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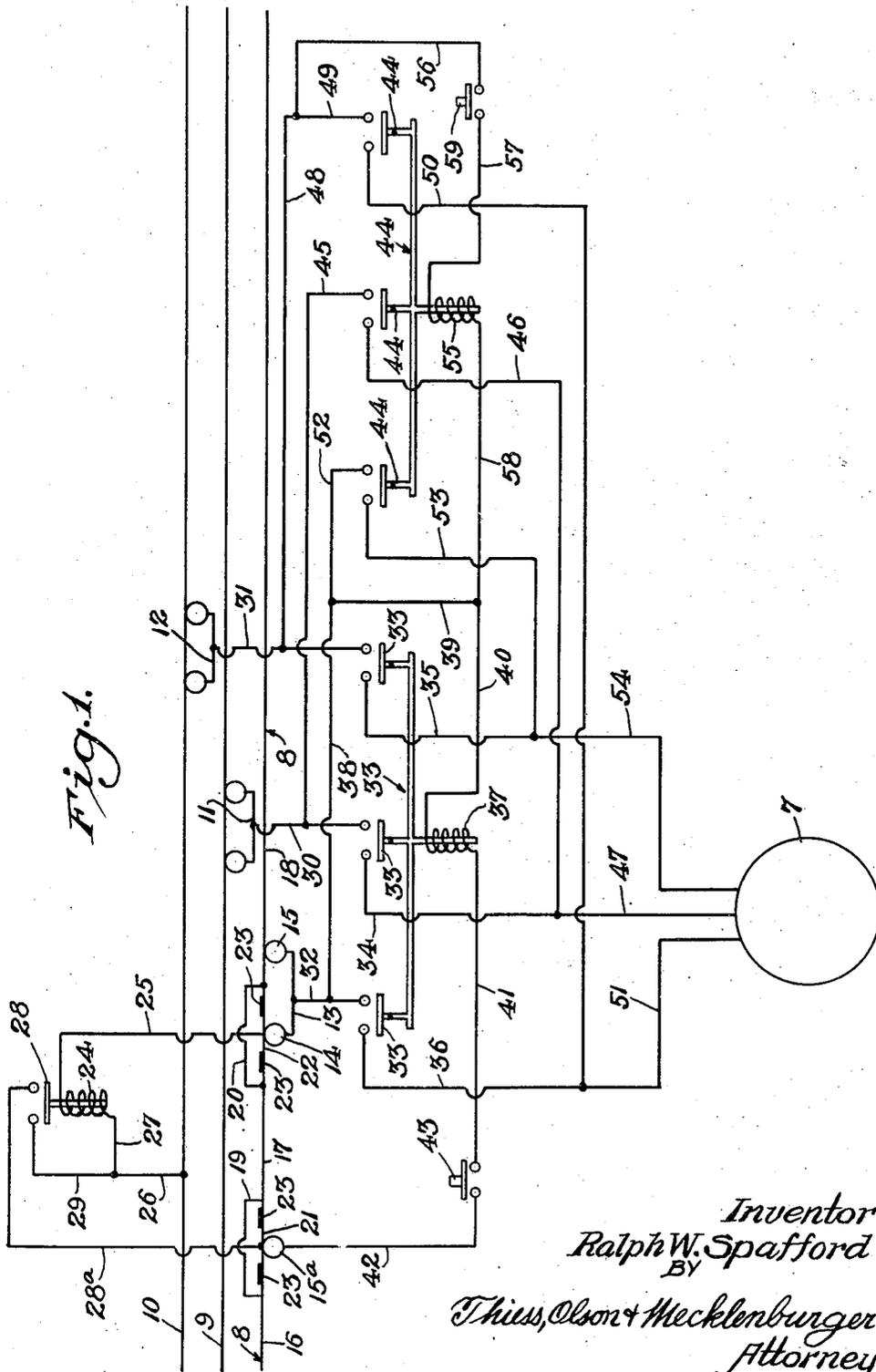
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CRANE CONSTRUCTION AND APPARATUS

