

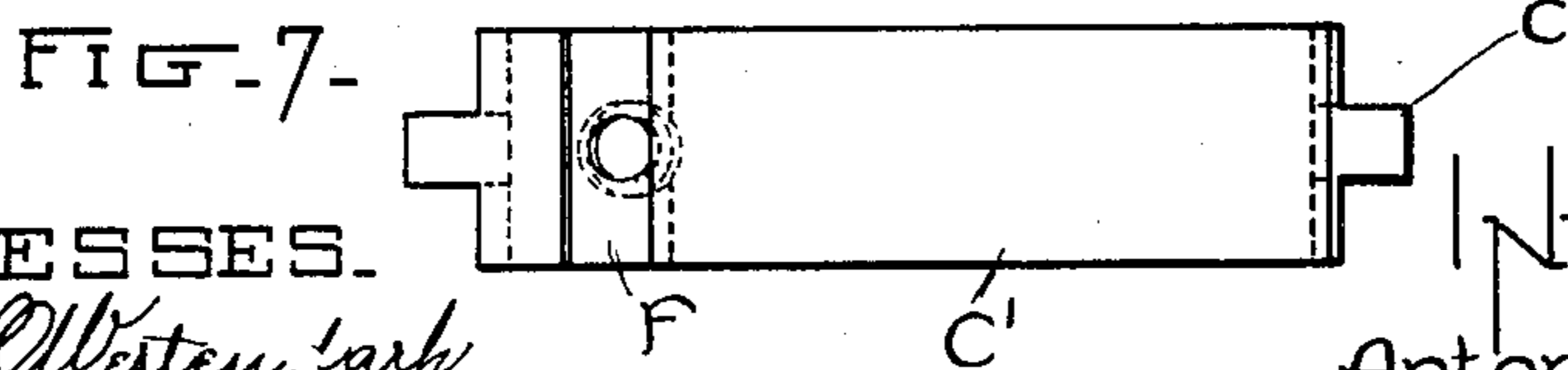
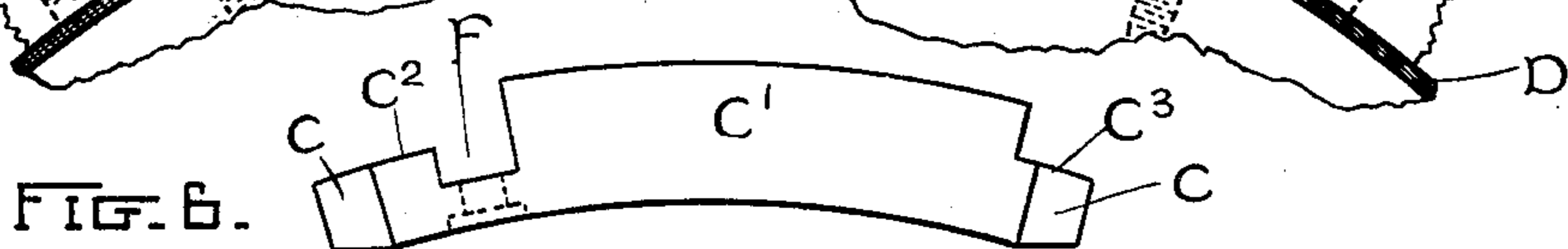
