

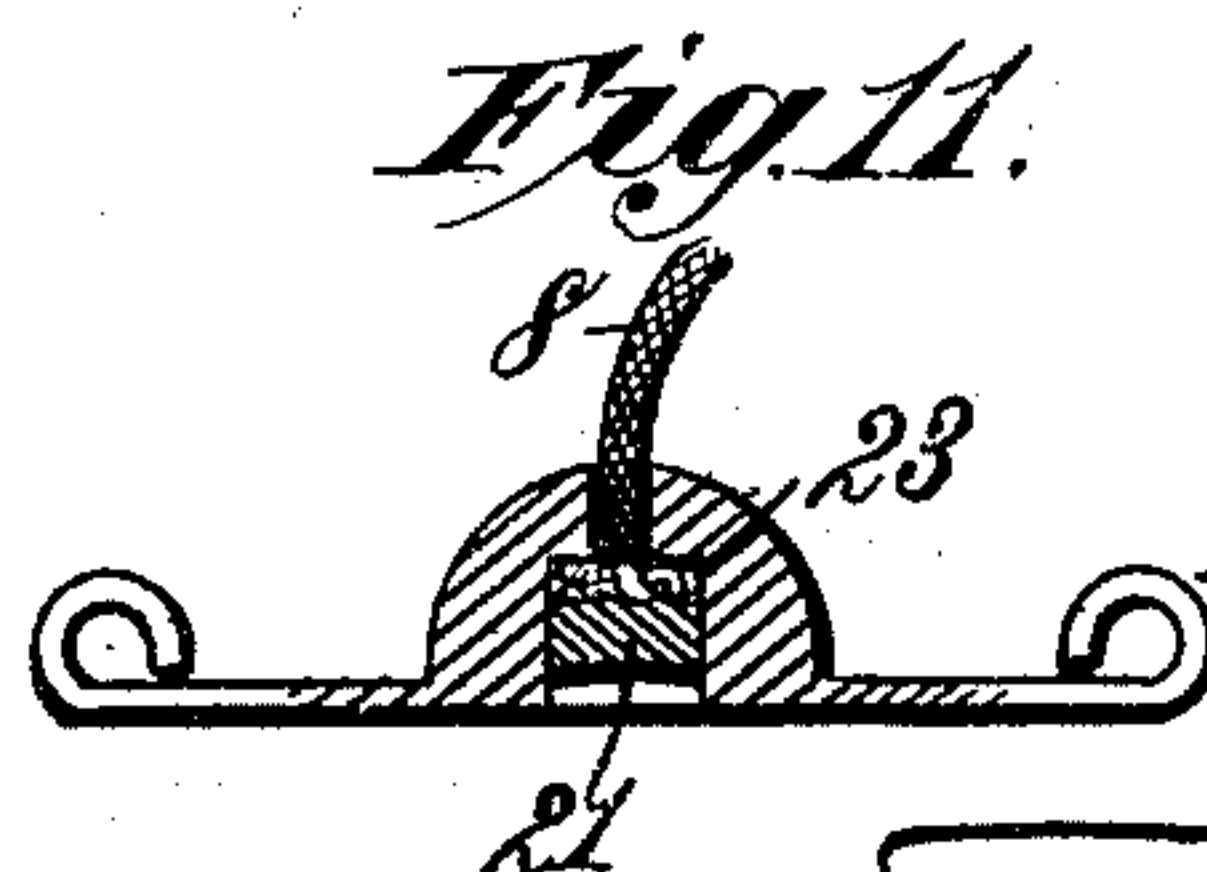
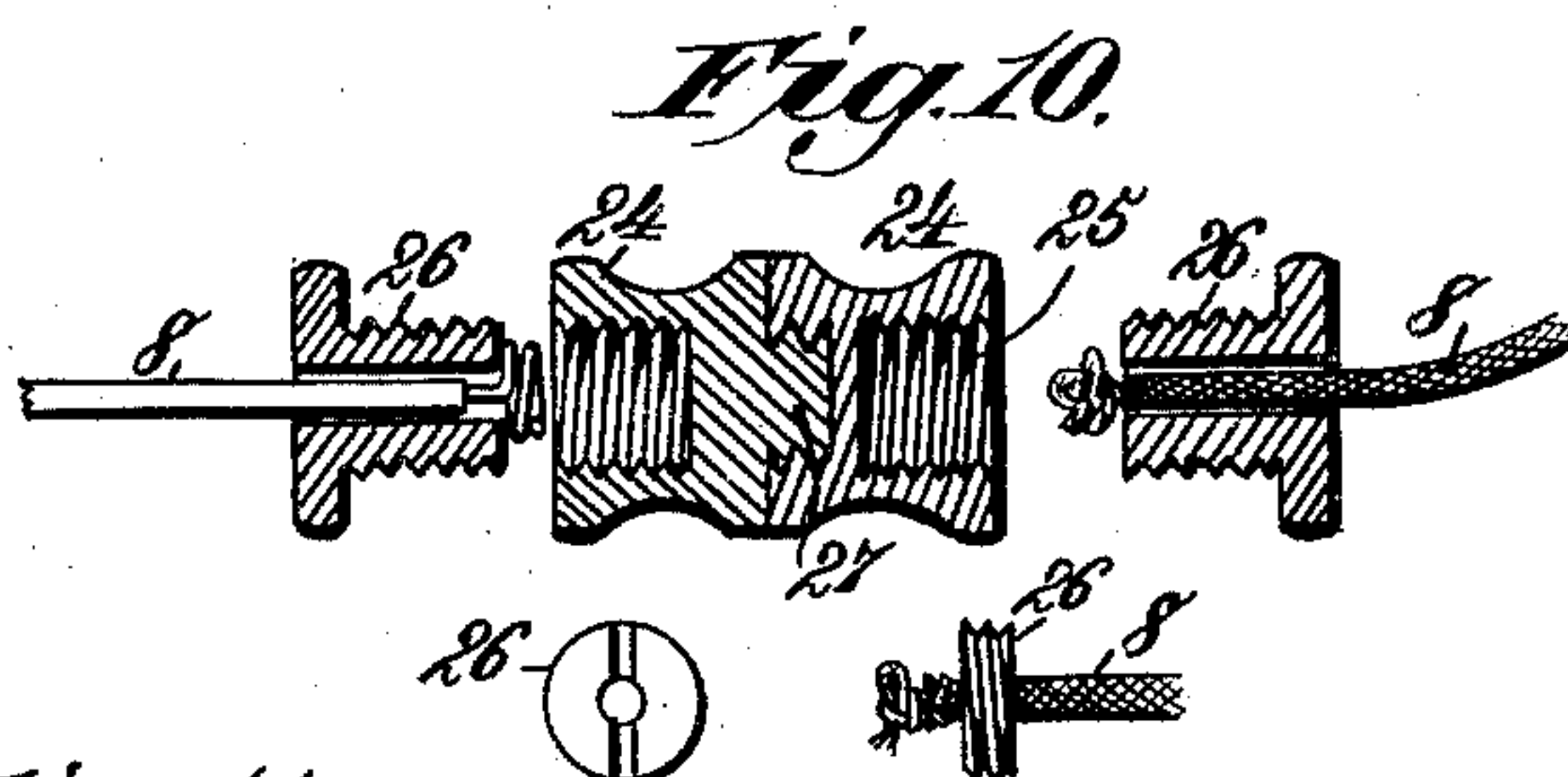