Filed Feb. 24, 1944

2 Sheets-Sheet 1



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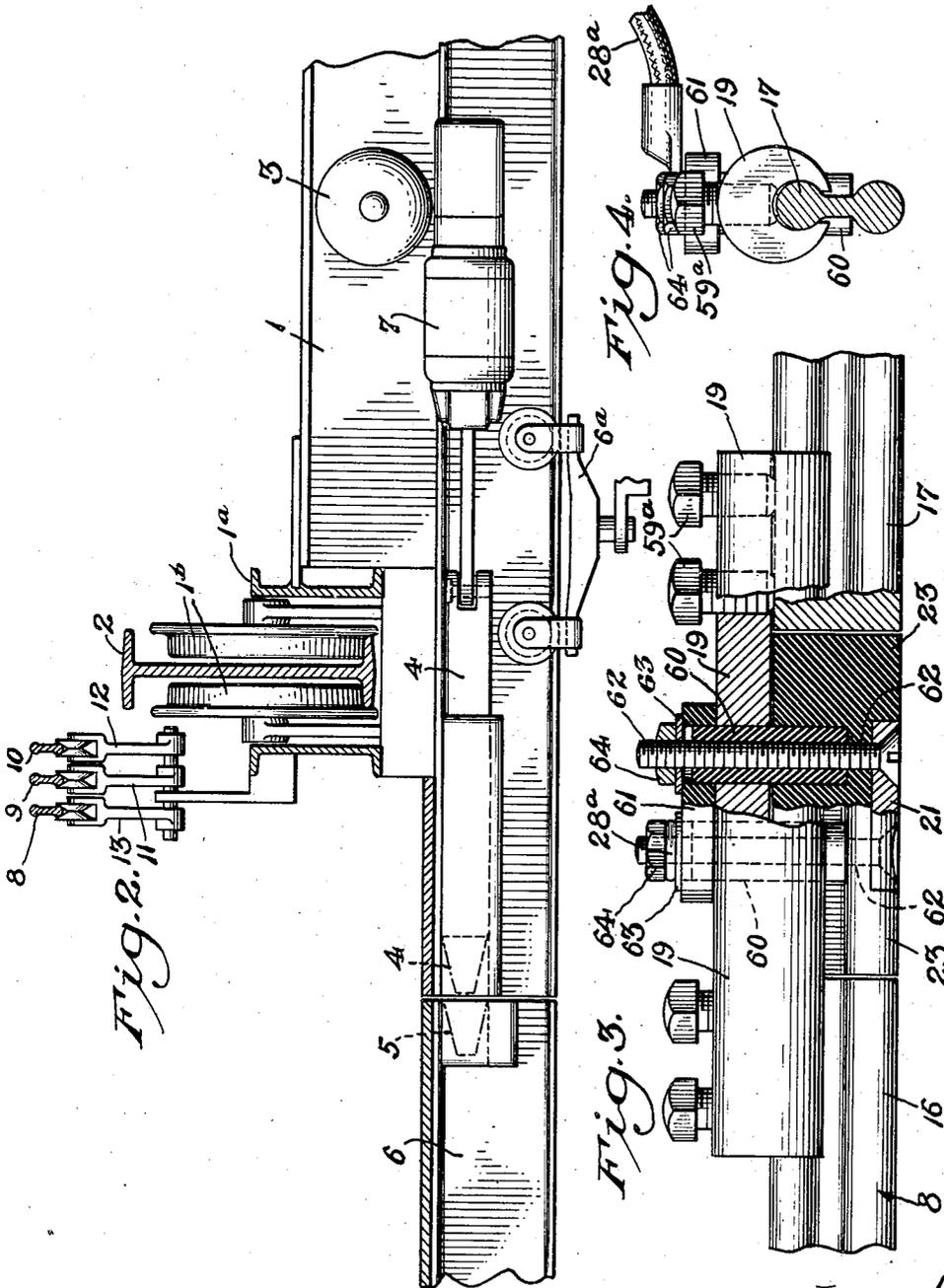
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# UNITED STATES PATENT OFFICE

2,486,221

## CRANE CONSTRUCTION AND APPARATUS

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Application February 24, 1944, Serial No. 523,635

23 Claims. (Cl. 104—98)

1

My invention relates to crane construction and apparatus.

One of the objects of my invention is to provide in a load conveyor system including a runway, a bridge traveling on said runway, a load-carrying trolley traveling along the bridge, a spur track with which the bridge may be brought into alignment, and latch means carried by the bridge for holding the bridge in alignment with the spur track, an improved apparatus for assuring that the bridge is in alignment with the spur track at the time that the alignment-maintaining latch is operated.

A further object is to provide an improved bus bar construction for engagement with a contact trolley carried by a load conveyor.

