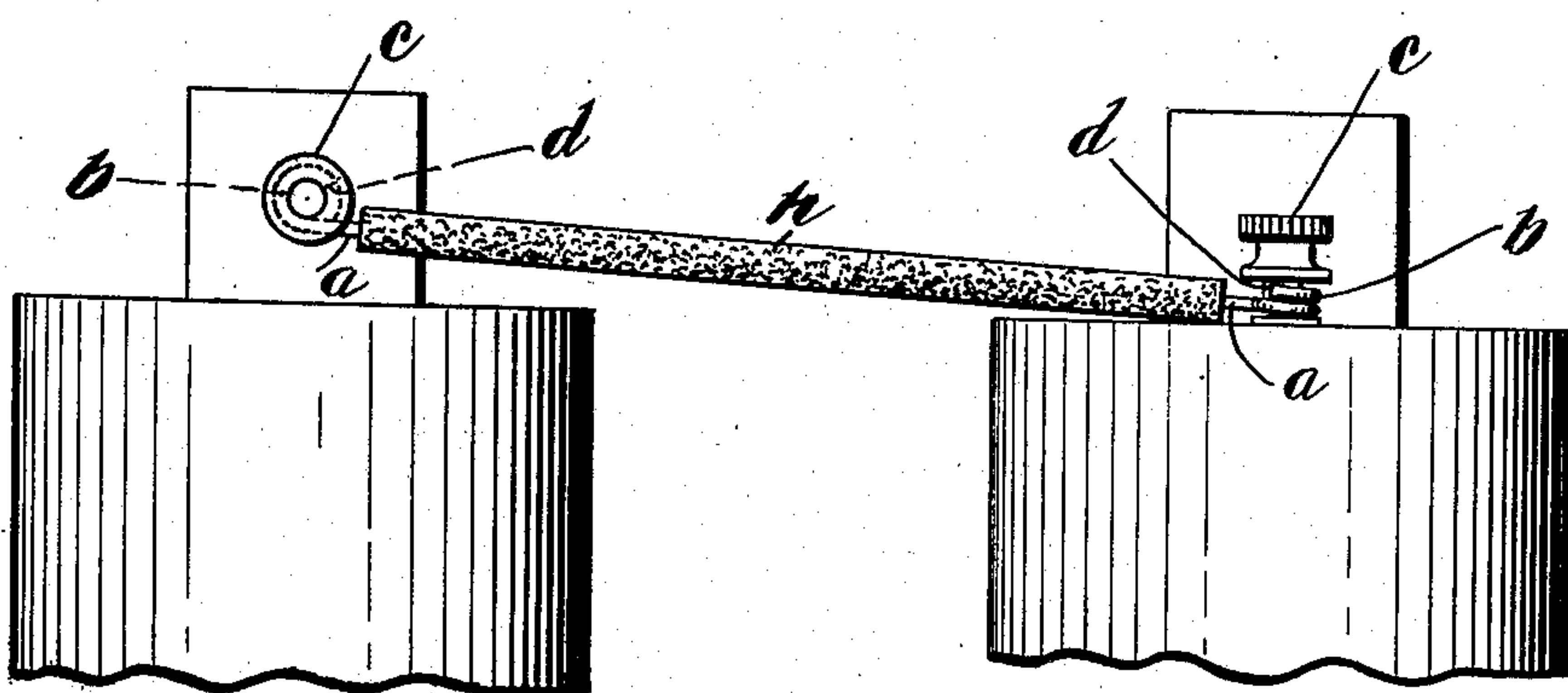
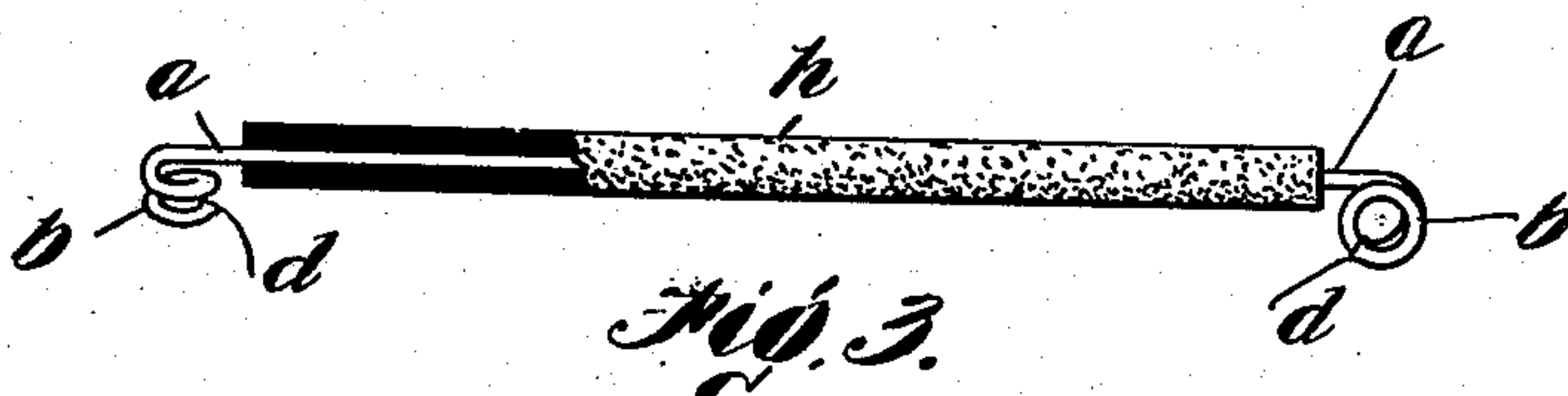
