March 13, 1934. H. A. DOUGLAS 1,950,717

MULTIPLE POLE LINE CONNECTER

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Fig. 1

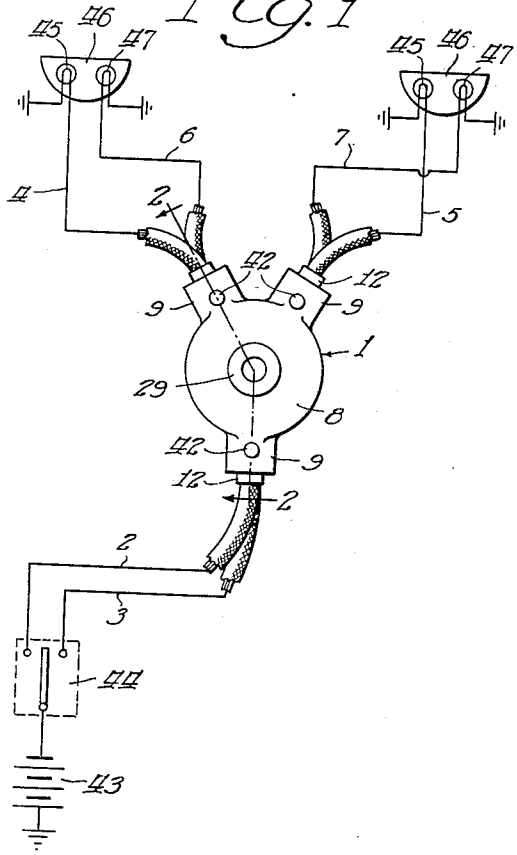

Fig. 2

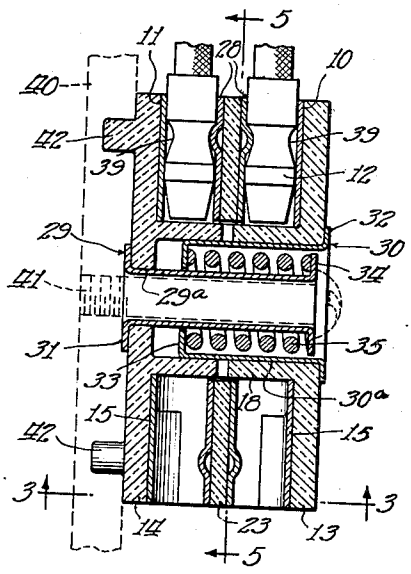

Fig. 3

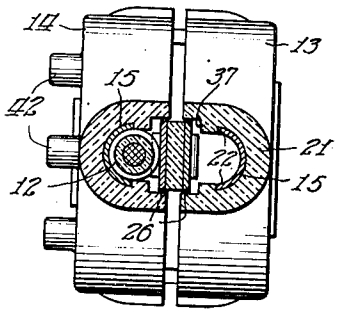

Fig. 4

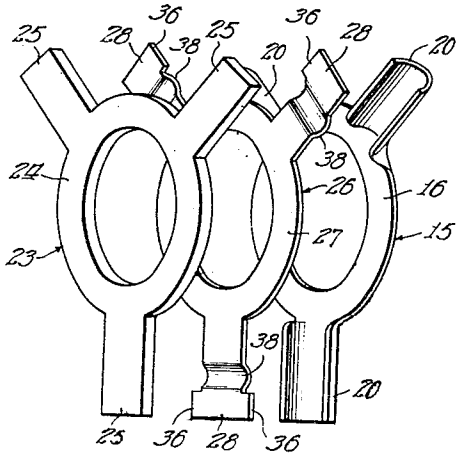

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Fig. 5

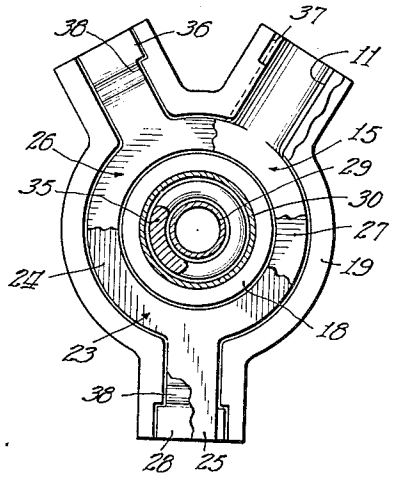


Fig. 6

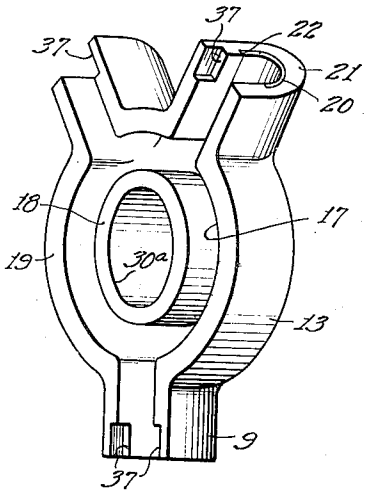


Fig. 7

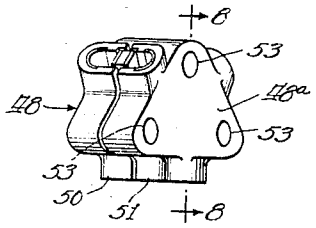


Fig. 8

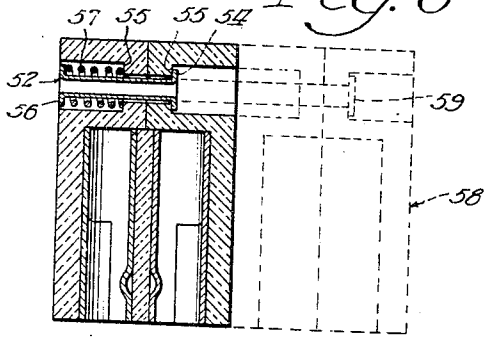
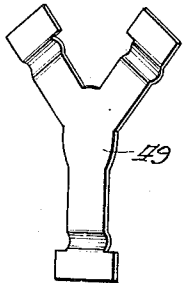


Fig. 9



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UNITED STATES PATENT OFFICE

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MULTIPLE POLE LINE CONNECTER

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Application June 2, 1932, Serial No. 614,881

10 Claims. (Cl. 173—334)

This invention relates to multiple-pole line connecters more particularly for automobile lighting circuits.

Among other objects, the invention aims to provide improved and economical means for connecting current conducting lines in multiple relation.

In one aspect, the invention provides a six-pole connecter in one unit with convenient means for adding other units thereto affording additional poles.

The invention will be understood by reference to the illustrative constructions shown in the accompanying drawings, in which—

Figure 1 is a side elevation of a connecter embodying my invention, with illustrative circuits diagrammatically associated therewith;

Figure 2 is a section taken on the line 2—2 of Figure 1;

Figure 3 is a section taken on the line 3—3 of Figure 2, with a terminal plug inserted in one of the recesses and also shown in section;

Figure 4 is a perspective view of some parts included in my improved connecter in separated relation;

Figure 5 is a section taken on the line 5—5 of Figure 2;

Figure 6 is a perspective view of one section of my improved connecter with one of the Y-shape plates received therein;