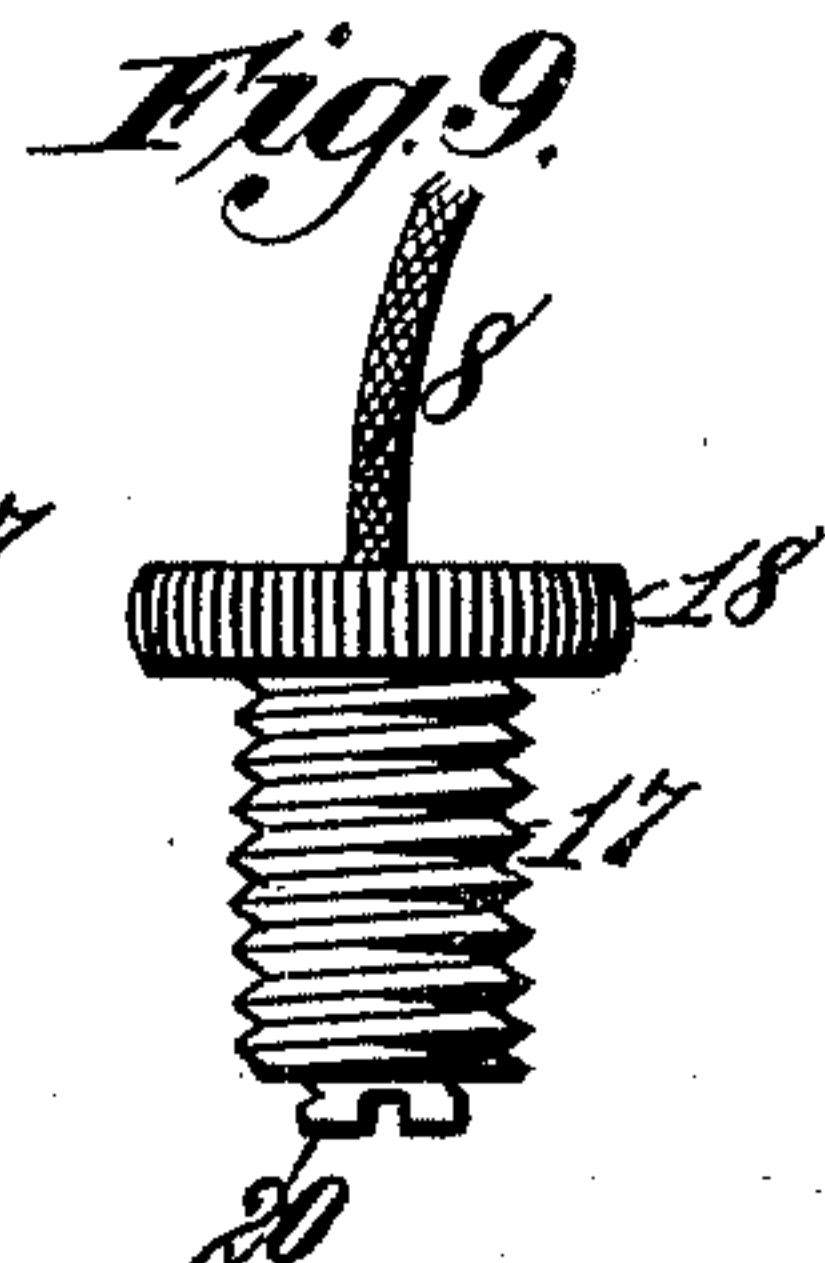
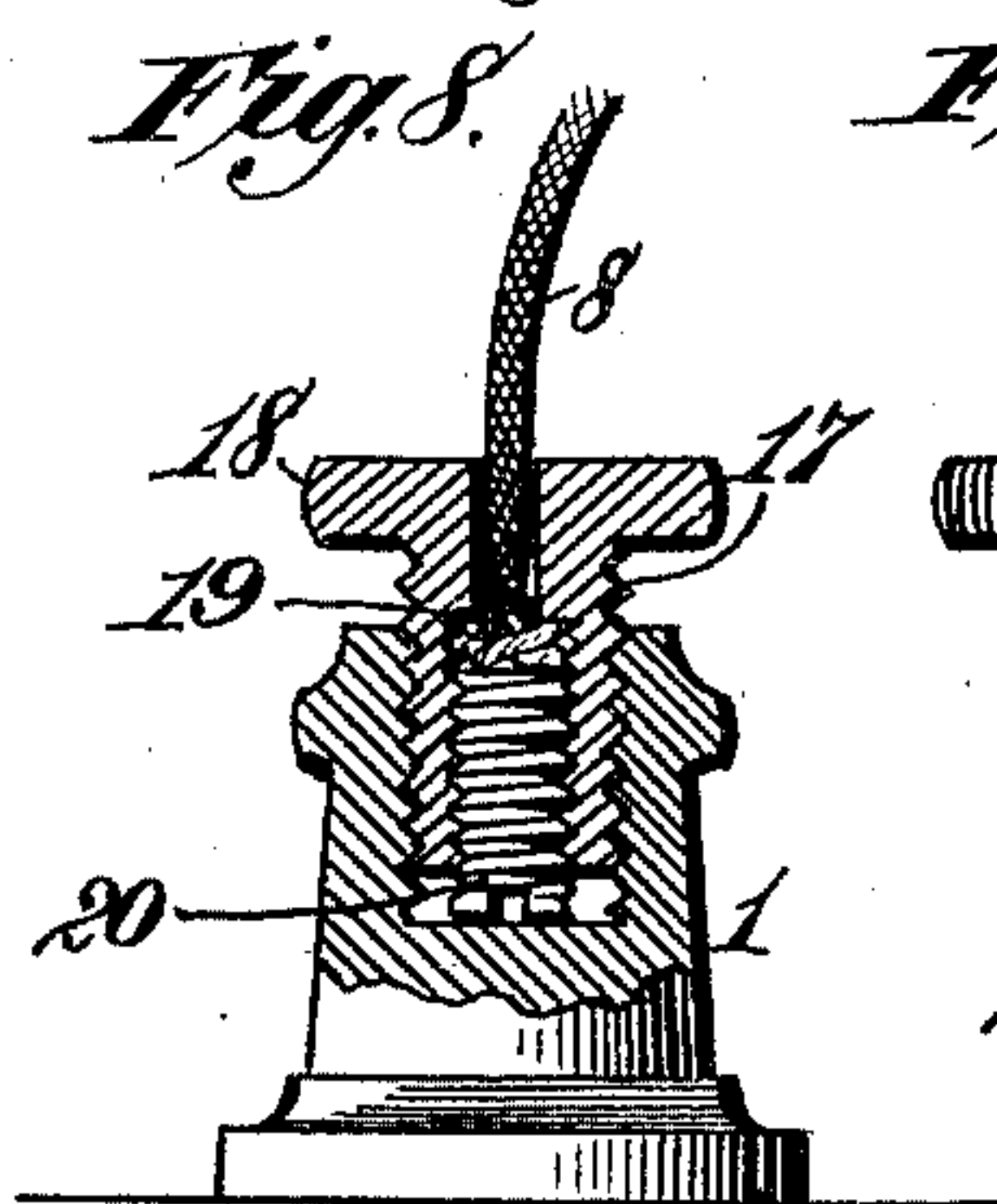
