

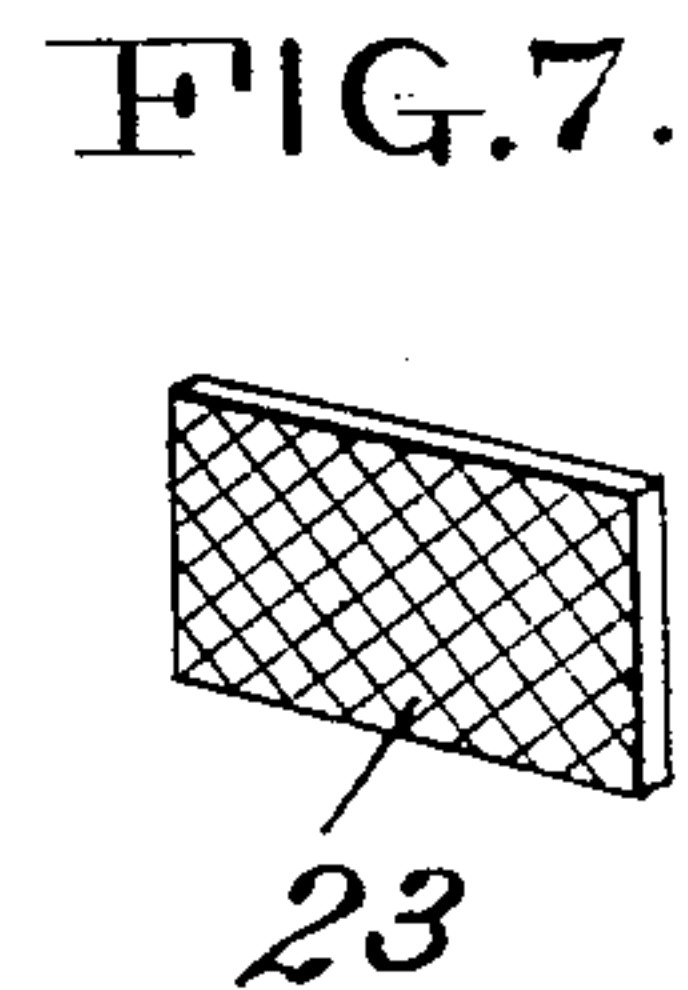
