

(No Model.)

A. T. WELLES.
CABLE TERMINAL ATTACHMENT.

No. 563,342.

Patented July 7, 1896.

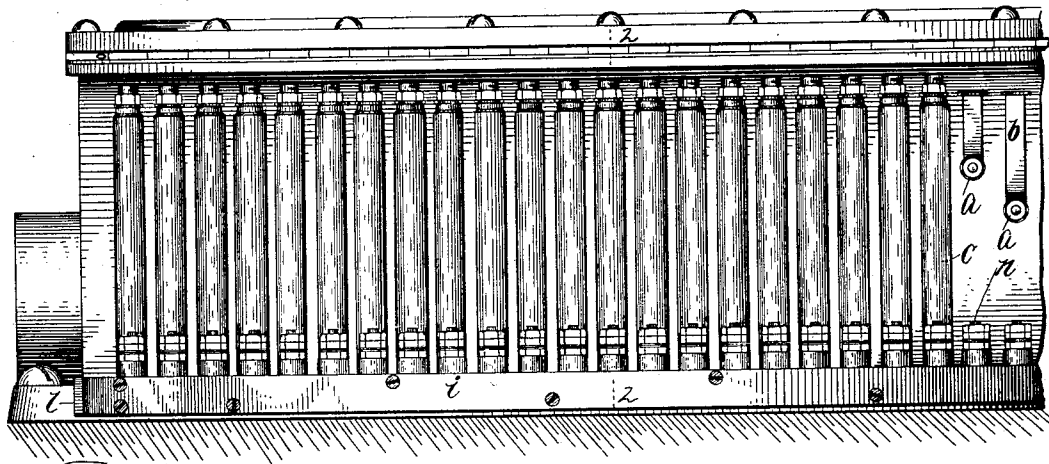


Fig. 1.

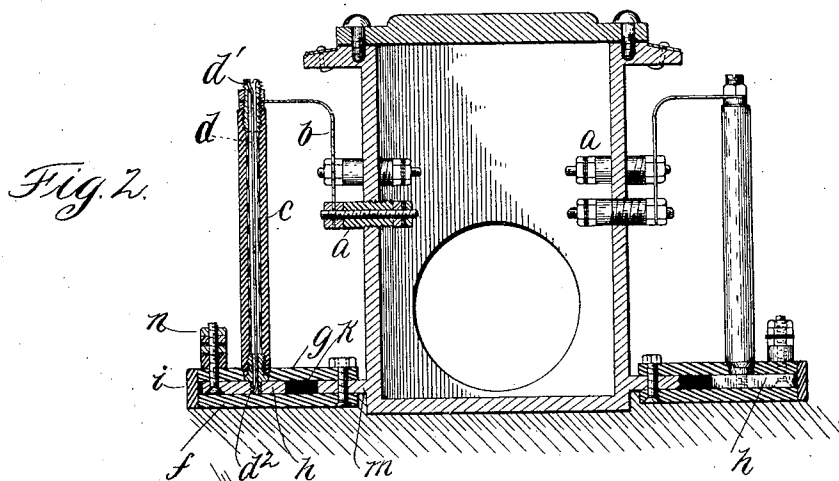


Fig. 2.

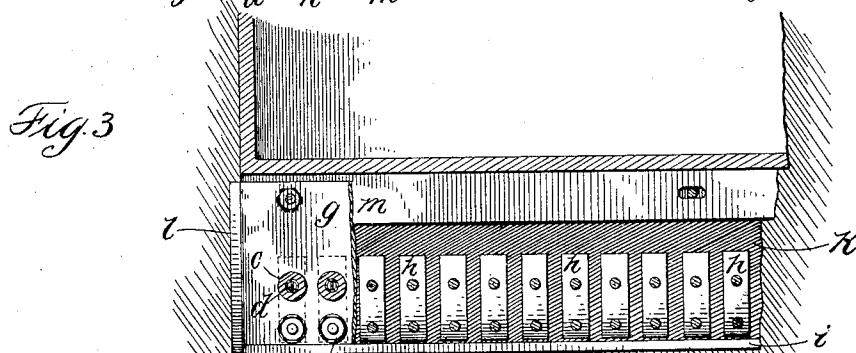
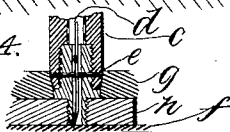


Fig. 3.