Figure 7 is a perspective view of a modified form of connecter embodying my invention;

Figure 8 is a section taken on the line 8—8 of Figure 7 and indicating, by dotted lines, another unit added thereto; and

Figure 9 is a perspective view of one of the Y-shape plates associated with the form of connecter shown in Figures 7 and 8.

Referring in detail to the figures of the drawings, the multiple-pole line connecter 1, shown in Figure 1, provides in a single unit a six-pole connecter having six recesses therein for receiving the terminal plugs of the six current conductors 2, 3, 4, 5, 6 and 7.

The multiple-pole line connecter unit 1 includes a housing desirably formed of molded insulating material such as "Bakelite" having a circular hub portion 8 and recessed portions 9 describing in this instance somewhat the form of a Y. Each of the recessed portions 9 contains a pair of parallel recesses 10 and 11, each recess receiving a conventional bulbous terminal plug 12 of one of the insulated current conductors. In this instance, the housing 8 is split in a plane passing through the recesses to form complementary hollow insulating sections 13 and 14, one of which sections, such as the section 13, is shown in perspective in Figure 6. One recess of each pair of recesses is formed in each of the sections 13 and 14. Each of the sections 13 and 14 receives snugly therein a metallic plate 15 having an annular hub portion 16 which is received in the annular space 17 between the inner hub wall 18 and the outer hub wall 19 of each section. Radiating from the hub portion 16 the plate 15 has integral semi-cylindrical portions 20 which describe the form of a Y and one of which is received in each of the recesses 10 and 11 of each of the sections 13 and 14. The semi-cylindrical portions 20 may be maintained in snug contact and substantially concentric with the semi-cylindrical walls 21 of the recesses by being pressed between these walls and shoulders 22 (Figures 3 and 6) molded within the recesses, thus providing metallic linings for the recesses.