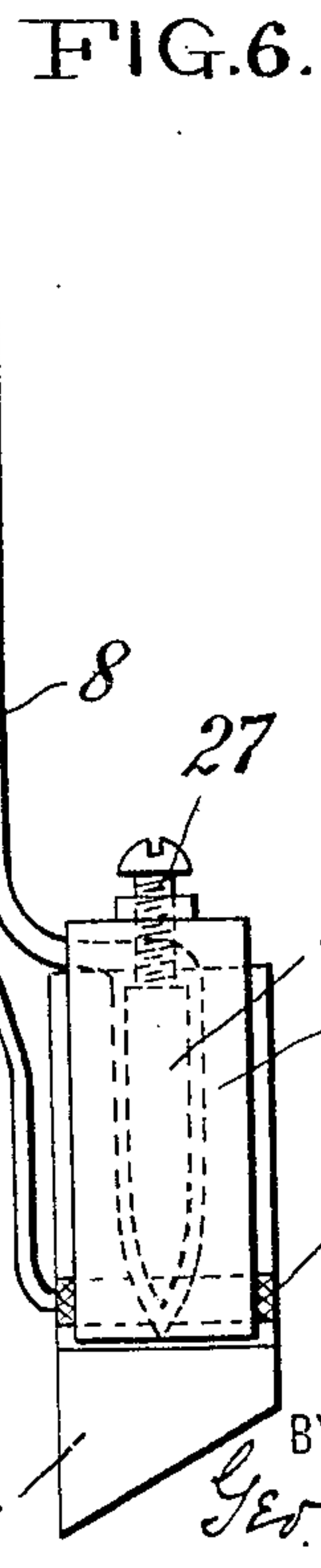
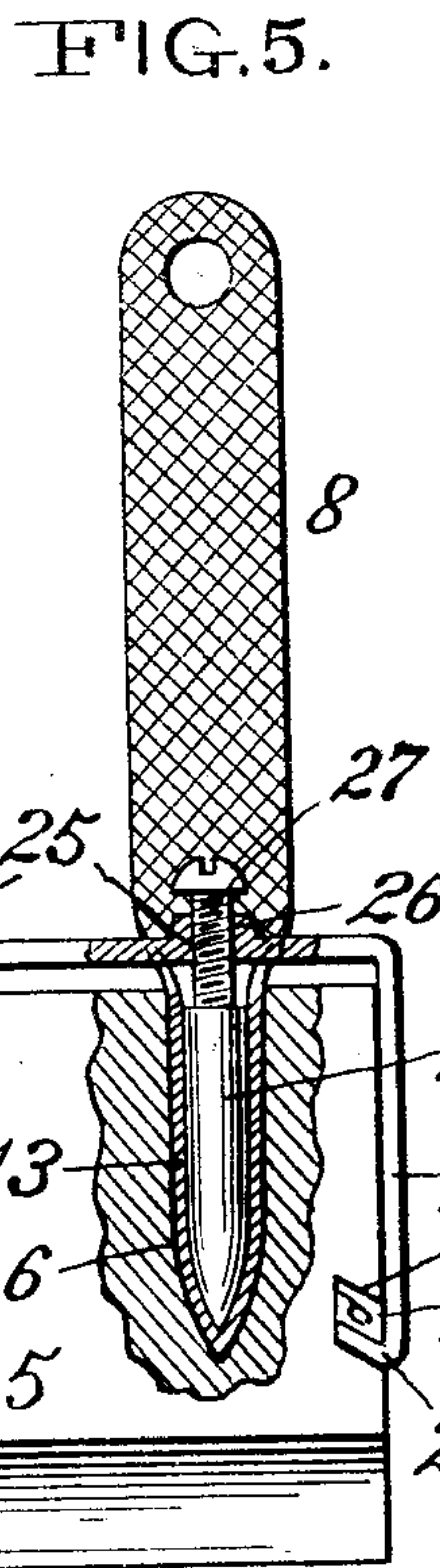