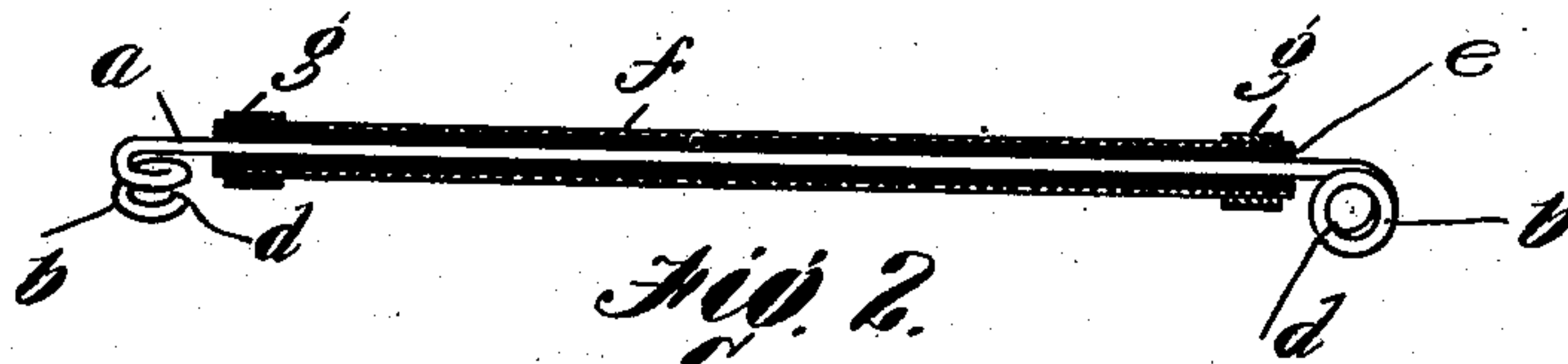


