

N. C. BASSETT.
BRUSH HOLDER.

APPLICATION FILED MAR. 20, 1902.

2 SHEETS—SHEET 1.

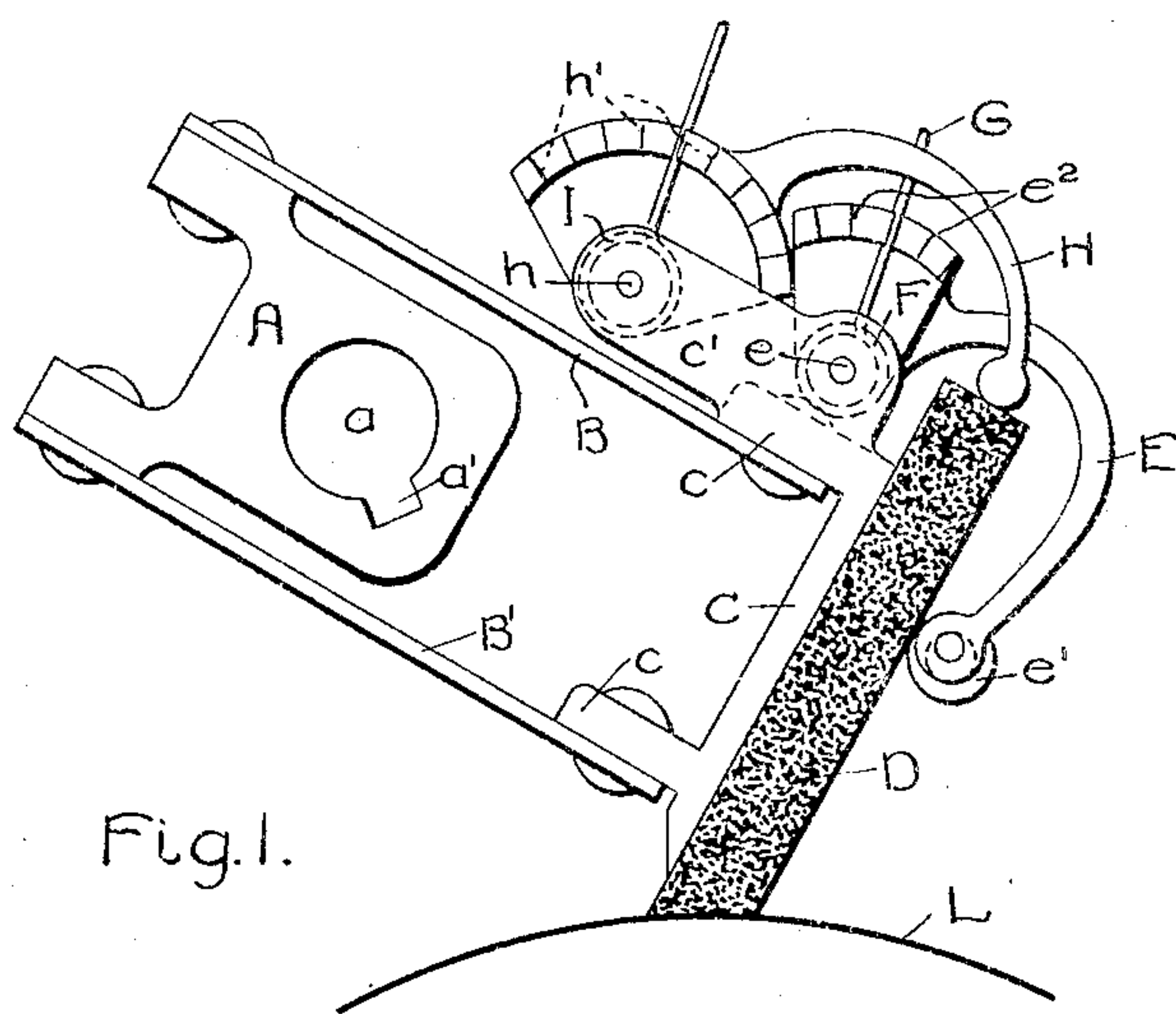


Fig. 1.

Fig. 2.

