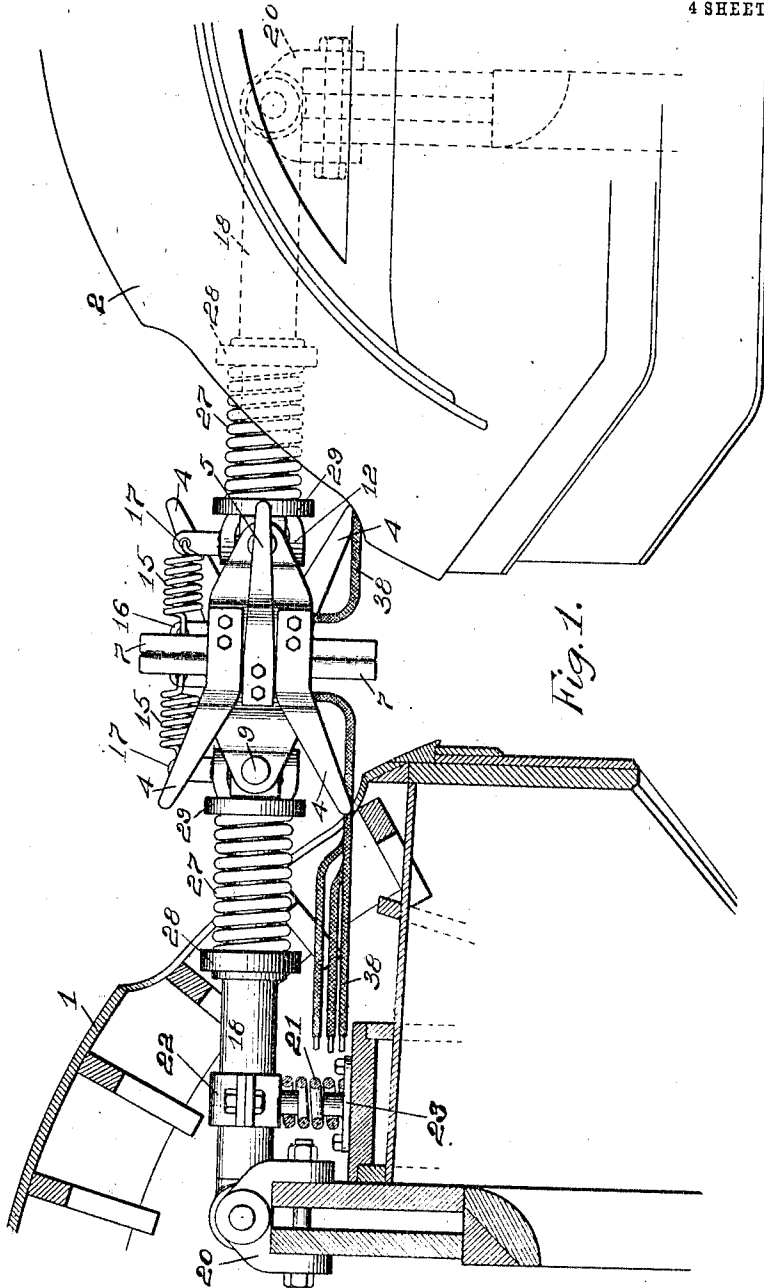


W. L. BLISS.
AUTOMATIC ELECTRIC TRAIN LINE COUPLING.
APPLICATION FILED JAN. 6, 1905.

1,011,402.

Patented Dec. 12, 1911.

4 SHEETS—SHEET 1.



WITNESSES:

