

A. BARR & W. STROUD.  
COLLECTOR BRUSH FOR TORSIONMETERS.  
APPLICATION FILED JULY 9, 1910.

998,272.

Patented July 18, 1911.

FIG: 1.

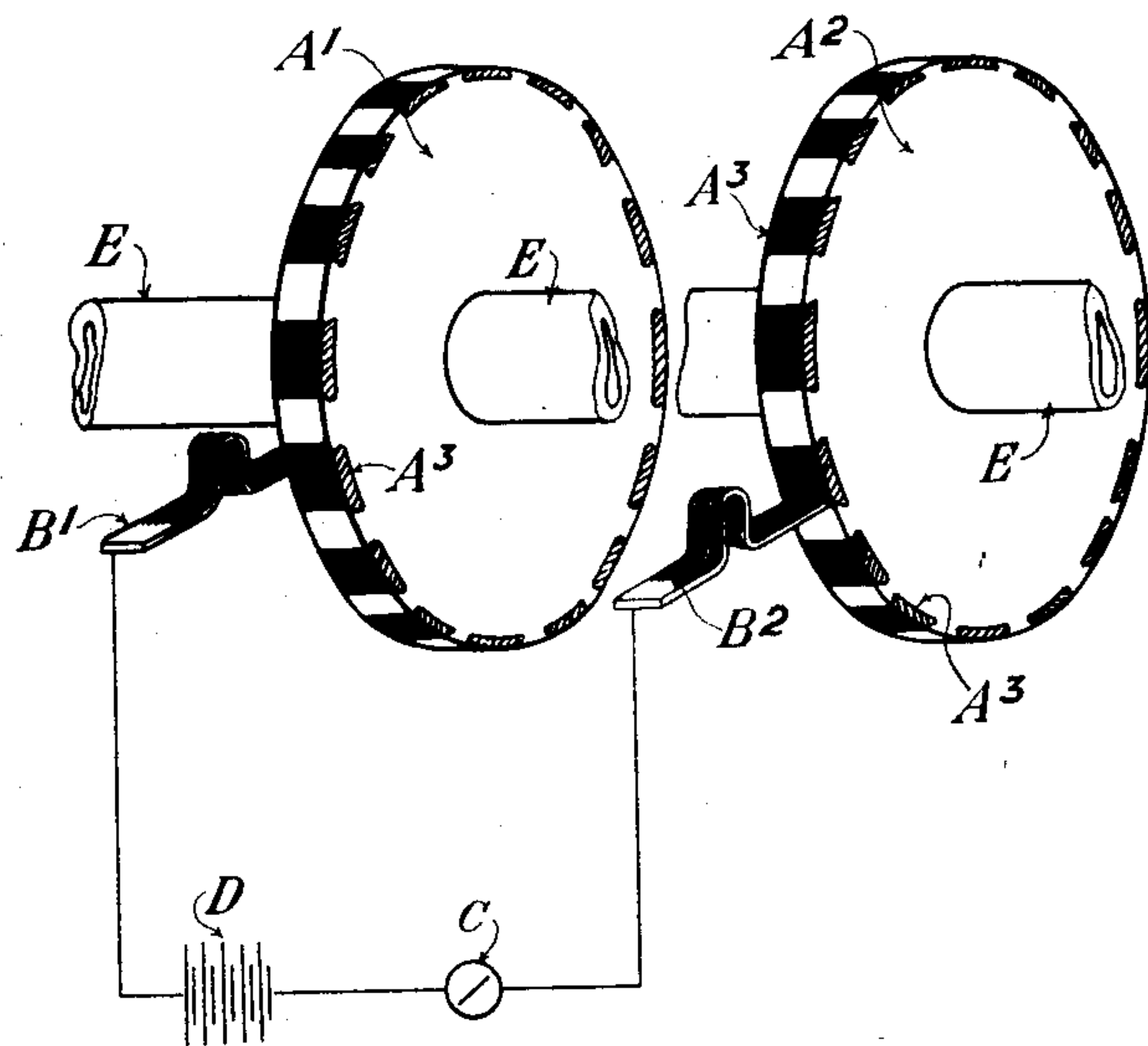


FIG: 2.