A further object is to provide an improved control apparatus including an interrupted trolley-engaging bus bar, a trolley-engaging contact located at the interruption, and an actuator connected with said contact.

Further objects and advantages of the invention will be apparent from the description and claims.

In the drawings, in which an embodiment of my invention is shown,

Figure 1 is a diagrammatic view showing a wiring diagram;

Fig. 2 is a view showing the bridge runway, bus bars, and bridge;

Fig. 3 is a detail view of an interrupted bus bar construction; and

Fig. 4 is an end view of Fig. 3.

The crane construction shown comprises a traveling bridge 1, end trucks 1a on which the bridge is mounted, truck wheels 1b engaging a runway 2 on which said bridge travels, a bridge motor 3, for propelling the bridge along the runway, a latch 4 carried by said bridge for engaging the keeper 5 on the stationary spur track 6 holding it against relative movement, a load supporting motor trolley 6a, mounted to travel on the bridge 1 and to travel from the bridge onto the spur track 6 and vice versa when the bridge is brought into alignment with the spur track, a reversible motor 7 for operating the latch 4 to effect latching and unlatching, three bus bar conductors 8, 9, and 10 extending along said runway, two contact trolleys 11 and 12 carried by said bridge engaging two of said bus bars 9 and 10, respectively, a third contact trolley 13 carried by said bridge having spaced electrically connected roller contacts 14 and 15 engaging the third bus bar, a fourth trolley 15a carried by said bridge engaging said third bus bar 8, said third bus bar having three trolley-engaging sections 16, 17, and 18, electrically connected in series by the jumpers 19 and 20 and having their ends spaced apart to provide two interruptions of the trolley-engaging portions of the three connected sections, two trolley-engaging contacts 21 and 22 located at said two interruptions, respectively, and insulated from said three connected sections by insulating trolley-engaging sections 23, an electric actuator 24 connected between one of said trolley-engaging contacts 22 and one of said two bus bars 10 by means of conductors 25, 26, and 27, a switch 28 controlled by said actuator 24 for connecting and disconnecting the other of said trolley-engaging contacts 21 with respect to said one of said two bus bars 10, through conductors 28a, 29, and 26, said two trolley-engaging contacts 21 and 22 and said third and fourth trolleys 13 and 15a being so spaced that when said fourth trolley 15a engages one of said trolley-engaging contacts 21, one of the spaced contacts 15 of said third trolley 13 will be in engagement with said third bus bar 8 and the other spaced contact 14 will be in engagement with the other trolley-engaging contact 22, conductors 30, 31, and 32 leading from said first three trolleys 11, 12, and 13, respectively, switch means 33 for connecting these three conductors 30, 31, and 32 with the conductors 34, 35, and 36, leading to the latch motor 7, an electric actuator 37 for said switch means connectible between the trolleys 13 and 15a through the conductors 32, 38, 39, 40, 41, and 42, a switch 43 for connecting and disconnecting the conductors 41 and 42, a second switch means 44 for electrically connecting said three conductors 30, 31, and 32 to said latch motor in reverse through the conductors 45, 46, 47, 48, 49, 50, 51, 52, 53, and 54, a second electric actuator 55 for said second switch means connectible between the trolleys 12 and 13 through the conductors 31, 48, 56, 57, 58, 39, 38, and 32, and a switch 59 for controlling the circuit to said second actuator.

2

In use, if the operator, who may be in a cage carried by the load-carrying trolley 6a, desires to latch the bridge 1 in alignment with the spur track 6 so that he can run the trolley 6a from the bridge 1 onto the spur track 6, he will operate the bridge motor 3 so as to bring the bridge 1 into substantial alignment with the track 6. If he has succeeded in aligning the bridge with the spur track, the trolley 15a will be in engagement with the contact 21, the trolley contact 14 will be in engagement with the contact or bus bar 22 and the trolley contact 15 will be in engagement with the bus bar 18, as shown in Fig. 1. Under

