

No. 779,814.

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C. L. STAYER.  
BRUSH HOLDER.

APPLICATION FILED OCT. 23, 1899.

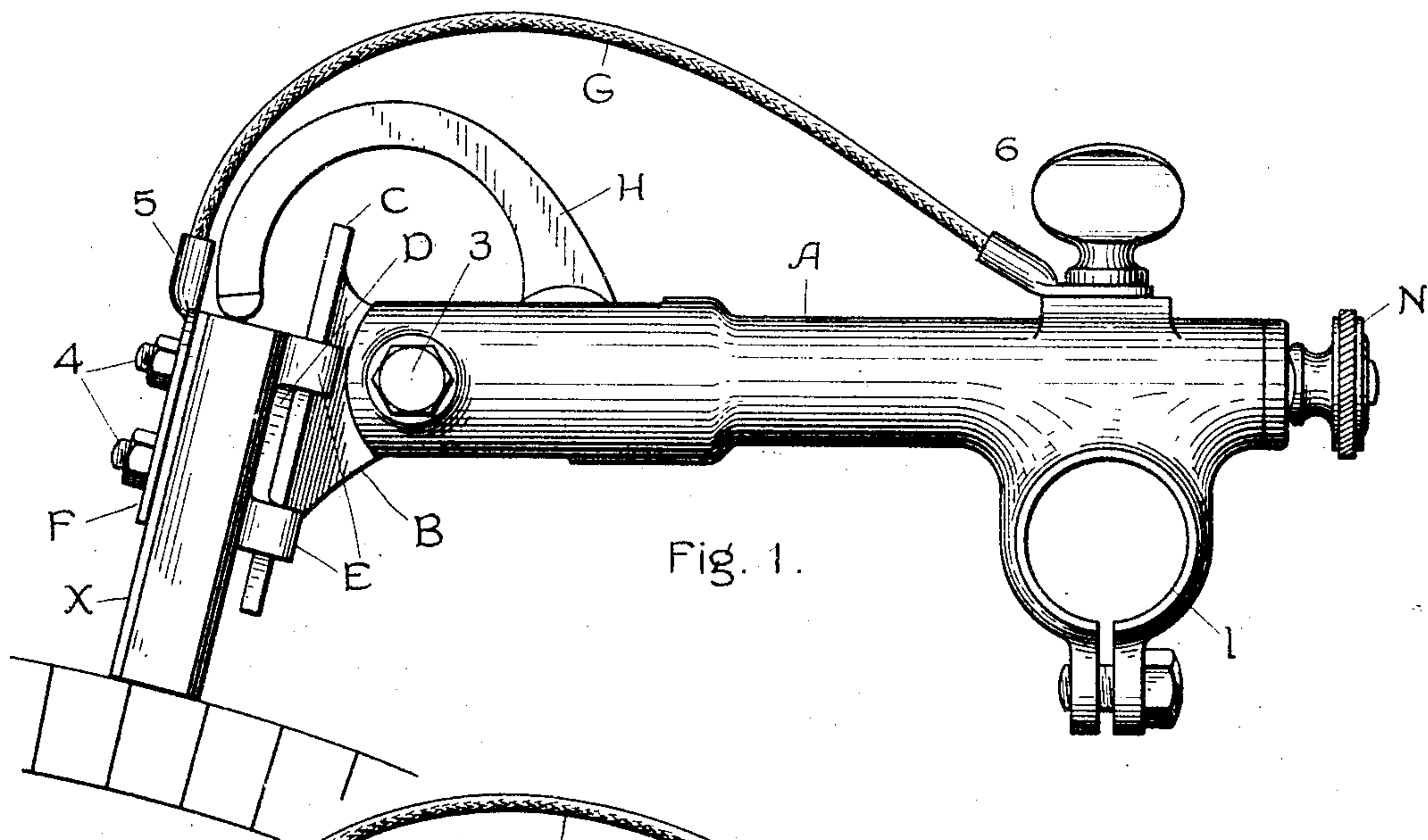


Fig. 1.