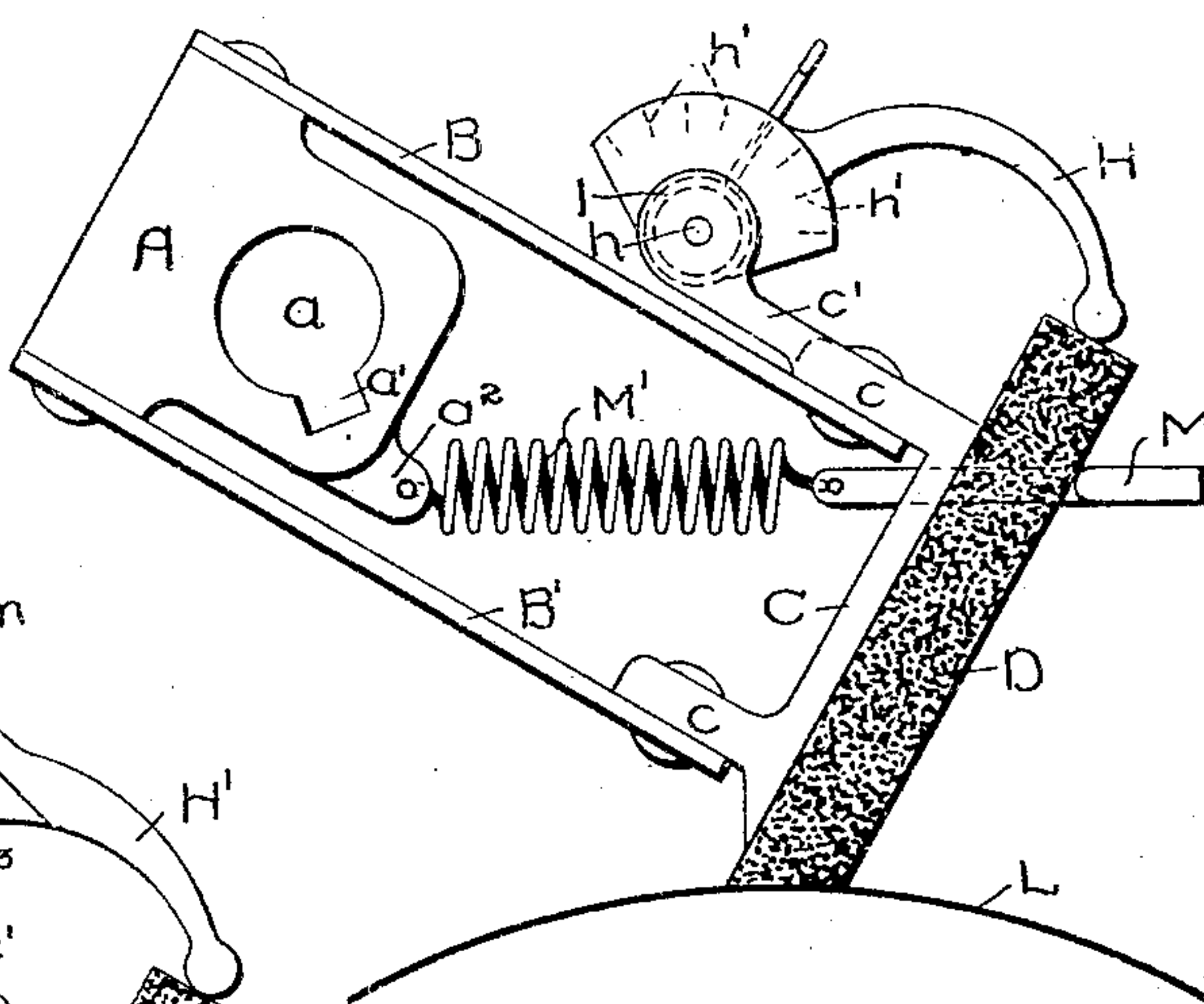