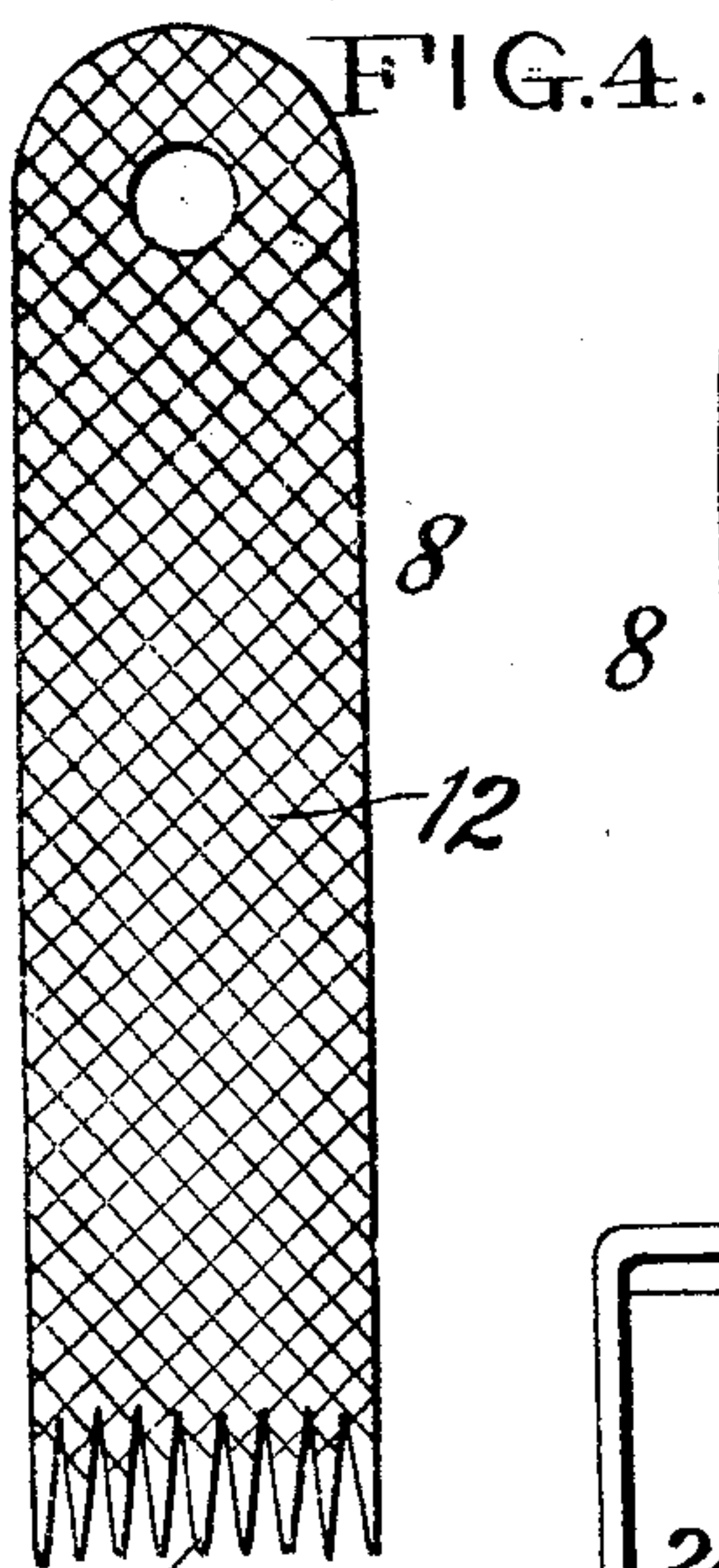
