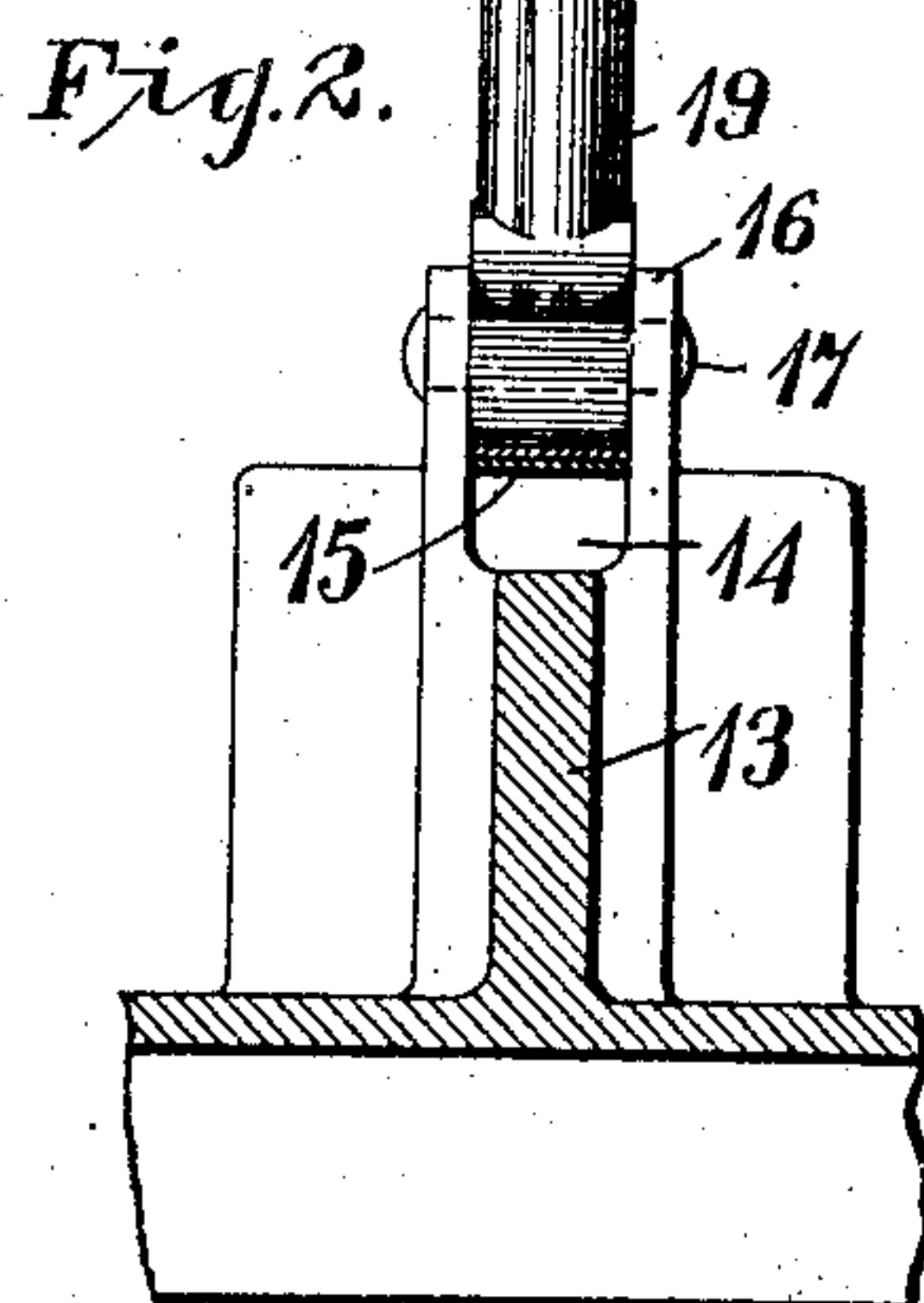
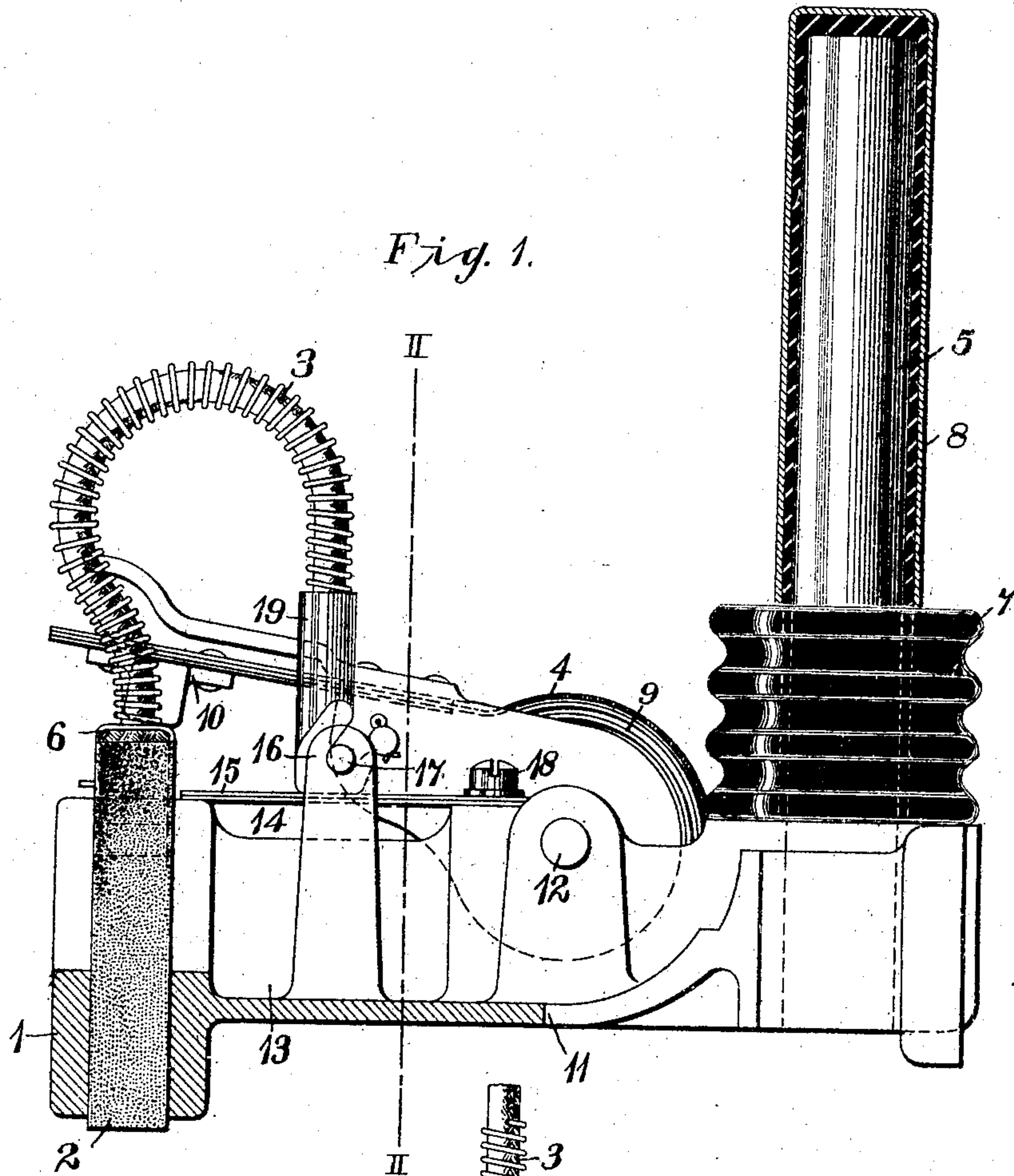


