

H. D. CURRIER.
 CONNECTION TERMINAL.
 APPLICATION FILED DEC. 20, 1917.

1,369,221.

Patented Feb. 22, 1921.

2 SHEETS—SHEET 1.

Fig. 1.

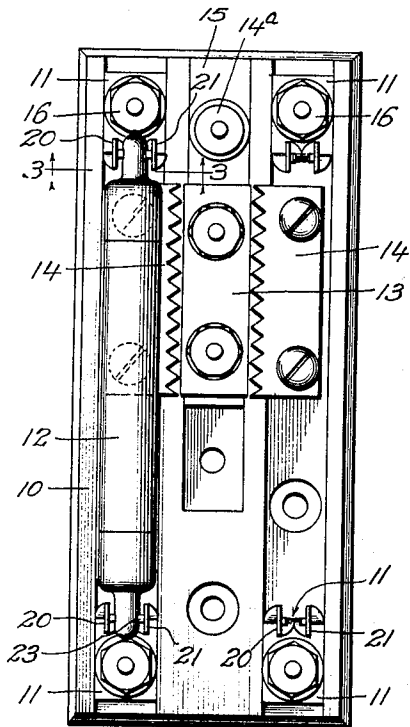


Fig. 2.

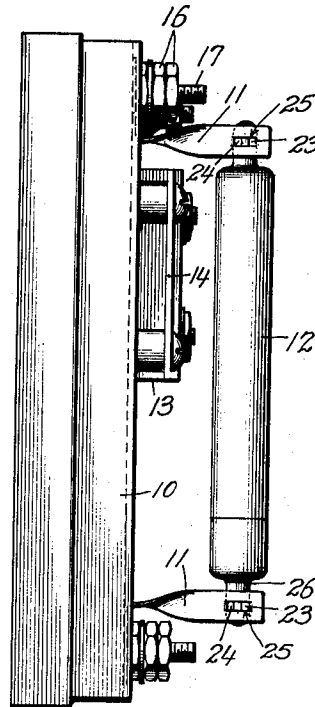


Fig. 3.

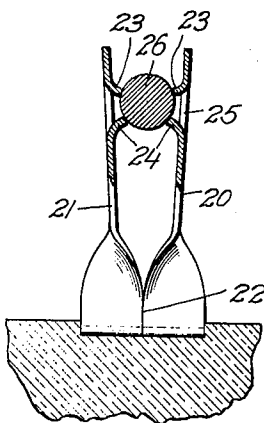
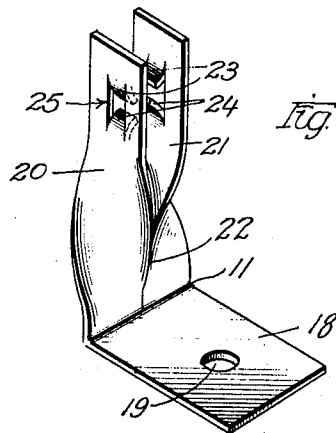


Fig. 4.



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2 SHEETS—SHEET 2.

Fig. 5.

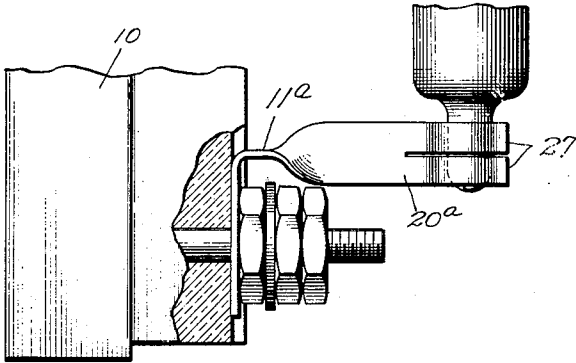


Fig. 6.

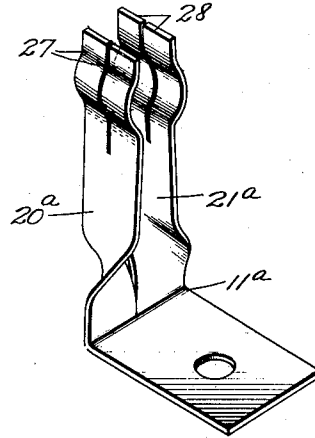


Fig. 7.