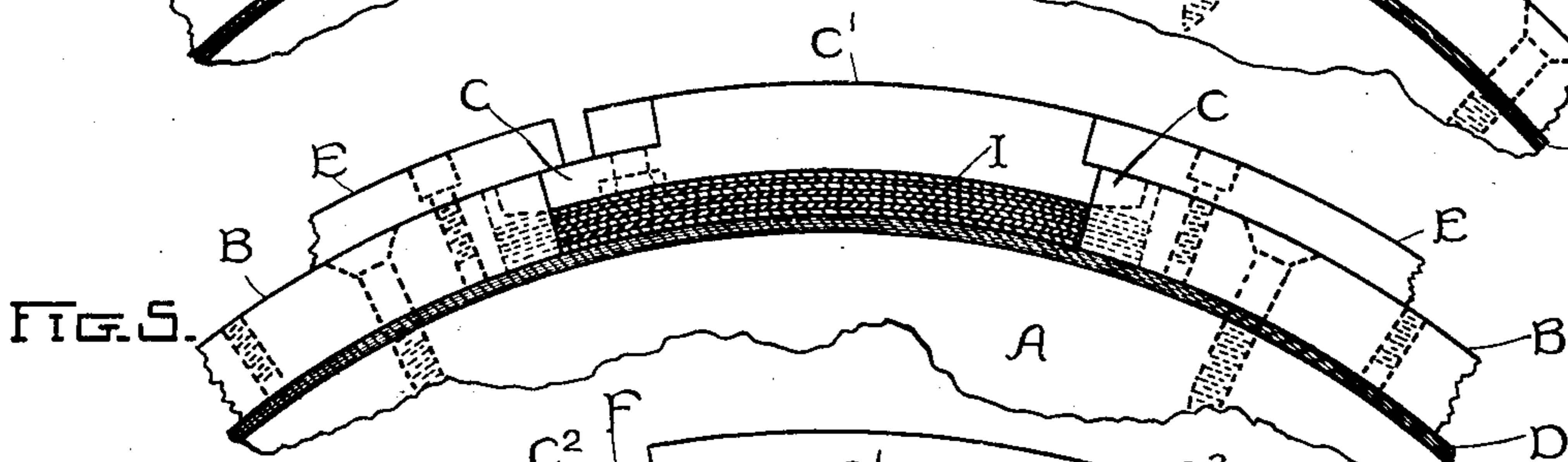
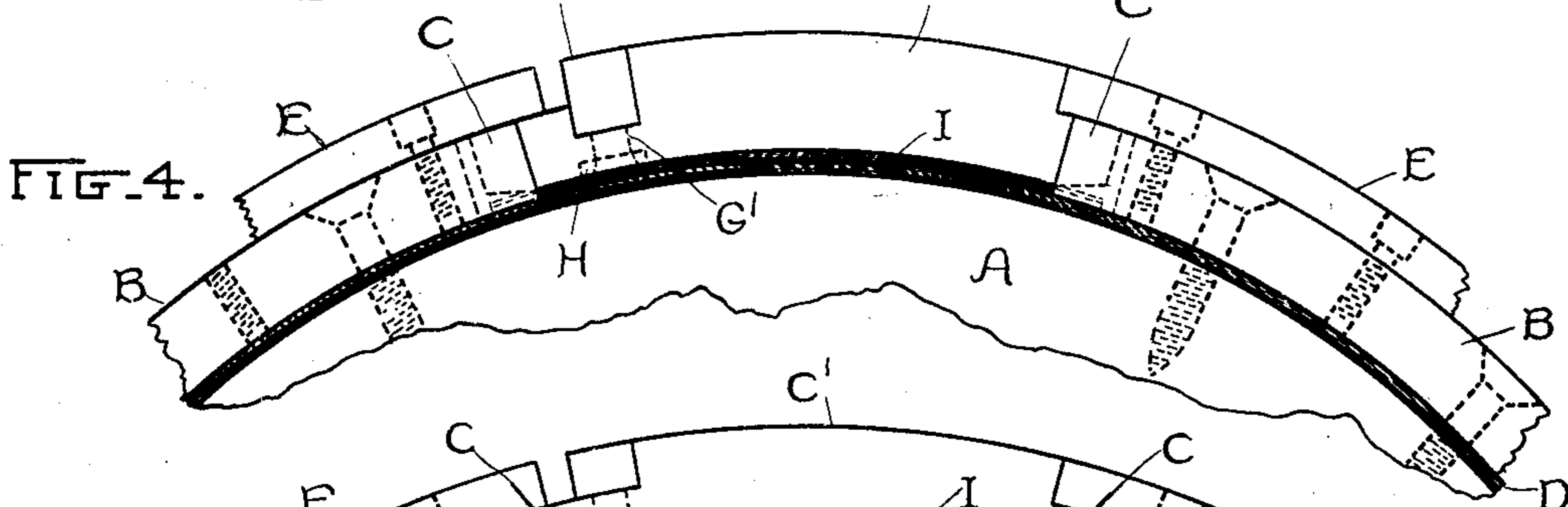
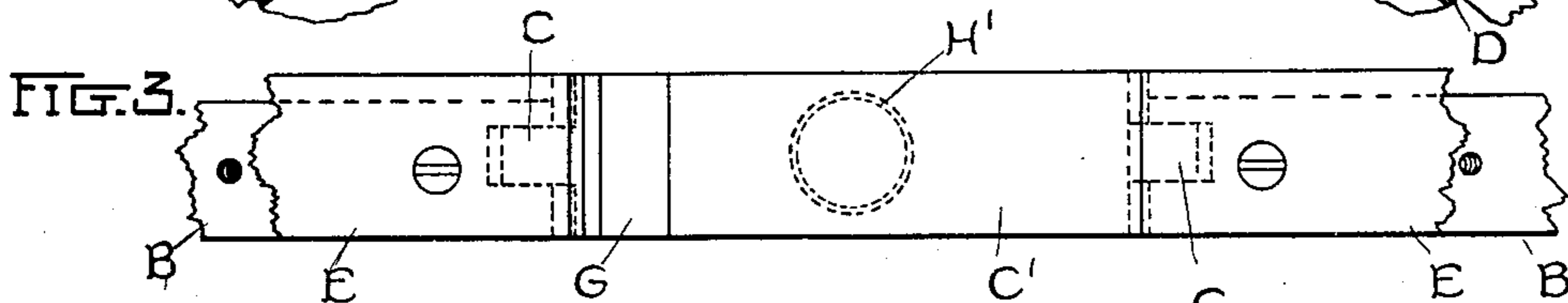