Disposed between the insulating sections 13 and 14 and therefore between the metallic plates 15 I have shown inserted an insulating plate 23 having an annular hub portion 24 similar to the hub portion 16 of the plates 15 and integrally radiating portions 25 which also form a general Y-shape coterminous with the Y-shape plates 15 and thereby insulating the plates 15 one from the other. The hub portion 24 and the radiating portions 25 of the insulating plate 23 are received respectively partially in the annular spaces 17 of each of the sections 13 and 14 and partially in each of the recesses 10 and 11, thus maintaining the radiating portions 25 in radial alignment with the radiating portions 20 of the plates 15, when the sections are secured together, as presently described.

In this instance, I have shown another pair of metallic plates 26 having annular hub portions 27 and integral radiating portions 28 forming a Y-shape generally similar to the other plates already described and one of which plates 26 is similarly received in each of the sections 13 and 14 between the insulating plate 23 and one of the metallic plates 15.

When a terminal plug 12 is received within one of the recesses it is received within the semi-cylindrical portions 20 of the plates 15 and between these portions and the portions 28 of the plates 26, one or both of these metallic plates 15 and 26 thus providing an electrical connection between all of the terminal plugs 12 received in one of the sections 13 or 14 of the housing.

In order that the terminal plugs 12 be yieldingly but snugly retained in the recesses and also

be maintained in contact with at least one of the metallic plates, I provide yielding means for securing together the sections 13 and 14 and the Y-shape insulating plate and metallic plates, which in the exemplification shown in Figures 1 to 6, inclusive, may include the telescoping hollow rivets 29 and 30 which pass centrally through the circular aperture 30*a* in the hub portion 8 of the housing within the inner hub walls 18 of the sections. The larger rivet 30 may be of the diameter of the aperture 30*a*, while the smaller rivet 29 passes slidingly through the larger rivet 30 and snugly through a reduced central aperture 29*a* in the housing section 14. The outer head 31 of the rivet 29 engages the section 14 and the outer head 32 of the rivet 30 engages the section 13. The inner head 33 of the rivet 30 is turned toward the rivet 29 and between this head 33 of the rivet 30 and the inner head 34 of the rivet 29, I have shown a compression coil spring 35 which is thus interposed between the inner end of one of the rivets and a member in abutting contact with the opposite section of the housing. This presses the housing sections together, but permits a yielding movement therebetween and between the plates 15 and 26 of each section of the housing. Thus the plates 26 as well as the plate 23 are in floating relationship to each other and to the plates 15.

To maintain the plates 26 spaced from the plates 15 to permit ready insertion of the terminal plugs therebetween, I may conveniently extend each of the radiating portions 28 of the plates 26 transversely as at 36 to engage shoulders 37 formed in enlargements of the recesses 10 and 11, the shoulders 37 being suitably spaced from the shoulders 22, so that the plugs 12 will force the plates 15 and 26 apart when received therebetween. When so received (as best shown in Figures 2 and 3), the bulbous plugs 12 desirably snap over transverse shoulders formed in this instance on the plates 26 such as the ribs 38 struck out from the radiating portions 28 toward the cylindrical portions 20 of the plates 15 transversely to these portions and thus yieldingly received within the annular grooves 39 at the base of the bulbous plugs 12.

In practice the unit 1 may be secured to a suitable mounting 40 as by having a screw bolt 41 pass through the rivet 29 and threadedly received in the mounting 40. To prevent rotation of the unit on the bolt 41 one of the housing sections such as the section 14 may have laterally protruding pins 42 molded integrally therewith which enter into suitably spaced recesses in the mounting 40.

So constructed and arranged the terminal plugs 12 of the insulated current conductors 2, 4 and 5 are received in the recesses 11 of the section 14 and are thus electrically connected together, whereby a current received from the grounded battery 43 may by means of the switch 44 be passed through the wire 2 and in parallel through the wire 4 and 5 to the grounded filaments 45 of the automobile head lights 46. The filaments 45 may constitute the intermediate driving lights of the automobile as by being located slightly above the focus of the lamps 46. Similarly, by means of the switch 44, the circuit just described may be broken and a circuit established through the wire 3 and in parallel through the wires 6 and 7, (which are in electrical connection with the wires 3 by being all received in the housing section 13) and through the grounded filaments 47 of the head lamps 46. The filaments 47 may constitute the normal driving lights of the vehicle as by being located at the focus of the lamps 46.

