April 17, 1951 W. MAYER 2,548,986

SECTIONALIZED BUS BAR CONSTRUCTION

Filed April 10, 1946

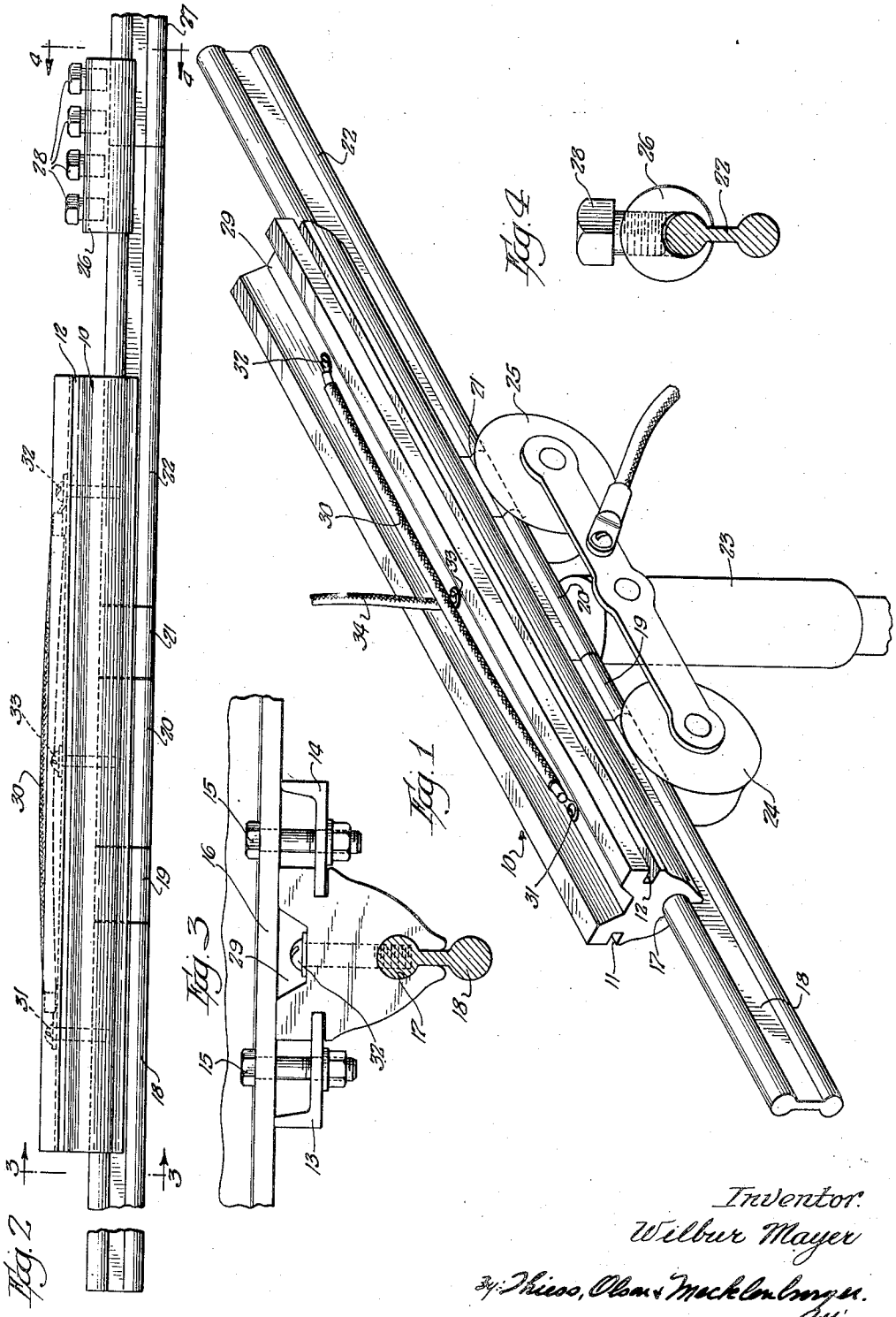


Fig. 2

Fig. 3

Fig. 1

Fig. 4

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Patented Apr. 17, 1951

2,548,986

UNITED STATES PATENT OFFICE

2,548,986

SECTIONALIZED BUS BAR CONSTRUCTION

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Application April 10, 1946, Serial No. 660,946

5 Claims. (Cl. 191—39)

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This invention relates to bus bar constructions, more particularly to sectionalized bus bars adapted to be engaged by movable contacts or current collectors, and the invention has for an object the provision of improved bus bar constructions of this character.

Although bus bar constructions embodying the present invention are not limited thereto, they are particularly useful in crane and conveyor systems of the type described and claimed in the copending applications Serial No. 523,635, now Patent No. 2,486,221, dated October 25, 1949, and Serial No. 548,193, now abandoned, respectively filed February 24, 1944, and August 5, 1944, in the name of Ralph W. Spafford, and respectively entitled Crane Construction and Apparatus and Traveling Conveyor Construction and Apparatus, which applications are assigned to the same assignee as the present invention, and bus bar constructions embodying the present invention constitute improvements on the bus bar constructions disclosed in the said Spafford application Serial No. 523,635.