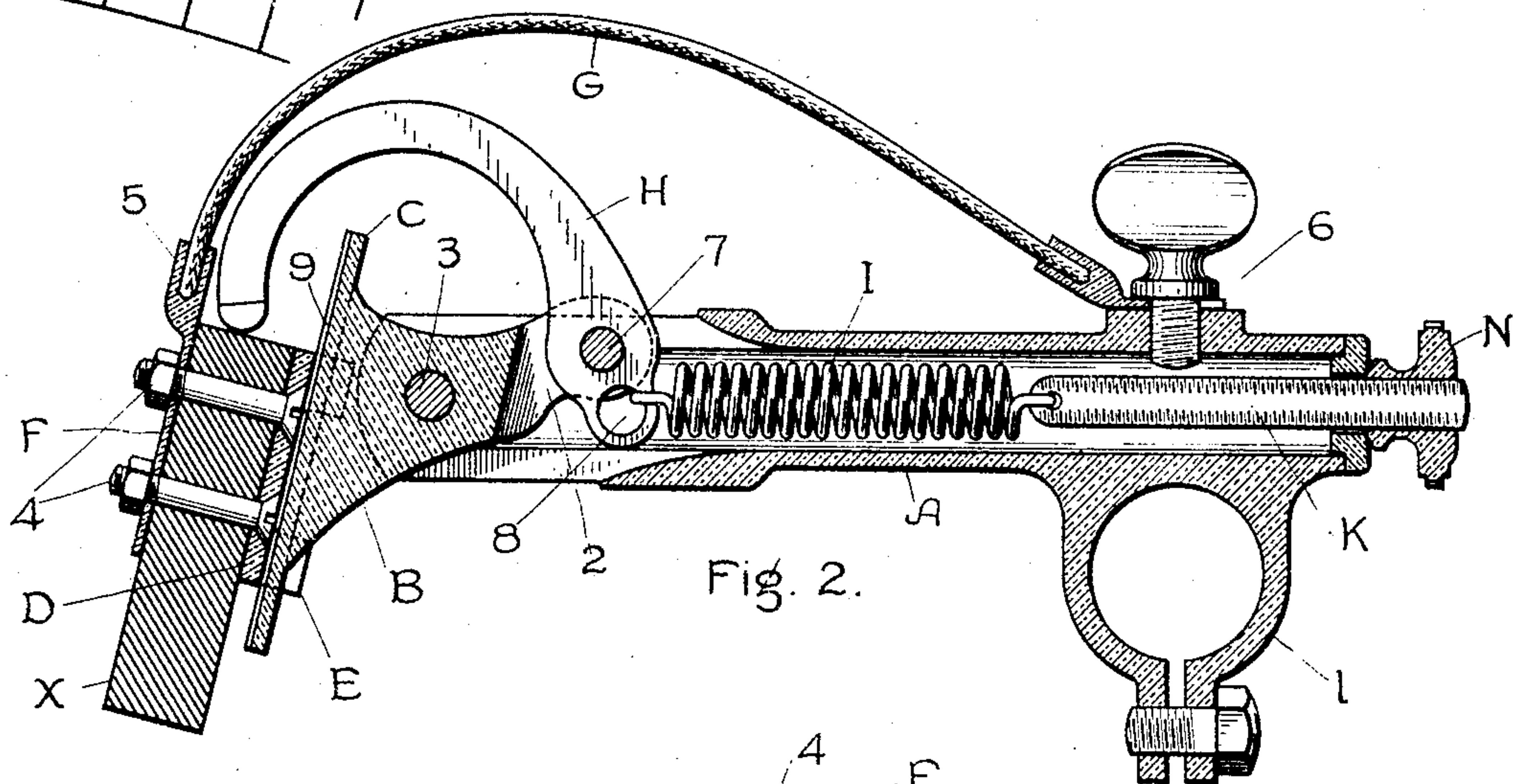


Fig. 2.