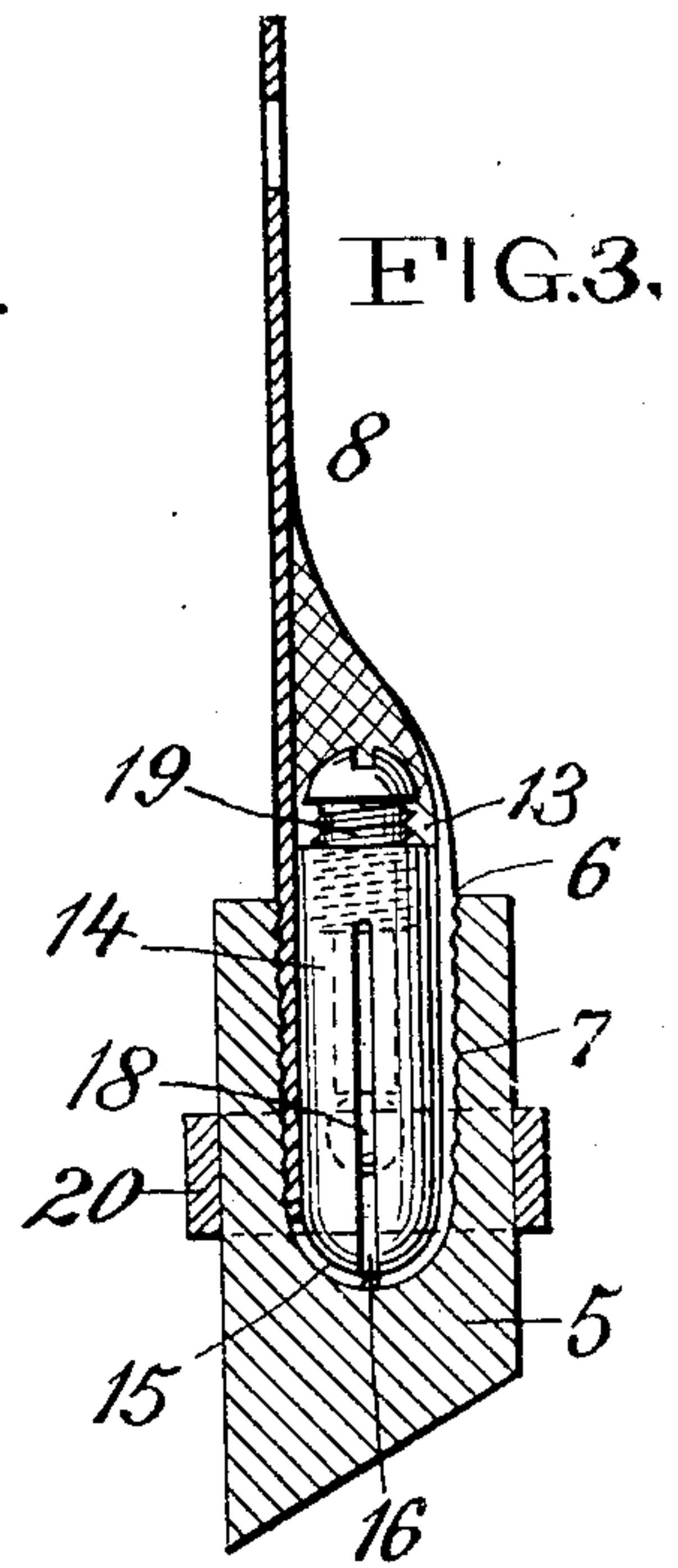
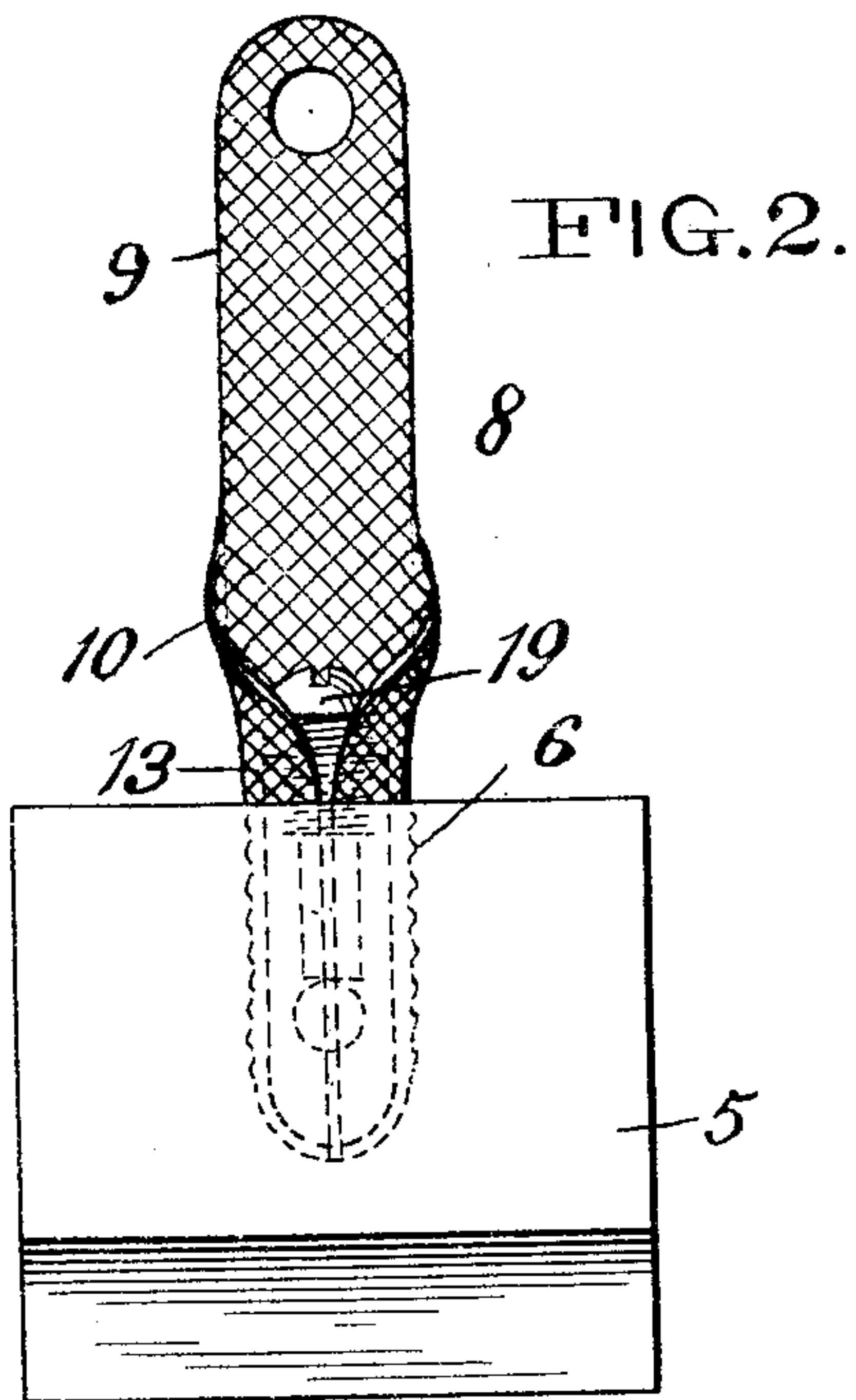
