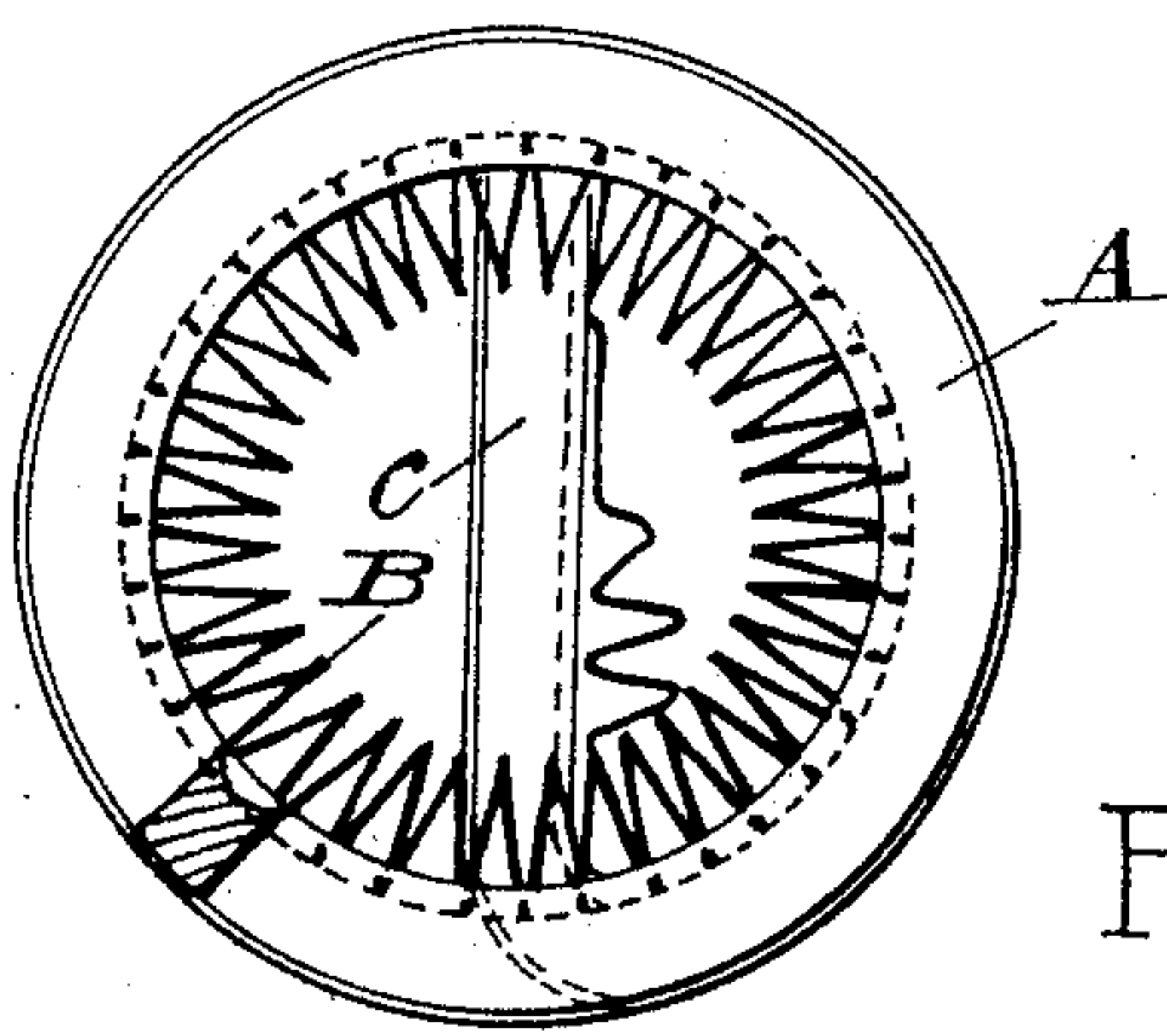
