

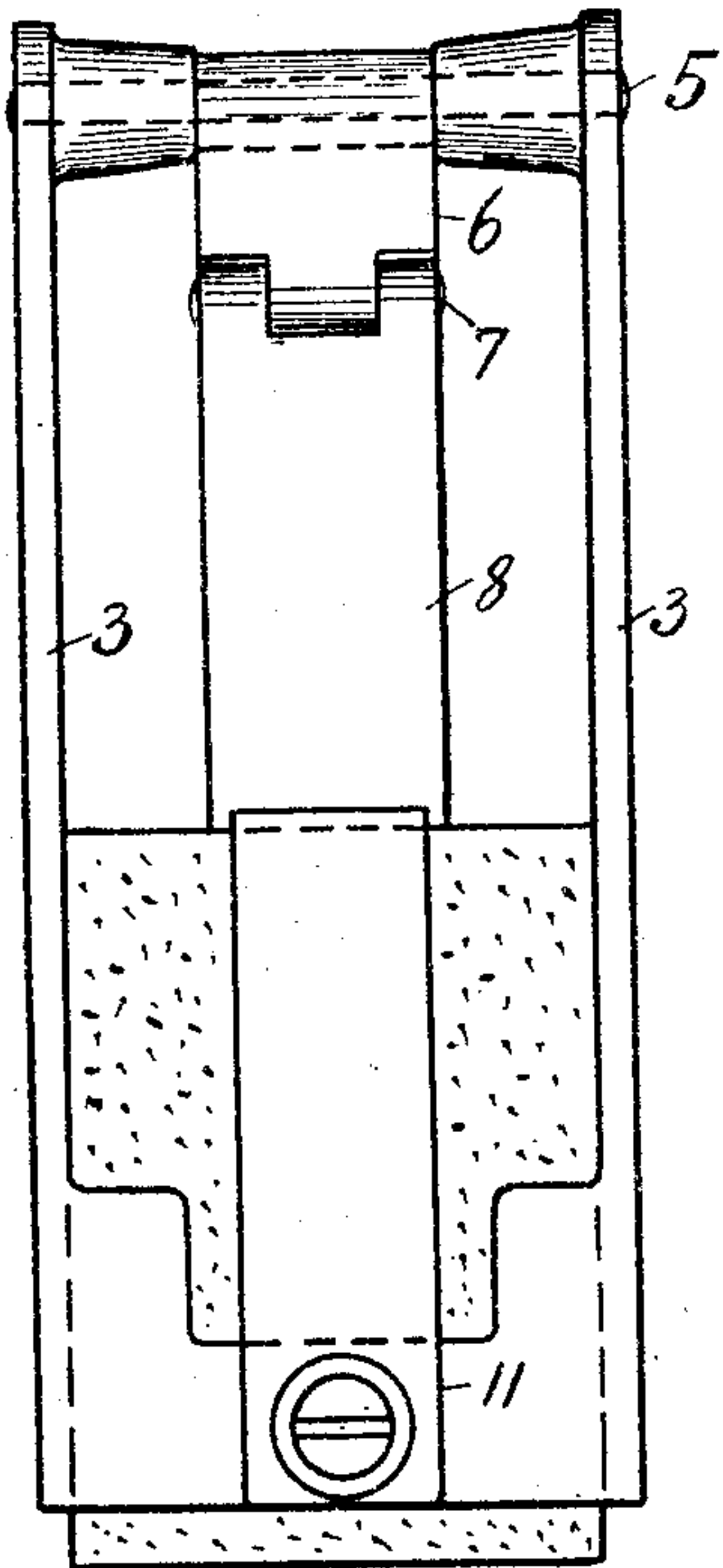
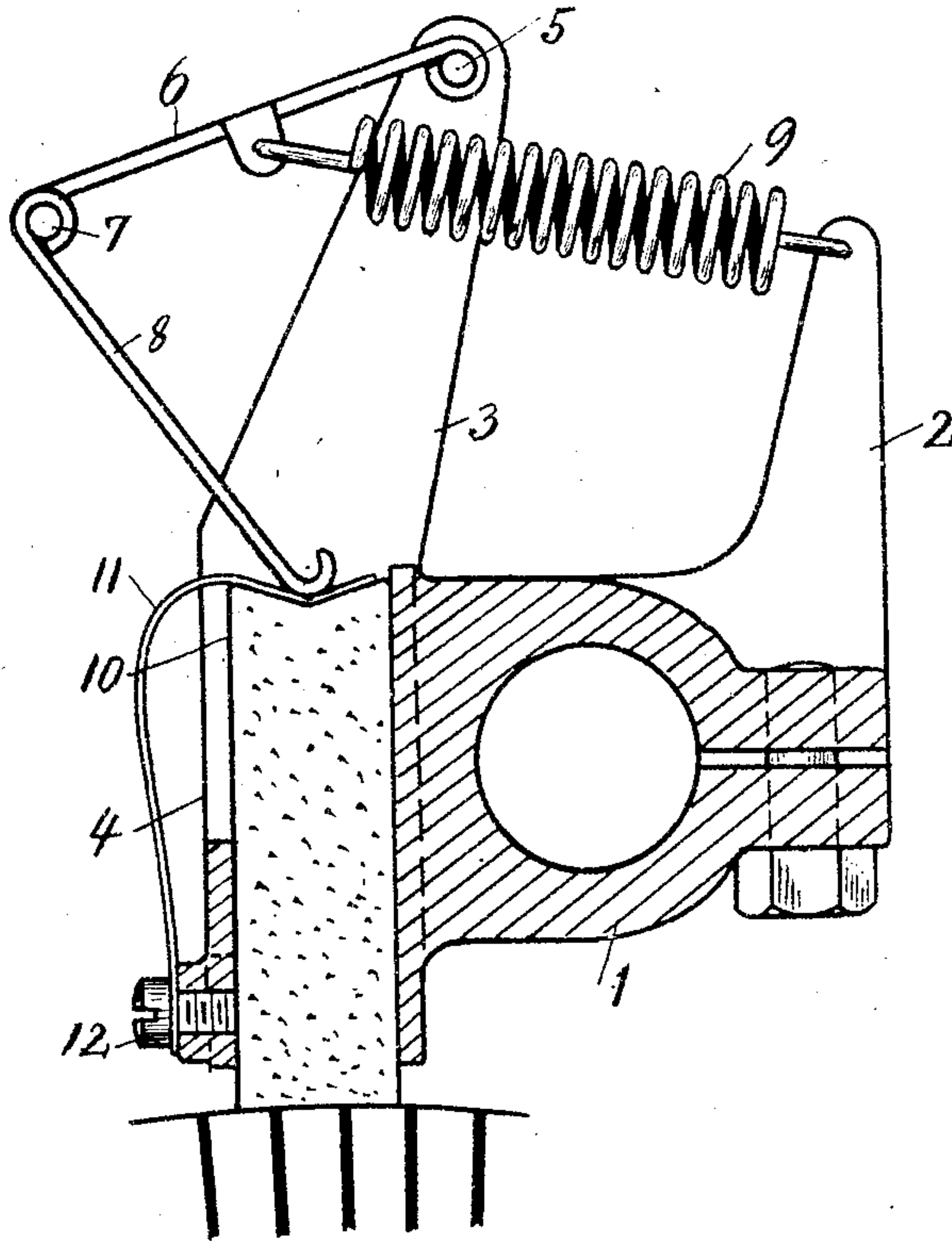