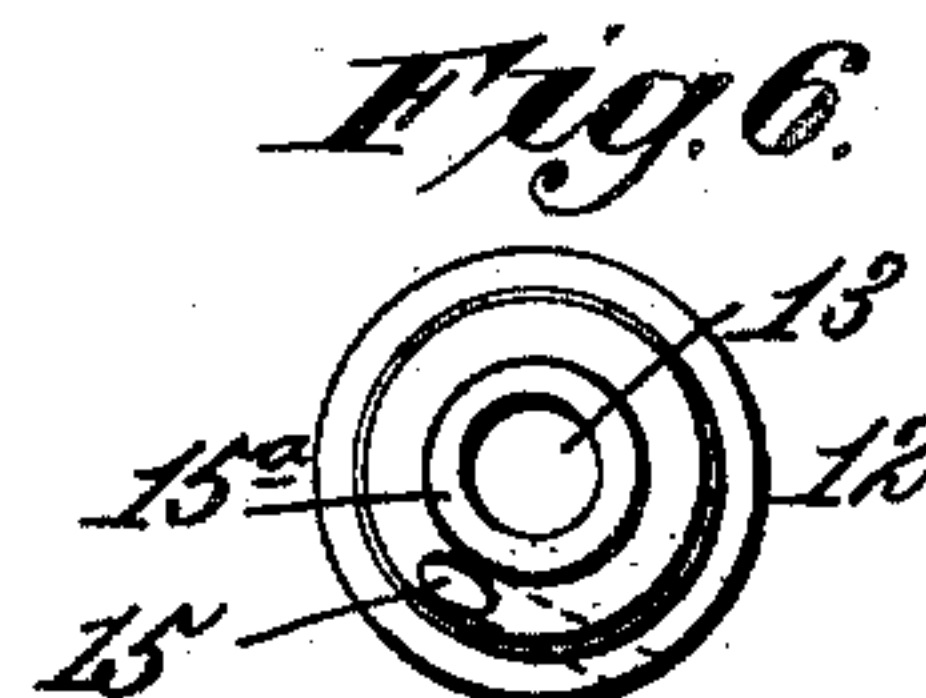
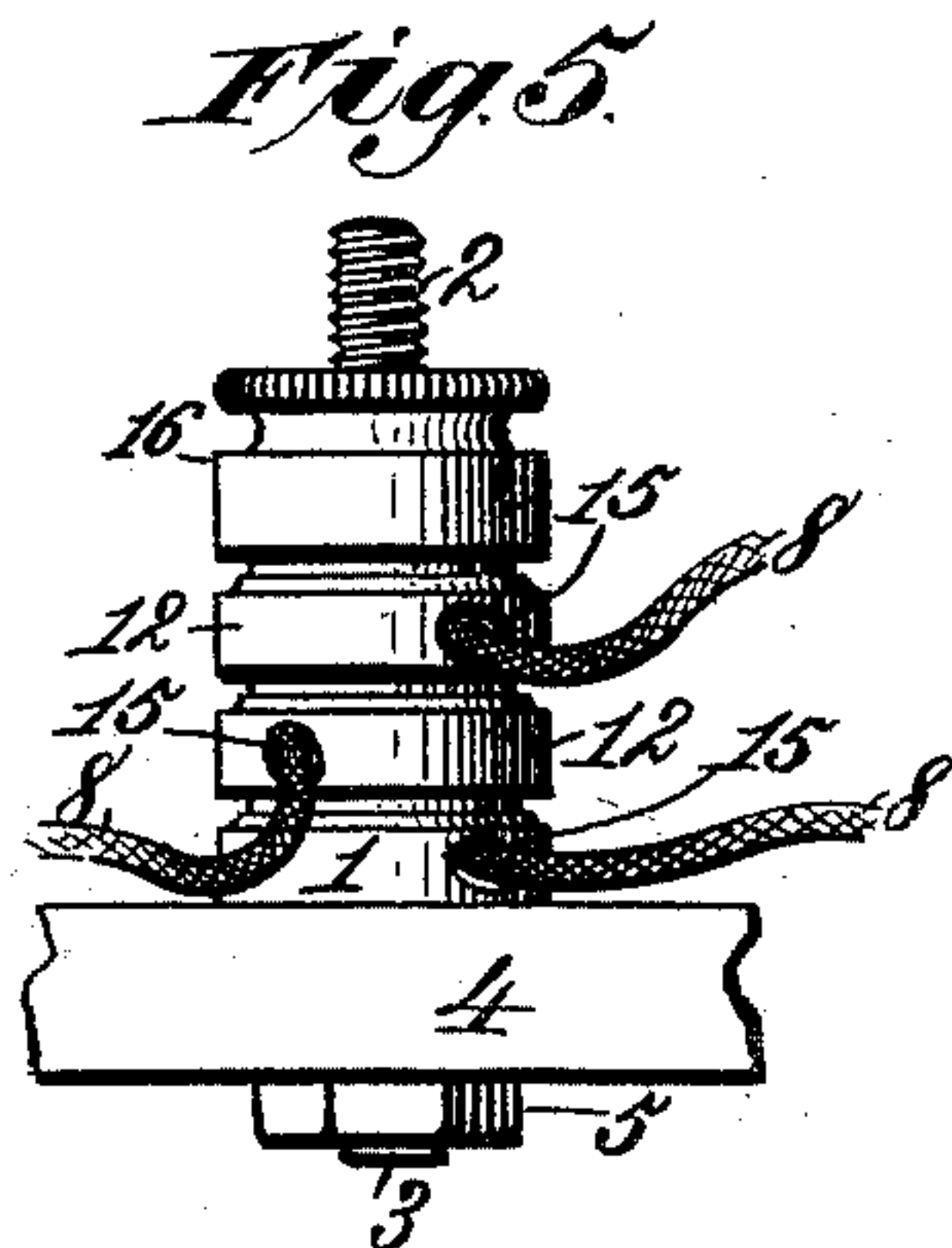