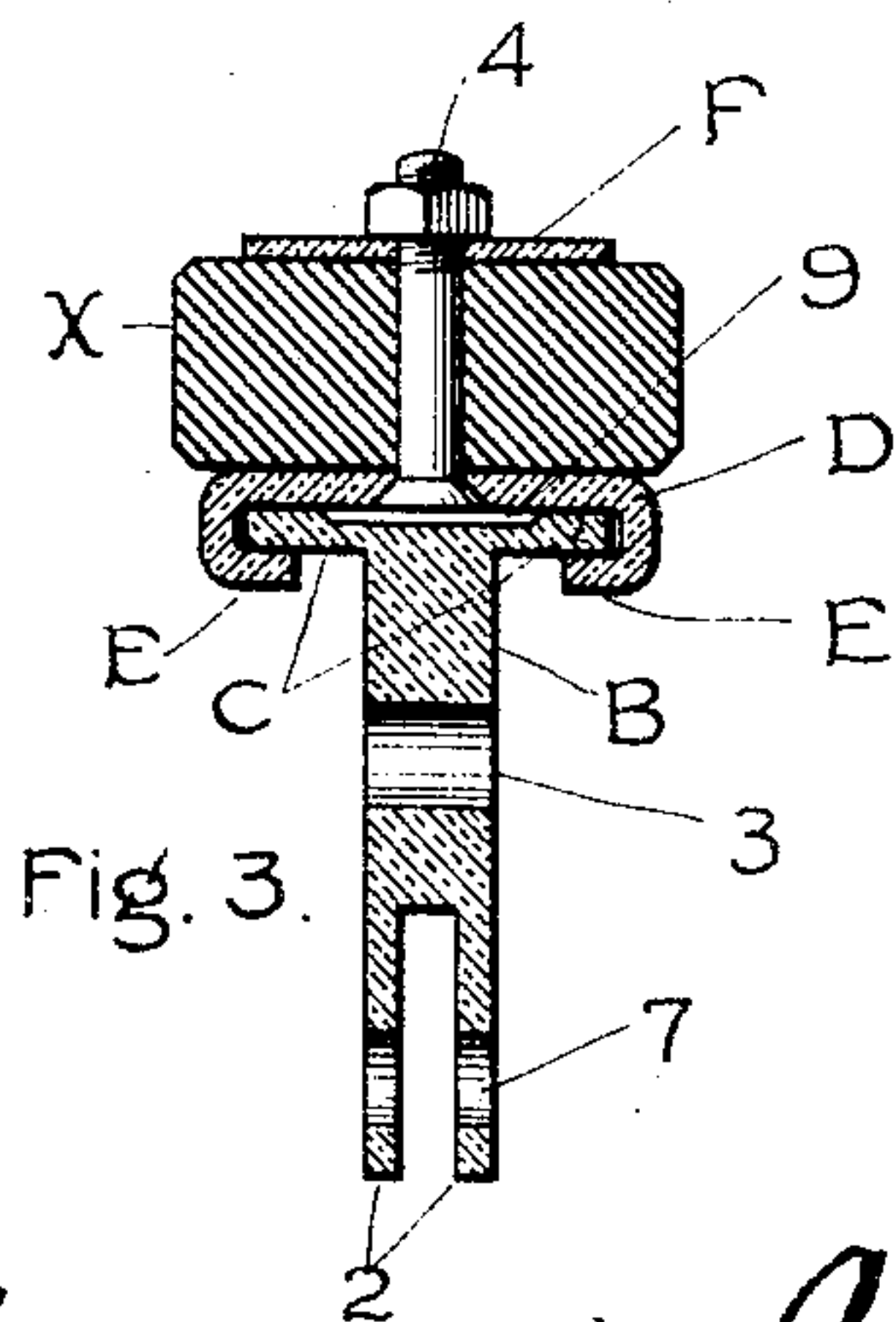


Fig. 3.

Witnesses.

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# UNITED STATES PATENT OFFICE.

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## BRUSH-HOLDER.

SPECIFICATION forming part of Letters Patent No. 779,814, dated January 10, 1905.

Application filed October 23, 1899. Serial No. 734,450.

*To all whom it may concern:*

Be it known that I, CHRISTIAN L. STAVER, a citizen of the United States, residing at Schenectady, in the county of Schenectady, State of New York, have invented certain new and useful Improvements in Brush-Holders, of which the following is a specification.

This invention relates to improvements in the mounting of commutator-brushes upon electric machines whereby various defects of hitherto-existing methods of mounting are effectually remedied.

Figure 1 is an elevation, Fig. 2 a longitudinal section, and Fig. 3 a transverse section, of a brush-holder embodying the various features of my invention, but to the details of structure of which I am not limited.

Brushes of dimensions within wide limits are simply bored for the reception of one or two bolts. The plates F and D are attached and as readily detached for the insertion of a new brush.

A is a hollow arm or support, which may be secured to the electric machine in any suitable manner, as by the split collar 1.

B is a brush-frame or brush-guide, having a fork 2, through which it is adjustably pivoted to the support A at 3. If it is not desired that this guide be adjustable, any other suitable construction may be adopted and the guide may be formed integral with the support A. Side pieces C are formed integral with the guide or brace B, and upon these the brush attachment D, having sides E bent to fit around the pieces C, is adapted to slide. The brush-guide is cut away at 9 to avoid engagement with the securing means 4. Any other suitable construction might be adopted whereby an attachment D of a different shape from that shown might slide along a guide C of a different construction or whereby the brush itself, if the plate D should be discarded, could slide along a guide C. A member F, of conducting material, is secured in intimate relation to the brush X, and this may be accomplished by causing one or more bolts and nuts 4 or screws to pass through plate D, brush X, and plate F. Any other suitable

means may be employed whereby the brush may be detachably secured to the plates D and F.