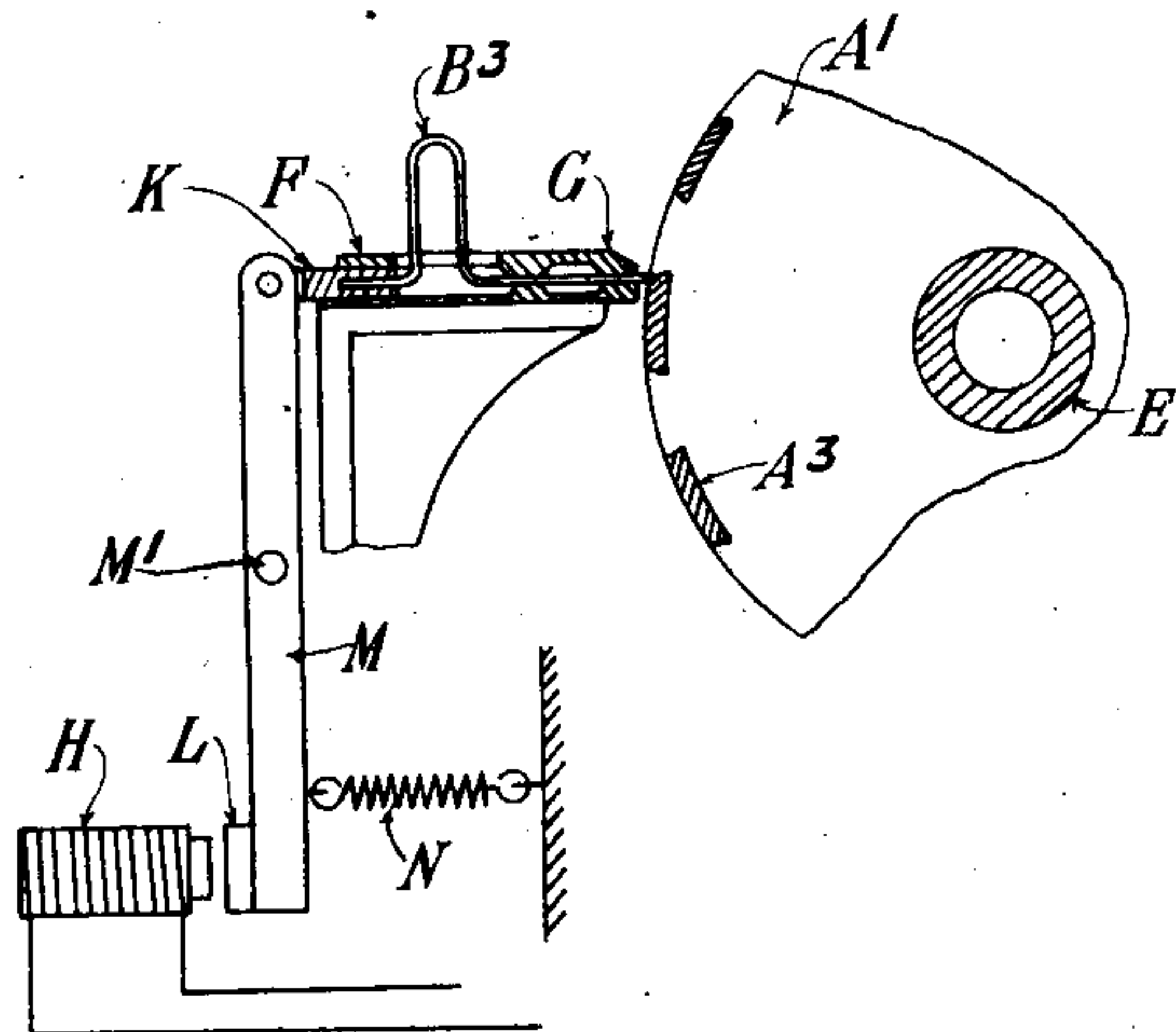
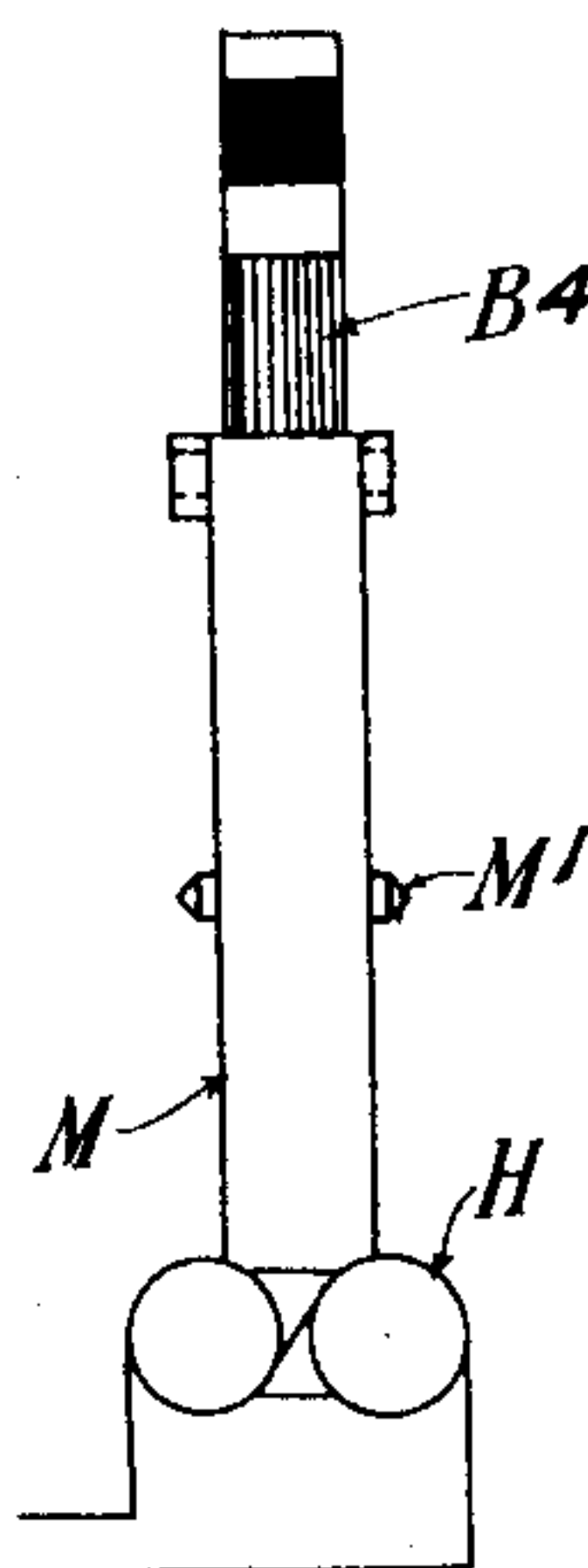


