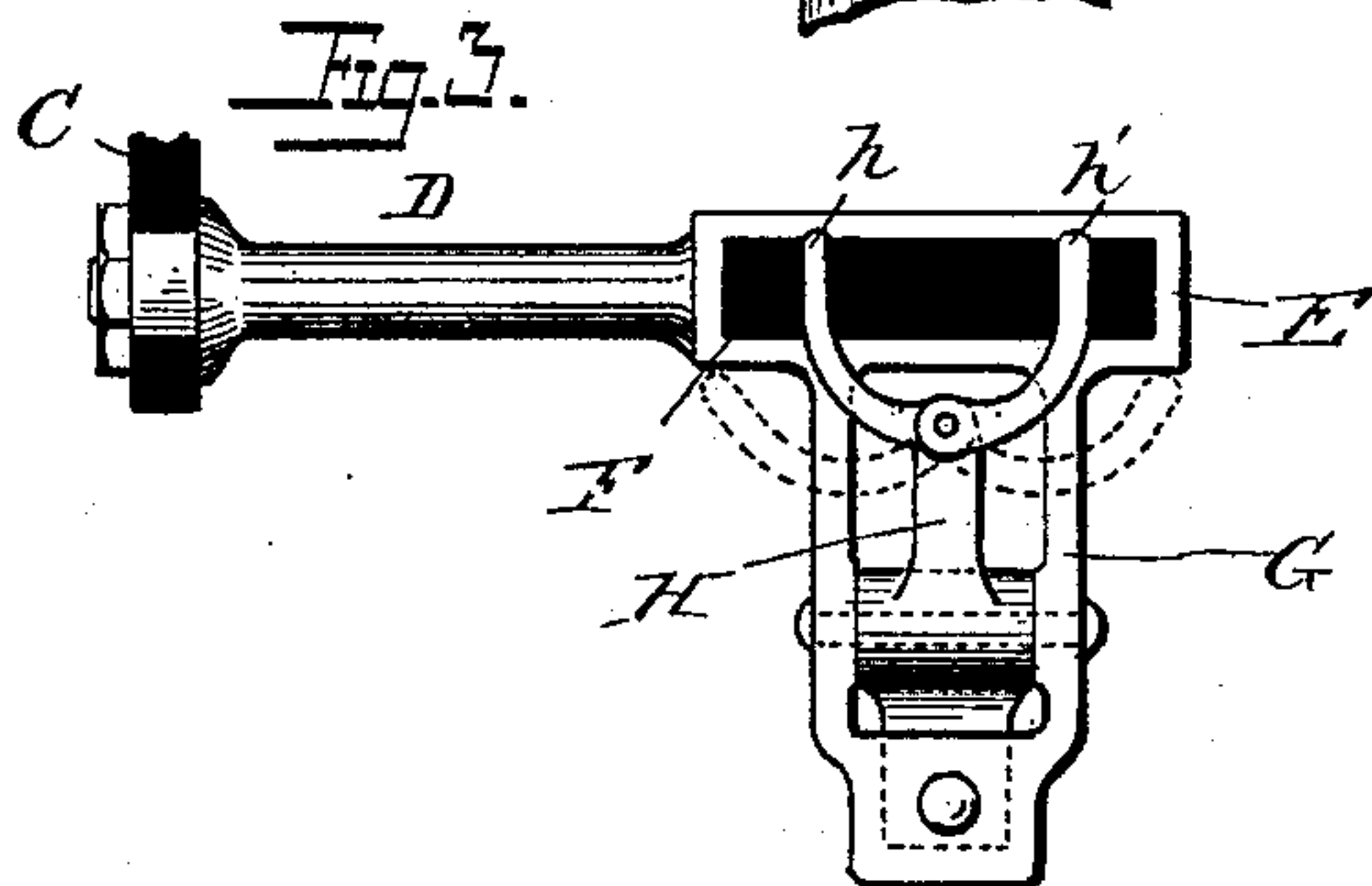
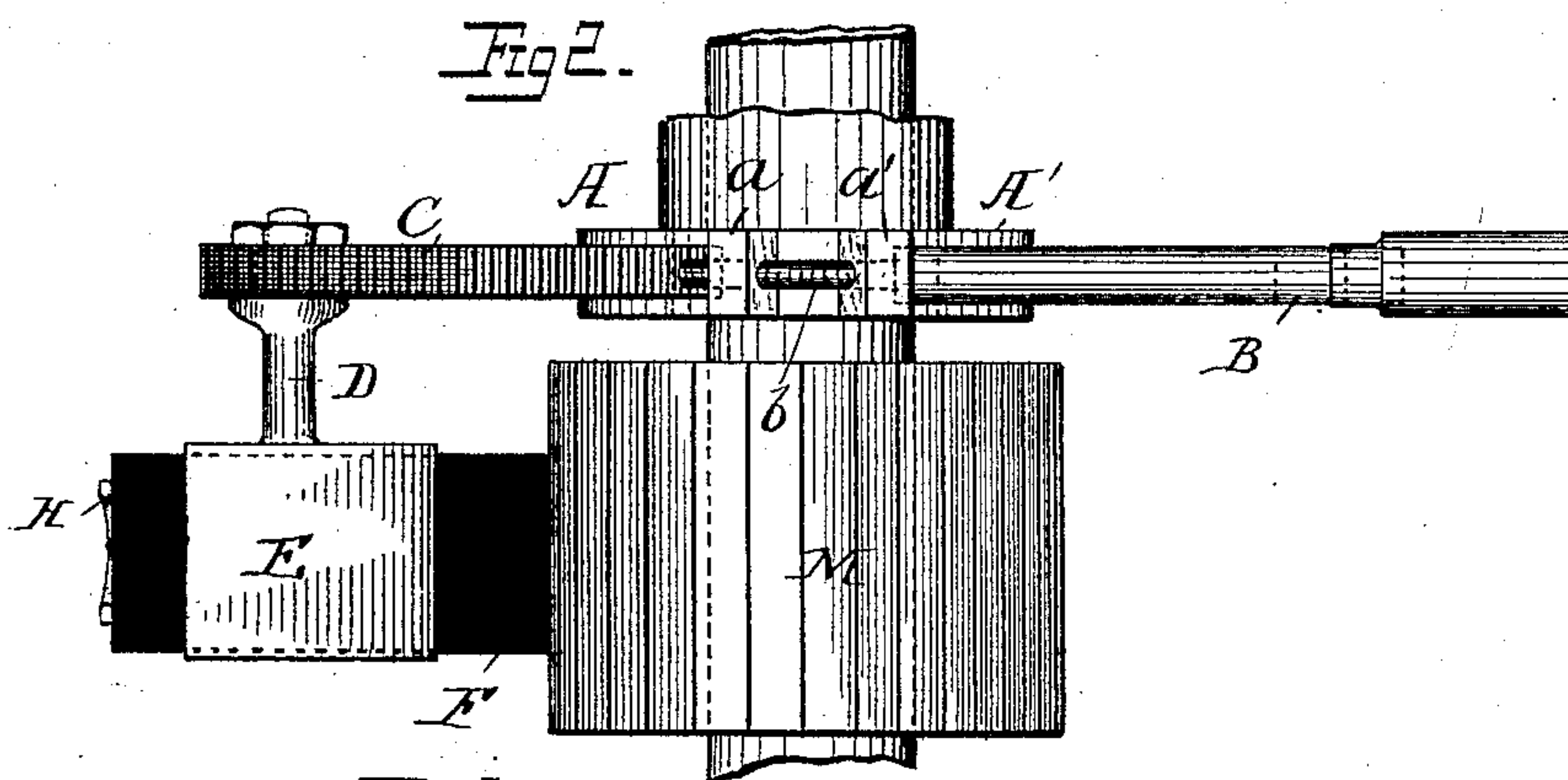