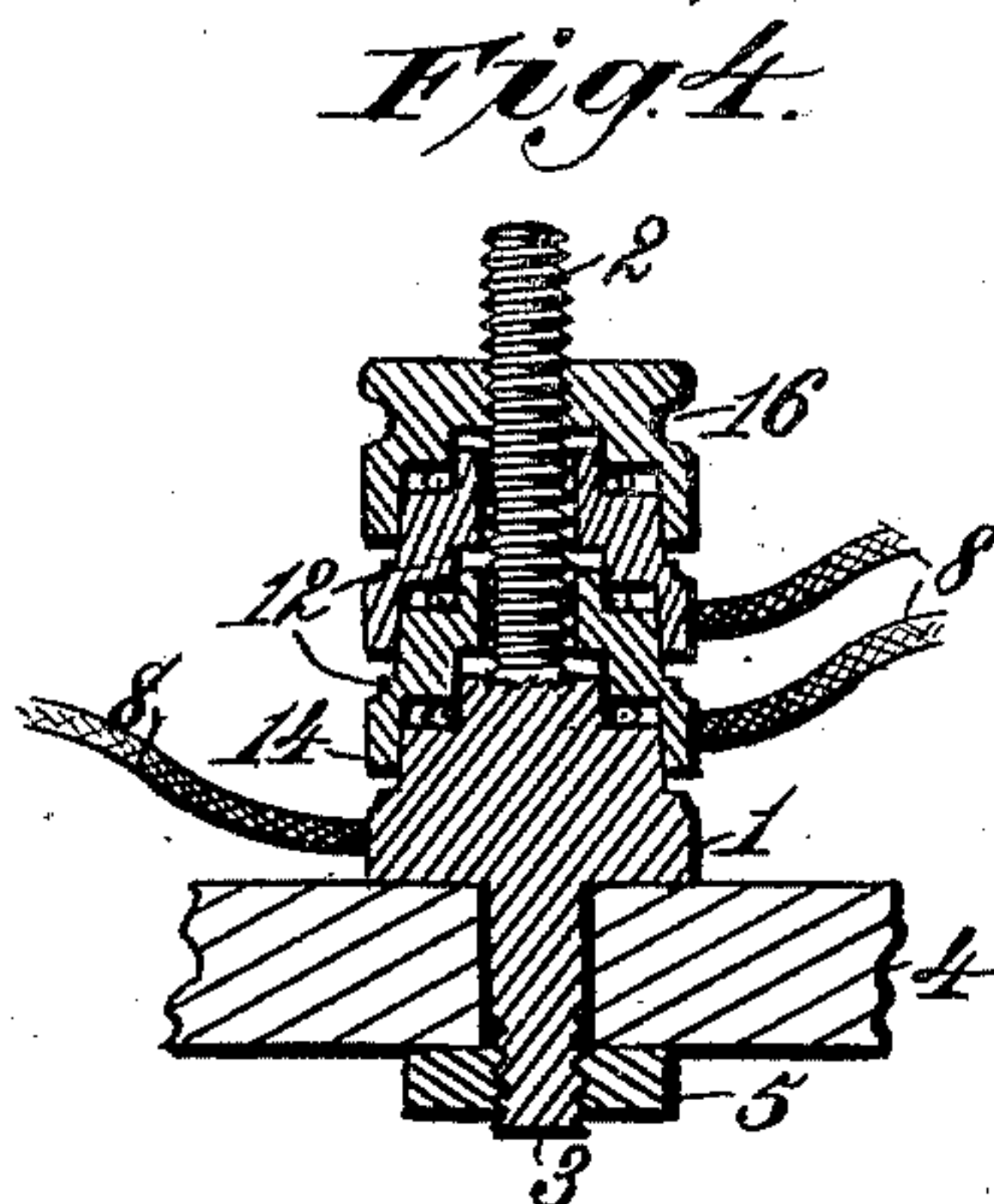
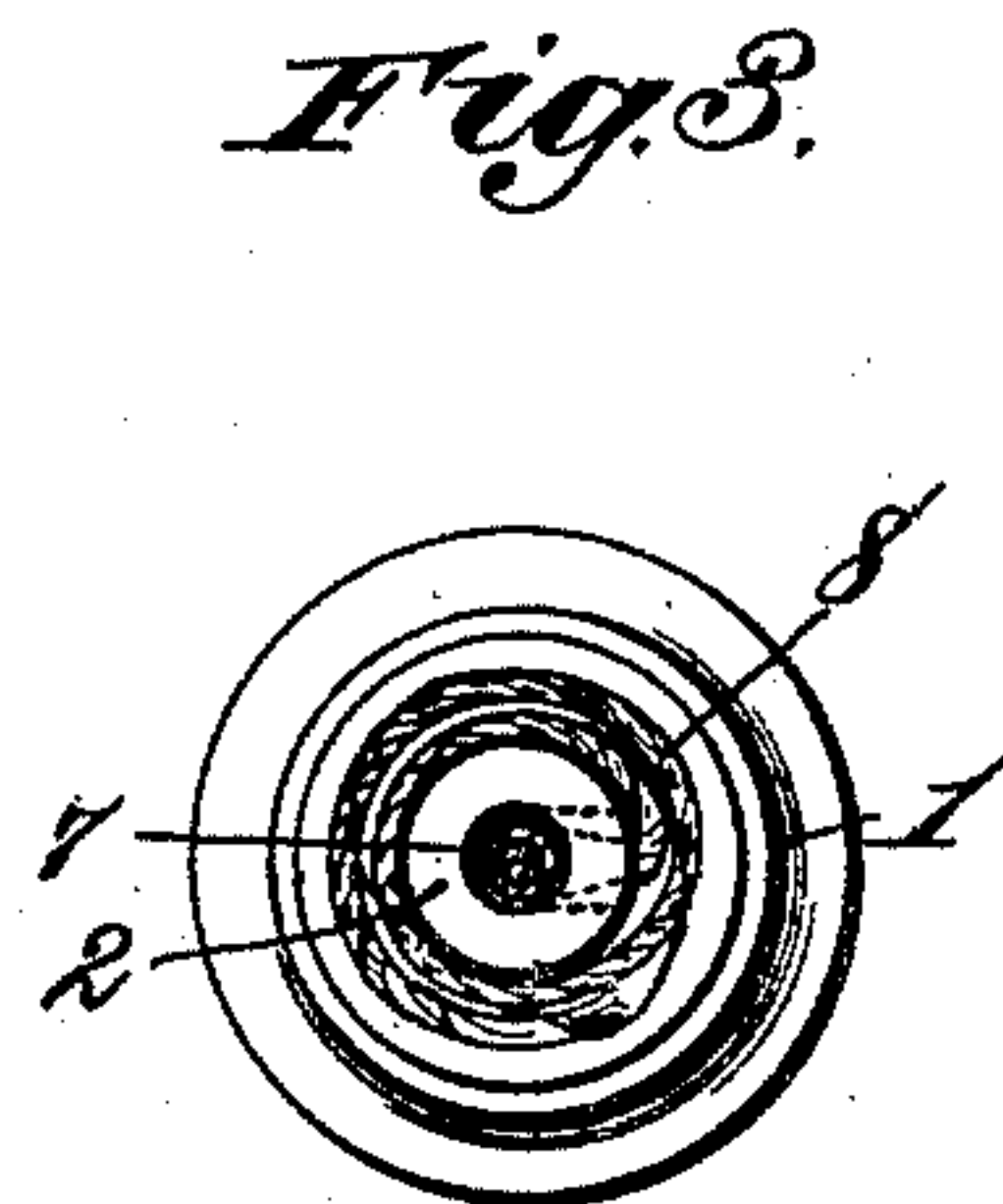