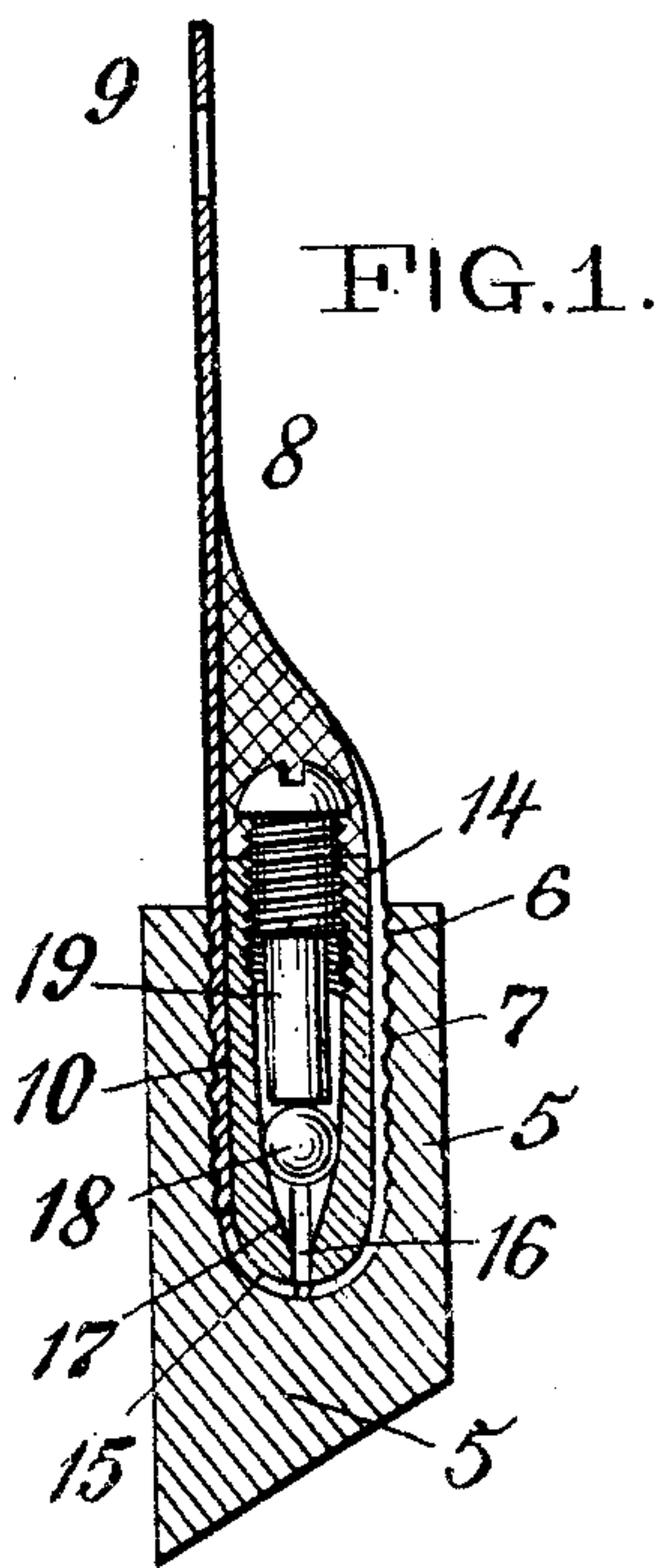
No. 798,279.