55

3

this condition, the electric actuator 24 is electrically connected between the bus bars 8 and 10 through the trolley 13, the conductor 25 and the conductors 27 and 26. This energizes the actuator 24 and closes the switch 28. This electrically connects the bus bar 10 with the trolley-engaging contact 21 through the conductors 26, 29, switch 28 and conductor 28a. This places the system in a condition in which a circuit may be closed through the switch actuator 37 by depressing the manual switch 43. This circuit, thus made, will be from the bus bar 10 to the bus bar 8, through the conductors 26 and 29, switch 28, conductor 28a, contact 21, trolley 15a, conductors 42, switch 43, conductor 41, actuator coil 37, conductors 40, 39, 38, and 32, and trolley contact 15. This energization of the actuator coil 37 will close the switch 33. This will establish a circuit for the latch motor 7 which will put the latch motor in operation to effect longitudinal movement of the latch 4 to bring it into engagement with the keeper 5 on the spur track to maintain alignment between the bridge 1 and the spur track. The operator can then cause the load-carrying trolley 6a to move from the bridge onto the spur track, and vice versa.

The circuit through the switch 33 thus established is from the bus bars 8, 9, and 10 to the conductors 51, 47, and 54, respectively.

The circuit from the bus bar 8 to the conductor 51 is through the trolley 13, conductor 32, switch 33 and conductor 36. The circuit from the bus bar 9 to the conductor 47 is through the trolley 11, conductor 30, switch 33 and conductor 34. The circuit from the bus bar 10 to the conductor 54 is through the trolley 12, conductor 31, switch 33 and conductor 35. Suitable limit switch apparatus may be provided to stop the operation of the latch motor 7 when it has moved to full latching position. To release the latch apparatus is provided for reversing the motor 7. To effect this reversal, the operator depresses the switch 59. This establishes a circuit through the coil of the actuator 55 which closes the switch 44 to establish reverse circuit arrangement for the motor 7. The closing of the switch 59 connects the coil 55 between the bus bars 10 and 8, the circuit being from the bus bar 10 through the trolley 12, conductors 31, 48 and 56, switch 59, conductor 57, coil 55, conductors 58, 39, 38 and 32 and trolley 13. The closing of the switch 44 electrically connects the bus bars 8, 9 and 10 with the motor conductors 54, 47 and 51, respectively, to effect reverse rotation of the motor 7. The circuit from the bus bar 8 to the conductor 54 is through the trolley 13, conductors 32, 38 and 52, switch 44 and conductor 53. The circuit from the bus bar 9 to the conductor 47 is through the trolley 11, conductors 30 and 45, switch 44 and conductor 46. The circuit from the bus bar 10 to the conductor 51 is through the trolley 12, conductors 31, 48, and 49, switch 44 and conductor 50.

The construction of the interrupted bus bar 8 is shown in detail in Figs. 3 and 4. This construction comprises an insulating bus bar section 23 having the same cross section as the conducting bus bars 16 and 17, a contact plate or bus bar section 21 imbedded in the insulating section 23, a jumper 19 having a channel to receive the upper bead of the trolley-engaging sections 16, 23 and 17, set screws 59a threaded in this metal jumper 19 and engaging the upper edges of the bus bars 16 and 17 for holding them securely in position, a pair of insulating sleeves 60

4

seated in pockets in the insulating section 23 and extending through the conducting jumper section 19, an insulating washer 61 having apertures therethrough into which the upper ends of the sleeves 60 extend, clamping screws 62 extending through registering openings in the conductor plate 21, insulating section 23 and sleeve 60, washers 63 through which the clamping screws 62 extend, and nuts 64 threaded on the ends of the clamping screws 62. One of these clamping screws may be used as a binding screw for connection with the conductor 28a which leads to the switch 28.

Further modifications will be apparent to those skilled in the art and it is desired, therefore, that the invention be limited only by the scope of the appended claims.

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

1. A crane construction comprising a traveling bridge, a runway on which said bridge travels, a bridge motor, a latch carried by said bridge for holding it against relative movement, a motor for operating said latch to effect latching and unlatching, three bus bar conductors extending along said runway, two trolleys carried by said bridge engaging two of said bus bars, respectively, a third trolley carried by said bridge having spaced electrically connected contacts engaging the third bus bar, a fourth trolley carried by said bridge engaging said third bus bar, said third bus bar having three trolley-engaging sections electrically energized and having their ends spaced apart to provide two interruptions of the trolley-engaging portions of the three energized sections, two trolley-engaging conductors located at said two interruptions, respectively, and insulated from said three energized sections, an electric actuator connected between one of said trolley-engaging conductors and one of said two bus bars, a switch controlled by said actuator for connecting and disconnecting the other of said trolley-engaging conductors with respect to said one of said two bus bars, said two trolley-engaging conductors and said third and fourth trolleys being so spaced that when said fourth trolley engages one of said trolley-engaging conductors, one of the spaced contacts of said third trolley will be in engagement with said third bus bar and the other spaced contact will be in engagement with the other trolley-engaging conductor, conductors leading from said first three trolleys, respectively, switch means for connecting these three conductors with the latch motor, an electric actuator for said switch means, and a switch for connecting and disconnecting the fourth trolley with respect to said actuator.