A flexible or yielding conductor G is attached to the plate or conductor supporting contact F and support A in a suitable manner, as shown at 5 and 6. The member F and conductor G may be regarded as together constituting a yielding conductor.

A brush-follower H is pivoted, as at 7, to any suitable part of the whole apparatus so that its end may bear upon the brush F. As shown, it is pivoted to the frame B and operates through a perforation or slot in the support A. One end of a helical spring I, lying inside the hollow support, is attached to the follower H at 8, the other end of the spring being attached to an adjusting-screw K, which extends through the perforated end of the support A and is controlled by an adjusting-nut N, which bears against the end of the support.

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

1. The combination with a support, of a brush in sliding relation with respect to said support, but not engaging therewith, a yielding conductor positively secured in position to be in electrical connection with said brush and adapted to be readily detached, and means for automatically tending to move said brush with respect to said support.

2. The combination with a support, of a brush in sliding relation with respect to said support, and a yielding conductor connected to said support and positively and detachably secured in place in electrical connection with the brush.

3. The combination with a support, of a brush, metal plates positively and detachably secured to said brush, whereby the brush is adapted to slide relatively to the support, and a flexible conductor positively secured to one of said plates.

4. The combination with a support provided with a brush-guide, of a brush, metal plates positively and detachably secured to said brush for engaging with said guide, whereby said



brush may be moved relatively to said support without engaging therewith, and a flexible conductor attached to one of said plates.

5 5. The combination with a support provided with a brush-guide, of a brush, a member adapted to engage with said guide, a conductor-supporting contact, and means for detachably securing said member and contact to opposite sides of said brush.

10 6. The combination with a hollow support, of a brush guided in sliding relation to said support, a follower bearing freely on the brush, and a spring inclosed within said support for actuating said follower.

15 7. The combination with a hollow support, of a brush guided in sliding relation to said support, a pivoted follower for the brush, and an actuating-spring inclosed within the hollow arm, and attached to the follower at a point nearer the pivot than the part of the  
20 follower which engages with the brush.

8. The combination with a hollow support, of a brush guided in sliding relation to said support, a follower for the brush pivoted inside the hollow support, and an actuating-spring for the follower entirely inclosed within the hollow support.

9. The combination with a support, of a brush-frame pivoted to said support and having a single flat surface parallel to which the  
30 brush slides, and a brush-follower pivoted to said brush-frame.

10. The combination with a support, of a brush-frame secured thereto, a brush, a yielding conductor, and metal plates detachably  
35 secured to said brush, one of which is adapted to retain said conductor and the other of which coacts with said brush-frame, whereby the brush can slide with respect to the frame.

40 11. The combination with a support, of a member interacting with said support for sliding engagement therewith, a brush detachably secured by perforating bolts to said sliding member, and continually and rectilinearly  
45 movable with said member with respect to said support.

12. The combination with a support, of a brush-frame adjustably secured thereto, a member interacting with said frame in rectilinear sliding engagement therewith, and a  
50 brush detachably secured to said member by bolts extending through the brush.

13. The combination with a support, of a brush-frame pivoted thereto, a brush adapted  
55 to slide with respect to said frame, and a pivoted follower for the brush, curved to extend around the brush-frame and rest positively upon the brush, and means for causing the follower to press against the brush.

60 14. The combination with a support, of a brush, means for engaging said support and brush and permitting a sliding relation between said support and brush, a yielding conductor, and means separate from said sliding

means for positively and removably attaching said conductor to said brush, which separate means participates with the brush in its sliding movement. 65

15. In a brush-holder, the combination with a frame having side pieces forming an open structure for the side of a brush and connected  
70 by an integral brace, of a brush in sliding relation therewith, means to hold the brush in yielding engagement with a commutator, and a flexible connection between the brush and the support, for connecting said brush and  
75 support electrically together.

16. The combination with a support, of a brush guided along its vertical portion in sliding relation to said support, a separate plate  
80 of conducting material detachably secured to a remaining vertical portion, and a yielding conductor secured to said contact-plate.

17. The combination with a hollow support, of a brush guided in sliding relation with said  
85 support, and a brush-follower pivoted within said support, said support being perforated to permit the operation of said follower.

18. The combination with a support, of a conducting member adapted to slide thereupon, and a brush positively and removably  
90 secured by perforating bolts to said member independently of said support, to form an integral conducting structure.

