

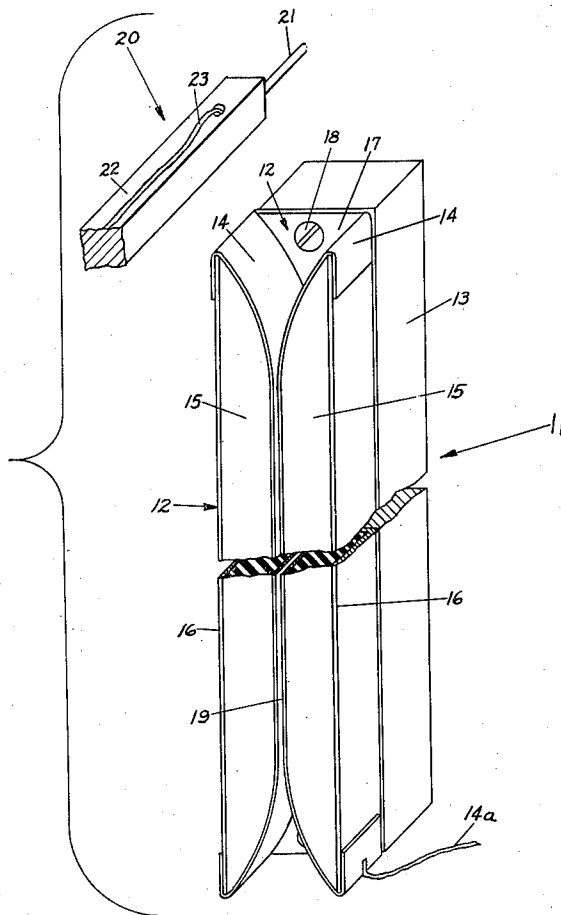
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ELECTRIC CONTACT

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ELECTRIC CONTACT

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2 Claims. (Cl. 173—324)

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1

This invention relates in general to an electric contact and in particular to an electric contact for a sliding electric connection.

In numerous instances it is necessary to make a firm electric connection between two moving bodies or between a moving body and a stationary body. In general this can be done by a simple sliding contact resembling the conventional electric brush, but where the system is subject to vibration or where the electric contact is used in connection with delicate readings such a simple setup is unsatisfactory. For example, in copending application, Serial No. 617,902, now Patent No. 2,475,614, entitled "Electrical apparatus for testing materials" and filed concurrently herewith by William H. Hoppmann II and Edward C. Taylor, there is described apparatus for obtaining electric measurements from an impact tester wherein a hammer and weight assembly is dropped against an anvil. The shock of this impact may well be sufficient to disrupt normal sliding electric connections during the important impact period, and accordingly a special shock or vibration-resistant electric connection is advisable.

It is an object of this invention to provide a vibration-resisting sliding electric connection.

Another object is to provide an auxiliary electric contact adapted to receive a moving member and to maintain electric contact therewith while permitting the moving member to continue uninterrupted along its path.

Further objects and advantages of this invention, as well as its construction, arrangement and operation, will be apparent from the following description and claims in connection with the accompanying drawing, in which,

The figure is an isometric view showing one embodiment of the new electric contact with a moving electric terminal positioned to enter the contact.

The electric contact generally designated 11 comprises a contacting member 12 mounted on an insulating frame or support 13. The contacting member 12 consists of a length of channel structure comprising the opposite side walls 16 and the bottom web 17. Blocks 15 of rubber or other suitable resilient material are positioned in the channel member 12 disposed lengthwise thereof, the respective blocks 15 being held abutting against the inside surfaces of respective opposite side walls 16. This positions the blocks 15 in op-

2

posed relationship as shown, with a space 19 between opposed surfaces of the blocks.

The surface of each block 15 that is opposite the other block is coated or faced with a flexible strip 14 of electrical conducting material. Throughout the greater parts of their lengths, the opposed surfaces of strips 14 are relatively straight and parallel but are curved apart from each other toward their ends to provide a smoothly widened entrance and exit into and out of the passage 19.

These metallic surfaces are supported and retained in position by the backing of resilient material 15, which in turn are supported and held in position by the metal channel 12 having the side walls or plates 16. Under practice of the invention proven suitable, the strips 14 comprise thin sheets of copper, bronze, brass or the like conductor material, each being positioned in facing relationship to its resilient block 15, and each being bent at its ends over its backing plate 16 of the channel member 12. The ends of the strips 14 are firmly attached to their side walls 16, for example by soldering, brazing or the like operation, to hold the pads 15 pressed against the inside surface of their supporting side walls 16, mechanically, and also to connect the strips 14 to the conductor material of the channel member 12 electrically.