2. A crane construction comprising a traveling bridge, a runway on which said bridge travels, a bridge motor, a latch carried by said bridge for holding it against relative movement, a reversible motor for operating said latch to effect latching and unlatching, three bus bar conductors extending along said runway, two trolleys carried by said bridge engaging two of said bus bars, respectively, a third trolley carried by said bridge having spaced electrically connected contacts engaging the third bus bar, a fourth trolley carried by said bridge engaging said third bus bar, said third bus bar having three trolley-engaging sections electrically energized and having their ends spaced apart to provide two interruptions of the trolley-engaging portions of the three energized sections, two trolley-engaging conductors located at said two interruptions, respective-

5

ly, and insulated from said three energized sections, an electric actuator connected between one of said trolley-engaging conductors and one of said two bus bars, a switch controlled by said actuator for connecting and disconnecting the other of said trolley-engaging conductors with respect to said one of said two bus bars, said two trolley-engaging contacts and said third and fourth trolleys being so spaced that when said fourth trolley engages one of said trolley-engaging conductors, one of the spaced contacts of said third trolley will be in engagement with said third bus bar and the other spaced contact will be in engagement with the other trolley-engaging conductor, conductors leading from said first three trolleys, respectively, switch means for connecting said three conductors with the latch motor, an electric actuator for said switch means, a switch for connecting and disconnecting the fourth trolley with respect to said actuator, a second switch means for electrically connecting said three conductors to said latch motor in reverse, a second electric actuator for said second switch means, and a switch for controlling the circuit to said second actuator.

3. A conveyor construction comprising a traveling conveyor, a trackway on which said conveyor travels, bus bar means extending alongside said trackway, a first trolley means carried by said conveyor having spaced electrically connected contacts engaging said bus bar means, a second trolley means carried by said conveyor engaging said bus bar means, said bus bar means having three trolley-engaging sections electrically energized and having their ends spaced apart to provide two interruptions of the trolley-engaging portions of the trolley-engaging sections, two trolley-engaging conductors located at said two interruptions, respectively, and insulated from said trolley-engaging sections, said two trolley-engaging conductors and said two trolley means being so spaced that when said second trolley means engages one of said trolley-engaging conductors one of the spaced contacts of said first trolley means will be in engagement with said bus bar means and the other spaced contact will be in engagement with the other trolley-engaging conductor, and means for controlling the energization of said one conductor controlled by said engagement.

4. A trolley-engaging bus bar construction comprising two electrically energized bus bar sections having their ends spaced apart to provide an interruption of the trolley-engaging portions of the sections, and a trolley-engaging conductor located at said interruption and insulated from said two electrically-connected sections, the insulation between said trolley-engaging contact and said sections comprising a trolley-engaging insulating member on which said trolley-engaging conductor is mounted, the electrical connection between said sections comprising a metal member for aligning the sections and electrically connecting them and for aligning the insulating member with said sections, said insulating member and sections each having a trolley-engaging bead and a support-engaging bead, said metal member having a channel in which said support-engaging beads are seated.

5. A trolley-engaging bus bar construction comprising two electrically energized bus bar sections having their ends spaced apart to provide an interruption of the trolley-engaging portions of the sections, a trolley-engaging conductor located at said interruption and insulated

6

from said two electrically-connected sections, the insulation between said trolley-engaging contact and said sections comprising a trolley-engaging insulating member on which said trolley-engaging conductor is mounted, the electrical connection between said sections comprising a metal member for aligning the sections and electrically connecting them and for aligning the insulating member with said sections, said insulating member and sections each having a trolley-engaging bead and a support-engaging bead, said metal member having a channel in which said support-engaging beads are seated, and means for securing said insulating member to said alignment member comprising a screw extending through said trolley-engaging contact, trolley-engaging insulating member and metal connecting member.