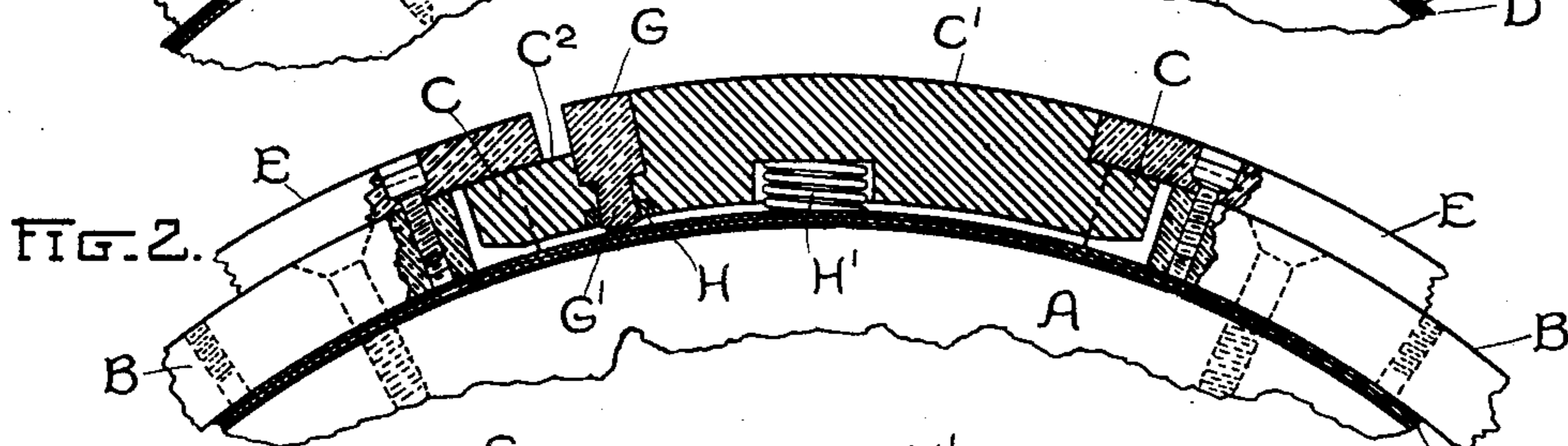
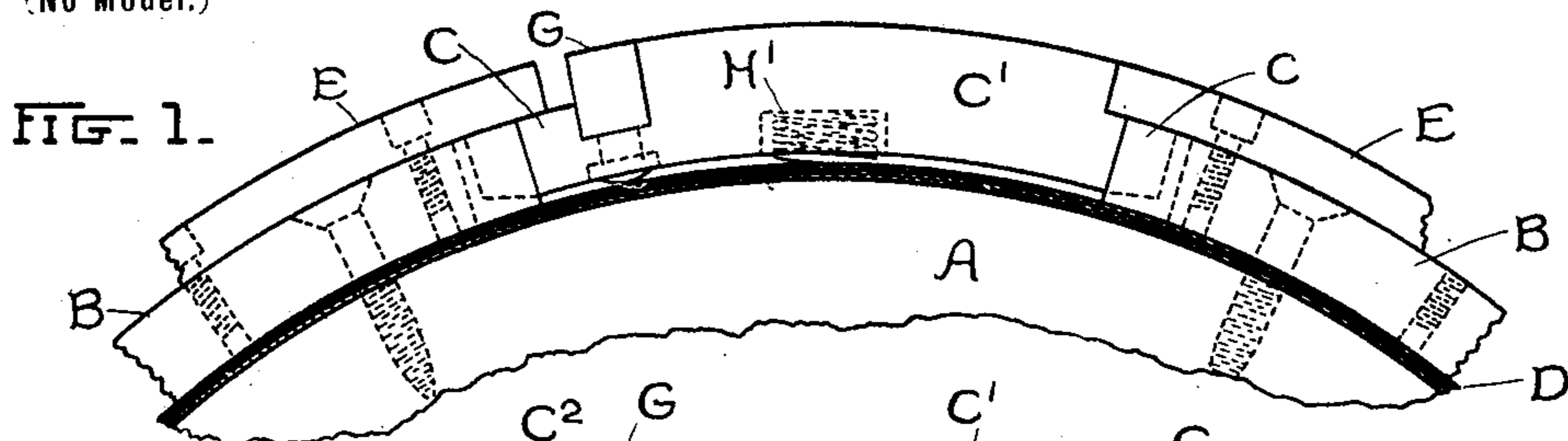
No. 657,804.