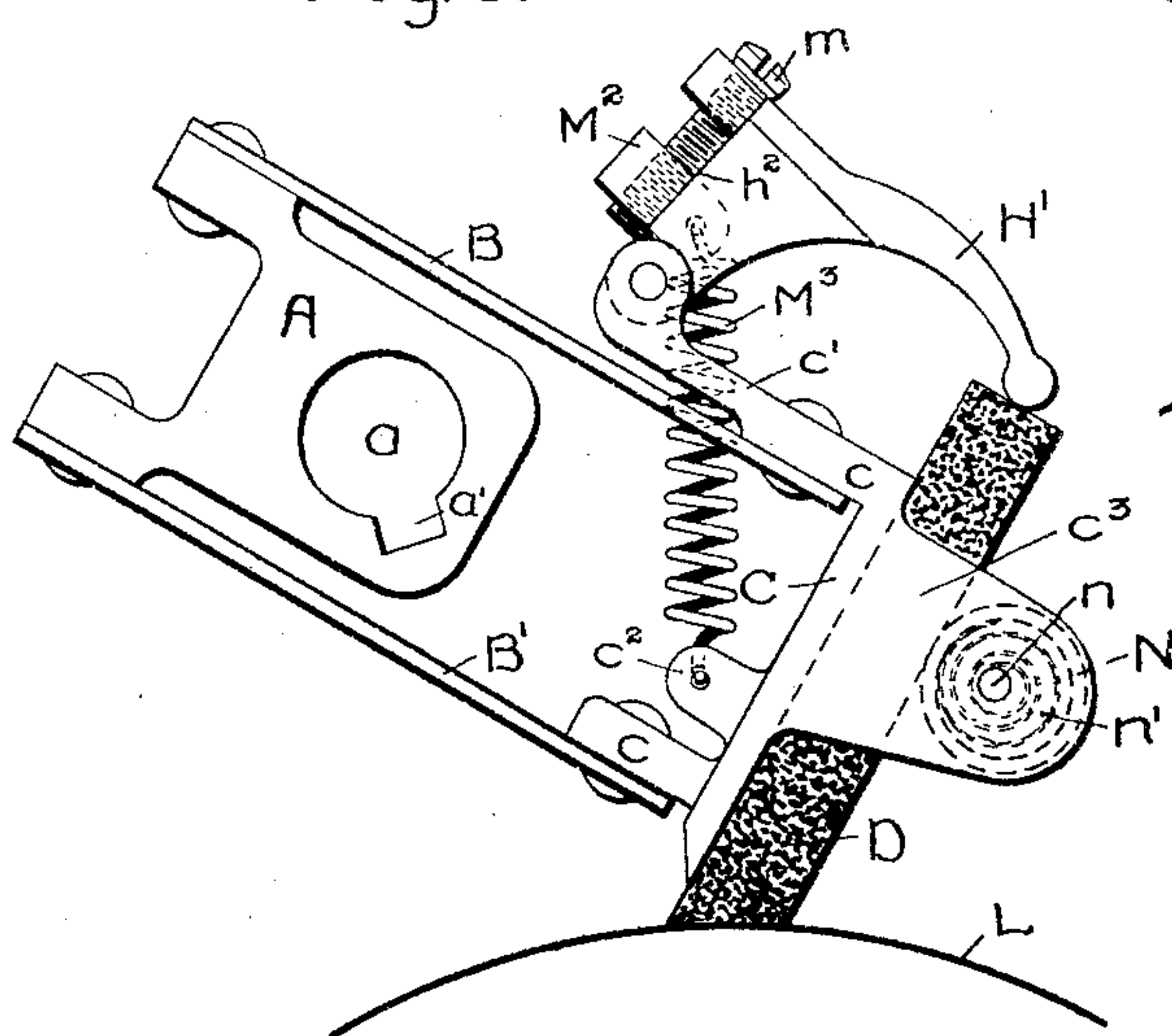