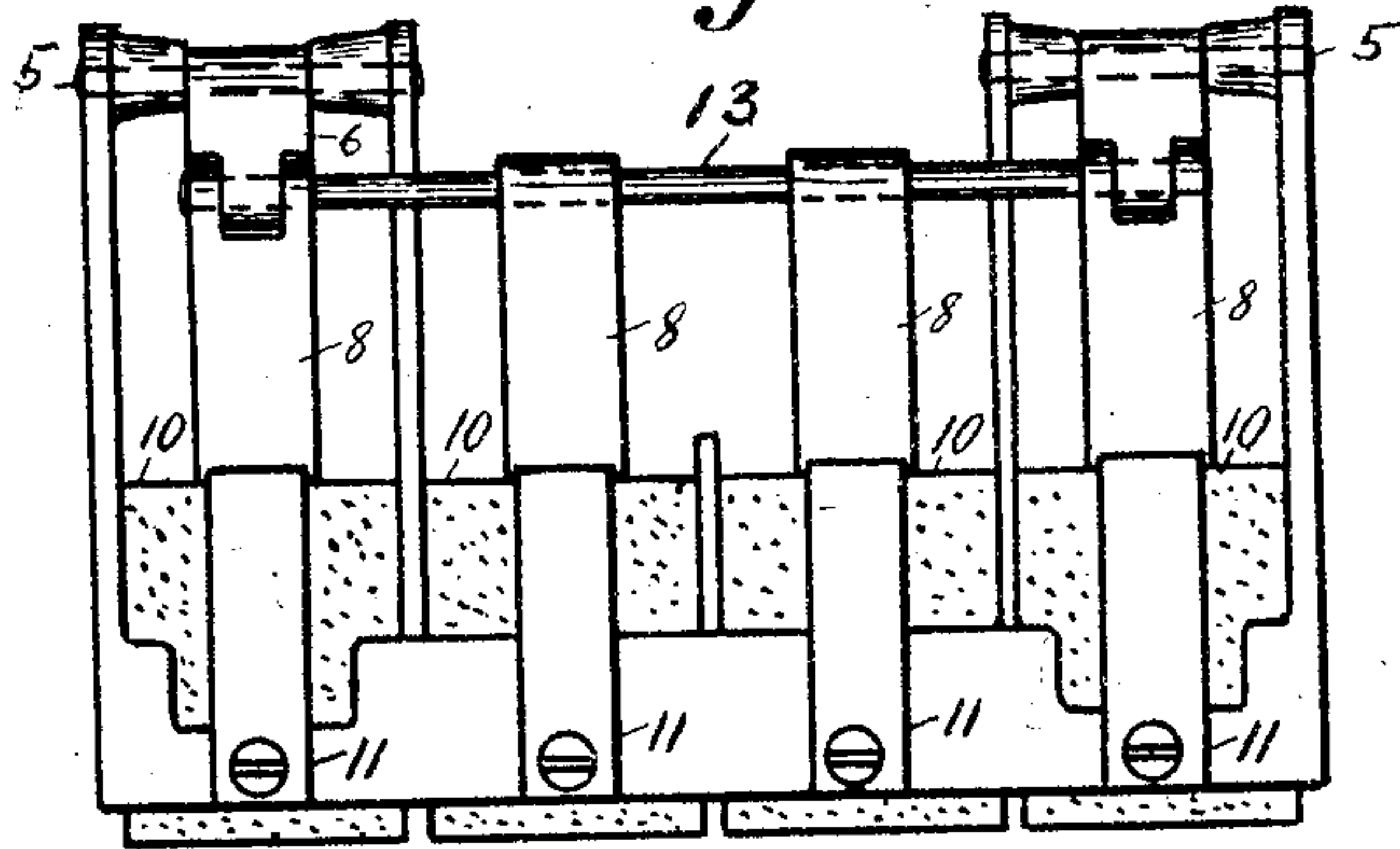
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BRUSH HOLDER FOR DYNAMO ELECTRIC MACHINES.