6. A trolley-engaging bus bar construction comprising two electrically energized bus bar sections having their ends spaced apart to provide an interruption of the trolley-engaging portions of the sections, a trolley-engaging conductor located at said interruption and insulated from said two electrically-connected sections, the insulation between said trolley-engaging contact and said sections comprising a trolley-engaging insulating member on which said trolley-engaging conductor is mounted, the electrical connection between said sections comprising a metal member for aligning the sections and electrically connecting them and for aligning the insulating member with said sections, said insulating member and sections each having a trolley-engaging bead and a support-engaging bead, said metal member having a channel in which said support-engaging beads are seated, means for securing said insulating member to said alignment member comprising a screw extending through said trolley-engaging conductor, trolley-engaging insulating member and metal connecting member, and a conductor secured to said screw.

7. A conveyor construction comprising a traveling conveyor, a trackway on which said conveyor travels, bus bar means extending alongside said trackway, a first trolley means carried by said conveyor having spaced electrically connected contacts engaging said bus bar means, a second trolley means carried by said conveyor engaging said bus bar means, said bus bar means having trolley-engaging sections electrically energized and having their ends spaced apart to provide two interruptions of the trolley-engaging portions of the trolley-engaging sections, two trolley-engaging conductors located at said two interruptions, respectively, and insulated from said trolley-engaging sections, said two trolley-engaging conductors and said two trolley means being so spaced that when said second trolley means engages one of said trolley-engaging conductors one of the spaced contacts of said first trolley means will be in engagement with said bus bar means and the other spaced contact will be in engagement with the other trolley-engaging conductor, and means for controlling the energization of said one conductor controlled by said engagement comprising an electric actuator energized by the engagement of said first trolley means, and a switch controlling the power supply to said one conductor controlled by said actuator.

8. A conveyor construction comprising a traveling conveyor, a trackway on which said conveyor travels, bus bar means extending alongside said trackway, a first trolley means carried by said conveyor having spaced electrically con-

nected contacts engaging said bus bar means, a second trolley means carried by said conveyor engaging said bus bar means, said bus bar means having trolley-engaging sections electrically energized and having their ends spaced apart to provide two interruptions of the trolley-engaging portions of the trolley-engaging sections, two trolley-engaging conductors located at said two interruptions, respectively, and insulated from said trolley-engaging sections, said two trolley-engaging conductors and said two trolley means being so spaced that when said second trolley means engages one of said trolley-engaging conductors one of the spaced contacts of said first trolley means will be in engagement with said bus bar means and the other spaced contact will be in engagement with the other trolley-engaging conductor, means for controlling the energization of said one conductor controlled by said engagement comprising an electric actuator energized by the engagement of said first trolley means, and a switch controlling the power supply to said one conductor controlled by said actuator, an electric translating element carried by said conveyor, and a circuit for said translating element including a conductor carried by said conveyor connected with said second trolley means.

9. A conveyor construction comprising a traveling conveyor, a trackway on which said conveyor travels, bus bar means extending alongside said trackway, a first trolley means carried by said conveyor having spaced electrically connected contacts engaging said bus bar means, a second trolley means carried by said conveyor engaging said bus bar means, said bus bar means having trolley-engaging sections electrically energized and having their ends spaced apart to provide two interruptions of the trolley-engaging portions of the trolley-engaging sections, two trolley-engaging conductors located at said two interruptions, respectively, and insulated from said trolley-engaging sections, said two trolley-engaging conductors and said two trolley means being so spaced that when said second trolley means engages one of said trolley-engaging conductors one of the spaced contacts of said first trolley means will be in engagement with said bus bar means and the other spaced contact will be in engagement with the other trolley-engaging conductor, means for controlling the energization of said one conductor controlled by said engagement comprising an electric actuator energized by the engagement of said first trolley means, and a switch controlling the power supply to said one conductor controlled by said actuator, an electric motor carried by said conveyor, and a circuit for controlling said motor carried by said conveyor and connected with said second trolley means.

10. A conveyor system comprising a bus bar system having two interruptions to provide a plurality of energized sections and two bus bar means interposed between said energized sections at said interruptions and insulated therefrom, a conductor normally disconnected from a first one of said insulated bus bar means, a conveyor for travelling alongside the bus bar system, two collector means carried by said conveyor for engaging said energized sections and respectively simultaneously engaging said interposed bus bar means as the conveyor travels, one of said collector means at the same time connecting the second one of said bus bar means with an energized section, and means controlled by said con-

nection for connecting said conductor with said first insulated bus bar means.