The pads 15 are contoured as shown to position their opposed surfaces parallel to each other and spaced apart a predetermined distance when they are positioned in the channel member 12 as shown. Opposite ends of each pad 15 are bevelled as shown to widen the spacing between their opposed surfaces at their ends, to provide widened ends in the gap of space 19 between the strips 14.

The described assembly comprising the channel 12 with the pads 15 and strips 14 attached thereto in the manner described, is secured to the structural support 13 by any suitable means, such as, for example, screws 18 that pass through the base web 17 of the channel 12. An electric lead 14a, is connected to the electrical contact of the strips 14 and channel 12 at a suitable location.

There is also shown the moving electric terminal 20 comprising a pin 21 mounted on a supporting arm 22 and connected by means of lead 23 to a source of electric power, testing equipment, or the like. This electric terminal 20 is adapted to make electrical contact with the contacting member 11 by means of pin 21, which travels sideways in a predetermined path, and which is constructed and adapted to slide between the opposed surfaces of the strips 14, and to be

3

firmly engaged thereby. The strips 14 are so positioned that space 19 between them is slightly smaller than the diameter of pin 21, thereby causing strips 14 to be pressed outwardly against the resilient supporting pads 15. By this means the opposed surfaces are constantly pressed against the pin 21, and accordingly make a firm continuous contact in spite of severe vibration which may be experienced by arm 22.

The connector 11 is positioned to locate the gap 19 in the path of travel of the terminal pins 21, and the portion of the gap 19 that comprises the opposed surfaces of strips 14 parallel coincides with the portion of the path of travel of the pin 21 during which it is desired that electrical contact should be closed. The widening of the gap 19 at its end, accomplished by the surface contours of the pads 15, provides a funneling entrance for the pin 21 into the confining parallel portion of the gap 19 at the approach end, and a gradual widening at the trailing end that causes the electrical connection to break smoothly and without severe lateral shock to the pin 21.

This new electric contact has been particularly described and used in connection with an impact tester wherein it is desired to obtain an uninterrupted relatively small electric current and to make accurate measurements of this current. It will be understood, however, that the new connector is adapted to be used in all cases to maintain a shock resisting electric connection between two members undergoing sliding motion with respect to each other. Where the sliding motion is in other than a straight line the space 19 between strips 14 will be made to conform with the direction of motion. For example, when arm 22 is undergoing accurate motion these strips 14 will be positioned in a corresponding arcuate path. As a further example, arm 22 may be adapted to revolve in a complete circle and it may be desired to maintain a continuous electric contact with this moving arm. In such a case, the strips 14 may be a pair of opposing continuous circular members.

It is to be understood that various modifications and changes can be made in this invention without departing from the spirit and scope thereof as set forth in the appended claims.

The invention described herein may be manufactured and used by or for the Government of the United States of America for governmental purposes without the payment of any royalties thereon or therefor.

What is claimed is:

1. In an electrical connector, a rigid channel

4

member comprising electrical conductor material, a pair of blocks of resilient material positioned in the channel and disposed side by side with adjacent surfaces in opposed relationship, the blocks being contoured for their opposed surfaces to be parallel and spaced apart a predetermined distance, a strip of flexible conductor material for each block, the several strips of conductor material extending along the opposed surfaces of the blocks respectively, each strip being mechanically connected to the channel member at the ends of one of its side walls to hold its block against the wall with the wall providing a rigid backing for the block, each strip being electrically connected to the channel member at its mechanical connections to the wall thereof.

2. In an electrical connector, a rigid channel member comprising electrical conductor material, a pair of blocks of resilient material positioned in the channel and disposed side by side with adjacent surfaces in opposed relationship, the blocks being contoured for their opposed surfaces to be parallel and spaced apart with opposite ends of each surface bevelled to widen the gap between the surfaces at their ends, a strip of flexible conductor material for each block, the several strips of conductor material extending along the opposed surfaces of the blocks respectively, each strip being mechanically connected to the channel member at the ends of one of its side walls to hold its block against the wall with the wall providing a rigid backing for the block, each strip being electrically connected to the channel member at its mechanical connections to the walls thereof.

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REFERENCES CITED

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

UNITED STATES PATENTS

Number	Name	Date
1,783,665	Meuer	Dec. 2, 1930
1,884,457	Wilkins	Oct. 25, 1932
2,025,189	Yancheno	Dec. 24, 1935
2,123,631	Koehler	July 12, 1938
2,284,097	La Jone	May 26, 1942
2,300,893	Hayford	Nov. 3, 1942
2,331,654	Butler	Oct. 12, 1943
2,361,721	Van Deventer	Oct. 31, 1944

FOREIGN PATENTS

Number	Country	Date
589,827	France	Feb. 28, 1925