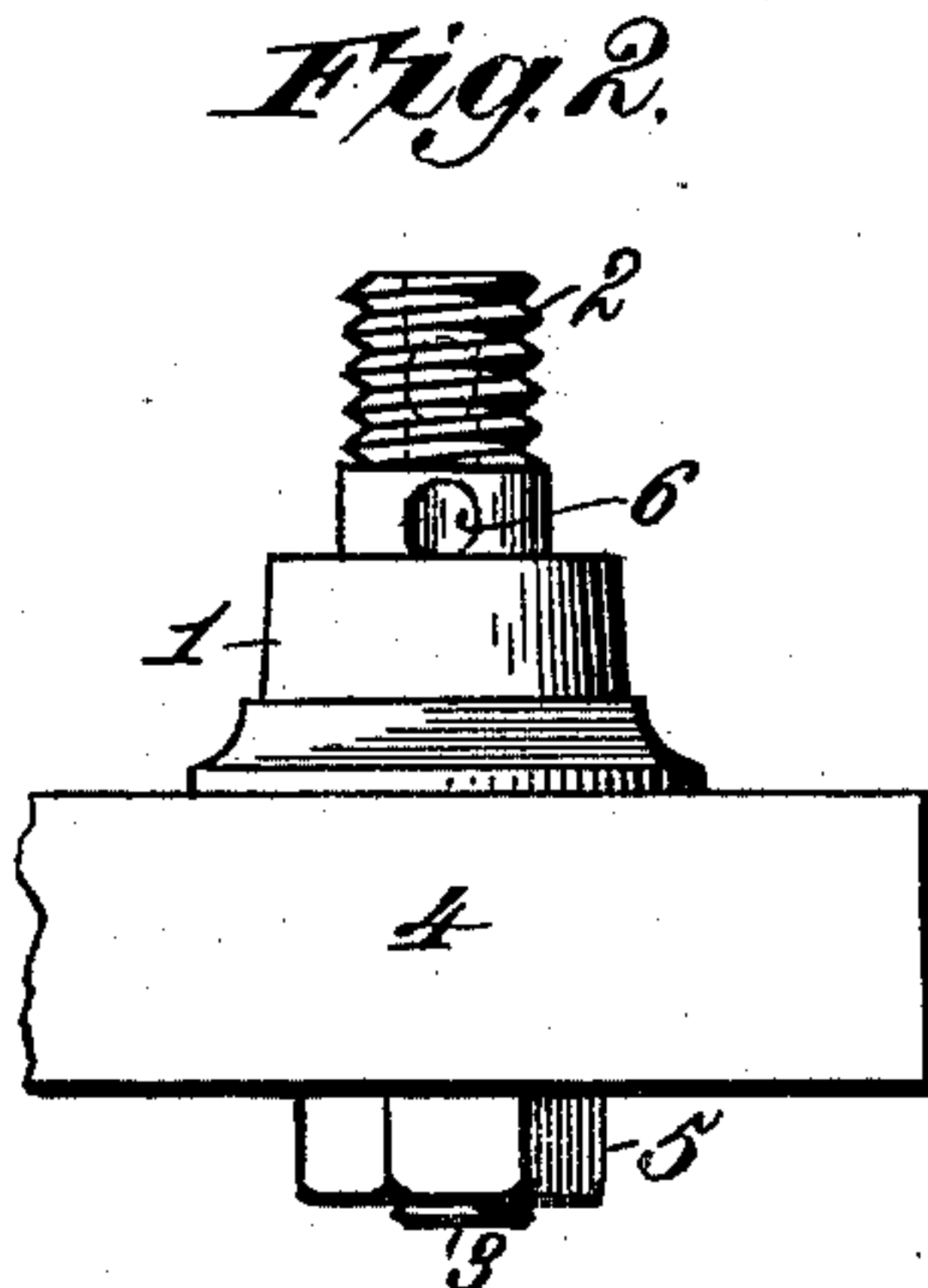
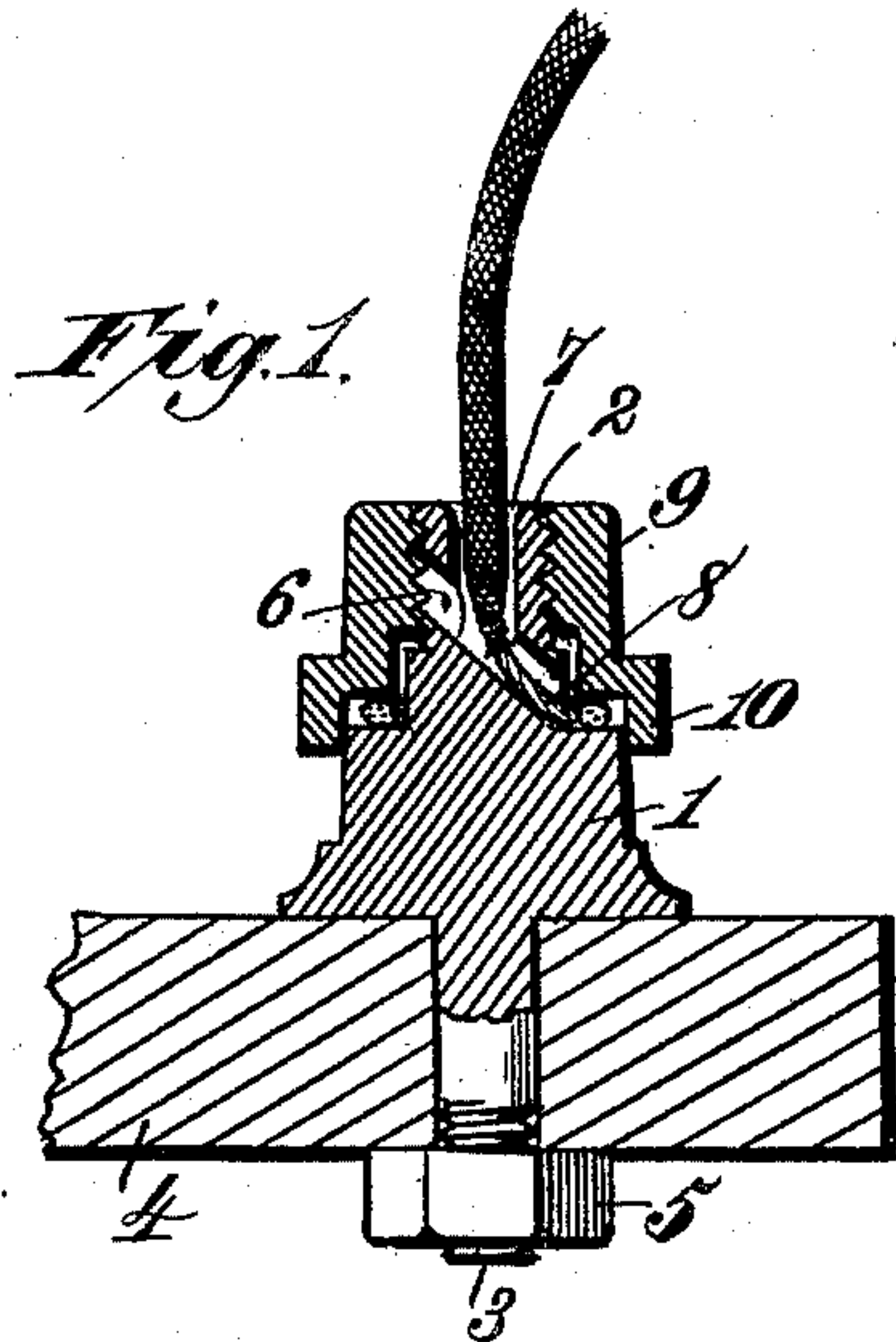
(No Model.)