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INVENTOR

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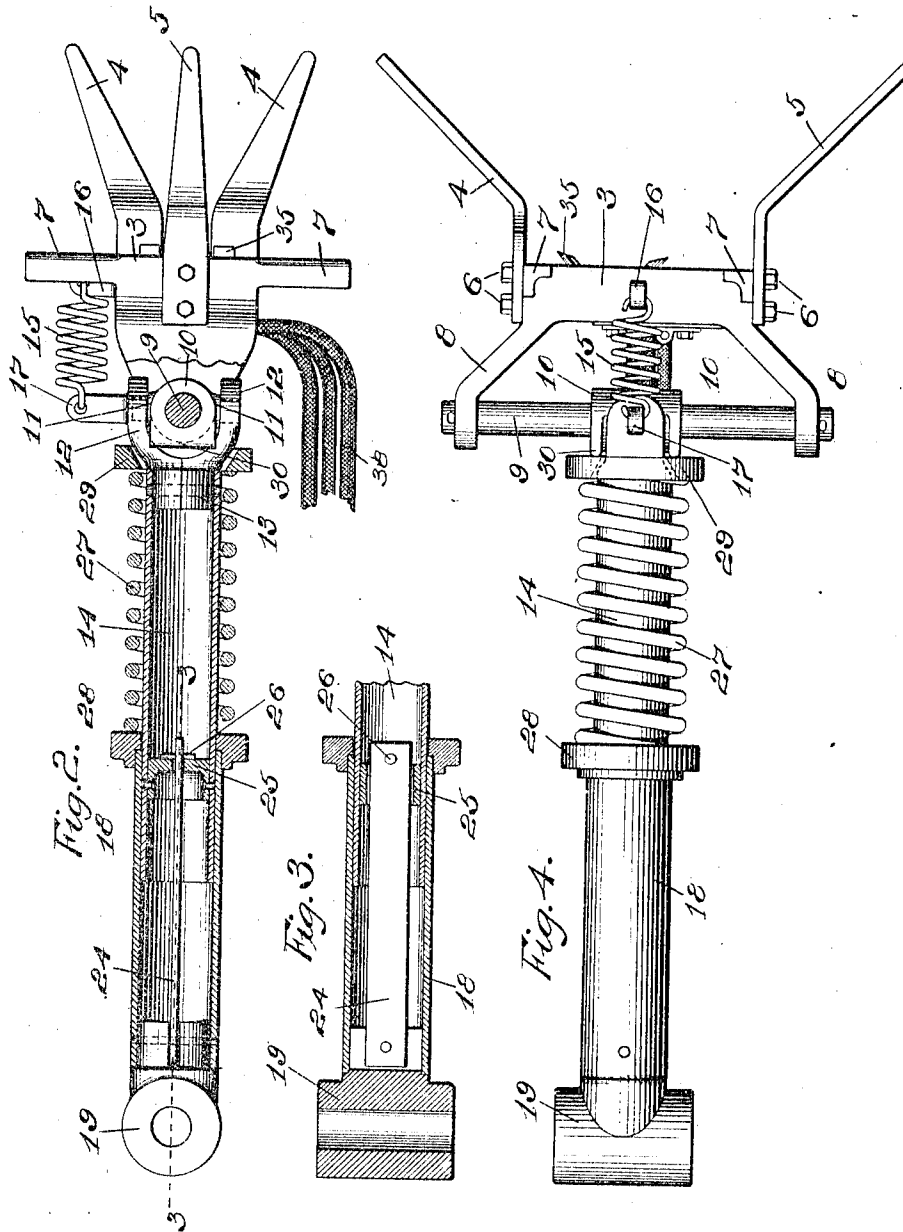
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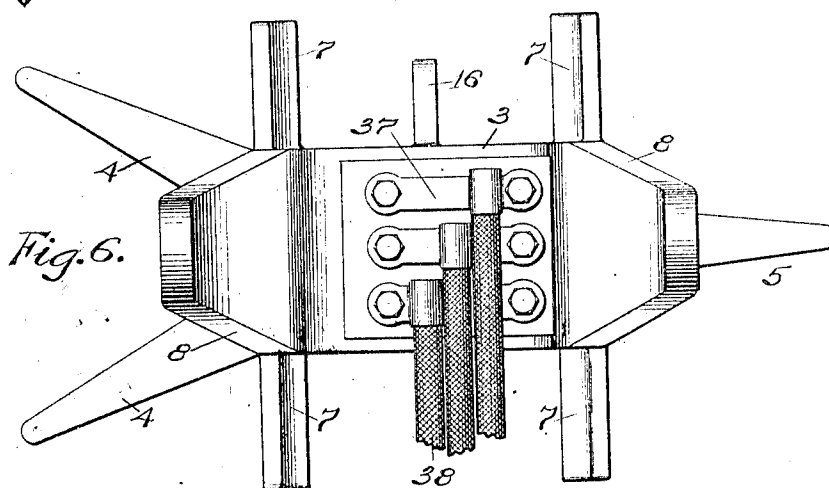
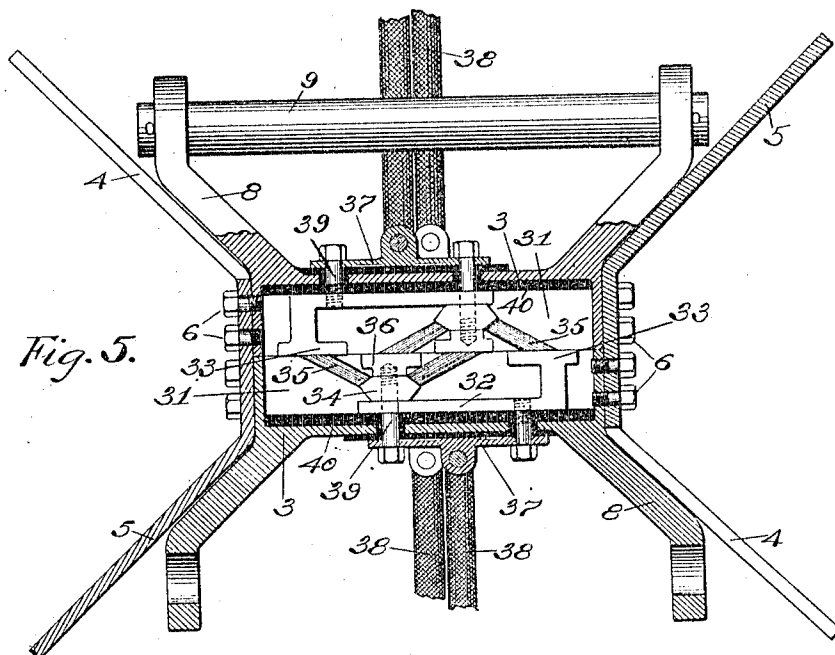
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4 SHEETS-SHEET 3.