Fig. 3.



Witnesses.

Erving R. Sumner
Helen Oxford

Inventor
Norman C. Bassett.

by *Albion H. Davis*
Atty.

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2 SHEETS—SHEET 2.

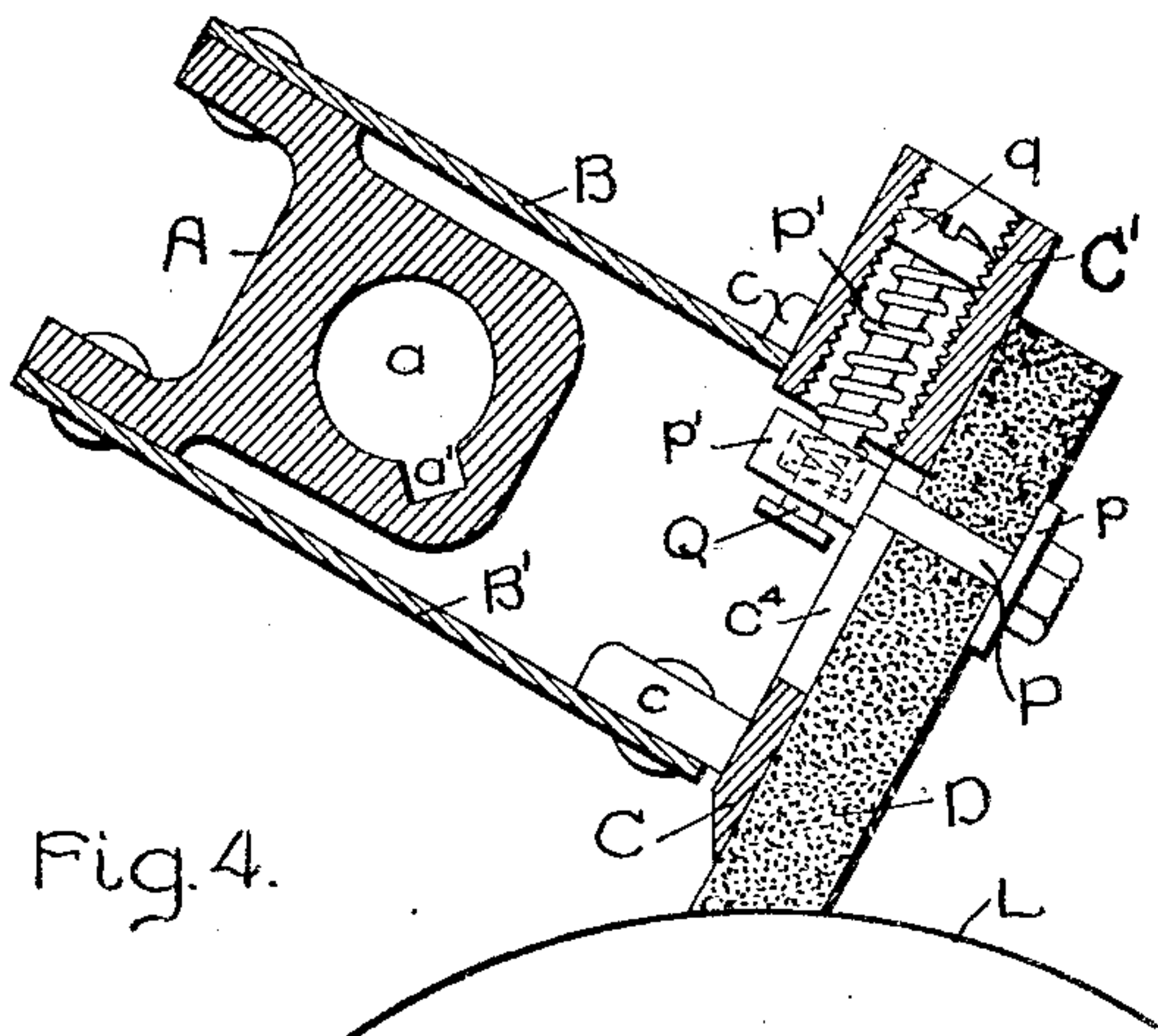


Fig. 4.

