

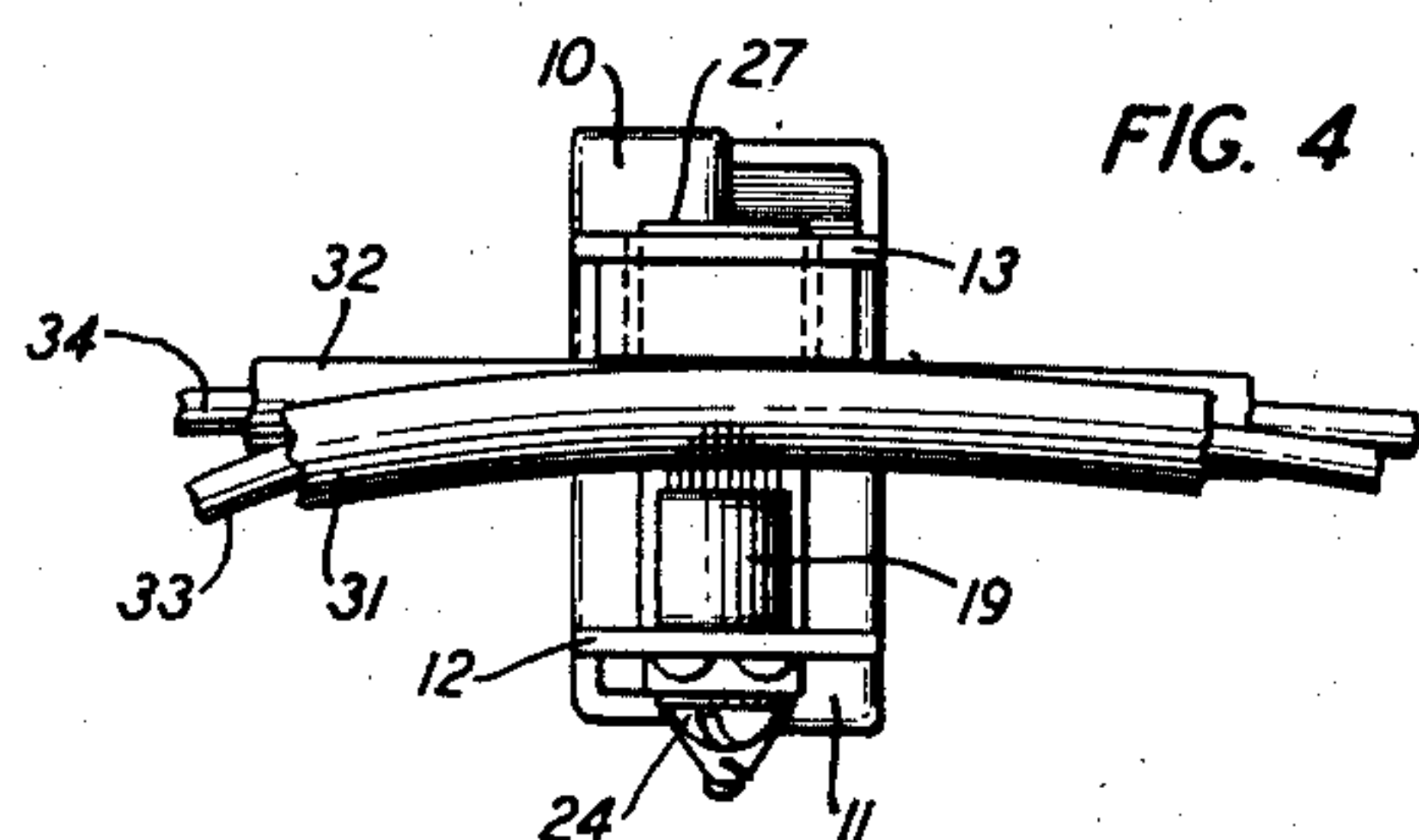
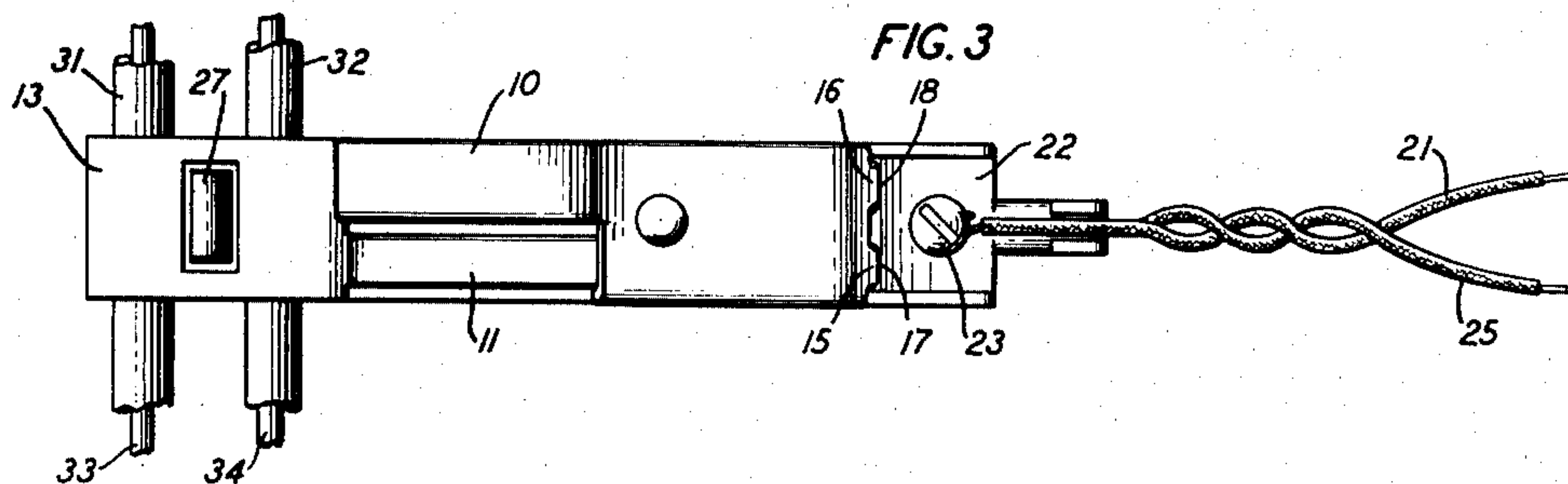