WITNESSES:

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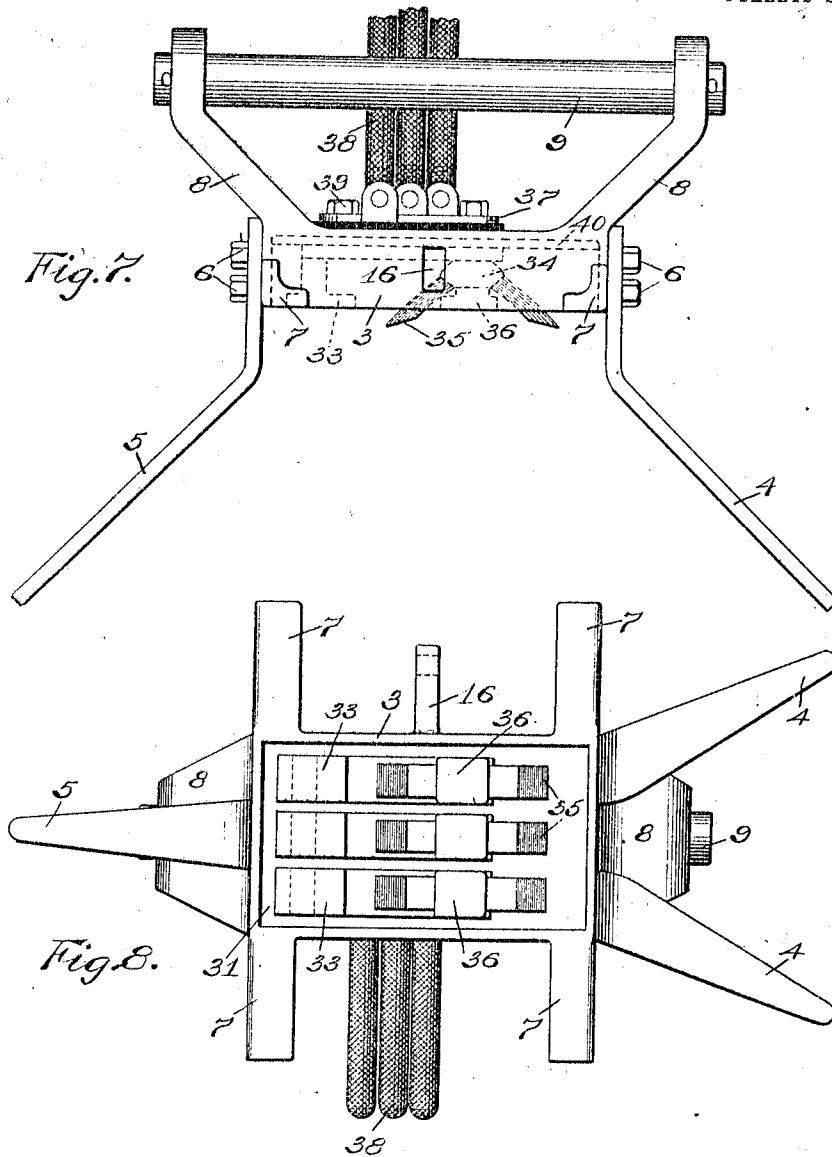
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4 SHEETS—SHEET 4.