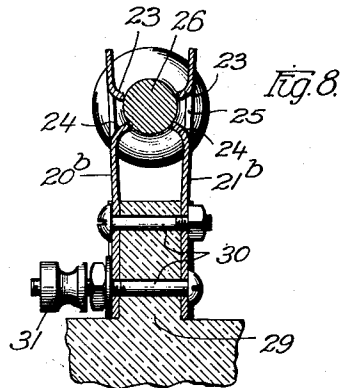
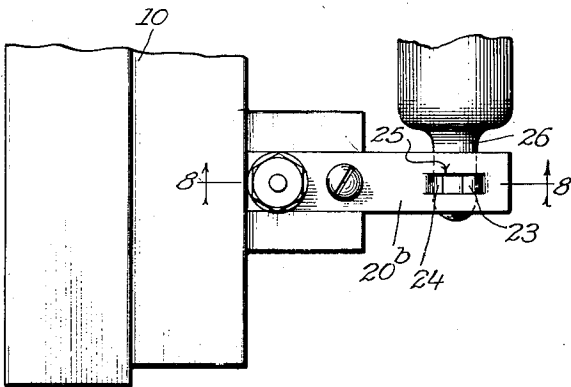


Fig. 9.

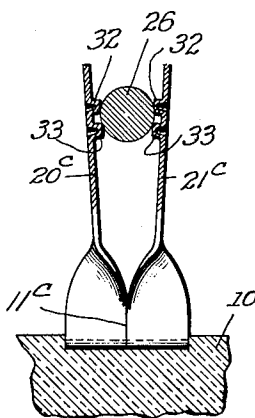
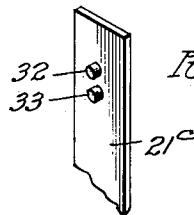


Fig. 10.



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CONNECTION-TERMINAL.

1,369,221.

Specification of Letters Patent. Patented Feb. 22, 1921.

Application filed December 20, 1917. Serial No. 207,995.

To all whom it may concern:

Be it known that I, HIRAM D. CURRIER, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Connection-Terminals, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to protective apparatus and concerns itself more particularly with means for holding fuses or similar appliances in circuit, although my invention in its broadest aspect is a connecting terminal capable of use in a great many ways when it is desired to establish electrical connection.

My invention, however, finds considerable application as a mounting clip for pencil fuses and it is in connection with this specific form of use that I will describe my invention.

One of the objects of the invention is to provide a connection terminal having four points of contact which may be so arranged that the element to be connected therewith can be readily introduced and removed therefrom. The connection terminal is of such a character that it automatically locks the cooperating contact terminal in place.

Another object of the invention is to provide a device of the character described which will insure perfect connections at the fuse clips so that the device may be used successfully with the low voltage and small current of the ordinary telephone circuits. The ordinary ferrule fuse clips on the market operate quite successfully in electric light and power work and in telegraphs where the voltage is high and the current great but such ferrule clips do not make the perfect connections necessary for telephone work. The free passage of voice currents throughout a circuit requires almost perfect connections and in order to obtain a quiet telephone circuit, both sides of the circuit must be of equal resistance. The presence of a single poor fuse connection in an open wire telephone circuit, introduces noises which impair the efficiency of the circuit.

Another object is to provide a fuse clip in

which the insertion of the fuse causes only a slight movement or separation of the contact members. The act of inserting and removing the fuses does not therefore place a severe strain on the metal of the clips, as in the clips now in use, thereby insuring a stronger pressure of the clip against the fuse even after a long use of the device.

Another object is to provide a clip which will permit of ready insertion and withdrawal of the fuse and yet insure perfect contact and which will hold the fuse securely in place at all times.

In the accompanying drawings I will describe certain forms of carrying out my invention, in which drawings—

Figure 1 is a top view of a fuse block provided with my improved connection terminal;

Fig. 2 is a side view thereof;

Fig. 3 is a view taken approximately on line 3—3 of Fig. 1, the upper ends of the clip members being shown in section to more clearly disclose the fuse holding prongs;

Fig. 4 is a perspective view of the connection terminal shown in Figs. 1, 2 and 3;

Fig. 5 is a fragmentary side view of a fuse block provided with a connection terminal of somewhat different design;

Fig. 6 is a perspective view of the terminal;

Fig. 7 is a view similar to Fig. 5 of a further modified form of connection terminal;

Fig. 8 is a sectional view on line 8—8 of Fig. 7;

Fig. 9 is a view similar to Fig. 3 of a further modified form of connection terminal, and

Fig. 10 is a detail view of the structure shown in Fig. 9.