11. A conveyor system comprising a bus bar system having two interruptions to provide a plurality of energized sections and two bus bar means interposed between said energized sections at said interruptions and insulated therefrom, a conductor normally disconnected from a first one of said insulated bus bar means, a conveyor for travelling alongside the bus bar system, two collector means carried by said conveyor for engaging said energized sections and respectively simultaneously engaging said interposed bus bar means as the conveyor travels, one of said collector means at the same time connecting the second one of said bus bar means with an energized section, and means controlled by said connection for connecting said conductor with said first insulated bus bar means, comprising a connector between said conductor and said first insulated bus bar means and an actuator for said connector controlled by the connection of said second bus bar means with said energized section.

12. A bus bar construction comprising an elongated connector member having a longitudinally-extending bead-retaining groove therein, two bus bar ends of uniform cross section, each having a bead along one edge insertable endwise into said groove, and a collector-engaging bead along its other edge, insulating means interposed between said bus bar ends having bead means along one edge insertable endwise into said groove and collector-engaging bead means along its other edge, and a collector-engaging conductor carried by said connector member intermediate said bus bar ends and insulated therefrom by said insulating means.

13. A bus bar construction comprising an elongated connector member having a longitudinally-extending bead-retaining groove therein, two bus bar ends of uniform cross section, each having a bead along one edge insertable endwise into said groove, and a collector-engaging bead along its other edge, insulating means interposed between said bus bar ends having bead means along one edge insertable endwise into said groove and collector-engaging bead means along its other edge, and a collector-engaging conductor carried by said connector member intermediate said bus bar ends and insulated therefrom by said insulating means, said connector member being of conducting material and serving to electrically connect said bus bar ends.

14. A sectionalized bus bar construction having a surface engageable by movable current collectors, comprising an elongated supporting member 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, at least a portion of said surface comprising an electric conductor, and a pair of bus bars, each having a beaded end portion insertable endwise into said groove to support said bus bars in said member adjacent the opposite ends of said means, said bus bars and said means forming a continuous collector-engaging surface when assembled in said supporting member with said conductor portion of said means insulated from said bus bars.

15. A conveyor system comprising a conveyor for travelling along a trackway, a pair of bus bars extending along said trackway, and collector

means carried by said conveyor engaging and travelling along said bus bars, one of said bus bars having a control section interposed therein insulated from the adjacent sections, said collector means including a bridging collector for connecting said control section with an adjacent section, an electric actuator connected between the said control section and the nonadjacent bus bar, the circuit through which actuator is completed by the said bridging collector, a second control section interposed in one of said bus bars and insulated from adjacent sections, and a connector controlled by said actuator for controlling the connection and disconnection between said second control section and one of said bus bars, said collector means comprising a second collector so spaced with respect to said bridging collector as to engage said second control section when the bridging collector connects the first control section with an adjacent bus bar section.

16. A conveyor system comprising a conveyor for travelling along a trackway, a pair of bus bars extending along said trackway, and collector means carried by said conveyor engaging and travelling along said bus bars, one of said bus bars having a control section interposed therein insulated from the adjacent sections, said collector means including a bridging collector for connecting said control section with an adjacent section, an electric actuator connected between the said control section and the nonadjacent bus bar, the circuit through which actuator is completed by the said bridging collector, a second control section interposed in one of said bus bars and insulated from adjacent sections, a connector controlled by said actuator for controlling the connection and disconnection between said second control section and one of said bus bars, said collector means comprising a second collector so spaced with respect to said bridging collector as to engage said second control section when the bridging collector connects the first control section with an adjacent bus bar section, and an electric translating device in circuit with said second collector.

17. A conveyor system comprising a conveyor for travelling along a trackway, a pair of bus bars extending along said trackway, and collector means carried by said conveyor engaging and travelling along said bus bars, one of said bus bars having a control section interposed therein insulated from the adjacent sections, said collector means including a bridging collector for connecting said control section with an adjacent section, an electric actuator connected between the said control section and the nonadjacent bus bar, the circuit through which actuator is completed by the said bridging collector, a second control section interposed in one of said bus bars and insulated from adjacent sections, a connector controlled by said actuator for controlling the connection and disconnection between said second control section and one of said bus bars, said collector means comprising a second collector so spaced with respect to said bridging collector as to engage said second control section when the bridging collector connects the first control section with an adjacent bus bar section, and an electric translating device carried by said conveyor in circuit with said second collector.