PATENTED AUG. 29, 1905.

J. H. HALLBERG.

BRUSH OR COLLECTOR FOR DYNAMO ELECTRIC MACHINERY.

APPLICATION FILED FEB. 15, 1904.



WITNESSES:
J. E. Pearson
Frank O'Connor

INVENTOR
J. H. Hallberg
BY
Geo. W. Benjamin
ATTORNEY

UNITED STATES PATENT OFFICE.

JOSEF HENRIK HALLBERG, OF CINCINNATI, OHIO.

BRUSH OR COLLECTOR FOR DYNAMO-ELECTRIC MACHINERY.

No. 798,279.

Specification of Letters Patent.

Patented Aug. 29, 1905.

Application filed February 15, 1904. Serial No. 193,507.

To all whom it may concern:

Be it known that I, JOSEF HENRIK HALLBERG, a citizen of the United States, residing at Clifton, Cincinnati, county of Hamilton, State of Ohio, have invented certain new and useful Improvements in Brushes or Collectors for Dynamo-Electric Machinery, of which the following is a specification.

My invention relates to the means employed for establishing and maintaining good electrical connection between a block or plate, which forms a brush or collector, and a circuit-terminal. The successful operation and efficiency of a dynamo-electro generator or motor, especially those of large capacity, depends to a great extent upon the character and resistance of the contact maintained between the brush or collector and the circuit-terminal. In practice I have found that with the means now employed for establishing such electrical connection a loss of current of fully five per cent. occurs, which loss is gradually increased if such brushes or collectors are maintained in use for any considerable length of time.

The object of my invention, therefore, is to provide means to originally make a good electrical connection between a brush or collector and a circuit-terminal and of a character which will interpose practically no resistance in the circuit and which connection will be maintained irrespective of any rough service to which the brush or collector may be subjected—as, for instance, when used upon a motor or any other position where it is subjected to vibration or shocks.

The accompanying drawings will serve to illustrate my invention, and in which—

Figure 1 is a vertical section with the pressure-screw and ball in elevation. Fig. 2 is a front view. Fig. 3 is a vertical section through a terminal, collecting member, and supporting-ring with the other parts in elevation. Fig. 4 is a detached elevation of a terminal before being inserted into a collecting member. Fig. 5 is a front view of a modification. Fig. 6 is an end view of the modification shown in Fig. 5. Fig. 7 is a detached view in perspective of one of the resisting-plates shown in Fig. 5.

In the drawings, 5 indicates a collecting member, which may be made of carbon or other suitable collecting material and of any desired shape. Located in any suitable position in the collecting member is a cavity 6, which may be given any suitable shape, pref-

erably cylindrical and cone-shaped at its lower end and carried through the major portion of the collecting member. The exposed surface of this cavity I prefer to roughen, as indicated at 7, Fig. 1, and further to cover with a deposit of a conducting material, such as copper.