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UNITED STATES PATENT OFFICE.

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THE UNITED STATES LIGHT AND HEATING COMPANY, OF NEW YORK, N. Y., A COR-
PORATION OF MAINE.

AUTOMATIC ELECTRIC TRAIN-LINE COUPLING.

1,011,402.

Specification of Letters Patent.

Patented Dec. 12, 1911.

Application filed January 6, 1905. Serial No. 239,926.

To all whom it may concern:

Be it known that I, WILLIAM L. BLISS, a citizen of the United States, residing at Brooklyn, in the county of Kings and State of New York, have invented new and useful Improvements in Automatic Electric Train-Line Couplings, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawing, forming a part of this specification.

The present invention relates to improvements in automatic couplings which are adapted to be employed on railroad trains to connect the sections of the train lines automatically upon connecting the cars or units of the train.

The cars or units of railroad trains are usually each provided with a section of a train line, such as a pipe line or an electric line, the sections of the train line being connected between the adjacent cars or units of the train.

An object of the present invention is to provide a coupling which may be employed to connect the sections of the train line automatically upon bringing the cars or the units of the train together.

Another object of the present invention is to provide a coupling which will be especially adapted to connect the sections of an electric train line.

The present invention has various other objects which will be apparent from the disclosure of the invention which is made herein.

The coupling contains a pair of coupling members which are adapted to engage each other. When the present invention is embodied in the preferred form thereof, means are provided to retain the members of the coupling in fixed positions in relation to each other while the same are in engagement. Furthermore, said members are supported by means which permit each member to move independently of the car by which it is supported whereby the cars may move relatively without changing the positions of the members of the coupling in relation to one another.

The coupling shown in the accompanying drawings which will be hereinafter described will serve to explain the present invention. It will of course be understood

that the invention may be embodied in various ways and that it may be applied to other purposes.

The views in the accompanying drawings are as follows:

Figure 1 is a side view of the coupling arranged between two adjacent cars of a train. Fig. 2 is a side view of one of the coupling members, parts thereof being in section. Fig. 3 is a sectional view on the line 3—3 of Fig. 2. Fig. 4 is a plan view of one of the coupling members. Fig. 5 is a horizontal sectional view taken through the coupling with the members thereof in engagement. Fig. 6 is a back view of one of the coupling members, and Figs. 7 and 8 are a plan view and a front view, respectively, thereof.

The cars 1 and 2 each carry a coupling member or block 3 which is provided upon one side thereof with a pair of guides 4 and upon the other side thereof with a single guide 5, said guides preferably being attached to said member by bolts 6. The outer ends of the guides 4 and 5 are inclined outwardly, and the inner ends of the guides 4 are preferably separated from each other. The coupling member or block is preferably provided with posts 7 which are arranged upon the top and bottom thereof.