Patented Sept. 11, 1900.

A. R. WESTERDAHL.
TIP FOR COMMUTATOR SEGMENTS.

(Application filed May 31, 1900.)

(No Model.)



WITNESSES.

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UNITED STATES PATENT OFFICE.

ANTON R. WESTERDAHL, OF NEW YORK, N. Y., ASSIGNOR TO THE GENERAL ELECTRIC COMPANY, OF NEW YORK.

TIP FOR COMMUTATOR-SEGMENTS.

SPECIFICATION forming part of Letters Patent No. 657,804, dated September 11, 1900.

Application filed May 31, 1900. Serial No. 18,518. (No model.)

To all whom it may concern:

Be it known that I, ANTON R. WESTERDAHL, a citizen of the United States, residing at New York, (Brooklyn,) county of Kings, State of New York, have invented certain new and useful Improvements in Tips for Commutator-Segments, (Case No. 1,706,) of which the following is a specification.

Arc-generators of the Brush type are provided with commutators composed of metal and also of wood or fiber segments. The wood or fiber segments are provided with metal tips or corners which are gradually worn away by the friction of the brushes and are also destroyed to a certain extent by arcing. These tips or corners are a source of more or less annoyance, owing to the fact that they are very difficult to secure in place. This difficulty is not so pronounced when the commutator-blocks are new; but as they wear away the stock becomes thinner and the rivets get loose, permitting the tip to fly outward by centrifugal action or to get wedged in between certain parts of the generator and cause damage thereto. The insulating "segments" or "blocks," as they are usually called, are provided with two tongues, which are somewhat narrower than the main body. These tongues fit in under the adjacent metal segments and hold the block in place. Heretofore the tips have been secured to the block by two rivets located on opposite sides of the tongue and very close to the shoulders formed at the point where the tongue projects from the block. On the under side of the block is a slot which still further decreases the already limited cross-section at that point, and mounted therein is a flat metal piece which forms a seat for the rivets that extends through the tip and segment and clamps the two together.

My invention has for its object to improve the construction of the block, so that it is more reliable, and, further, to prolong the life of the blocks by changing the means of attaching the tip to the block, so as to get greater depth of wearing stock.

In the accompanying drawings, which show an embodiment of my invention, Figure 1 is a side elevation of a portion of a commutator for a Brush generator. Fig. 2 is a longitu-

nal section of an insulating-block with certain of the other parts in elevation. Fig. 3 is a plan view of the structure shown in Figs. 1 and 2. Fig. 4 is a side elevation of the block, showing shims for supporting it in place instead of a spring, as in Fig. 1. Fig. 5 is a side elevation of the block, showing it in a very much worn condition. Figs. 6 and 7 are respectively a side elevation and plan view of the block without the metal tip.