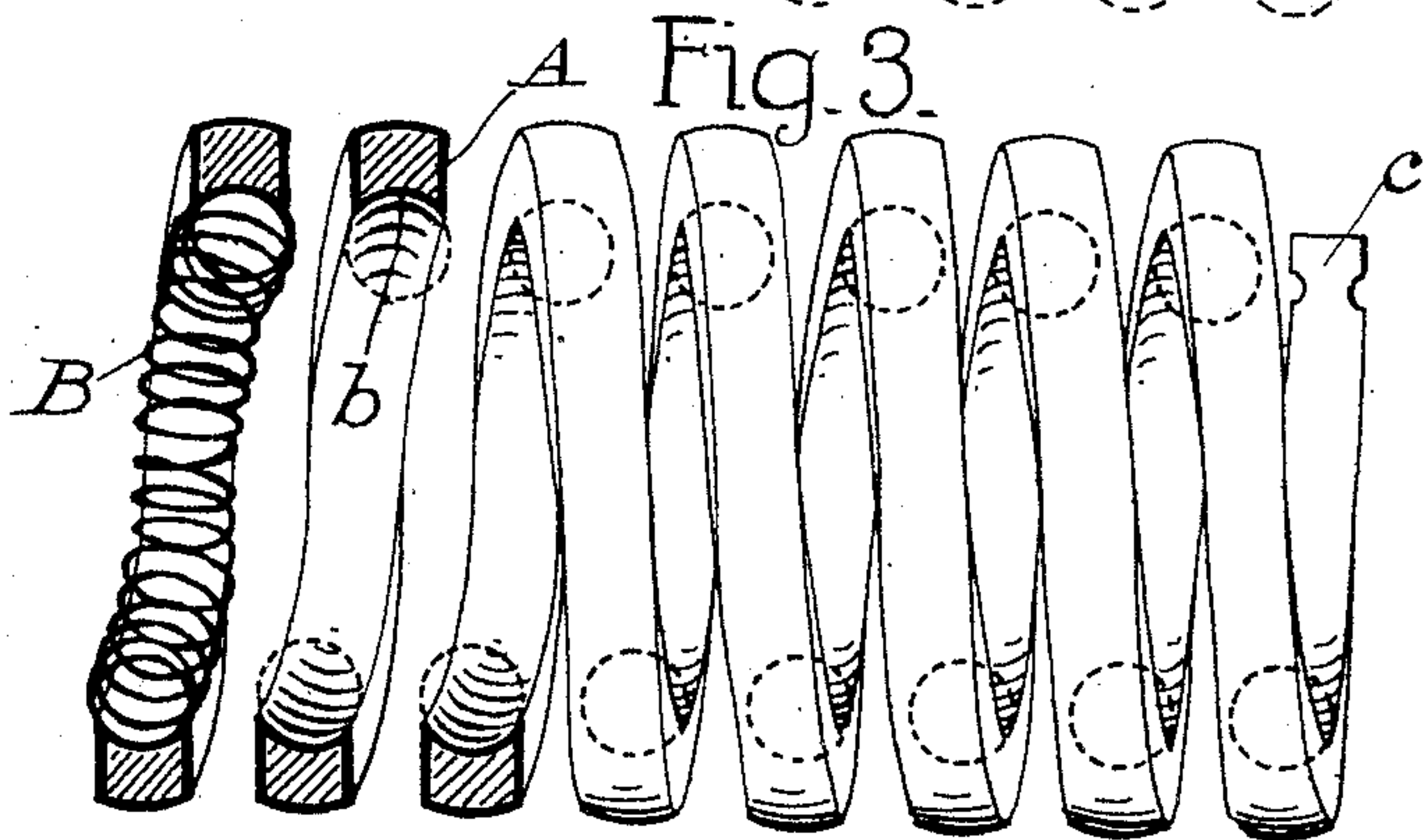
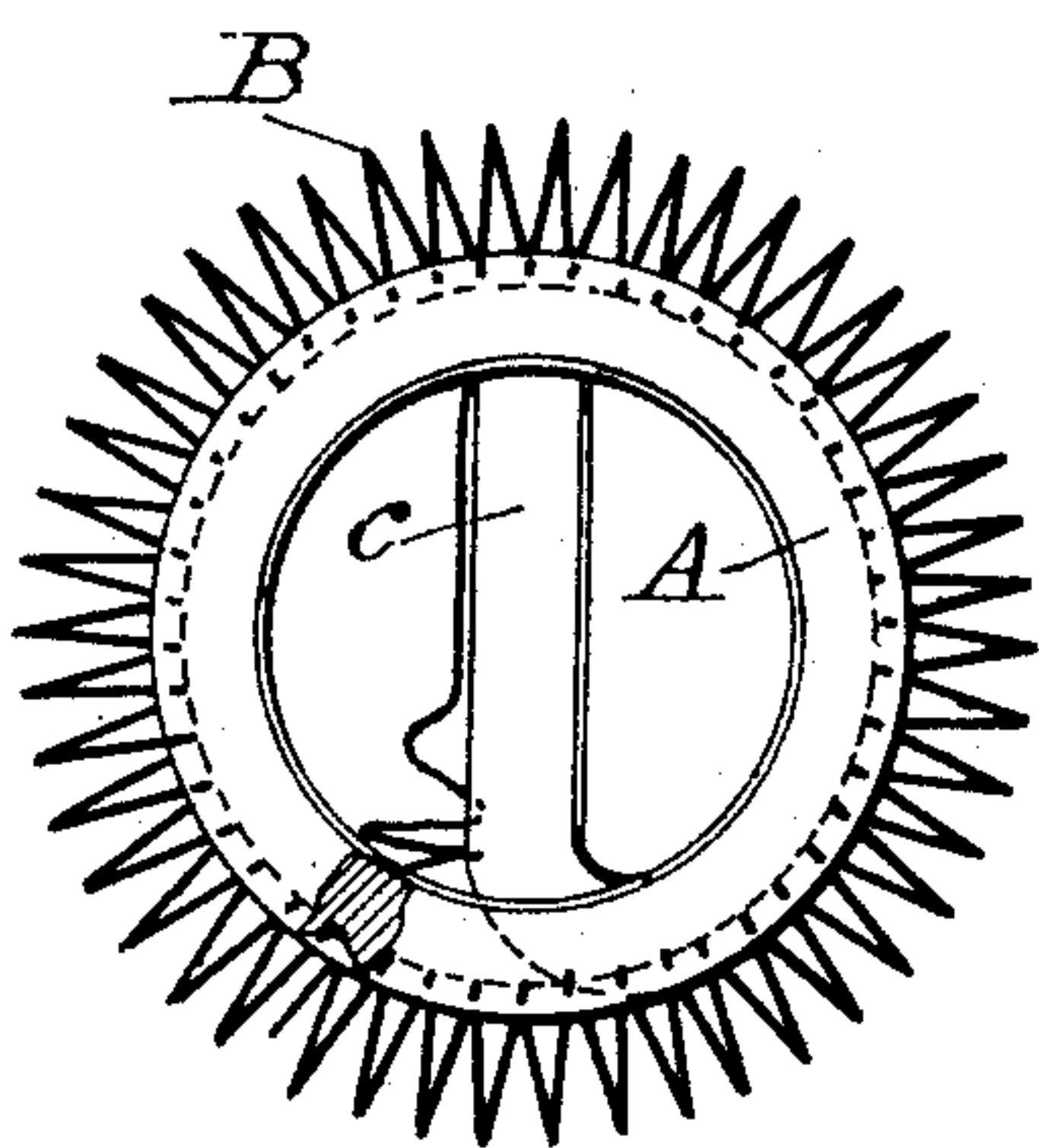