Upon the back of the coupling member are formed arms 8 which are connected to a rod 9, said rod being mounted in a sleeve 10 through which it may slide or in which it may rotate. The sleeve 10 is preferably pivoted upon trunnions 11 which bear in a yoke 12, the stem 13 of said yoke being fastened in the outer end of a slidable tube 14 and preferably made in two parts. The coupling member is preferably suspended upon a spring 15 which is connected to a lug 16 formed upon the top of the coupling member and a lug 17 formed upon the yoke 12. The position of the coupling member may be changed by having the rod 9 slide through the sleeve 10 or revolve therein. The spring 15 will yield to permit such movements of the coupling member.

The slidable tube 14 extends into a pivoted tube 18, and may be moved inwardly and outwardly and also revolved therein. The inner end of the pivoted tube has a hub 19 fastened thereto, said hub being journaled upon a bracket 20 which is fastened to a suitable part of the car. The outer end of

the pivoted tube bears upon a spring 21 which is interposed between a collar 22 fastened upon the pivoted tube and a plate 23 mounted upon a suitable part of the car, said collar and said plate being provided with pins which keep the spring 21 in place.

Within the pivoted tube is arranged a flat torsion spring 24, the inner end of which is fastened in the hub 19. The outer end of the torsion spring passes through a slotted diaphragm 25 which is arranged within the slidable tube 14. When the slidable tube is moved inwardly and outwardly, the torsion spring passes through a slot in the diaphragm 25, and a pin 26 carried by said spring prevents said slidable tube from being withdrawn from the pivoted tube. The flat torsion spring fits closely within the slot in the diaphragm, and will yield to permit the slidable tube to be revolved slightly in the pivoted tube.

The slidable tube is preferably surrounded by helical spring 27 which is interposed between a collar 28 mounted upon the outer end of the pivoted tube 18 and a loose collar 29 bearing against lugs 30 carried by the sleeve 10. The spring 27 presses the slidable tube outwardly and also offers a yielding resistance to the rotation of the sleeve 10 upon the trunnions 11.

If the coupling members are out of alignment when the cars are brought together, the guides 4 and 5 will bring the same into alinement, said members being permitted to move independently of the cars in the requisite directions. The posts 7 of each coupling member are adapted to engage the outer ends of the guides 4 of the other coupling member, and the same increase the bearing surface of each coupling member. The single guide 5 of each coupling member passes between the guides 4 of the other coupling member and thereby the coupling members are locked against vertical relative movement. The guides 4 and 5 of each coupling member engage the sides of the other coupling member and thereby the coupling members are locked against horizontal relative movement. The coupling members are pressed firmly together by the springs 27 when the same are in engagement, the slidable tubes being forced inwardly.

The coupling members are permitted to move vertically by the pivoted tubes 18 turning on the pivots thereof, or the rods 9 rotating in the sleeves 10; and also the same are permitted to move horizontally by the rods 9 sliding through the sleeves 10 and the sleeves 10 rotating on the trunnions 11. Moreover, the coupling members are permitted to move longitudinally by the slidable tubes 14 sliding inwardly and outwardly and to turn on the longitudinal axis thereof by the slidable tubes turning. The coupling members may therefore move in

such directions independently of the cars by which the same are supported, that said cars may move relatively without changing the positions of the coupling members in relation to one another.

The outer face of each coupling member may be provided with a recess 31 in which may be mounted a plurality of contact supports 32. Each contact support preferably has a contact shoe 33 formed upon one end thereof. The other end of the contact support preferably has mounted thereon a cup 34 carrying brushes or contacts 35 and a contact shoe 36. A cable lug 37 arranged upon the back of the coupling member and having a cable 38 of a train line connected thereto is preferably connected to the contact support by bolts 39, said bolts serving to electrically connect the contact support and the cable lug, and also retain the same in position. The contact shoe 36 and the cup 34 are preferably secured upon the contact support by one of the bolts 39. The cable lug 37, the bolts 39 and the contact supports 32 are preferably insulated from the coupling member by insulating material 40.

The brushes 35 of each coupling member are adapted to engage the contact shoes 36 and 33 carried by the other member and corresponding thereto. When the members of the coupling are in engagement, the ends of the brushes are sprung backwardly, and thus firm contact is obtained between the brushes and the contact shoes.