8 indicates a circuit-terminal formed of a good conducting material and which may be rigid or flexible, preferably flexible. The shape of such terminal is immaterial. Preferably, however, it is given the shape shown in Fig. 4—that is, with parallel sides and of the same width at top and bottom. It may, however, be given the shape shown at Fig. 2—that is, the top portion 9 narrower than the bottom portion 10. The bottom of the terminal I prefer to cut away to form a series of V-shaped projections 11. I also prefer to give the terminal a roughened surface, as indicated at 12. The object of making the lower edge of the bottom portion 10 with V-shaped projections is to provide means whereby such bottom portion may be bent to take the shape of the bottom of the cavity 6 in the collecting member 5, as indicated in Fig. 2.

The bottom portion 10 of the terminal 8 before it is inserted in the cavity 6 of the collecting member 5 is turned upon itself to form a cylindrical body 13, which in exterior diameter is substantially the same as the diameter of such cavity.

Situated within the cylindrical body 13 of the terminal 8, Figs. 1, 2, and 3, is a tubular body 14, the bottom 15 of which is closed and rounded. This tubular body is interiorly threaded at the top and divided at the bottom by one or more longitudinal parallel slots 16, extending upward. The interior of the tubular body is cone-shaped, with the apex 17 of the cone at the bottom of the tube. Located within the tubular body and bearing upon the sides of its cone-shaped interior is a ball 18, and arranged over this ball is a bolt provided with a screw-thread at its upper end, which takes in a thread situated in the upper part of the tubular body 14 and having an extension at its lower end, which bears upon the top of the ball. By screwing the bolt 19 downward pressure is made through the ball upon the sides of the tube at the bottom, which forces the sides of the tube outward into contact with the bottom portion 10 of the terminal 8 and at the same time the outer surface of such bottom portion 10 into contact with the inner surface of

the cavity 6 in the collecting member 5, thus insuring a good, permanent, and separable connection between the outer surface of the terminal 8 and the surface of the cavity 6 in the collecting member 5. To resist the outward pressure exerted by the sides of the slotted tube 14, a strap of metal 20 may be placed around the exterior of the collecting member 5, if desired.

In the construction shown in Figs. 5 and 6 the slotted tube is omitted and in place of it there is used a metal strap 21, which surrounds the upper portion of the collecting member 5 and has its ends 22 turned inward and upward and situated in contact with metal plates 23, Fig. 7, located in cavities 24, formed in the opposite sides of the collecting member 5. These plates 23 serve a double purpose: first, to form a hard resisting seat for the upward pressure exerted by the ends 22 of the strap 21, and, second, to form an extended collecting-surface for a supplemental terminal, as will be described. The top of the strap 21 has formed in it an opening 25, (two of such openings are shown in Fig. 5,) screw-threaded at 26 on its interior. Located within such opening 25 is a screw 27, the lower end of which is situated in a threaded opening in the top of a tapered bolt 28. This tapered bolt is situated in the cylindrical portion 13, formed in the bottom of the terminal 8. By adjusting the screw 27 downward the tapered bolt is forced downward and making pressure upon the cylindrical portion of the terminal 8 expands such cylindrical portion and forces it into contact with the surface of the cavity 6 in the collecting member 5.

In Fig. 6 I have shown a second terminal 29, connected at its lower end to the plates 23, the object of which arrangement is to increase the conducting capacity at the terminals and decrease the resistance due to the mass of the collecting member.

It will be observed that the ends of the terminal member or members 8 are carried very near to the collecting-surface of the collecting member and, further, that owing to the shape given to the lower end of the terminal member an extended conducting-surface is presented to the body of the collecting member. The effect of the construction described is not only to insure a good electrical connection, which may be maintained, but to materially reduce the resistance of the collecting member, and, further, the respective members may be quickly separated for inspection, repair, or the substitution of a new terminal or collecting member.

The two means described for effecting and maintaining good electrical connection between the collector-block and the terminal or terminals are those I prefer to use; but it will be obvious to any mechanic that other devices which serve to effect good connection

by forcing the respective members in contact may be substituted.

Having thus described my invention, I claim—

1. A brush or collector for dynamo-electric machinery, comprising a collecting member having a cavity therein, a flexible terminal member having one end situated in the cavity, and means within the cavity for forcing said members into an intimate and extended contact.