Referring more particularly to Figs. 1 and 2, I show an insulating base 10 preferably of porcelain provided with four of my improved connection terminals 11, 11. A pencil fuse 12 is shown in connection with two of the connection terminals, no pencil fuse being shown in connection with the remaining two in Fig. 1. The fuse block 10 likewise carries a carbon block 13 which in cooperation with the serrated elements 14, 14 provide lightning protection. The nut

14^a mounted upon the metallic strip 15 is adapted for connection to the ground, the strip 15 being in metallic connection with the carbon 13. Terminal nuts 16 are provided in connection with the bolts 17 to hold the connection terminals 11 in place.

My invention concerns itself primarily with the constructional features of the connection terminals 11, 11. The construction of this connection terminal will be more clearly apparent from an inspection of Figs. 3 and 4. In the particular form shown in these figures I use a single piece of metal from which the device is punched. As punched the device is formed to include a base piece 18 having a hole 19 therethrough to accommodate the bolt 17, which base piece at one extremity terminates in two wings 20, 21. These wings are split preferably their entire distance down to the base piece along the line 22. These wings are twisted intermediate their extremities so that the upper extremities of these wings are rectangularly disposed relative to the lower extremities. The upper extremities of these wings thus present parallel opposing faces from each of which project oppositely disposed prongs 23 and 24 adapted to engage portions of a fuse terminal partially projecting into the space between them. The prongs 23 and 24 are punched out of the material of the wings. The prongs 23 and 24 however do not comprise all of the material punched from the hole 25 as a portion of the material is actually cut away. Thus, if the prongs 23 and 24 of Fig. 3 were bent backwardly into parallelism with their respective wing, the extremities of these prongs would be some distance apart on account of the cut away portion of material above referred to. The prongs 24 are longer in extent preferably than the prongs 23, at least, they project inwardly farther so as to form a more solid abutment to prevent the lug 26 from passing beyond the prongs 24 when it is inserted into place past the prongs 23. When the fuse is inserted into the clip, the opposed sharp prongs 23 engage and scrape the surface of the fuse terminal clean and bite into the metal of the terminal thus insuring perfect telephonic connection. The sharpened extremities of the prongs 23 bite into the fuse terminal just above its center when the fuse is in place. The point of contact, being only slightly above the center of the terminal, holds the fuse securely in place and yet allows the fuse to be easily removed. The lower prongs 24 are longer than the upper prongs 23 and contact with, and form a support for, the fuse terminal. The dimensions of the prongs and the terminal are such as to prevent contact of the terminal with the clip except at the prongs 23 and 24. The prongs 23 being short, only a slight spread of the

wings 20 and 21 takes place when the fuse is inserted between them. With this construction, the wings 20 and 21 are not subjected to severe strains whenever fuses are inserted or removed and will therefore wear longer and provide a more perfect contact. These four prongs thus provide four points of contact for each terminal 26. A very substantial contact is thereby provided and also a very efficient means of automatically holding the fuse in place in its proper position. This slight movement of the wings 20 and 21 during the insertion or removal of the fuse is a very important feature of applicant's invention in that it insures maximum pressure at the points of contact at all times. This is believed to be an entirely new feature in a clip used with round fuse terminals.

By referring more particularly to Figs. 5 and 6, I have shown the wings 20^a and 21^a as provided with four coöperating fingers, respectively the fingers 27, 27, and the fingers 28, 28. There is thus also provided a four point contact, the material of the wings 20^a and 21^a being split to form respectively two fingers at each wing extremity. In other respects the contact terminal construction is similar to that shown in Figs. 1 to 4 inclusive.

By referring more particularly to Figs. 7 and 8 I have shown the device in such a manner that the wings 20^b and 21^b are respectively provided with the prongs 23 and 24, but these two wings are mounted on opposite sides of the insulating base 29 and held together by the bolts 30. A binding post 31 is provided in connection with one of the bolts 30. The wings of the structure of Figs. 7 and 8 are thus made in two parts; but the lock grasping prongs are the same as those illustrated in Figs. 1 to 4 inclusive.

By referring more particularly to Figs. 9 and 10, I show the connection terminal 11^c as provided with wings 20^c and 21^c formed similarly to the manner illustrated in Figs. 1 to 4 inclusive but provided with prongs or grasping fingers of a somewhat different character. In this instance the prongs 32 and 33 respectively are punched from the material of the wings merely to form protrusions or projections which again provide the four point contact heretofore mentioned.

These various forms of carrying out my invention will illustrate some of the many forms which the invention may take.