2 Sheets—Sheet 1.

H. SANCHE.  
ELECTRIC TERMINAL.

No. 476,080.

Patented May 31, 1892.



Witnesses.  
*Robert Emmett.*  
*J. A. Rutherford.*

Inventor.  
*Hercules Sanche.*  
By *James L. Norris.*  
*Atty.*

(No Model.)

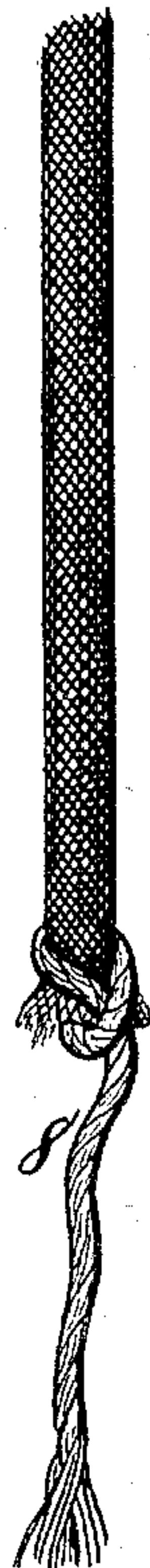
2 Sheets—Sheet 2.

H. SANCHE.  
ELECTRIC TERMINAL.

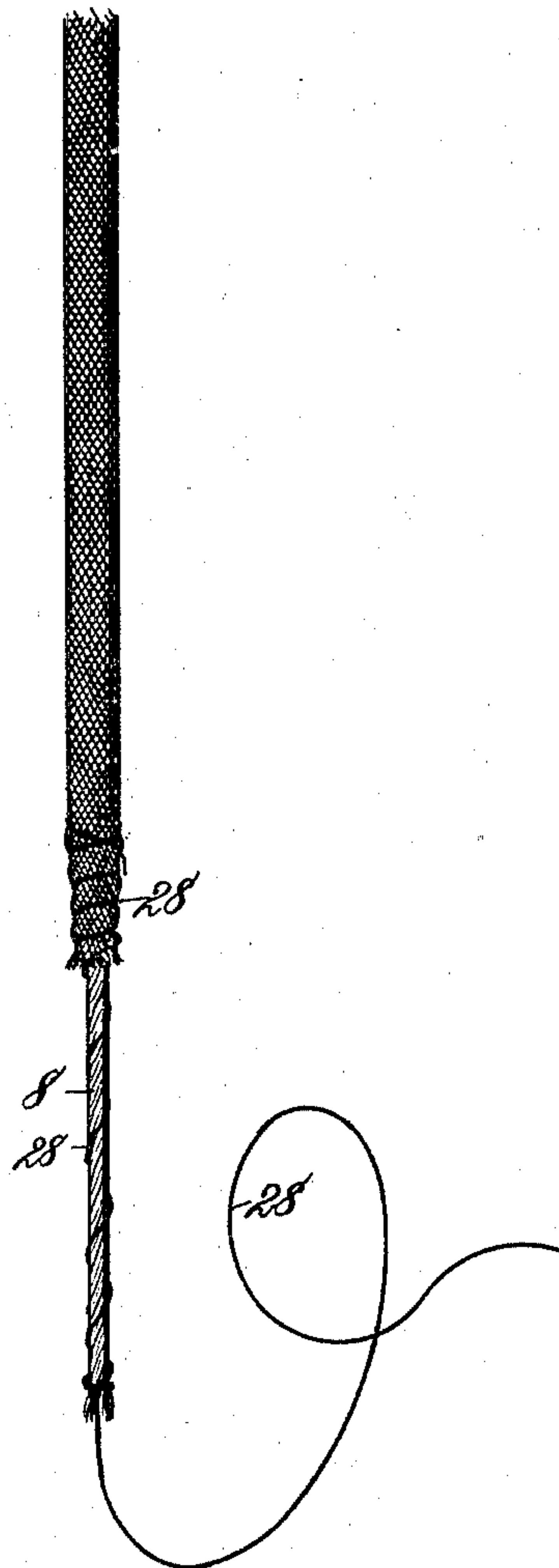
No. 476,080.

Patented May 31, 1892.