Each car in the train may carry a coupling member upon each end thereof, and between the coupling members of each car may extend the cables 38 of the train line, said cables being connected to the contacts of the coupling members. When cars are brought together, the coupling members carried thereby will automatically connect the sections of the train line. It is obvious that the number of conductors or cables which the coupling may be adapted to connect may be varied according to the circumstances.

It will be understood that the coupling may be applied to purposes other than those which have been set forth, and that the construction thereof may be readily adapted to suit the circumstances under which it is to be employed.

The embodiment of the invention which has been particularly set forth herein for the purpose of disclosing the invention may be changed in various ways and still retain the features which are contemplated by the claims of this specification.

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

1. In an automatic coupling, in combination, a pivoted supporting member, a longi-

itudinally movable member mounted upon said pivoted member, and a coupling member movably mounted upon the latter member.

5 2. In an automatic coupling, in combination, a pivoted supporting member, a longitudinally movable member mounted upon said supporting member, a part pivoted upon the latter member, and a coupling member movably mounted upon said part.

10 3. In an automatic coupling, in combination, a pivoted supporting member, a longitudinally movable member mounted upon said supporting member, a sleeve pivoted upon the latter member, a rod extending through said sleeve, and a coupling member pivoted upon said rod.

15 4. In an automatic coupling, in combination, a pivoted supporting member, a longitudinally movable member mounted upon said supporting member, a sleeve pivoted upon the latter member, a rod extending through said sleeve, a coupling member pivoted upon said rod, and guides carried by said coupling member.

20 5. In an automatic coupling, in combination, a pivoted supporting member, a longitudinally movable member mounted upon said supporting member, a sleeve pivoted upon the latter member, a rod carried by said sleeve, a coupling member pivoted upon said rod, a single guide arranged upon one side of said member, and a pair of guides arranged upon the other side of said member.

25 6. In an automatic coupling, in combination, a pivoted supporting member, a longitudinally movable member mounted upon said supporting member, a part pivoted upon the latter member, a rod carried by said part, and a coupling member pivoted upon said rod.

30 7. In an automatic coupling, in combination, a pivoted supporting tube, a longitudinally movable tube carried thereby, a part pivoted upon the latter tube, a rod carried by said part, a coupling member pivoted upon said rod, and guides carried by said coupling member.

35 8. In an automatic coupling, in combination, a pivoted supporting member, a longitudinally movable member carried thereby and adapted to turn upon said supporting member, a part pivoted upon the latter member, a coupling member movably mounted upon said part, and guides carried by said coupling member.

40 9. In an automatic coupling, in combination, a pivoted supporting member, a longitudinally movable member carried thereby, a part pivoted upon the latter member, a rod carried by said part, a coupling member pivoted upon said rod, guides carried by said coupling member, a spring having said coupling member suspended thereon, a col-

lar surrounding the latter member and bearing against said part, and a spring pressing said collar against said part.

10. In an automatic coupling, in combination, a pivoted tube, a slidable tube extending into said pivoted tube, a torsion spring arranged within said pivoted tube, a helical spring surrounding said slidable tube, a sleeve pivoted upon said slidable tube and pressed against said sleeve by said helical spring, a rod carried by said sleeve, a coupling member pivoted upon said rod, and guides carried by said coupling member.

11. In an automatic coupling, in combination, a pivoted tube, a slidable tube extending into said pivoted tube, a torsion spring fastened in a fixed position in said pivoted tube and adapted to slide into said slidable tube, a helical spring surrounding said slidable tube, a yoke fastened upon the outer end of said slidable tube, a sleeve pivoted upon said yoke, a collar bearing against said sleeve and engaged by said helical spring, a rod bearing in said sleeve, a coupling member carried by said rod, guides carried by said coupling member, and a spring connecting said coupling member and said yoke.

12. In an automatic coupling, in combination, a coupling member, guides carried by said coupling member, a part having said coupling member movably mounted thereon, said coupling member being movable vertically and horizontally and a pivoted supporting member having said part pivotally mounted upon the same.

13. In an automatic coupling, in combination, a coupling member, guides carried by said coupling member, a rod having said coupling member pivoted thereon, a part carrying said rod and a pivoted supporting member having said part pivotally mounted thereon.