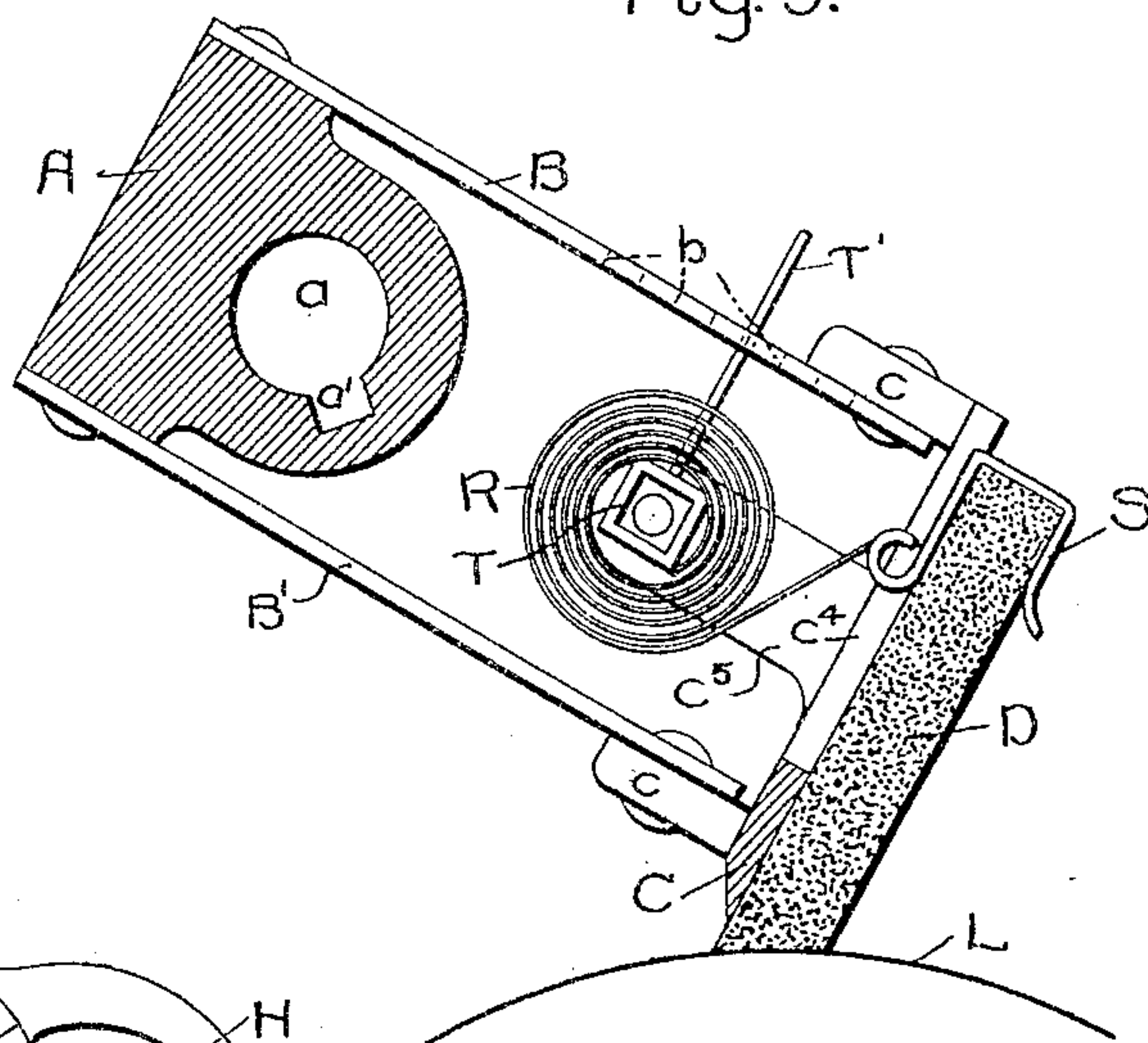


Fig. 5.