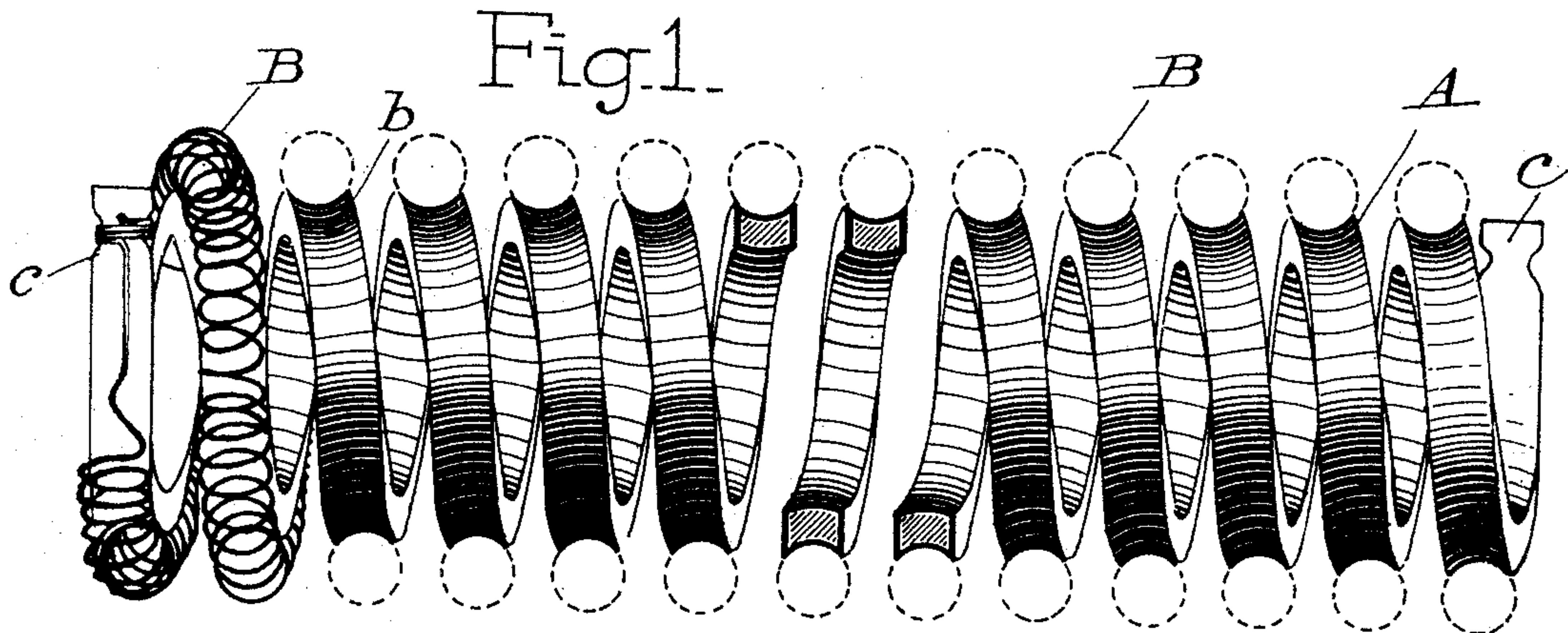
No. 616,800.