APPLICATION FILED MAY 13, 1904.

NO MODEL.

2 SHEETS—SHEET 1.

Fig. 1.*Fig. 2.**Fig. 3.*

WITNESSES:

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No. 777,709.

PATENTED DEC. 20, 1904.

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BRUSH HOLDER FOR DYNAMO ELECTRIC MACHINES.

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NO MODEL.

2 SHEETS—SHEET 2.

Fig. 4.

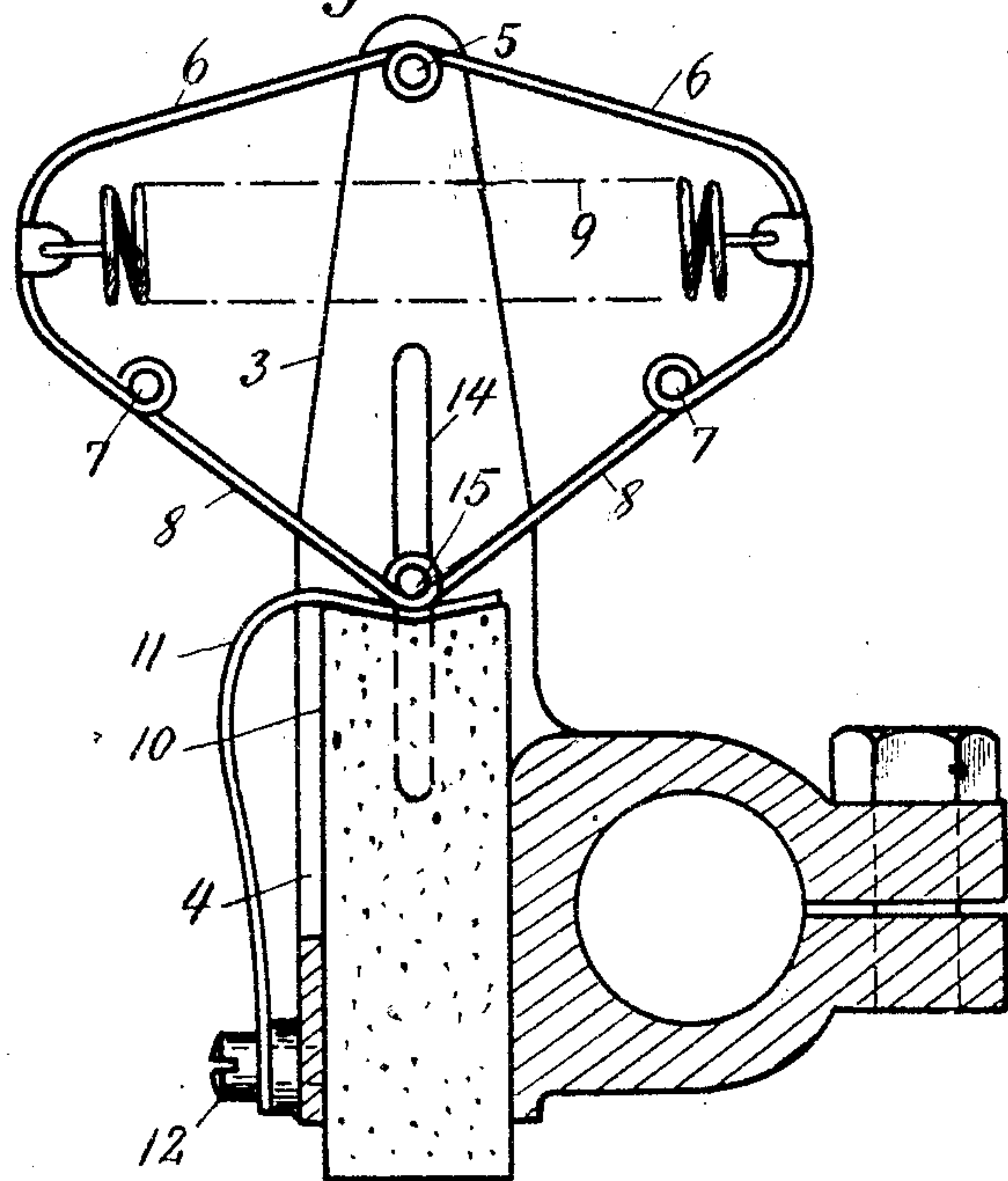
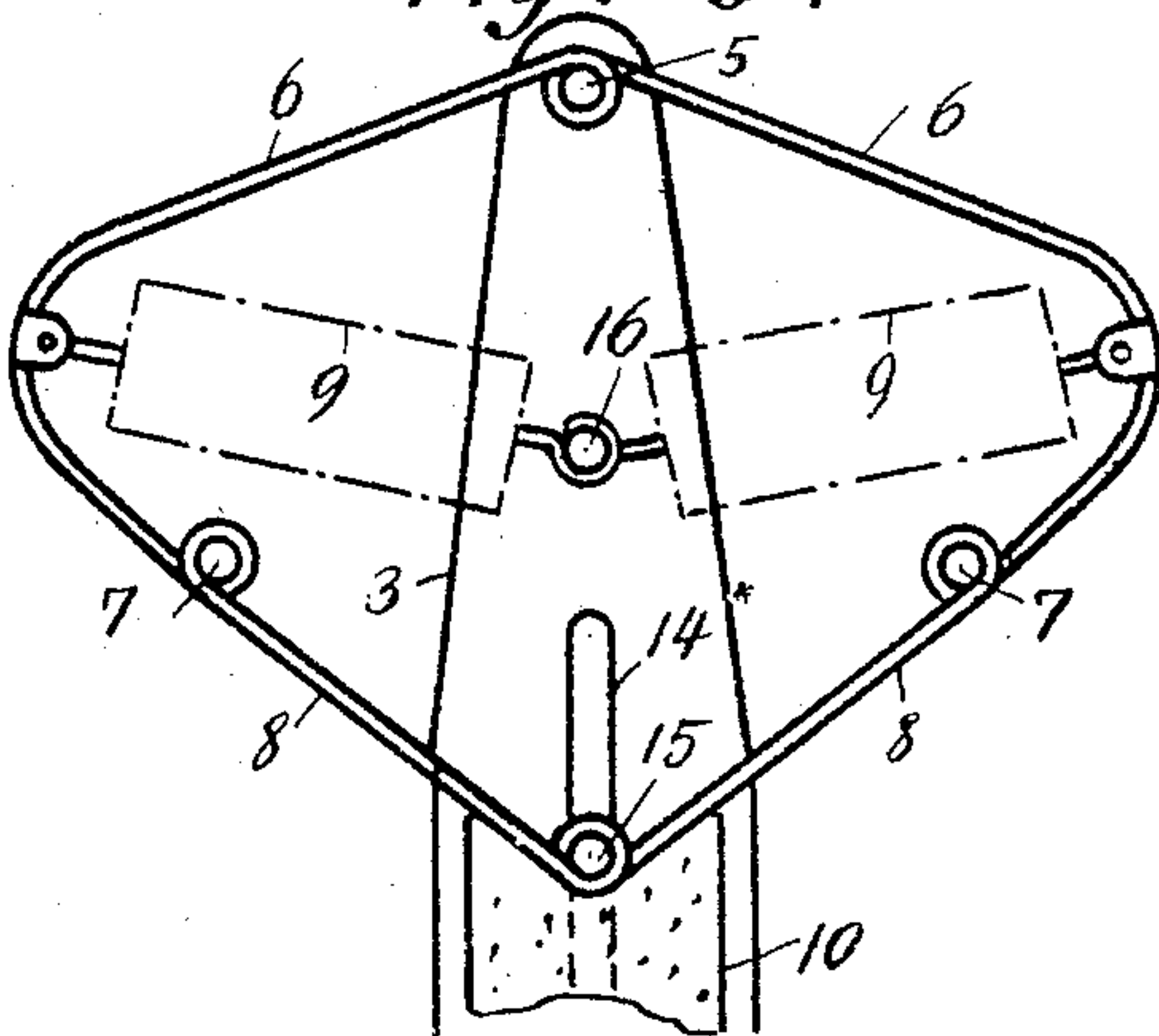