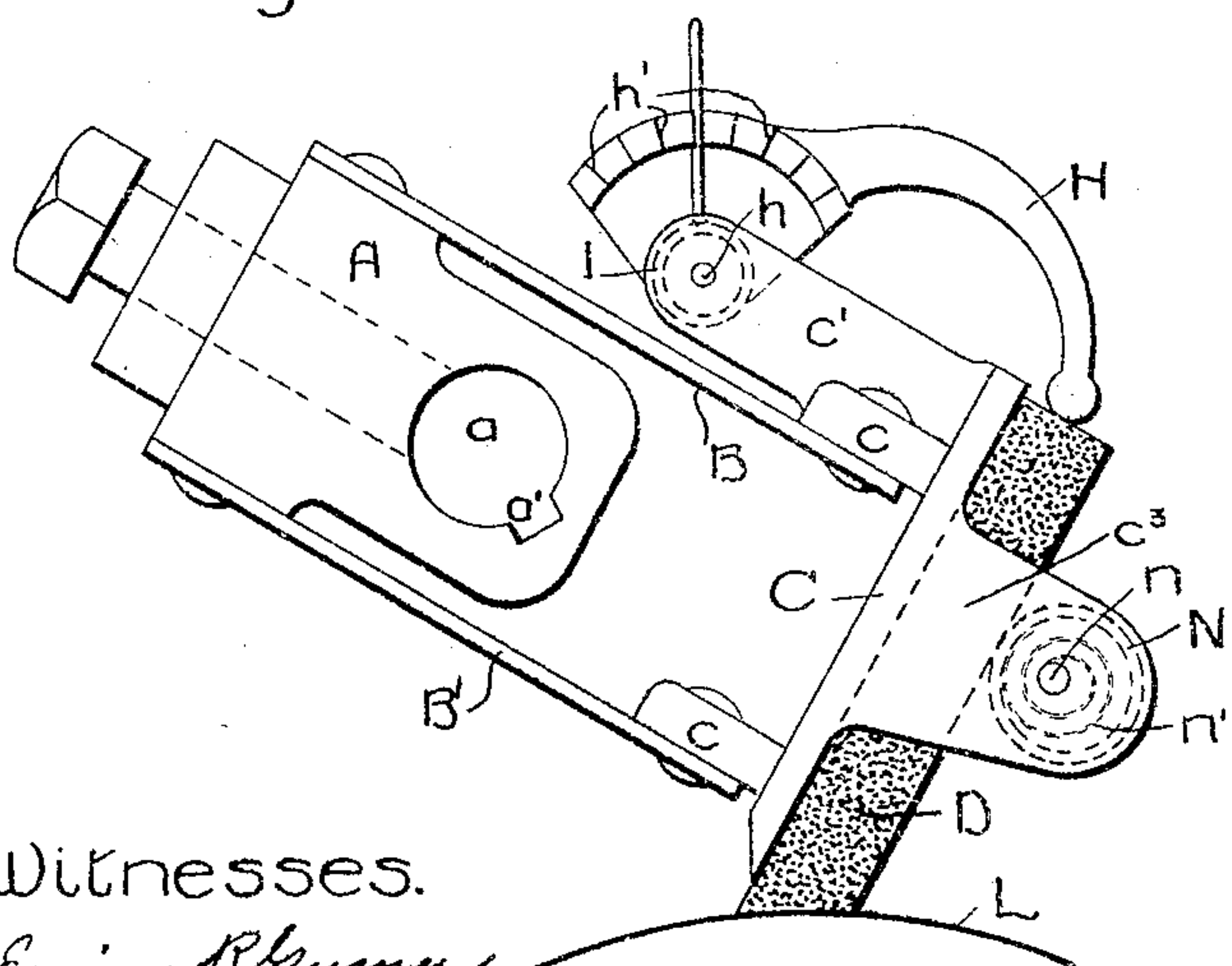


Fig. 6.

Witnesses.

Ewing R. Kummer
Helen Orford

Inventor:
Norman C Bassett.
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Atty.

UNITED STATES PATENT OFFICE.

NORMAN C. BASSETT, OF LYNN, MASSACHUSETTS, ASSIGNOR TO GENERAL ELECTRIC COMPANY, A CORPORATION OF NEW YORK.

BRUSH-HOLDER.

No. 803,803.

Specification of Letters Patent.

Patented Nov. 7, 1905.

Application filed March 20, 1902. Serial No. 99,161.

To all whom it may concern:

Be it known that I, NORMAN C. BASSETT, a citizen of the United States, residing at Lynn, county of Essex, State of Massachusetts, have
5 invented certain new and useful Improvements in Brush-Holders, of which the following is a specification.

This invention relates to brush-holders for dynamo-electric machines; and its object is to
10 insure an even pressure of the brush upon the commutator, especially when starting up after a period of idleness. When an electric motor cools down over night, the brush is liable to become stuck to the brush-holder by the
15 cooling of the mixture of carbon-dust and oil which gathers on its surface while the parts are hot. When the motor is started the next morning, the brush is not free to feed through the brush-holder until either broken loose or
20 warmed up enough to melt the carbon-grease paste. This immovability of the brush is liable to cause the motor to flash badly at starting, and the present invention is designed to overcome this difficulty. To this end I
25 provide between the fixed portion of the holder and the brush-clamping portion resilient arms, preferably two in number and parallel with each other. These arms are independent of the other devices for feeding the brush. The
30 arms are both in a plane or planes of movement of the brush, so that they exert a parallel ruler effect and preserve the same angle between the brush and the surface of the commutator. The degree of pressure between
35 the brush and the commutator is determined by the feeding device, whose spring is made adjustable for this purpose. When once adjusted, the pressure is maintained by the resilient arms independently, so that the pres-
40 sure of the brush is always kept at the same degree as it feeds down, and if it gets stuck to the holder the arms still keep it pressed against the commutator.