2. A brush or collector for dynamo-electric machinery, comprising a collecting member having a cavity therein, a flexible terminal member having one end situated in the cavity, and adjustable means within the cavity for forcing said members into an intimate and extended contact.

3. A brush or collector for dynamo-electric machinery, comprising a collecting member having a centrally and vertically disposed cavity therein, a flexible terminal member having one end situated in said cavity, and means within the cavity for forcing said members into an intimate and extended contact.

4. A brush or collector for dynamo-electric machinery, comprising a collecting member having a cylindrical vertically-disposed cavity therein, a flexible terminal member having one end situated in said cavity and shaped to conform to the sides of the cavity, and means situated within the cavity for forcing said members into an intimate and extended contact.

5. A brush or collector for dynamo-electric machinery, comprising a collecting member having a cavity therein, a terminal member having one end turned to conform to the shape of said cavity, and means for forcing said members into intimate contact.

6. A brush or collector for dynamo-electric machinery, comprising a collecting member having a cavity therein, open at its upper end only, a terminal member having one end situated in said cavity, and a device also situated in said cavity for forcing the collecting and terminal members into intimate contact.

7. A brush or collector for dynamo-electric machinery, comprising a collecting member having a cavity therein, a terminal member having one end situated in said cavity, a slotted tube situated in said cavity, and means for expanding said tube at the bottom, whereby said collecting and terminal members are forced into intimate contact.

8. A brush or collector for dynamo-electric machinery, comprising a collecting member having a cavity therein, a terminal member having one end situated in said cavity, a pressure member situated in said cavity, said pressure member comprising a slotted tube, cone-shaped on its interior, a ball located in said interior, and an adjustable screw situated over said ball.

9. A brush or collector for dynamo-electric machinery, comprising a collecting member having a cavity therein, a terminal member having one end in said cavity, a supporting-strap surrounding the collecting member, and means for forcing the terminal member into intimate contact with the collecting member.

10. A brush or collector for dynamo-electric machinery, comprising a collecting member, a terminal member, means for forcing the terminal member in contact with the collecting member, a collecting-strap surrounding the collecting member, and a supplemental terminal member connected to said collecting-strap.

11. A brush or collector for dynamo-electric machinery, comprising a collecting member having a cavity therein, a flexible terminal member having one end situated within said cavity and shaped to conform to said cavity, and means situated within the shaped end of the terminal member for establishing an extended mechanical pressure connection between said members.

12. A brush or collector for dynamo-electric machinery, comprising a collecting member having a cavity therein, a flexible terminal member having its lower portion shaped to conform to the interior of the cavity, and means for forcing said shaped portion of the terminal member into intimate contact with the surface of the cavity in the collecting member.

13. A brush or collector for dynamo-electric machinery, comprising a collecting mem-

ber having a cavity therein, of considerable surface area as compared with the vertical height of the collector, a flexible terminal member having its lower portion shaped to conform to the shape of such cavity, and means for forcing the coacting surfaces of the two members into intimate contact.

14. A brush or collector for dynamo-electric machinery, comprising a collector-block having a cavity therein which extends through the major portion of the block, a flexible terminal having its lower end inserted in said cavity and conforming in shape and dimensions thereto, together with means for forcing said portion of the terminal into intimate contact with the body of the collector-block.

15. A brush or collector for dynamo-electric machinery, comprising a collector-block having a cavity therein, a flexible terminal having its lower portion situated in said cavity and conforming in shape and dimensions thereto, and metallic means for forcing said members into intimate contact.

16. A brush or collector for dynamo-electric machinery, comprising a collector-block having a cavity therein, a flexible terminal, and means for forcing the lower end of said terminal into intimate contact with the interior surface of said cavity and near to the collecting-surface of said block.

In testimony whereof I affix my signature in the presence of two witnesses.

JOSEF HENRIK HALLBERG.

Witnesses:

JOHN BROWN,
H. K. PRUDDEN.