Patented Dec. 27, 1898.

J. F. McELROY.  
ELECTRIC HEATER.

(Application filed Oct. 13, 1898.)

(No Model.)



Witnesses:  
A. W. Harg.  
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# UNITED STATES PATENT OFFICE.

JAMES F. McELROY, OF ALBANY, NEW YORK, ASSIGNOR TO THE CONSOLIDATED CAR-HEATING COMPANY, OF SAME PLACE.

## ELECTRIC HEATER.

SPECIFICATION forming part of Letters Patent No. 616,800, dated December 27, 1898.

Application filed October 13, 1898. Serial No. 693,372. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES F. McELROY, a citizen of the United States of America, and a resident of Albany, in the county of Albany and State of New York, have invented certain new and useful Improvements in Electric Heaters, of which the following is a specification.

My invention relates to devices for heating by electricity; and the object of my invention is to provide an electric heater, particularly adapted for warming railway-cars, in which the resistance-wire is in the form of a compound helix supported by a ventilated core. I attain this object by means of the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation, partly in section. Fig. 2 is an end elevation. Fig. 3 is a side elevation, partly in section, of a modified form; and Fig. 4 is an end elevation of the modified form. Fig. 5 is a side elevation, partly in section, showing the space between the major and minor helices somewhat exaggerated.

Similar letters refer to similar parts throughout the several views.

I arrange a ventilated core consisting of a bar A, coiled in such a manner as to leave spaces between adjacent convolutions, thus forming a helix, which may be termed the "minor" helix. As thus arranged there is an opportunity for the circulation of air through the helix.

The resistance-wire B is in the form of a spring or compound helix, which I secure at one end to a post C and wind in contact with the support A. I term the resistance a "major" helix. In order that the major helix may be more securely held in position in contact with the convolutions of the minor helix A, I preferably groove the surface of the minor helix A and arrange the major helix so that it will rest within the grooves. The groove *b* on the minor helix may be a shallow one and may be arranged so that the major helix comes in contact with the minor helix simply at two points on the sides, leaving a space beneath the major helix and between that and the surface of the minor helix, as shown in Fig. 5.

I may either arrange the major helix, as shown in Fig. 1, placed exterior to the minor helix, or, as shown in Fig. 3, interiorly thereto,

in which case I have a major helix in contact with the convolutions, respectively, of the minor helix held in position by the resiliency of the resistance-wire, together with the groove-shaped face of the supporting-bar, and provide for the circulation of air through the core and in contact with the resistance, allowing for the dissipation of heat by conversion. When the form shown in Fig. 3 is used, the supporting or minor helix also forms a case for the resistance, preventing contact with the resistance-wire.

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

1. An electric heater, consisting of a supporting-helix, and a resistance in the form of a compound helix arranged in continuous contact with each convolution of the supporting-helix in such a manner that the spaces between the convolutions of the supporting-helix shall register substantially with the spaces between corresponding convolutions of the resistance-helix.

2. An electric heater, consisting of a supporting-helix a groove on the face of each convolution of said supporting-helix, and a resistance in the form of a compound helix arranged in continuous contact with each convolution of the supporting-helix in such a manner that the convolutions of the resistance-helix shall rest in the grooves on the face of the supporting-helix, and that the spaces between the convolutions of the supporting-helix shall register substantially with the spaces between corresponding convolutions of the resistance-helix.

3. In an electric heater, a supporting-helix, a groove on the face of each convolution of said helix, and a resistance in the form of a compound helix arranged in continuous contact with the convolutions of said supporting-helix and resting in said groove, the radius of the curvature of said groove being smaller than that of the spirals of said compound helix, so that said compound helix shall be in continuous contact with said supporting-helix at two points, one on each side of said groove, substantially as described.

Signed by me, at Albany, New York, this 11th day of October, 1898.

JAMES F. McELROY.

Witnesses:

CHAS. B. MITCHELL,  
W. W. ERWIN.