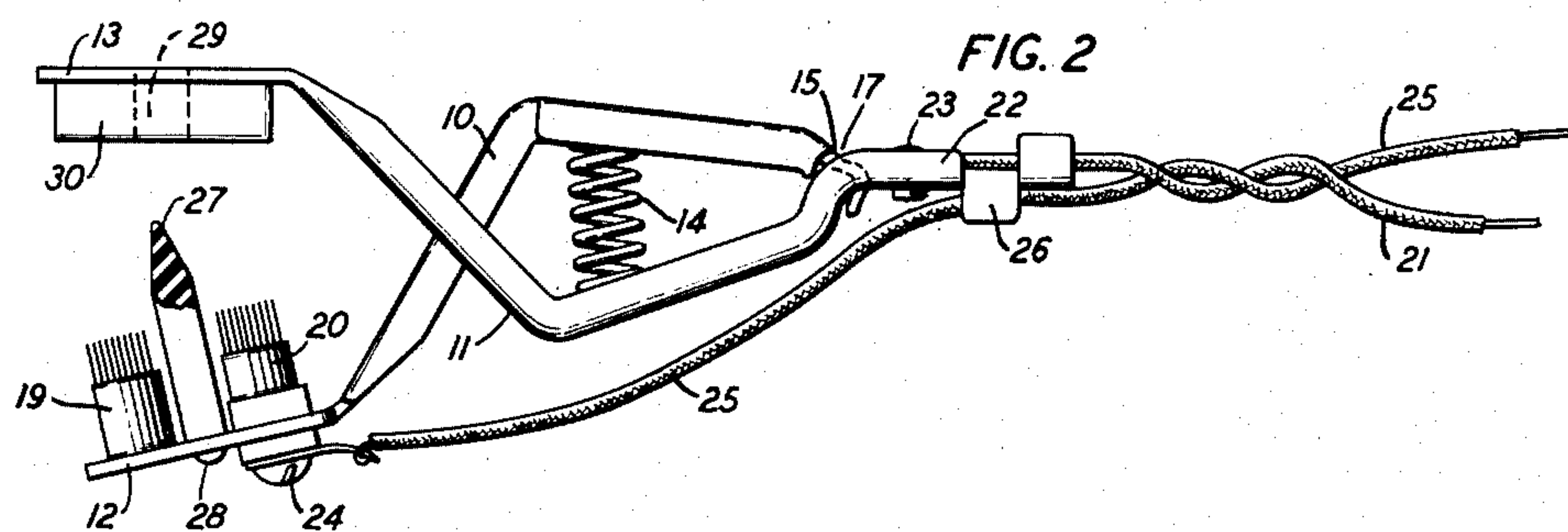
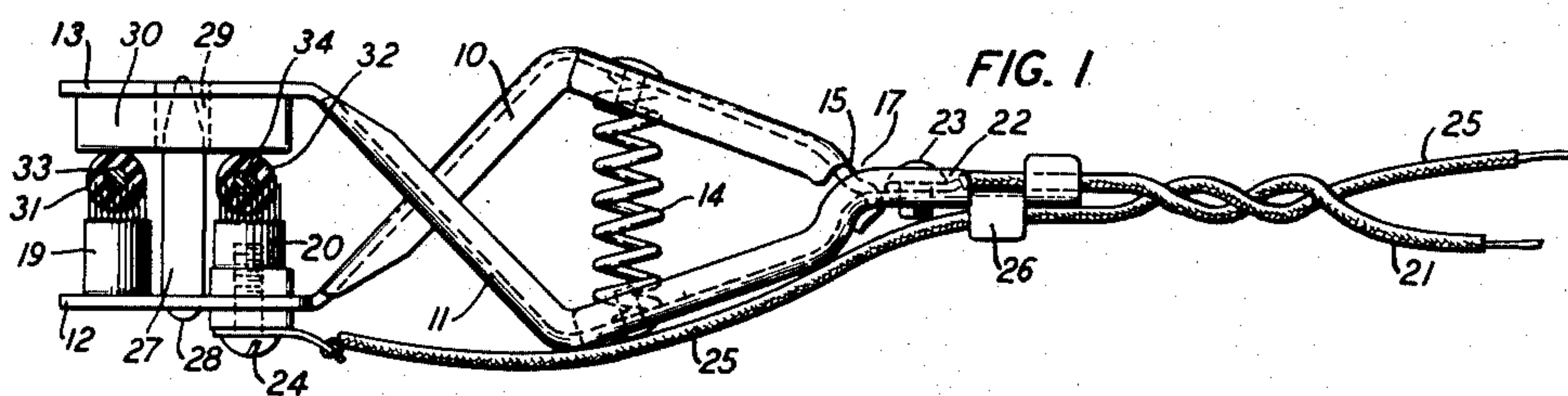
Oct. 2, 1951