Fig. 5.



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ERNST WOEHHR, OF WILKINSBURG, PENNSYLVANIA.

BRUSH-HOLDER FOR DYNAMO-ELECTRIC MACHINES.

SPECIFICATION forming part of Letters Patent No. 777,709, dated December 20, 1904.

Application filed May 13, 1904. Serial No. 207,866.

To all whom it may concern:

Be it known that I, ERNST WOEHHR, a citizen of Germany, residing in Wilksburg, in the county of Allegheny, State of Pennsylvania, have invented certain new and useful Improvements in Brush-Holders for Dynamo-Electric Machines; of which the following is a specification.

The object of this invention is a brush-holder and brush arranged so that the contact-pressure between brush and commutator is maintained practically constant throughout the whole range of wear of brush. It is particularly adapted for carbon brushes, but can be used with such of other material if suitably shaped.

In the drawings, Figure 1 is a front view, and Fig. 2 a side elevation, partly in section, of a single carbon-brush holder embodying my improvements. Fig. 3 shows a front view of an arrangement in which the invention is applied to a multiple brush-holder. Fig. 4 and Fig. 5 are modified arrangements of the invention.

In Figs. 1 and 2 the holder comprises an open frame with an eye 1, a rear arm 2, front arms 3, and a brush-socket 4, preferably all integral. The ends of front arms 3 serve as bearings for a pin 5, on which is hinged a link 6, connected through pin 7 with link 8 in form of a toggle-joint. A strip 11, which is held between link 8 and carbon 10 and fastened, by means of screw 12, to the frame, transmits the current to the frame. One end of spring 9 is hooked to rear arm 2, while the other end is fastened to a suitable eye in link 6 and tends to pull it inward. As link 6 can turn only around pin 5 and the lower end of link 8 is practically fixed by means of the groove in brush 10, any inward movement of link 6 would cause the toggle-joint to open up and can take place only gradually as the brush wears off. By means of this arrangement spring 9 forces brush 10 against the commutator. In its initial position (see Fig. 2) spring 9 is pulled out to its greatest length and exerts, therefore, its maximum force, though its acting component upon brush 10 is relatively the smallest. As the brush wears off the spring contracts and its tension de-

creases while links 6 and 8 open up. At the same time the relative component of pressure upon the brush increases with the angle between the links. By choosing suitable dimensions the decrease of spring tension through contraction in consequence of wear of the brush will be counterbalanced by the increase of relative pressure component and the actual pressure upon the brush can be maintained fairly uniform.

Fig. 3 shows the invention applied to a multiple brush-holder. Pin 7 of Fig. 2 is replaced by rod 13, which serves to transmit the pressure to all the operating devices when rear arm 2, front arm 3, pin 5, link 6, and spring 9 may be omitted for some or all of the intermediate brushes.

In Fig. 4 links 6 and 8 are duplicated on both sides of the axis and joined together through pin 15, which moves in slot 14, while spring 9 is now fastened between both links 6. According to the angle chosen for slot 14, which governs the link-end movement, the lateral pressure components are either partly or entirely compensated.

Fig. 5 shows practically the same arrangement as Fig. 4, except that two springs 9 are used, which are fastened to their respective links 6 and spring-pin 16, located in arms 3. The object is to provide a construction where spring 9 can be attached under any desired angle, depending, of course, upon the location of spring-pin 16 with regard to link 6. Through choosing the proper angle between spring 9 and link 6 a pressure component normal upon the brush can be obtained that will be either constant or variable, in accordance with some special preconceived plan.

The constructions shown in Fig. 4 and Fig. 5 can be arranged for multiple brush-holders similar to Fig. 3.

What I claim as new, and desire to secure by Letters Patent of the United States, is—

1. A brush-holder comprising a frame, having one or more sockets for the brushes, one or more extending arms, one or more toggle-joints, hinged with one link to its arm, while the other link acts upon the carbon, a spring acting on the toggle-joint in such a way, that during the period of wear of the brush the

angle between the hinged link and that link of the toggle-joint which presses against the carbon gradually increases.

2. A brush-holder comprising a socketed
5 frame, an extending arm, a toggle-joint hinged to the extending arm, a spring actuating the toggle-joint and a conductor-strip between top of carbon and one end of the toggle-joint.

3. A brush-holder comprising a socketed

frame, an extending arm, a toggle-joint hinged to the extending arm, a spring actuating the toggle-joint, a conductor-strip and a carbon grooved at the top.

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Witnesses:

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