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Fig. 4.



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UNITED STATES PATENT OFFICE

ARTHUR T. WELLES, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE WESTERN
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CABLE-TERMINAL ATTACHMENT.

SPECIFICATION forming part of Letters Patent No. 563,342, dated July 7, 1896.

Application filed March 3, 1896. Serial No. 581,671. (No model.)

To all whom it may concern:

Be it known that I, ARTHUR T. WELLES, 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 Cable-Terminal Attachments, (Case No. 1,) 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 apparatus for distributing electric wires, and more particularly to the contacts of such wires with strong current-fuses at the ends of cables.

Heretofore various forms of terminals have been employed for connecting the individual insulated wires of a cable with the corresponding distributing-wires.

One of the well-known forms of cable-terminals consists of an iron box provided with insulated binding-posts or couplers inserted through the sides thereof, so that the wires of the cable may be connected through said couplers with corresponding distributing-wires.

It has been common heretofore to place between each coupler and its distributing or line wire a safety-fuse or some form of lightning or strong current-arrester for the purpose of preventing accidental currents, which may be of abnormal volume or of undue electric stress, from injuring the cable.

One style of strong current-arrester consists, essentially, of a strip of soft metal which will fuse when a current of undue stress passes through it, thus severing the connection between the line and cable wires.

Since cable-terminals are, generally speaking, the weakest part of cables on account of the fact that they are exposed to changes of temperature and the moisture of the atmosphere, it is very necessary that all metallic connections between the cable-wires and their corresponding distributing-wires be thoroughly insulated.

The object of my invention is to improve the insulation of the connections of these arresters with the distributing-wires, and, generally speaking, consists in certain details of construction of cable-terminal attachments or strips, in the means of mounting the ar-

resters or fuses thereon, and in the insulation of the connecting-blocks thereof.

In the accompanying drawings, which are illustrative of my invention, Figure 1 is a side elevation of a portion of a cable-terminal provided with my improved attachments or strips. Fig. 2 is a sectional view thereof upon line 2 2 of Fig. 1. Fig. 3 is a detail sectional view showing the connecting-blocks of the strip insulated and the means of securing the strips to the iron box of the terminal. Fig. 4 is an enlarged detail view showing the manner of mounting the safety-fuses upon the strip.

Like parts are indicated by similar letters of reference throughout the several figures.

The couplers *aa*, inserted through the sides of the iron box of the terminal, are of well-known construction, each consisting of a rubber sleeve surrounding a metal pin or screw provided with nuts at the outer and inner ends for securing the ends of the wires thereto. I preferably provide, in connection with each coupler, a line-spring *b*, which connects with the safety-fuse *c*, as shown.

The form of safety-fuse illustrated consists of a sleeve or tube of insulating material, a fibrous composition, called "vulcanite," being usually employed, within which is placed a glass tube, through which tube the fusible wire *d* is inserted. The fusible wire is connected at its upper end with the metallic piece *d'*, and at its lower end with the metallic piece *d''*. A pin *e* is inserted through the lower portion of the insulating-sleeve and the metallic piece *d''* to hold the latter in place. The rubber strips or pieces *f g*, after the connecting-blocks *h* are in place, are bolted together, as shown, and by means of a rubber strip *i* the insulating material *h*, which is flowed in between the side pieces *f g* to thoroughly insulate the blocks *h*, is held in place.