My invention also includes other features
45 of novelty, all of which will be more particularly pointed out in the claims annexed to and forming a part of this specification.

In the accompanying drawings, Figure 1 is a side elevation of a brush-holder embodying
50 my invention, and Figs. 2, 3, 4, 5, and 6 are modifications of the same.

Referring to Fig. 1, the casting A is provided with an opening *a* and a keyway *a'*, by means of which it can be secured to any suitable

support. To opposite sides of this casting 55 and preferably in a plane at right angles to the axis of the commutator are secured arms B B', made of some suitable resilient material. Their free ends are attached to a brush-carrier C, preferably by means of lugs *c* on 60 said carrier, to which said arms may be riveted. The carrier is preferably a casting whose front face is smooth and flat in order to form a suitable supporting-surface for the commutator-brush D, of carbon or other suit- 65 able material. The brush is inclined to the radius of the commutator, so that by means of the pressure of the brush-spring the brush will be held pressed against the commutator and against the lower end of the carrier C. At 70 its upper end the brush is pressed against the carrier by means of a presser-arm E, suitably pivoted on a pin *e* in a bracket *e'*, projecting from the upper part of the carrier C. The free end of the arm E preferably carries a re- 75 silient roller *e'*, bearing against the outer face of the brush. In order to adjust the pressure of this arm, a spring F is coiled on the pin *e*, one end of said spring being secured either to the pin or to the bracket *e'* and the other end 80 carrying an arm G, which can be adjustably connected with the arm E by means of a series of notches *e''* in the hub of said arm. The brush D is fed downward as it wears away by means of a spring-follower H, pivoted at *h* 85 in the bracket *e'* and actuated by means of the coiled spring I, secured to said bracket and to an arm which can be adjusted in notches *h'* in the hub of the follower. It will be noted that when the degree of pressure exerted by 90 the follower is adjusted it will tend to put the arms B B' under tension, and this tension will exert a constant pressure between the brush and the commutator L irrespective of the rate at which the brush may feed down- 95 ward along the face of the carrier C. It will also be noted that the resilience of the arms B B' provides for any minor irregularities in the commutator and tends to maintain a steady even pressure of the brush upon the 100 commutator. In all the other figures of the drawings the same arrangement of arms B B' appears, the difference in structure being simply in the means of maintaining the pressure of the brush against the carrier and of 105 feeding it downward against the commutator.

In Fig. 2 the same spring-follower H is used as in Fig. 1; but in place of the presser-arm

E there is substituted a flat hook M, held yielding against the outer face of the brush D by means of a helical spring M', secured to the lug a^2 on the casting A.

5 In Fig. 3 the follower is somewhat modified. It consists of an arm H' having near its pivotal point a smooth inclined surface h^2 , along which slides a block M², adjustable by means of a screw m. To this block is secured
10 one end of a helical spring M³, whose other end is fastened to a lug c^2 on the casting C, and this exerts an adjustable spring-pressure upon the follower H' and also changes the leverage on the follower. In place of the
15 presser-arm E or the flat hook M in Figs. 1 and 2 I employ a resilient roller N, journaled at n in arms c^3 , projecting forward from the carrier C on either side of the brush. The roller is loosely mounted on its pivot and in-
20 closes a loose coiled spring n' , which tends to hold it concentric with the pivot n, but permits it to yield laterally, and thus exert a pressure on the brush tending to keep it in good electrical contact with the carrier C.

25 In Fig. 4 the brush is held against the carrier C by means of a transverse bolt P, which is provided with a broad washer p, resting against the outer face of the brush. The bolt passes through a longitudinal slot c^4 in the
30 carrier and has at its inner end a head p' , preferably containing a socket to receive one end of a helical spring P', which encircles a bolt Q, having at its upper end a screw-threaded head q, meshing with internal screw-threads
35 in a sleeve C', projecting upward from the carrier C. Any wear of the brush will be taken up automatically by the spring P', which can be suitably adjusted from time to time by turning the head q. This spring also tends to
40 press the upper end of the brush against the carrier.