H. W. MUNYAN.  
BATTERY CONNECTOR.  
APPLICATION FILED FEB. 21, 1907.

907,852.

Patented Dec. 29, 1908.



Witnesses:

C. F. Mason  
E. M. Allen.

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by Attorneys  
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# UNITED STATES PATENT OFFICE.

HARRY W. MUNYAN, OF WORCESTER, MASSACHUSETTS.

## BATTERY-CONNECTOR.

No. 907,852.

Specification of Letters Patent.

Patented Dec. 29, 1908.

Application filed February 21, 1907. Serial No. 358,560.

*To all whom it may concern:*

Be it known that I, HARRY W. MUNYAN, a citizen of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented a new and useful Battery-Connector, of which the following is a specification.

This invention relates to connections for use on batteries, and in similar places for conducting electricity.

The principal objects of the invention are to provide a connector of this character which will have no parts which can be bent in ordinary practice sufficiently to reduce their conductivity or to break them; to provide such a connector with terminals of such a character that when the thumb-nuts of the battery or other terminals to which they are to be applied are screwed down into position to clamp them in place there will be sufficient resiliency to assist in holding the thumb-nuts, and additional means for engaging the same to prevent them from becoming loosened in ordinary service, or to delay such action; and generally to improve and simplify the construction of articles of this character.

While the invention is illustrated as applied to battery cells which is one of its principal uses, it is to be understood that the invention is applicable for the purposes of connecting electrical terminals of all kinds.

Reference is to be had to the accompanying drawings, in which—

Figure 1 is a side elevation of a connector constructed in accordance with this invention. Fig. 2 is a central longitudinal sectional view of the same; Fig. 3 is a side elevation partly broken away showing another form in which the insulation may be applied; and Fig. 4 is a side elevation of a pair of cells connected by means of the form of connector shown in Fig. 3.

Most of the connectors in ordinary use are provided with soldered joints which have to be bent more or less in applying and removing the connections and which under such circumstances lose their conductivity and even become broken after a short time. A connector constructed in accordance with this invention is formed in such a manner that this objection is obviated and so that the connections will not become loose or broken and will not wear out. Therefore, no new connections are needed and no special tools are required to connect the device up

with the batteries or other electrical apparatus.

In the accompanying drawings, the invention is illustrated in the form of a continuous electrical conductor *a* having coiled terminals *b* at its ends. The terminals are given a spring temper so that the coils will have sufficient resiliency to normally bear against the binding post thumb-nuts *c* which hold them in position. This results in more firmly holding the thumb-nuts themselves in position and preventing their accidental removal. For the purpose of assisting in this function, the wire is coiled in the direction in which the thumb-nuts are turned to tighten them and at their ends they are provided with upturned edges *d*. These edges may be formed in any desired way but in practice, it is sufficient to cut off the wire in any ordinary manner. This leaves a bur on the edge of the wire which serves this function.

It will be noticed that the thumb-nuts are screwed against the spring and in the direction in which the wire is coiled and when they attempt to turn in the other direction, the bur at the end of the wire will have a tendency to prevent such motion and this is assisted by the resiliency of the coil itself.

When the device is to be used for connecting battery cells, the two coils are turned at right-angles to each other so that they are in proper position for application to the battery terminals as is indicated in Fig. 4, both of the connector terminals being coiled in the proper direction.

It will be seen that the coiled terminals being fixed in position with respect to the continuous conductor *a*, they have a certain location which results in their being readily applied to the desired kind of terminal. The device may be supplied with any desired kind of insulation. In Figs. 1 and 2 this is shown in the form of a coating *e* on the wire, on the outside of which is a woven tube *f* held in position by two metal clips *g*.

In the form shown in Figs. 3 and 4, the insulation consists merely of a rubber tube *h* which is held in position only by the coiled terminals.

While I have illustrated and described a particular form in which the invention may be embodied, I am aware that many modifications may be made therein without departing from the spirit of the invention as expressed in the claims. Therefore, I do not



wish to be limited to the particular form shown, but

What I do claim is:—

1. As an article of manufacture, a battery  
5 connector comprising a continuous conductor having resilient coiled terminals in one integral piece with the conductor, forming compressible springs at the ends thereof.
2. As an article of manufacture, a battery  
10 connector comprising a continuous resilient conductor having a resilient coiled terminal in one piece integral with the conductor, and having a sharp edge at the end thereof.
3. As an article of manufacture, a connector  
15 for electrical purposes consisting of a continuous conductor provided at the end with a terminal comprising a plurality of convolu-

tions formed on the conductor and provided with a spring temper, said convolutions being spaced apart to constitute a coiled spring, 20 and the outer convolution having on the end thereof a bur left by the cutting off of the wire and projecting outwardly, and a tube of insulating material mounted on said conductor and extending to the terminal thereof so 25 as to leave the terminal bare throughout the coiled portion thereof.

In testimony whereof I have hereunto set my hand, in the presence of two subscribing witnesses.

HARRY W. MUNYAN.

Witnesses:

ALBERT E. FAY,  
J. ELMER HALL.