Strips or pieces *l* are provided for closing up the opening at the ends between pieces *f* and *g*. The piece at the edge *i* being removed, and a blank being inserted to fill the space occupied by the projecting lug or flange *m*, the insulating material, melted so as to be in liquid form, is flowed in about the metal blocks *h* to fill the spaces remaining between

the rubber side pieces *f g*, as shown most clearly in Fig. 3. It will thus be seen that the metal blocks *h*, each provided with a binding-post, and adapted to receive a safety-fuse, will be inclosed in a hard-rubber case and the space between said blocks filled with an insulating substance which will not melt when subjected to summer heat. Any insulating material that may be conveniently melted, and which will not become liquid, so as to flow at a temperature, say, less than 120° Fahrenheit, may be employed. I have used a mixture of resin and beeswax.

As shown in Fig. 4, it will be observed that the ends of the metal pin *e* come below the upper surface of the rubber side piece *g* of the attachment, all liability to accidental electrical connections being thus obviated. As shown most clearly in Fig. 2, it will be seen that by means of a coupler *a*, a line-spring *b*, a safety-fuse *c*, a metallic block *h*, and a binding-post *n* connection may be made between a wire of the cable and a corresponding distributing-wire, while the insulation of the intermediate connecting parts is made reliable, and liability to faults or accidental electrical connections therewith prevented. Each block *h* is provided with a screw-thread adapted to receive the corresponding screw of a safety-fuse, and on each block is also provided a binding-post *n* for attachment of a line-wire. This binding-post, it will be observed, consists of a screw inserted through the metal of the block and a corresponding hole in the rubber plate *g*. Above the rubber plate *g* there is closely fitted upon the screw a section of rubber tubing, above which are placed the nuts and washers for securing the end of the proper distributing-wire.

Prior to my invention the distributing-wire had been connected directly to the metal block by means of a screw inserted directly in the block. These connecting-blocks had been placed upon strips of vulcanite, no insulating-cover having been provided for them, and no insulating compound having been placed between them, thus leaving these metal parts and connections exposed. By my invention all these parts are protected from mechanical injury, and at the same time thoroughly insulated, while the strip as a whole is made more compact than heretofore.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination in a cable-terminal attachment with the safety-fuse to one end of which a coupler of the terminal is connected,

of a connecting-block *h* into which the safety-fuse is inserted, said safety-fuse being provided with a metallic pin *e* which is covered by the rubber side piece *g* when inserted in the block, the block being provided with a binding-post *n* and insulated by insulating material *k* flowed about the same, substantially as and for the purpose specified.

2. In a cable-terminal attachment, the combination with a series of metallic connecting-blocks *h*, each provided with a binding-post, and each adapted to receive a safety-plug, of the inclosing case of hard-rubber insulating material, and an insulating substance flowed in about said blocks to fill the spaces remaining between the rubber side pieces of said case, said insulating material being adapted to remain solid when the attachment is exposed.

3. An electric-cable-terminal attachment or strip consisting, essentially, in the combination with connecting-blocks, of a casing of insulating material having plates *f g* above and below said blocks, an insulating compound filling the space remaining within said case, and means for connecting the safety-fuses and the distributing-wires, respectively, with said blocks, substantially as described.

4. A connecting-block with which a safety-fuse is connected, and a binding-post consisting of a screw attached to said block and passing through a hole in a plate of insulating material, and a section of rubber tubing above said plate, combined with the nuts and washers above the same, whereby the connection of the distributing-wire is made at a distance from the block, substantially as and for the purpose specified.

5. The combination with an electric-cable attachment having connecting-blocks *h h* placed upon the base thereof and insulated one from another, of the rubber plate *g* placed over said blocks and having openings which register with screw-holes tapped out in said blocks, safety-fuses, one for each block, inserted through said openings, the metallic portions of the inserted ends of said fuses being below the surface of said rubber plate, and the insulating-sleeves of said fuses closely fitting said openings, substantially as described.

In witness whereof I hereunto subscribe my name this 28th day of February, A. D. 1896.

ARTHUR T. WELLES.

Witnesses:

GEORGE P. BARTON,
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