F. W. GARRETT.  
BRUSH HOLDER FOR DYNAMO ELECTRIC MACHINES.  
APPLICATION FILED MAY 21, 1908.

930,068.

Patented Aug. 3, 1909.



WITNESSES:

Fred H. Miller,  
R. P. Clearborn.

INVENTOR

Frank W. Garrett  
BY  
Hosley E. Carr  
ATTORNEY



# UNITED STATES PATENT OFFICE.

FRANK W. GARRETT, OF PITTSBURG, PENNSYLVANIA, ASSIGNOR TO WESTINGHOUSE  
ELECTRIC & MANUFACTURING COMPANY, A CORPORATION OF PENNSYLVANIA.

## BRUSH-HOLDER FOR DYNAMO-ELECTRIC MACHINES.

No. 930,068.

Specification of Letters Patent.

Patented Aug. 3, 1909.

Application filed May 21, 1906. Serial No. 318,016.

*To all whom it may concern.*

Be it known that I, FRANK W. GARRETT, a citizen of the United States, and a resident of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Brush-Holders for Dynamo-Electric Machines, of which the following is a specification.

My invention relates to brush holders for dynamo-electric machines and it has for its object to provide means for detachably connecting one end of a flexible shunt to a brush holder that shall be simple and durable in construction and shall insure a good electrical connection between the shunt and the holder.