A. C. BENNER ET AL

2,569,972

TWO-WIRE TEST CLIP

Filed Oct. 28, 1947



INVENTORS: **A. C. BENNER**
W. L. GUEST

BY

H. A. Patterson.

ATTORNEY

UNITED STATES PATENT OFFICE

2,569,972

TWO-WIRE TEST CLIP

Archie Carol Benner and Walter Leroy Guest,
Chicago, Ill., assignors to American Telephone
and Telegraph Company, a corporation of New
York

Application October 28, 1947, Serial No. 782,508

2 Claims. (Cl. 173-273)

1

This invention relates to electrical connection clips and more particularly to clips composed of two members having jaws at their forward ends which are pressed yieldingly together by a spring located between said members and having means thereon for making electrical connections thereto.

Clips of this general type are well known, for example, the clip shown in Patent 1,779,442 to Mueller, October 28, 1930. However, in all of these known clips provision is made only for making electrical connection to one terminal or circuit at a time; that is, a separate clip must be used for each circuit.

The object of this invention is to provide, in a single unitary structure, a test or connection clip which is capable of making a multiplicity of individual electrical connections to a multiplicity of individual conductors which are connected to separate circuits.

The connection clip of our invention comprises a pair of hinged members, provided with jaws at their outer ends, and a spring interposed between the members for pressing the jaws yieldingly toward each other and for maintaining them in a closed position. Located on one of the jaws are a pair of needle contact members. These members are insulated from each other and are individually connected to a pair of flexible lead wires, one of the leads being connected directly to the insulated contact and the other connected to the other contact through the body portion of the clip to which the contact is electrically connected. A guide member of insulating material is interposed between the two contact members, extends some distance above them, and is adapted to engage an elongated aperture in an insulated plate secured to the opposite jaw member. Thus when it is desired to make individual connections to a pair of conductors, the conductors are spread apart by means of the separator and forced into contact with the needle contacts, which puncture the insulation and make electrical contact with the metallic core of the conductor thereby establishing individual electrical contacts with two separate circuits.

Our invention may be more clearly understood from the following detailed description when read with reference to the following drawings in which:

Figure 1 is a side elevational view of the clip of our invention, with a pair of wires, shown in cross-section, in position between the jaws and the contact needles in engagement with the metallic core of the conductors;

2

Fig. 2 is a side elevational view, similar to Fig. 1, but with the clip opened and the wires removed;

Fig. 3 is a top plan view of Fig. 1; and

Fig. 4 is a front elevational view of Fig. 1.