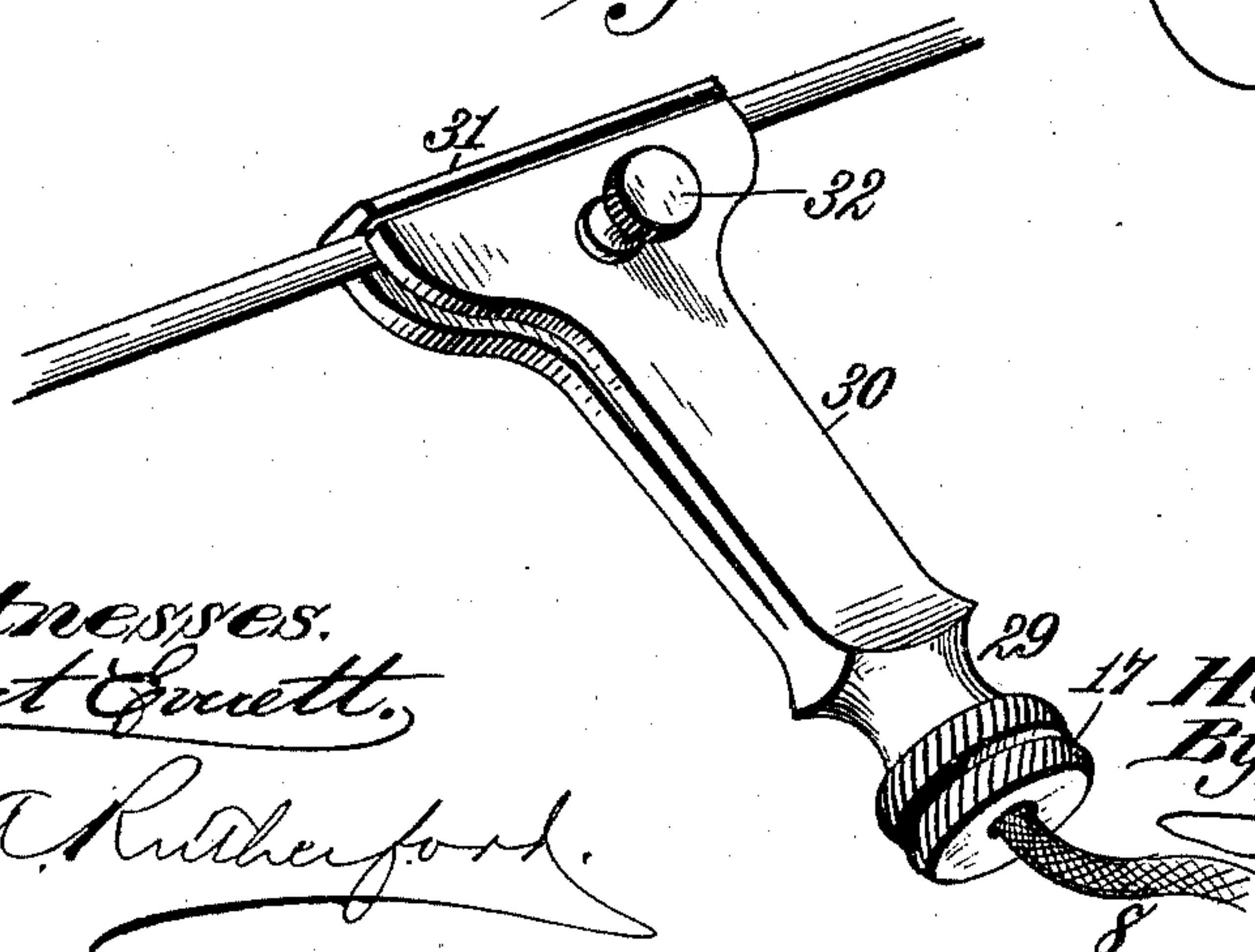
*Fig. 12.*



*Fig. 13.*



*Fig. 14.*



Witnesses.  
*Robert Gruett.*  
*J. A. Rutherford.*

Inventor.  
*Hercules Sanche.*  
By *James L. Norris.*  
Atty.



# UNITED STATES PATENT OFFICE.

HERCULES SANCHE, OF DETROIT, MICHIGAN.

## ELECTRIC TERMINAL.

SPECIFICATION forming part of Letters Patent No. 476,080, dated May 31, 1892.

Application filed September 29, 1891. Serial No. 407,189. (No model.)

*To all whom it may concern:*

Be it known that I, HERCULES SANCHE, a citizen of the United States, residing at Detroit, in the county of Wayne and State of Michigan, have invented new and useful Improvements in Electrical Terminals, of which the following is a specification.

It is the purpose of my invention to provide a terminal for electrical wires with which the denuded portion of the wire may be readily and easily connected and in which it may be held with the best possible contact and with complete protection to the cut or frayed end of the insulating-covering.

It is my purpose, also, to avoid the waste of the wire, to prevent the unnecessary denudation thereof, to provide a neat and elegant finish, to cover the contacting-surfaces from dust and moisture, and to provide a terminal and a post therefor upon which a plurality of such terminals may be associated.

It is my object, finally, to provide a permanent wire-terminal having a novel and simple form of attachment by which the exposed end of the wire is wholly inclosed and its electrical contact secured.

The invention consists to these ends in the novel features of construction and new combinations of parts hereinafter fully set forth, and then definitely pointed out in the claims which follow this specification.

To enable others skilled in the art to understand and practice my said invention, I will proceed to describe the same in detail, reference being had for such purpose to the accompanying drawings, in which—

Figure 1 is a vertical central section of a binding-post and its contact-cap. Fig. 2 is a side elevation of the post shown in Fig. 1 with the contact-cap and wire removed. Fig. 3 is a plan view of the parts shown in Fig. 3 with the wire attached, the contact-cap being removed. Fig. 4 is a vertical central section of a binding-post and a series of terminals. Fig. 5 is a side elevation of the parts shown in Fig. 4. Fig. 6 is a plan view of one of the terminals shown in Fig. 5, the wire being removed. Fig. 7 is a perspective view of the cap shown in Fig. 6. Fig. 8 is a central vertical section of a post with a permanent terminal. Fig. 9 is a side elevation of the permanent terminal shown in Fig. 8 removed

from the post. Fig. 10 is a central longitudinal section of a duplex permanent terminal for the meeting ends of wires, said figure showing two forms of contact-fastening or contact-plug. Fig. 11 is a central section of a permanent terminal for medicinal and other purposes, showing a modified form of contact-plug. Figs. 12 and 13 are views of the terminal portions of wires, showing different methods of securing the cut or frayed end of the insulating-covering, Fig. 13 also illustrating means for positively attaching the denuded end of the wire or wires to the post. Fig. 14 is a perspective view showing a lateral clamp connection which forms part of a permanent terminal.

In the said drawings the reference-numeral 1 indicates the binding-post, having a shank 2, which I prefer to thread externally from its upper end to or nearly to its base, which is provided with a pendant 3, adapted to occupy an opening in the table or other support 4 on which the post is mounted and to which it is rigidly attached by means of a nut 5, turned upon the threaded end of the pendant. When a single wire only is to be connected to the post, I drill in the threaded shank 2 an opening 6, the drill entering upon one side between the ends of the shank and usually near its top. The opening 6 is straight and is substantially in the axial plane of the shank, its lower end opening at the base of the latter, as seen in Figs. 1 and 2. In the upper end of the shank is formed an axial opening 7, which passes down far enough to intersect with the opening 6. The wire 8 is introduced through the axial opening 7, its end passing naturally and easily into the lower part of the intersecting opening 6, from which it emerges at the base of the shank, around which the denuded terminal portion is coiled in such manner as to lie upon the flat surface of the post 1, surrounding the base of the shank. A contact cap or nut 9 is then screwed down upon the shank, pinching the denuded portion of the wire between the lower end of the nut and the end of the post. The contact cap or nut 9 is provided with a hanging flange 10, which surrounds the top of the post, from which the shank 2 rises, thereby inclosing the contacting-surfaces and excluding dust and moisture. The flange is



usually made of such width as to permit the adjustment of the contact-cap to any ordinary size of wire without lifting the edge of the flange above the top of the post. By this method of drilling the threaded shank the wire is caused to emerge at its base, which is not bored or slotted, as it necessarily would be if the opening 6 was not cut entirely through the shank 2. This construction provides a neat finish and protects the insulating-covering, which enters the opening 7 in the shank and is thereby inclosed and secured against the wear and tear of constant contact upon its cut and frayed edge, and the ease and readiness with which the wire is inserted and removed and the extended area of close contact render this form of terminal a desirable one in all cases where a single wire is to be attached.