Having thus described certain means for carrying out my invention what I broadly claim as new and desire to secure by these Letters' Patent is:

1. A connection terminal of the character described comprising a base piece, and a pair of opposing wings of bendable material extending from one edge thereof and twisted

into substantial parallelism, said wings being provided with oppositely extending contact portions.

2. A connection terminal of the character described comprising a base piece, and a pair of opposing wings of bendable material extending longitudinally therefrom and twisted in opposite directions into substantial parallelism, said wings being provided with oppositely bent contact portions.

3. A connection terminal of the character described comprising a base piece, and a pair of opposing wings of bendable material extending therefrom and bent into parallelism, one of said wings having a pair of contacting fingers projecting from one face thereof.

4. A connection terminal of the character described comprising a base piece, and a pair of opposing wings of bendable material extending longitudinally from one edge thereof and bent into parallelism, each of said wings having a pair of contacting fingers.

5. A connection terminal of the character described comprising a base piece, and a pair of opposing wings of bendable material extending therefrom and bent in opposite directions into parallelism, one of said wings having a pair of oppositely disposed contacting fingers.

6. A connection terminal of the character described comprising a base piece, and a pair of opposing wings of bendable material extending longitudinally therefrom and bent into parallelism, each of said wings having a pair of oppositely disposed contacting fingers, one of said fingers forming a stop or abutment.

7. A connection terminal of the character described comprising a pair of oppositely disposed conducting elements, one of said elements having two oppositely disposed vertically aligned contacting fingers, the lower one of said contacting fingers having means to form an abutment for a cooperating contact terminal.

8. A connection terminal of the character described comprising a pair of oppositely disposed conducting elements, each having two oppositely disposed contacting fingers, one of each pair of fingers being longer than the companion finger to thereby form a stop or abutment.

9. A connection terminal of the character described comprising a pair of parallel oppositely disposed conducting elements, one of said elements having two oppositely disposed contacting fingers, punched from the material of said wings.

10. A connection terminal of the character described comprising a pair of parallel oppositely disposed conducting elements each having two oppositely disposed contacting fingers punched from the material thereof, said fingers pointing inwardly.

11. A connection terminal of the character

described comprising a pair of parallel oppositely disposed conducting elements, one of said conducting elements having two oppositely disposed contacting fingers punched from the material thereof.

12. A connection terminal of the character described comprising a pair of parallel oppositely disposed conducting elements, one of said conducting elements having two oppositely disposed contacting fingers punched from the material thereof, said fingers pointing inwardly.

13. A connection terminal of the character described comprising a pair of contact strips of bendable material having their base portions aligned in a given plane and having their contact extremities twisted in opposite directions into substantial parallelism, said extremities being provided with oppositely bent contact portions.

14. A connection terminal of the character described comprising a pair of oppositely disposed elements adapted to receive a cooperating contact terminal, one of said elements being of current conducting material and having oppositely disposed contact fingers projecting inwardly thereof.

15. A connection terminal of the character described comprising a pair of oppositely disposed elements adapted to receive a cooperating contact terminal between them, one of said elements having a sharpened projection adapted to bite into said terminal when forced between said elements.

16. A connection terminal of the character described comprising a pair of oppositely disposed elements adapted to receive a cooperating contact terminal between them, one of said elements being of current conducting material and having a sharpened projection adapted to bite into said terminal when forced between said elements.

17. A connection terminal of the character described comprising a pair of oppositely disposed elements having parallel faces adapted to receive a cooperating contact terminal between them, one of said elements having means to support and means to bite into said terminal when the same is forced between said elements.

18. A connection terminal of the character described comprising a pair of oppositely disposed elements having parallel faces adapted to receive a cooperating contact terminal between them, one of said elements being of current conducting material and having means to support, and means to bite into said terminal when the same is forced between said elements.

19. A connection terminal of the character described comprising a base piece, and a pair of opposed wings of bendable material extending from one edge thereof and twisted into substantial parallelism, said wings having slotted portions oppositely bent to pro-

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vide oppositely extending contact members, each of said wings being adapted to receive a member between the bent portions thereof.

20. A connection terminal of the character described, comprising a base piece, a pair of wings of bendable material extending from one edge thereof, said wings being twisted to provide portions extending substantially in parallelism, said substantially parallel

portions having slotted portions, and said slotted portions being bent to provide oppositely extending contact members, each of said wings being adapted to receive a member between the bent portions thereof.

In witness whereof, I hereunto subscribe my name this 14th day of November, A. D. 1917.

HIRAM D. CURRIER.