FIG: 3.



Witnesses  
Charles Smith  
A. G. Terrell

Inventors  
Archibald Barr  
William Stroud  
by Harold Terrell  
their attys.

# UNITED STATES PATENT OFFICE.

ARCHIBALD BARR AND WILLIAM STROUD, OF ANNIESLAND, GLASGOW, SCOTLAND.

COLLECTOR-BRUSH FOR TORSIONMETERS.

998,272.

Specification of Letters Patent.

Patented July 18, 1911.

Application filed July 9, 1910. Serial No. 571,108.

*To all whom it may concern:*

Be it known that we, ARCHIBALD BARR and WILLIAM STROUD, subjects of the King of Great Britain and Ireland, and both of  
5 Caxton street, Anniesland, Glasgow, Scotland, have invented new and useful Improvements in Collector-Brushes for Torsionmeters, (for which we have made application for a patent in Great Britain No.  
10 17160, bearing date 23rd July, 1909,) of which the following is a specification.

This invention refers to torsionmeters or power indicators of the type in which two  
15 metal disks having insulating segments inserted in their peripheries are employed and mounted one at each end of the portion of the shaft (or other elastic member) whose twist is to be measured, and in one form two  
20 brushes are arranged to rest upon the peripheries of the disks, one on each disk, the two brushes being arranged in an electrical circuit comprising a source of current, and a galvanometric device, in other forms  
25 more than two brushes are used; and the object of this invention is to provide an improved form of brush for use in conjunction with torsionmeters of this general type, with the view to obtaining greater accuracy of observation.