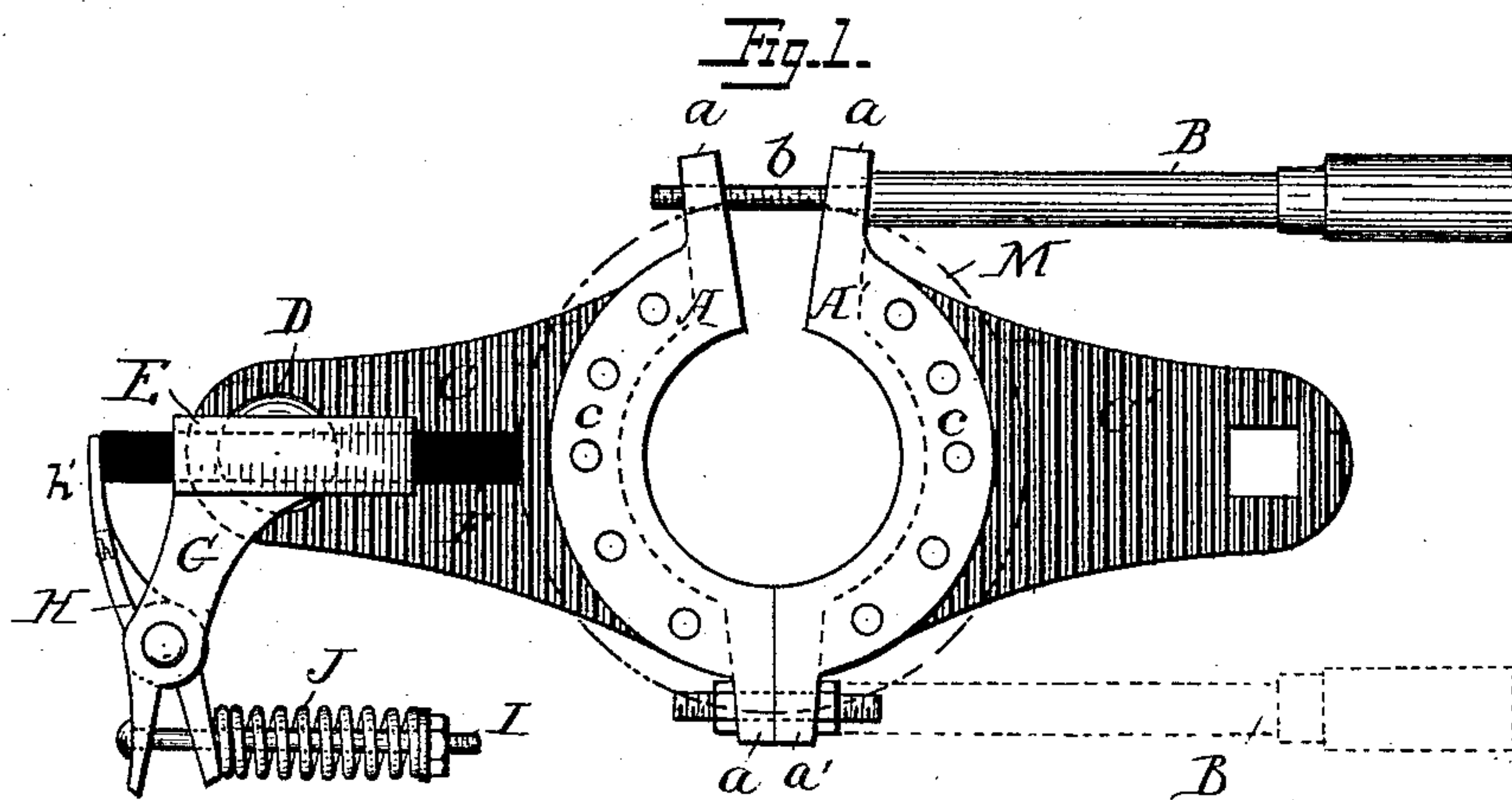