In systems of the type disclosed in the said Spafford applications the bus bars include sectionalized control stations wherein the sectionalized bus bar is adapted to be engaged by movable contact members for carrying out various control operations, and for convenience of designation these contact members will be referred to herein as current collectors without regard to whether engagement of the collector with a particular bus bar section energizes the bus bar or receives energy therefrom. In order to insure proper operation of the crane and conveyor systems the various bus bar sections must be rigidly supported in properly spaced insulated relation and must present to the current collectors a continuous collector-engaging surface. It is a further object of this invention, therefore, to provide a simple and rugged bus bar construction which effectively meets the requirements of such systems, and which includes a relatively few readily assembled parts that may be easily and economically fabricated.

In carrying out the invention in one form an elongate supporting member of insulating material is provided with a continuous bead-retaining groove extending longitudinally thereof, and beaded collector-engaging means having a bead along one edge engageable in the groove for support by the insulating member are disposed intermediate the ends of the supporting member, which collector-engaging means includes a collector-engaging surface protruding from the

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groove, a central portion of the collector-engaging means comprising a bus bar section. Likewise disposed in the groove and supported by the insulating-supporting member is a pair of bus bars disposed at opposite ends of the centrally located collector-engaging means, the bus bars and collector-engaging means when assembled in the supporting member forming a continuous collector-engaging surface with the bus bar section of the collector-engaging means insulated from the pair of bus bars. More particularly, the collector-engaging means and the bus bars comprise a plurality of similarly shaped members, each having a bead along one edge insertable endwise into the groove for support by the insulating member and each having a collector-engaging surface protruding from the groove, alternate ones of these members being formed of insulating material so that when assembled in the support they form a continuous collector-engaging surface including longitudinally spaced-apart bus bar sections insulated from each other.

For a more complete understanding of the invention, reference should now be had to the drawing in which:

Fig. 1 is a perspective view of a bus bar construction embodying the present invention and illustrating the manner in which the bus bar section is engaged by suitable bus bar collectors;

Fig. 2 is a side elevational view of the bus bar construction shown in Fig. 1;

Fig. 3 is an end elevational view partly in section taken along the line 3—3 of Fig. 2; and

Fig. 4 is a detail sectional view taken along the line 4—4 of Fig. 2.

Referring now to the drawing, the invention is shown as embodied in a bus bar construction comprising an elongate supporting member 10 which is formed of insulating material such as hard rubber or the like. Extending along opposite sides of the supporting member 10 are slots 11 and 12 adapted to receive the flanges of suitable supporting angle brackets 13 and 14 which may be secured by bolts 15 to any suitable supporting structure or beam, such as the element 16 shown in Fig. 3. It will be understood of course that the angle brackets 13 and 14 extend throughout substantially the length of the supporting member 10 and may be secured to the member 16 by a plurality of bolts 15 spaced therealong.

Extending throughout the length of the supporting member 10 and opening downwardly therefrom is a bead-retaining groove 17 adapted to receive in supporting relation a plurality of

collector-engaging members 18, 19, 20, 21 and 22, each of which is provided along its upper edge with a bead adapted to be inserted endwise into the groove 17 so as rigidly to support the members 18 to 22, inclusive, in the member 10. As shown, each of the collector-engaging members is shaped to provide a collector-engaging bead along the lower edge thereof, and these members are all of similar configuration so that when assembled in the supporting member 10, as shown best in Figs. 1 and 2, a continuous collector-engaging surface is provided for engagement by suitable collector means, such for example as the collector 23 (Fig. 1), which includes a pair of rotatable contact members 24 and 25 of the type well known in the art.

In order to provide the sectionalized construction employed in systems of the type disclosed in the above referred to Spafford applications, the collector-engaging members 19 and 21 are formed of insulating material while the members 18, 20 and 22 constitute bus bar sections formed of conducting material. Thus the bus bar construction provided upon assembly of the collector-engaging members in the supporting member 10 provides a plurality of conductor sections disposed in spaced-apart longitudinal relation and insulated from each other. The sections 18 and 22 may constitute the end portions of long bus bars which go to make up the conveyor system, or may comprise short sections adapted to be connected to the bus bars of the system by suitable splice bars of the type well known in the art. Thus, as shown in Figs. 2 and 4, the bus bar section 22 is engaged by a splice bar 26 having a bead-receiving groove therein, which splice bar also engages a suitably-shaped bus bar 27 one end of which abuts against the bus bar section 22. The bus bar section 22 and the bus bar 27 are firmly held in the splice bar 26 by suitable set-screws 28, which not only provide a rigid mechanical connection but insure a good electrical connection therebetween.