19. The combination with a support, of a brush, conducting members, and securing means of conducting material for clamping  
95 both said members tightly to said brush and for electrically connecting said members with each other, one of said members being adapted for sliding engagement with said support. 100

20. The combination with a hollow support, of a brush-frame adjustably mounted therein, a brush in sliding engagement with said frame, a brush-follower, and an actuating means  
105 therefor entirely inclosed within said hollow support, said support being perforated to permit the adjustment of the brush-frame and the operation of the follower.

21. The combination with a support, of a brush in sliding relation thereto, a contact-piece positively and detachably secured by  
110 perforating bolts to, and in electrical contact with, said brush, a yielding conductor secured to said contact-piece so secured, and means for moving said brush and contact-piece rectilinearly with respect to said support. 115

22. The combination with a support, of a brush, means detachably secured to said brush adapted for sliding engagement with said support, a yielding conductor, and means separate from said sliding means, secured to said  
120 brush and electrically connected with said yielding conductor.

23. The combination with a support, of a brush, means detachably secured to said brush adapted for sliding engagement with said support, a yielding conductor, and means separate from said sliding means, secured to said  
125 brush and electrically connected with said yielding conductor.



rate from said sliding means, detachably secured to said brush and to which said yielding conductor is secured.

24. The combination with a support, of a brush, means adapted to be detachably secured to said brush for sliding engagement with said support, a yielding conductor, and means separate from said sliding means, adapted to be detachably secured to said brush and electrically connected with said yielding conductor, and securing means common to both said means.

25. In a brush-holder, the combination of a frame having projecting guideways, a brush, means carried by the brush and engaged with said guideways to hold the brush for sliding movement on the frame, and means to hold the brush in yielding engagement with the commutator, substantially as set forth.

26. In a brush-holder, the combination of a frame having guideways, a brush, a plate secured to the brush and having engagement with the guideways to retain the brush in place thereon, and means to hold the brush in yielding engagement with the commutator, substantially as set forth.

27. In a brush-holder, the combination of a frame having parallel guideways, a brush, a plate on said brush having its side portions engaged with the guideways to retain the brush in place thereon, a screw-bolt for holding said plate to the brush, a flexible conducting-strip having one end secured by said screw-bolt and having its opposite end electrically connected to the frame, and means to hold the brush in yielding contact with the commutator, substantially as set forth.

28. In a brush-holder, the combination of a frame having guideways, a brush having a bent plate the side portions of which are engaged with the guideways of the frame to hold the brush for sliding movement on the said frame, and means for holding said brush in yielding engagement with the commutator, substantially as set forth.

29. In a brush-holder, the combination of a frame, having parallel flat projecting guideways, a brush, means carried by the brush and engaging said guideways to hold the brush in place thereon, and means to hold the brush in yielding engagement with the commutator, substantially as set forth.

30. The combination with a support, of a brush in sliding relation therewith, and a yielding conductor removably and positively secured in electrical connection with said brush by means of bolts extending through the brush.

31. The combination with a support, of a

brush in sliding relation thereto, a conducting-plate positively but removably secured to said brush, and a yielding conductor permanently attached to said plate.

32. The combination with a support, of a brush, two conducting members, and means composed of conducting material for securing both said members to said brush and for electrically connecting said members with each other, one of said members being adapted for sliding engagement with said support and the other member having attached to it a yielding conductor.

33. The combination with a support, of a brush, conducting means positively secured to said brush by perforating bolts, which permit the brush to slide with respect to said support, and a flexible conductor in electrical connection with said means.

34. The combination with a support, of a member continually free to slide with respect thereto, and a brush removably secured to said member by bolts passing through the brush.

35. The combination with a support, of a member continually free to slide with respect thereto, a brush removably secured to said member by bolts passing through the brush, and means constantly tending to force said member and brush to slide along said support.

36. The combination with a support, of a member continually free to slide with respect thereto, a brush secured to said member by perforating bolts, and a yielding conductor secured in electrical connection with said brush.

37. The combination with a support, of a conducting member continually free to slide with respect thereto, a brush, a yielding conductor, and conducting means for securing said brush to said conducting member, and said yielding conductor to said brush.

38. The combination with a hollow support, of a brush carrier or frame pivoted thereto, and having a portion extending beyond the pivot into the support, a follower for the brush pivoted to said extended portion, and a spring inclosed entirely by the hollow support.

39. The combination with a hollow support, of a brush carrier or frame pivoted thereto, a follower pivoted to the carrier, and a spring for the follower which is entirely inclosed by the hollow support.

In witness whereof I have hereunto set my hand this 21st day of October, 1899.

CHRISTIAN L. STAVER.

Witnesses:

BENJAMIN B. HULL,  
MABEL H. EMERSON.