In brush holders or current collectors having sliding brushes which are held in engagement with a rotating surface by spring pressure, it has usually been found desirable to connect the brush to the holder in which it operates by means of a flexible shunt in order that the spring-pressure mechanism may not be overheated by the passage of electrical currents through it. Shunts of this kind have usually been rigidly attached to the brush itself and have been connected to the brush holder by means of a suitable binding screw. Some machines, however, of which railway motors form good examples, are so located in service that it is difficult to use a screw-driver or similar tool for detaching the shunt connection from the brush holder. Since it is often necessary, particularly in machines of the aforesaid class, to replace the brushes, and since it is desirable that the change may be accomplished in a very short time, I provide an improved connection between the flexible shunt and the brush holder which insures a good electrical connection, irrespective of the vibrations to which it may be subjected, and which may readily be manually detached and replaced without necessitating the use of any tools.

In the accompanying drawings, Figure 1 is a view, mainly in side elevation, but partially in section, of a brush holder embodying my invention, and Fig. 2 is a sectional view on the line II—II of Fig. 1.

Referring to the drawings, the brush holder illustrated comprises a carbon-box 1, in which a brush 2 is movably mounted, a flexible shunt 3, a spring-pressure mechanism 4, and supporting studs 5.

The flexible shunt 3 may be attached to the brush 2 by any convenient means, such

as a connecting plate 6, which is riveted to the brush near one corner and does not interfere with the pressure mechanism 4 which acts near the center of the outer end of the brush. The supporting studs 5 are substantially cylindrical, are wrapped in insulation and are provided with collars 7 of porcelain or other suitable material and a cap 8 of thin metal which protects the wrapping of insulating material.

The pressure mechanism 4 may be of any suitable form and comprises, as illustrated, a spiral spring 9 which is so arranged as to exert a downward pressure through a finger 10 upon the brush 2. A guide 11, which may be an integral part of the frame, extends from the carbon-box 1 and so engages the outer turn of the spring 9 that all its turns are held substantially in concentric relation to each other and to a shaft 12 about which it is coiled.

The brush holder frame is provided with a web 13, the outer edges of which are provided with an indentation 14 across which a flat spring 15 extends. A pair of ears 16 extend outwardly from the center of the web 13 at the sides of the indentation and are provided with a rod or pin 17. The flat spring 15 is fastened at one end to the top of the web 13 by a binding screw 18 and extends between the ears 16. In this way, a loop is provided above the spring which may be engaged by a hooked cam connector 19, which is attached to the free end of the flexible shunt 3. The outer surface of the hooked end of the cam 19 is flattened and the size and arrangement of parts are such that when the hook engages the pin 17 the spring 15 forces the hook against the pin and the normal position of the connector is accentuated.

By making the spring 15 of sufficient strength, a good connection may be maintained between the connector 19 and the brush holder and this connection will not be impaired when the holder is subjected to service conditions.

I claim as my invention:

1. In a current-collecting device, the combination with a brush and a holder having a loop, of a shunt connector having one end attached to the brush and having a hook at its other end, and a spring for holding the hook in engagement with the loop.

2. In a current-collecting device, the combination with a brush and a holder having



projecting ears, and a pin supported by the ears, of a flexible conductor having one end attached to the brush and having a hooked terminal at its other end to engage the pin.

5 3. In a current-collecting device, the combination with a brush, a holder, and a flexible conductor one end of which is attached to the brush, of a detachable connection between the flexible conductor and the holder comprising a cam hook attached to the free end  
10 of the conductor, a loop on said holder, and means for holding the hook in engagement with the loop.

15 4. In a current-collecting device, the combination with a brush, a holder, and a flexible conductor one end of which is attached to the brush, of a detachable connection between the flexible conductor and the holder comprising a cam hook attached to the free  
20 end of the conductor, ears which project from the holder, a cross pin supported by the

ears and engaged by the cam hook and a spring between the ears which forces the hook against the pin.

5. A detachable electrical connection comprising a hook terminal, a cooperating loop terminal, and a spring which engages the outer side of the hook terminal to hold its inner side in engagement with the loop terminal.  
30

6. A detachable electrical connection comprising a hook terminal, a loop terminal, and a flat spring projecting through the loop and serving to force the hook into engagement with its outer portion.  
35

In testimony whereof, I have hereunto subscribed my name this 19th day of May, 1906.

FRANK W. GARRETT.

Witnesses:

JOS. M. DAVIS,  
BIRNEY HINES