To provide for the attachment of a single wire or of a plurality of wires to the same terminal, I use the construction shown in Figs. 4, 5, and 6, wherein the post is substantially similar in construction to that shown in Figs. 1 and 2, save that the shank 2 is not drilled and is usually somewhat longer. Upon the shank I place one, two, or more contact-collars 12 of conducting metal, each having a central opening 13, through which the shank 2 passes. I form these openings, preferably, of such size as to have a loose engagement with the shank, no female thread being provided; but they may be threaded, if desired, without departing from my invention. Each collar 12 is provided with a flange 14, hanging from its periphery and adapted to surround the collar next below on the same shank. Through the outer vertical face or periphery of the flange is formed an opening 15, which passes upward in a plane parallel with a plane lying in the diametrical line of the collar and coinciding with its axis, the upper end of said opening emerging in the flat upper face of the collar between its periphery and a guard-flange 15<sup>a</sup>, which surrounds the central opening 13 and preferably close to the said flange. The wire is inserted at the lower end of this opening, its denuded portion emerging from the upper end at such an angle with the flat surface of the collar, due to the inclined position of the opening, that it may be coiled around the shank without producing an abrupt bend in the wire. A cap-nut 16, having a flange similar to that upon each collar, is turned upon the shank above the last collar placed upon the latter, and by its adjustment equal pressure is imparted to the denuded contact portions of wire lying between the several collars. An opening 15 may be and usually is formed in the post 1, as shown in Fig. 5, in the manner described in connection with the collars. The openings for the wire, being perfectly straight, are formed with ease and require but little skill.

For permanent terminals I use the constructions shown in Figs. 8, 9, and 11. In this form the post 2 is provided with a threaded socket

in its upper extremity, which receives the terminal 17, which is usually in the form of a threaded plug, having a milled head 18. The wire 8 enters through a central opening passing axially through the head 18 into the plug and entering the upper end of a concentric chamber 19 of somewhat larger diameter and provided with a female thread. A contact-plug 20 is screwed into this chamber from its lower end until its flat extremity abuts against the knotted, bunched, or coiled end of the wire or wires, as seen in Fig. 8.

The terminal shown in Fig. 11 is adapted to give surface contact and is used in medical apparatus, though the manner of attaching the wire may be used in other forms. It resembles that shown in Fig. 8, save that I substitute a contact-plug 21 for the screw-plug 20. This plug 21 may consist of a buckshot, small shot, or bullet 22, slightly flattened by a tap from a hammer and placed in the recess 23, opening centrally in the lower face of the terminal, until one of its flat faces abuts against the knotted, bunched, or coiled end of the wire, which is introduced through a smaller opening through the center of the terminal. The plug is then driven with a punch or other instrument until it is spread laterally sufficiently to fill the recess 22 and be wedged therein.

For connecting the ends of wires and similar purposes I employ the duplex form of permanent terminal shown in Fig. 10, in which the numeral 24 denotes either terminal provided with an internally-threaded recess or socket 25, which receives the contact-plug 26, having an axial opening passing entirely through it. The wire is introduced through this opening, and its denuded end is knotted or coiled beyond the extremity of the plug, which pinches the knot or coil between its end and the bottom of the recess 25. A threaded nipple 27 on one terminal entering a socket in the other provides means for connecting the two terminals in one. In attaching the denuded end of the wire it is desirable to provide some simple means for preventing the raveling and excessive fraying of the insulating covering, and where a group of small wires is used, as in flexible wire cables, it is also a matter of convenience and economy to provide means for binding the denuded portions together and for positively attaching them to the portion of the terminal around which they are coiled. For these purposes I may simply knot the denuded wire around the insulation close to the denuded portion, as in Fig. 12, or I may wrap the same with a fine flexible wire 28, which is also wound around the denuded portions of the fine wires, its end being prolonged beyond the latter, as shown in Fig. 13, to provide means for positively securing the wires to the shank 2 of the binding-post by winding the wire around the same over the small wires. This wire forms a binder for the fine conducting-wires, prevents their entanglement, and effects an economy in use,



as well as a great convenience, as it provides for the positive attachment of the denuded wires to the terminal, permits their ready detachment, prevents the wire from becoming broken, and secures the insulation from rapid wear. It obviates the necessity for a frequent removal and renewal of some part or the whole of the denuded ends and the further removal of the insulation, by which the wire is wasted and sometimes rapidly shortened. It provides, also, a much more sightly and finished appearance by giving a binding to the raw edge of the insulating-covering, which would otherwise fray out very rapidly.

I have shown in Fig. 14 a further form of permanent terminal, which is adapted to form part of a lateral connection to a conducting-wire. It consists of the terminal 17, through which the wire 8 enters and in which it is fastened in substantially the manner shown in Figs. 8 and 9. The terminal 17 engages with a socket in a block 29, which forms part of a pair of spring clamping-jaws 30, one of which has a latch-flange 31, while the other is provided with a set-screw 32, passing through it and tapped into the other jaw to permit the jaws to be clamped on the wire or upon its insulation by screw-pressure.

It should be understood that the openings or channels 6 and 7 may consist of slots instead of passages of the form shown. For example, I might slot the shank 2 diametrically from the end down to the upper end of the opening 6, said slot being continued upon one side of the diameter down to the base, or I may use the opening 6 and slot upon one side of the shank's diameter only.

What I claim is—

1. A terminal-fastening for electric and other wires, consisting of a post having a threaded shank projecting from a flat contact-face on said post and a collar having a non-central opening entering its periphery on one side of a diametrical line and emerging on its flat upper face between the periphery and the central opening receiving the threaded shank, substantially as described.

2. A terminal-fastening for electric and other wires, consisting of a post having a threaded shank projecting from a flat contact-face on said post, a collar having a straight non-central opening entering its periphery and emerging in its flat upper face between the periphery and a central opening receiving the threaded shank, and a contact-nut screwed on said shank, said nut and collar being each provided with a hanging flange surrounding the contact-surface beneath and

inclosing the peripheries of the posts on which said surfaces are formed, substantially as described.

3. A terminal attachment for electric and other wires, the same consisting of a post having a threaded shank projecting from a flat contact-surface on said post, a series of collars, each having a flange dropped from its periphery and adapted to inclose the periphery of the adjacent collar below and each provided with a non-central straight opening for the wire passing through said flange and emerging on the flat upper face of the collar between the periphery and a flange surrounding a central opening which receives the threaded shank, and a contact-nut having a hanging flange inclosing the upper collar, substantially as described.

4. The combination, with a terminal consisting of a post having a threaded shank, of a conductor having the raw edge of its insulating-covering bound by a wire, the denuded portion of said conductor being brought upon a contact-surface, coiled around the shank, and fastened by the prolonged end of the binding-wire, and a contact cap or nut having a flange surrounding and dropping below the contact-surface, substantially as described.

5. An electric conductor having a wire bound around the raw edge of its insulating-covering and prolonged beyond the extremity of the denuded portion of the conductor, substantially as described.

6. A permanent terminal for electric and other wires, having a central opening for the entrance of the wire, a concentric recess of larger diameter in which the denuded portion of the wire is bunched or knotted, and a positively-engaged contact-plug entering said chamber and compressing the bunched or knotted portion of the wire, substantially as described.

7. In terminals for electric wires, the combination, with a post having a flat circular contact-face, of a wire lying in a rectilinear opening which is inclined to the axis of the post, the end of the wire emerging upon said contact-face, and a contact cap or nut turned upon a threaded part of the post and pinching the wire upon the flat contact-face, substantially as described.

In testimony whereof I have hereunto set my hand and affixed my seal in presence of two subscribing witnesses.

HERCULES SANCHE. [L. S.]

Witnesses:

JAMES A. RUTHERFORD,  
CHAS. B. TILDEN.