In the embodiment of the invention shown in the drawing, the bus bar sections 18 and 22 are adapted to be electrically connected together, and to facilitate such connection the upper surface of the supporting member 10 is provided with a conductor-receiving channel 29 for receiving a bridging conductor 30 the opposite ends of which are connected to terminal screws 31 and 32, which terminal screws extend through the support 10 and threadedly engage the upper bead portion of the bus bar sections 18 and 22. Connection of the bus bar section 20 to an external electric circuit is provided by means of a terminal screw 33 extending through the supporting member 10 and threadedly engaging the bus bar section 20, the terminal screw 33 being adapted to receive a suitable lead or conductor 34.

It will of course be understood that any desired number of alternate insulating and conducting sections may be assembled in a suitable insulating support 10 in accordance with the requirements of the system, and although the elements 19, 20 and 21 have been shown as separately formed elements, it is within the contemplation of the present invention to provide a single insulating element having an insert of conducting material forming the lower collector-engaging surface thereof and terminating short of the ends to provide insulating collector-engaging surfaces at the opposite ends thereof.

While I have shown a particular embodiment of my invention, it will be understood, of course, that I do not wish to be limited thereto since since many modifications may be made, and I, therefore, contemplate by the appended claims to cover any such modifications as fall within the true spirit and scope of my invention.

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

1. A sectionalized bus bar construction having a surface engageable by movable current collectors, comprising an elongate supporting member of insulating material having a continuous bead-retaining groove extending longitudinally thereof, beaded collector-engaging means having a bead along one edge engageable in said groove for support by said member at a point intermediate the ends of said member and having a collector-engaging surface protruding from said groove, a central portion of said means comprising a bus bar section, end portions of said means comprising sections of insulating material, a pair of bus bars each having a beaded end portion insertable endwise into said groove to engage opposite ends of said means, said bus bars and said means when assembled in said supporting member forming a continuous collector-engaging surface with said bus bar section insulated from said pair of bus bars, means carried by said supporting member for electrically connecting said bus bars, and means carried by said supporting member for connecting said bus bar section to an electric circuit insulated from said bus bars.

2. A sectionalized bus bar construction having a surface engageable by movable current collectors, comprising an elongate supporting member of insulating material having a continuous bead-retaining groove extending longitudinally thereof, a plurality of similarly-shaped collector-engaging members each having a bead along one edge insertable endwise into said groove for support by said insulating member and each having a collector-engaging surface protruding from said groove, alternate ones of said collector-engaging members being formed of insulating material and the remaining collector-engaging members being formed of conducting material, whereby said members when assembled in said support form a continuous collector-engaging surface including longitudinally spaced apart bus bar sections insulated from each other, and means carried by said supporting member for connecting said bus bar sections in selected electric circuits.

3. A sectionalized bus bar construction having a surface engageable by movable current collectors, comprising an elongate supporting member of insulating material having a continuous bead-retaining groove extending longitudinally thereof, a plurality of similarly-shaped collector-engaging members each having a bead along one edge insertable endwise into said groove for support by said insulating member and each having a collector-engaging bead along its opposite edges, alternate ones of said collector-engaging members being formed of insulating material and the remaining collector members being formed of conducting material whereby when said members are assembled in said support said collector-engaging beads form a continuous collector-engaging surface including longitudinally spaced apart bus bar sections insulated from each other, and means carried by said supporting member for selectively connecting said bus bar sections in selected electric circuits.

4. A sectionalized bus bar construction having a surface engageable by movable current collec-

tors, comprising an elongate supporting member of insulating material having a continuous bead-retaining groove extending longitudinally thereof, beaded collector-engaging means having a bead along one edge engageable in said groove for support by said member at a point intermediate the ends of said member and having a collector engaging surface protruding from said groove, a central portion of said means comprising a bus bar section, end portions of said means comprising sections of insulating material, a pair of bus bars each having a beaded end portion insertable endwise into said groove to engage opposite ends of said means, said bus bars and said means when assembled in said supporting member forming a continuous collector-engaging surface with said bus bar section insulated from said pair of bus bars, said supporting member having a conductor-receiving channel extending along the surface thereof opposite from said bead-retaining groove, and means extending transversely through said support from said groove to said channel for connecting said bus bars and said bus bar section to conductors in said channel.

5. A sectionalized bus bar construction having a surface engageable by movable current collectors, comprising an elongate supporting member of insulating material having a continuous bead-retaining groove extending longitudinally thereof, a plurality of similarly-shaped collector-

engaging members each having a bead along one edge insertable endwise into said groove for support by said insulating member and each having a collector-engaging bead along its opposite edge, alternate ones of said collector-engaging members being formed of insulating material and the remaining collector members being formed of conducting material whereby when said members are assembled in said support said collector-engaging beads form a continuous collector-engaging surface including longitudinally spaced apart bus bar sections insulated from each other, said supporting member having a conductor-receiving channel extending along the surface thereof opposite from said bead-retaining groove, and means extending transversely through said support and electrically engaging said bus bar sections for connecting said bus bar section to conductors in said channel.

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