In Fig. 5 means for keeping the brush in good contact with the carrier C and also for feeding it downward against the commutator
45 L are shown. This means consists of a spiral spring R, one end of which is attached to a hook or cap S, resting on the upper end of the brush D and capable of longitudinal movement in the slot c^4 in the carrier C. The other
50 end of the spring R is attached to a hub T, pivotally mounted in arms c^5 , extending rearwardly from the carrier. The hub is provided with a handle T', which can be adjustably engaged with notches b in the upper arm
55 B. It will be seen that this spring not only tends to drag the brush downward against the commutator, but also to pull it inward against the face of the carrier.

In Fig. 6 the spring-follower H (shown in
60 Figs. 1 and 2) is made use of to produce the proper feed of the brush, while the pressure device shown in Fig. 3 is used to keep the brush in good contact with the carrier.

It is apparent from the drawings that the
65 novelty of my invention does not depend upon

the means employed for feeding the brush and keeping it in contact with its carrier, but resides more especially in the resilient arms connecting said carrier with the stationary
70 portion of the brush-holder and operating in a plane substantially at right angles with the axis of the commutator in order to exert a constant steady pressure of the brush against the commutator irrespective of the rate at
75 which it may wear away or of its movement or non-movement across the face of the carrier and irrespective of any minor irregularities in the surface of the commutator. It is also apparent that the spring-arms and the
80 spring, which exerts a downward pressure on the brush, react against each other, so that the pressure on the brush is maintained constant, since one spring compensates for the other, the tension of one varying directly with
85 that of the other.

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

1. In a brush-holder, the combination with a stationary support, of a brush-carrier, resilient arms connecting said carrier with said sup-
90 port, said arms being in a plane substantially at right angles with the axis of the commutator, and an automatic spring feeding device for the brush mounted on the carrier.

2. In a brush-holder, the combination with
95 a movable brush-carrier, of an adjustable spring-follower for varying the pressure on the brush, and means for maintaining said pressure constant irrespective of minor irregularities in the commutator-surface. 100

3. In a brush-holder, a spring-supported
spring-follower for the brush.

4. In a brush-holder, a spring-supported
brush-carrier, and a spring-follower mounted
105 on said carrier.

5. In a brush-holder, a brush-carrier, a
spring-follower for the brush, and a spring-
support for the carrier whose tension reacts
against that of the follower.

6. In a brush-holder, the combination with
110 the brush, of two reacting spring-actuated devices for producing a pressure on said brush, and means for varying said pressure.

7. In a brush-holder, a brush-carrier, a
brush relatively movable with respect to said
115 carrier, a follower, a spring for forcing said follower against said brush, and means for regulating the pressure with which said fol-
lower bears against said brush comprising a
120 block to which one end of said spring is attached, and a screw for varying the position of the block.

8. In combination, a brush-carrier, a fol-
lower, a spring tending to move the follower
with respect to the brush-carrier, means for
125 regulating the tension given to the follower by the spring comprising a block to which one end of the spring is connected, and a screw for moving said block.

9. In a brush-holder, a pivoted follower, a 130

block slidingly mounted on said follower, a spring connected to said block for moving said follower against the brush, and a screw for moving said block relative to said follower.

5 10. In a brush-holder, a movable brush, a pivoted follower bearing against said brush, a block slidingly mounted on said follower, a spring connected to said block and operating to hold the follower against the brush, and a
10 screw for moving the block to vary the distances from the pivotal point of the follower.

11. In a brush-holder, a pivoted follower, a tension-spring, means for connecting the
15 spring to the follower at different distances from the pivotal point comprising a member

movably connected to the follower to which the spring is attached, and a screw for moving said movable member.

12. In combination, a brush-carrying member, a follower member, a block movably connected to one of said members, a spring connecting the other of said members and the block, and a screw for moving said block. 20

In witness whereof I have hereunto set my hand this 17th day of March, 1902.

NORMAN C. BASSETT.

Witnesses:

DUGALD McK. McKILLOP,
JOHN J. WALKER.