(No Model.)

F. B. RAE.  
YOKE AND BRUSH HOLDER.

No. 440,817.

Patented Nov. 18, 1890.



WITNESSES  
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# UNITED STATES PATENT OFFICE.

FRANK B. RAE, OF DETROIT, MICHIGAN, ASSIGNOR TO THE DETROIT ELECTRICAL WORKS, OF SAME PLACE.

## YOKE AND BRUSH-HOLDER.

SPECIFICATION forming part of Letters Patent No. 440,817, dated November 18, 1890.

Application filed August 9, 1890. Serial No. 361,560. (No model.)

*To all whom it may concern:*

Be it known that I, FRANK B. RAE, a citizen of the United States, residing at Detroit, Wayne county, Michigan, have invented certain new and useful Improvements in Yokes and Brush-Holders, of which the following is a specification.

My invention relates to yokes and brush-holders for electric generators or motors, and is intended more particularly for use of railway-motors having carbon brushes, although it is evident it can be used in other and various combinations.

The object of my invention is a simple, cheap, and effective yoke and brush-holder adapted for the purposes set forth, and which is capable of adjustment on the motor and may be readily removed and applied thereto.

To these ends my invention consists in a yoke and brush-holder constructed and arranged substantially as hereinafter pointed out.

Referring to the accompanying drawings, Figure 1 is a side view showing the yoke and brush-holder. Fig. 2 is a plan view showing the yoke and brush-holder in position with one brush bearing on the commutator. Fig. 3 is an end view of the same.