30 In the accompanying drawing Figure 1 is a perspective view illustrating by way of example a torsionmeter of the type in question, furnished with brushes constructed according to this invention. Fig. 2 is a part  
35 sectional side elevation, and Fig. 3 is an end view showing a brush constructed and applied to a disk according to this invention.

Referring to Fig. 1 of the accompanying drawing, E designates a shaft, upon which  
40 two conducting disks  $A^1$   $A^2$  are mounted and electrically connected to each other through the shaft E or otherwise. Each disk  $A^1$   $A^2$  is formed with insulating segments  $A^3$  inserted in its periphery.  $B^1$   $B^2$   
45 are two conducting brushes adapted to rest on the disks and joined in circuit with a galvanometer C and battery D. In the untwisted condition of the shaft the conducting and insulating segments of the disks  
50  $A^1$   $A^2$  may be so arranged that as the shaft revolves, electrical contact is made between  $A^1$  and  $B^1$  at the same moment that electrical contact is broken between  $A^2$  and  $B^2$ ,  
55 or broken between  $A^1$  and  $B^1$  at the same moment that electrical contact is made be-

tween  $A^2$  and  $B^2$ . In this case the circuit is always broken at one brush or the other, and there is consequently no deflection of the galvanometer C. If now the shaft E be  
twisted there will be some portion of the  
60 revolution during which both the brushes  $B^1$   $B^2$  will be upon conducting portions of the disks  $A^1$   $A^2$ , and the duration of these contacts will increase with the amount of twist, and consequently the amount of deflection of  
65 the galvanometer will be a measure of the amount of the twist.

An example of the construction of a brush according to this invention will now be described with reference to Figs. 2 and 3  
70 of the accompanying drawings as applied to a disk of the torsionmeter illustrated at Fig. 1.

In order to secure steadiness and accuracy in the indication of the galvanometer or  
75 other electrical current actuated means which might be substituted for the galvanometer, the brush is made to yield freely in an endwise direction, and may be of composite character, and may be firmly supported and present but a very short unsupported  
80 outer end for application to the moving surface.

To obtain longitudinal flexibility a transverse bend is formed in the brush, and the  
85 force for applying and maintaining the outer end of the brush in contact with the moving surface is transmitted through the bend. In one form the brush may be bent  
90 at  $B^3$  as shown at Fig. 2, consisting of a curved bend projecting laterally relative to the length of the brush. In construction, the brush may be composed of an assemblage of rods  $B^4$ , wires for example, having  
95 their inner ends secured in a slipper K, as shown at Fig. 2. The rods  $B^4$  may be flat in cross section. For supporting and directing the brush a carrier F is provided having jaws G, the slipper K and brush  
100 being mounted therein, as shown at Fig. 2, the end of the brush being adapted to project from the mouth of the jaws G, which may be set very close to the periphery of the disk  $A^1$ , so that the unsupported projecting part of the brush may be made  
105 extremely short.

To save wear and tear, the brushes may be arranged to be normally removed out of contact with the disk, and only be brought into contact therewith while an observation  
110



is being made. A convenient device for this purpose may consist of an electromagnet H, an armature L, rocking arm M pivoted at M<sup>1</sup>, and connected at its head to the  
5 slipper K, associated with a spring N connected to the rocking arm M for normally holding the brush out of contact with the disk A<sup>1</sup>.

We claim:

10 1. A brush composed of an assemblage of rods, each rod having straight inner and outer end portions and a bend between the said portions, for the purposes set forth.

15 2. A brush composed of an assemblage of rods, each formed with a bend between its inner and outer ends, supported in a carrier

having jaws through which the ends of the rods project, for the purposes set forth.

3. A brush composed of an assemblage of rods, a slipper in which the inner ends of  
20 the rods are secured, each rod being formed with a bend between its inner and outer ends, a carrier having jaws in which the slipper and brush are mounted so that the  
25 ends of the rods project from the mouth of the jaws, for the purpose set forth.

ARCHIBALD BARR.  
WILLIAM STROUD.

Witnesses:

O. H. POTTER,  
D. AITKEN.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,  
Washington, D. C."