Owing to the great number of Brush machines now installed that require new blocks from time to time it is necessary to use blocks of standard size and shape. Therefore the question of arranging and securing the parts becomes an important one.

In the drawings, A represents a standard base or support of insulating material for a certain size machine, and secured thereto by screws are curved pieces of metal B. These pieces are slotted at the ends to receive the tongues C of the insulating-blocks C', and between them and the support are layers of insulating material D. Secured to the metal blocks by ordinary machine-screws are removable conducting-strips E, with which the brushes make contact. These strips extend over the tongues C of the insulating-blocks and serve to hold them in place. The peripheral face of the strips and blocks coincide, so that the brush will pass smoothly from one to the other. The blocks C' may be made of wood—such as lignum-vitæ, fiber, or other similar insulating material—the ends of which are provided with tongues C. The shoulders formed by the projecting tongues engage with the metal pieces B and hold the block against circumferential movement. The left-hand end of the block is slotted transversely at F to receive the metal tip G, whereas with the old construction the entire end was made flush with the surface C². This permits of using with a given block a tip which is materially deeper, thereby adding to the life of the segment.

The tip G is made of one piece of metal in the form of an oblong block and may either be cut from solid stock or drop-forged, as desired. Formed on the under side and integral with the tip is a single pin G', of circu-

lar cross-section. This pin is the means employed for securing the tip in place and takes the place of the two detachable rivets formerly employed. Surrounding the end of
 5 the pin is a small washer H, which is countersunk into the segment, and the end of the pin is enlarged or riveted over the washer to hold the tip in place. The pin is located in
 10 the center of the tip and in line with the tongue C, so that the stock at the end of the insulating-block is not decreased opposite the shoulders, as was the case with the old construction where two detachable rivets, one on
 15 each side of the tongue, were employed. Lignum-vitæ is brittle, and when the holes are placed in line with the shouldered portion of the block, as in the old construction, the wood is very apt to crack, especially when
 20 the riveting is being done, and the loss from this is considerable.

The insulating-blocks may be pressed outward against the conducting-strips E by using a coiled compression-spring H' or they may be backed up by thin shims of insulating material I, as in Fig. 4. The spring will permit a slight rocking movement of the block unless the spring is very stiff, whereas the shims hold the block firmly in place at all times.

30 As the block C' wears off it is adjusted by cutting off the surfaces C² and C³ of the tongue until the wearing-surface of the block is slightly above the strips E, after which it is turned down flush by any suitable means.
 35 If the block is smooth, it may be adjusted until it is flush and not turned.

Fig. 5 represents a block which has been much worn, and the surfaces C² and C³ have been cut away to a considerable extent, the
 40 surface C² being flush with the bottom of the tip G.

In Figs. 6 and 7 the location of the hole for the pin G' is clearly shown, and the advantage

of placing it in line with the tongue C is apparent.

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

1. As an article of manufacture, a commutator-segment composed of insulating material, with a metal tip secured thereto, comprising a rectangular block with a pin formed on the under side and integral therewith, which pin is employed for clamping the tip in place.

2. As an article of manufacture, a commutator-segment made of insulating material, and provided with a tongue for securing it in place and a metal tip composed of a rectangular block having a downwardly-extending pin formed integral therewith, which pin passes through a hole located in line with the tongue and is riveted over to hold the tip in place.

3. As an article of manufacture, a commutator-segment composed of lignum-vitæ, and provided with a tongue and slot, a metal tip located in the slot, and a pin which is formed integral with the tip and passes through the segment, and is riveted over a washer countersunk on the under side of the segment.

4. As an article of manufacture, a commutator-segment comprising an insulating portion and a metal tip, the latter being made of a solid rectangular body of metal, G, having a single pin G', of circular cross-section formed integral therewith and located midway between the ends, which pin forms a rivet for securing the tip to the insulating portion.

In witness whereof I have hereunto set my hand this 17th day of May, 1900.

ANTON R. WESTERDAHL. [L. S.]

Witnesses:

FREDERICK W. MORRIS,
 BENJAMIN B. HULL.