In the use of electric motors, especially on electric railroads, where the brushes are arranged to bear upon the commutator at an angle, it is desirable to have some simple and ready means of attaching and detaching the brushes or of adjusting them in position, and it is with this object in view that I have made my present invention.

The yoke is made in two parts, practically the same in construction, and these parts are provided with means whereby they may be secured and adjusted on the stationary part of the armature-bearing.

In the drawings, A A' are two pieces of a collar which is preferably made of brass, but may be of other non-magnetic material. These two pieces are provided with projections *a a'*, which are furnished with bolts or other clamping device B. In the drawings I have shown the bolt B as having an extended handle and provided with a screw-thread reduced end *b*. The other side of the clamps, as shown, is

held together by an ordinary screw rod or bolt provided with nuts, and, if desired, the rod or handle may be made as indicated by the dotted lines B'. It will thus be seen that the two parts of the collar can be easily removed from or placed on the stationary part of the armature-bearing, and they can be adjusted around said bearing, so as to bring the brushes at the proper point of contact with the commutator M. The two parts of the collar are made somewhat smaller than the circumference of the bearing upon which they are placed, and thus, by adjusting the screw rod or handle, the brushes can be caused to both move upward or downward with relation to the line of commutation, and this I find to be an important feature, as this line sometimes changes slightly by reason of wear of the commutator or otherwise, and thus the brushes can be adjusted to any position of lead which may be necessary to find the non-sparking point on the commutator. Secured to these collars in any suitable way are arms or extensions C C', which are preferably made of leatheroid or other equivalent insulating material, and which are shown as secured in recesses in the collar by bolts or screws *c*. These collars and their attached arms constitute the yoke which supports the brush-holder proper, and it will be noticed that the yoke is made in two separable complementary parts which are adjustable with relation to each other in the manner before described. Secured in recesses in these arms are stems D, carrying at their outer ends the brush-holders E, which in the present instance are shown in the form of rectangular slots to receive the carbon or equivalent brush-plates F, and these are held endwise against the surface of the commutator M.

In order to maintain the brushes in position, I subject them to spring-pressure, which forces their ends against the commutator, and to do this I provide the brush-holders E with an extension or frame G, in which I pivotally mount a lever H and connect the extremities of the extension and lever by a rod I, upon which is adjustably mounted a spring J, which is arranged to cause the lever to bear constantly upon the rear of the brush.



The upper portion of the lever II is made in two arms  $h$   $h'$ , which are pivoted to the end of the lever and curved upwardly to bear against the end of the brush, but which can be turned down, as indicated in dotted lines, Fig. 3, when it is desired to remove the brush from its holder.

Having thus described my invention and illustrated the preferred embodiment thereof, it will be understood that I do not limit myself to the exact construction and arrangement of parts shown, as these can be modified by those skilled in the art without departing from the principle of the invention.

What I claim is—

1. A brush-holding yoke for electric motors, provided with a collar made in two complementary portions connected together, each portion being somewhat smaller than half of the circumference of the bearing therefor, and connecting devices between the two parts, whereby they can be adjusted with relation to each other around the armature-bearings, substantially as described.

2. A brush-holding yoke for electric motors, provided with a collar made in two complementary portions adjustably connected together, each portion of the collar being somewhat smaller than half of the circumference of the bearing upon which it is placed and provided with arms carrying rectangular brush-holders, whereby the brush and the parts of the collar carrying them can be ad-

justed with relation to each other around the armature-bearings, substantially as described.

3. The combination, with the brush-holder having an extension, of a lever pivoted thereto and bearing on the free end of the brush in the holder, a rod connected to the extension and passing through the end of the lever, and a spring adjustably mounted on the rod and bearing on the lever, substantially as described.

4. The combination, with the brush-holder, of a spring-actuated lever, the said lever having arms pivoted thereto and arranged to bear upon the brush, substantially as described.

5. A yoke and brush-holder for electric motors, consisting of a collar in two portions, a screw-handle adjustably connecting the portions of the collar, insulating-arms socketed in the collar, brush-holding stems mounted in the arms supporting rectangular brush-holders, extensions connected to said brush-holders, spring-actuated levers mounted in the extensions, and pivoted arms connected to the levers for bearing on the brushes, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

FRANK B. RAE.

Witnesses:

M. B. O'DOGHERTY,  
N. LINDOP.