18. Conveyor apparatus comprising a conveyor for travelling along a trackway, an electric translating device carried by said conveyor, interrupted bus bar means extending alongside said trackway, an insulated bus bar section interposed between

two interrupted bus bar sections, collector means carried by said conveyor engaging said interrupted sections and engageable with said interposed section for supplying current to the translating device, and means for controlling the energization of said interposed section comprising a circuit control element interposed between two interrupted bus bar sections, and a collector carried by said conveyor, engaging said interrupted sections and engageable with said control element simultaneously with the engagement of said collector means with said interposed section.

19. Conveyor apparatus comprising a conveyor for travelling along a trackway, an electric translating device, interrupted bus bar means extending alongside said trackway, an insulated bus bar section interposed between two interrupted bus bar sections, collector means carried by said conveyor engaging said interrupted sections and engageable with said interposed section for supplying current to the translating device, and means for controlling the energization of said interposed section comprising a circuit control element interposed between two interrupted bus bar sections and a collector carried by said conveyor, engaging said interrupted sections and engageable with said control element simultaneously with the engagement of said collector means with said interposed section.

20. Conveyor apparatus comprising a conveyor for travelling along a trackway, an electric translating device, interrupted bar means extending alongside said trackway, an insulated bus bar section interposed between two interrupted bar sections, collector means carried by said conveyor, engaging said interrupted bar sections and engageable with said interposed section for supplying current to the translating device, and means for controlling the energization of said interposed section comprising a first circuit control element interposed between two interrupted bar sections, and a second circuit control element carried by said conveyor engaging said interrupted bar sections engageable with said first control element simultaneously with the engagement of said collector means with said interposed section.

21. Conveyor apparatus comprising a conveyor for travelling along a trackway, an electric translating device, interrupted bar means extending alongside said trackway, an insulated bus bar section interposed between two interrupted bar sections, collector means carried by said conveyor, engaging said interrupted bar sections and engageable with said interposed section for supplying current to the translating device, and means for controlling the energization of said interposed section comprising a circuit control element fixed with respect to said bus bar section, and a second control element carried by said conveyor engageable with said first control element simultaneously with the engagement of said collector means with said interposed section.

22. A conveyor construction comprising a travelling conveyor for travelling along a trackway, bus bar means extending alongside said trackway, a first trolley means carried by said conveyor having spaced electrically connected contacts engaging said bus bar means, a second trolley means carried by said conveyor engaging said bus bar means, said bus bar means having trolley-engaging sections electrically energized and having their ends spaced apart to provide two interruptions of the trolley-engaging portions of the trolley-engaging sections, two trolley-

11

engaging conductors located at said two interruptions, respectively, and insulated from said trolley-engaging sections, said two trolley-engaging conductors and said trolley means being so spaced that when said second trolley means engages one of said trolley-engaging conductors one of the spaced contacts of said first trolley means will be in engagement with said bus bar means and the other spaced contact will be in engagement with the other trolley-engaging conductor, and means for controlling the energization of said one conductor controlled by said engagement.

23. A conveyor construction comprising a conveyor for traveling along a trackway, a first bus bar and a second bus bar extending alongside said trackway, a first trolley carried by said conveyor having spaced electrically connected collectors engaging said first bus bar, a second trolley carried by said conveyor having a collector engaging one of said bus bars, said first bus bar having at least two collector-engaging sections spaced apart to provide an interruption of the collector-engaging portions of the two sections, a first collector-engaging conductor located at said interruption and insulated from said sections, said spaced collectors being so spaced longitudinally that when one of them is in engagement with said collector-engaging conductor the other will be in contact with one of said sections, an electric actuator connected between said collector-engaging conductor and said second bus bar, said bus bar which engages said second trolley collector having a second collector-engaging conductor located at an interruption in said

12

bus bar and insulated from said bus bar and connectible and disconnectible in circuit with the other bus bar, means for controlling said connection and disconnection controlled by said actuator, a third trolley carried by said conveyor having a collector engaging said second bus bar and cooperating with said first trolley to supply current from said current from said bus bars to said conveyor, said second trolley collector being engageable with said second collector-engaging conductor only when predetermined ones of said spaced collectors are in engagement with said first-mentioned collector-engaging conductor and said section, respectively, and means for selectively controlling an electrical device through said circuit.

RALPH W. SPAFFORD.

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