The clip as shown in the accompanying drawings comprises two members, 10 and 11, which are crossed one over the other as shown, to provide the extending jaw members 12 and 13 at their free ends thereof. The jaws 12 and 13 are pressed yieldingly together as shown in Figs. 1 and 2, by means of the coil spring 14.

The members 10 and 11 are hingedly connected together at their outer ends by means of the tongues or lips 15 and 16 on the member 10 and are positioned in and extend through slots 17 and 18 in the member 11 and are bent slightly to prevent displacement.

Located on the jaw 12 are a pair of needle contact cups 19 and 20 which are adapted to penetrate the insulation of the conductors to be connected to and make contact with the metallic core on its interior when the jaws are in the closed position as shown in Fig. 1. The contact cup 19 is mounted directly on the jaw 12 of the clip in such a manner that suitable electrical connection is made thereto, thereby establishing a circuit through the body of the clip to the lead 21 which in turn is secured to the extending ear 22 on the member 11 by means of the screw 23.

The needle contact cup 20 is insulatingly mounted on the jaw 12 adjacent the contact cup 19, by means of the screw 24 which passes through the jaw 12 and engages the bottom of the cup 20. Connected to the cup 20 by means of the screw 24, is a lead wire 25 which is secured in position on the clip by means of the ear 26.

Located on the jaw 12, between the contact cups 19 and 20, is an upstanding insulating separator member 27. This member 27 is secured to the jaw 12 by means of the rivet 28 and is adapted when the jaws are closed under the influence of the spring 14, as shown in Fig. 1, to engage an elongated-shaped aperture 29 in the insulating plate 20, which in turn is secured to the inner surface of the jaw 13. The insulated separator member 27, just described, acts as a means to spread the conductors 31 and 32 apart and guide them into the path of the needle contact cups 19 and 20 which, when the jaws are closed, under the influence of the spring 14, as shown in Figs. 1 and 4, cause the needles to engage the conductors and penetrate the insulation and make electrical contact with the metallic cores 33 and 34 thereby establishing a circuit between the conductors 33

3

and 34 and the leads 21 and 25, which in turn may be attached to any suitable testing apparatus or other electrical device (not shown).

While we have shown and described the preferred embodiment of our invention it is to be understood that various modifications and changes may be made therein without departing from the spirit of the invention. For example, we do not limit ourselves to any particular number of needle contact cups on the jaw member of the clip since it is obvious that a plurality of these cups may be used and insulatedly mounted on the jaw with suitable separators therebetween in order to make electrical connection with two or more individual conductors and we are only limited by the scope of the appended claims.

What is claimed is:

1. An electrical connection clip comprising a pair of members having substantially channel-shaped cross sections, hingedly connected together at one end and having cross-over portions and jaws on their opposite ends, a spring between said members, adjacent the hinged connection, for maintaining said jaws yieldingly closed, one of said jaws having a pair of metal cups mounted thereon, one of said cups insulated from said jaw and the other electrically connected thereto, contact members comprising a multiplicity of upstanding needles embedded in said cups and having electrical connection thereto, an insulated separator transversely located on said jaw and positioned between and extending above said contacts, the opposite jaw having an insulated member thereon, said opposite jaw and said insulated member having an aperture therein registering with said separator, said insulated member bearing against said contact members when the jaws are closed under the influence of the spring.

4

2. An electrical connection clip comprising a pair of offset members having substantially channel-shaped cross sections, hingedly connected together at one end and having jaws on their opposite ends, a spring between said members, adjacent the hinged connection, for maintaining said jaws yieldingly closed, one of said jaws having a pair of metal cups mounted thereon, one of said cups insulated from said jaw and the other electrically connected thereto, contact members comprising a multiplicity of upstanding needles embedded in said cups and having electrical connection thereto, and an insulated separator transversely located on said jaw and positioned between and extending above said contacts, the other jaw having an insulated member thereon which bears against said contact members when the jaws are closed under the influence of the spring.

ARCHIE CAROL BENNER.
WALTER LEROY GUEST.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,171,710	Freixas	Feb. 15, 1916
1,999,613	Mueller et al.	Apr. 30, 1935
2,121,063	Walter	June 21, 1938
2,237,187	Mantilla	Apr. 1, 1941
2,245,194	Hollander	June 10, 1941
2,402,766	Moore	June 25, 1946
2,408,045	Cottrell	Sept. 24, 1946

FOREIGN PATENTS

Number	Country	Date
7,593	Great Britain	Feb. 16, 1911
211,884	Great Britain	Oct. 16, 1924