14. In an automatic coupling, in combination, a coupling member, guides carried by said coupling member, a pivoted supporting member having said coupling member pivotally mounted thereon, said coupling member being adapted to pivot in a vertical plane and also in a horizontal plane, and means permitting said coupling member to move longitudinally.

15. In an automatic coupling, in combination, a pair of coupling members, a bow-shaped brush carried by each coupling member, a contact arranged between the ends of said brush and another contact arranged upon one side of said brush, one end of the brush of each member being adapted to engage the contact arranged between the ends of the brush of the other member and the other end of the brush of each member being adapted to engage the contact arranged at one side of the brush of the other member.

16. In combination, a pivoted supporting member, a longitudinally slidable member mounted upon said supporting member, a bearing piece pivotally mounted upon the second mentioned member, a coupling member carried by said bearing piece and adapted to pivot upon said bearing piece and also to partake of bodily movement in relation to said bearing piece, electrical contacts mounted upon said coupling member, and guides carried by said coupling member.

17. In combination, a pivoted supporting tube adapted to pivot in a vertical plane, a longitudinally slidable tube carried by the first mentioned tube and arranged in axial alinement therewith and adapted to turn axially, a spring yieldingly opposing axial movement of the second mentioned tube, another spring yieldingly opposing longitudinal movement of the second mentioned tube, a bearing piece pivoted upon the outer end of said second mentioned tube and adapted to pivot in a horizontal plane, a coupling member mounted upon said bearing piece, said coupling member being adapted to pivot in a horizontal plane with said bearing piece, to pivot in a vertical plane and to partake of a bodily movement in a horizontal plane in relation to said bearing piece, electrical contacts mounted upon said coupling member, and guides mounted upon said coupling member.

18. In combination, a pivoted supporting member, a longitudinally movable member carried thereby, a coupling member and means carried by the second mentioned member and carrying said coupling member, said means being adapted to allow said coupling member to pivot in a vertical plane and also in a horizontal plane, and to partake of bodily movement in a horizontal plane.

19. In combination, a pivoted supporting member, a longitudinally movable member carried thereby, a coupling member and means mounted upon the second-mentioned member to carry said coupling member, said means being adapted to allow said coupling member to pivot in a vertical plane and also in a horizontal plane, and to partake of bodily movement in a horizontal plane, and electrical contacts carried by said coupling member.

20. In combination, a pivoted supporting member, a longitudinally movable member carried thereby, a coupling member means

mounted upon the second mentioned member to carry said coupling member, said means being adapted to allow said coupling member to pivot in a vertical plane and in a horizontal plane, and to partake of bodily movement in a horizontal plane, and springs for yieldingly opposing the movement of said longitudinally movable member and said coupling member.

21. In combination, a pivoted supporting member, a longitudinally movable member carried thereby, a coupling member means mounted upon the second mentioned member to carry said coupling member, said means being adapted to allow said coupling member to pivot in a vertical plane and also in a horizontal plane, and to partake of bodily movement in a horizontal plane, springs for yieldingly opposing the movement of said longitudinally movable member and said coupling member, and electrical contacts carried by said coupling member.

22. In combination, a pivoted supporting tube, a longitudinally movable tube carried thereby and adapted to be turned, springs opposing axial movement and also longitudinal movement of the second mentioned tube, a coupling member, means connecting said coupling member to said second mentioned tube and adapted to allow said coupling member to pivot vertically and horizontally and to move bodily in a horizontal plane, and means yieldingly opposing the movement of said coupling member.

23. In combination, a pivoted supporting tube, a longitudinally movable tube carried thereby and adapted to be turned, springs opposing axial movement and also longitudinal movement of the second mentioned tube, a coupling member, means connecting said coupling member to said second mentioned tube and adapted to allow said coupling member to pivot vertically and horizontally and to move bodily in a horizontal plane, means yieldingly opposing the movement of said coupling member, and electrical contacts carried by said coupling member.

In witness whereof, I have hereunto subscribed my name in the presence of two witnesses.

WILLIAM L. BLISS.

Witnesses:

I. N. ROBERTSON,
HERBERT J. SMITH.