In Figures 7, 8 and 9, I have shown a modified form of multiple-pole line connecter 48 embodying my invention in which the hub portion 48*a* is triangular instead of circular and the plates received therein, one of which is shown in perspective in Figure 9, has a solid hub portion 49 instead of an annular hub portion. The sections 50 and 51 in this exemplification may be secured together by a rivet 52 which passes through each of the apertures 53 located in each corner of the triangular hub portion 48*a*. The rivet 52 may have a head 54 at one end which engages a shoulder 55 within the aperture 53 and a head 56 at its other end between which and another of the shoulders 55 in the other section of the housing is interposed a compression coil spring 57 thus yieldingly securing the sections 50 and 51 together.

Another unit 58 similar to the unit 48 may be added as suggested by dotted lines in Figure 8. In this case longer rivets, such as 59, substituted for the rivets 52 may pass through both units 48 and 58 to secure them together while at the same time the sections of both units are pressed together by the springs 57.

Such changes may be made as fall within the scope of the following claims without departing from the invention.

I claim:

1. A device of the class described, comprising an insulating housing having a plurality of pairs of parallel recesses for receiving the metallic terminal plugs of a plurality of groups of electrical conductors; a pair of metallic plates each having semi-cylindrical portions entering each recess each said semi-cylindrical portion receiving a plug therein; a floating insulating plate coterminous with the metallic plates and disposed therebetween; and means for yieldingly retaining the plates together to retain the plugs within the semi-cylindrical portions.

2. A device of the class described, comprising an insulating housing having three pairs of parallel recesses for receiving three pairs of terminal plugs, said housing being split in a plane passing through the recesses to form complementary sections with one recess of each pair in each section; a pair of Y-shape metallic plates having semi-cylindrical portions entering the recesses of each of the sections and concentric therewith; a Y-shape insulating plate coterminous with the Y-shape metallic plates and disposed therebetween; another pair of Y-shape metallic plates substantially coterminous with the first mentioned plates, one of which latter plates is disposed between each of the first mentioned metallic plates and the insulating plate; and means for yieldingly securing the sections and plates together.

3. The structure of claim 2 wherein the plates which are disposed between the insulating plate and the other metallic plates have shoulders thereon transverse to and projected toward each of the semi-cylindrical portions to provide detents for the plugs.

4. The structure of claim 2 wherein the Y-shape plates have annular hub portions and telescoping hollow rivets pass therethrough to secure the sections and plates together and wherein there is a coil spring interposed between the inner ends of the rivets and pressing the rivets into telescoping relation.

5. The structure of claim 2 wherein the yielding means includes a rivet having a head at each end, one of said heads engaging one section of the housing and wherein there is a compression spring interposed between the other head of the rivet and the other section of the housing.

6. An electrical connecter comprising an insulating housing embodying two complementary hollow sections; oppositely disposed recesses in the sections; metallic linings in the recesses; means for resiliently retaining the sections together; and a floating insulating plate received partially in each section and providing pairs of recesses each pair insulated from another pair.

7. A multi-pole connecter comprising an insulating housing embodying two complementary hollow sections; at least three recesses in each of the sections; an integral metallic plate in each section having semi-cylindrical branch portions received in each recess of the section and secured therein to provide a metallic lining therefor; a floating insulating plate received partially in each section substantially coterminous with the metallic plates to insulate the recesses of one section from the recesses of the other; and resilient means for retaining the sections and insulating plate together, said resilient means including a compression coil spring forcing the sections together.

8. A multi-pole connecter comprising an insulating housing embodying two complementary hollow sections; at least three recesses in each of the sections; an integral metallic plate in each section having semi-cylindrical branch portions received in each recess of the section and secured therein to provide a metallic lining therefor; a floating insulating plate received partially in each section and substantially coterminous with the metallic plates to insulate the recesses of one section from the recesses of the other; another pair of metallic plates substantially coterminous with the first mentioned plates and received one between each of the first-mentioned metallic plates and the insulating plate; and resilient means for retaining the sections and plates together.

9. The structure of claim 8 wherein the metallic plates that are received between the first mentioned plates and the insulating plate have transversely extended portions which engage shoulders in enlargements of the recesses.

10. The structure of claim 8 wherein the metallic plates that are received between the first mentioned plates and the insulating plate have transverse shoulders thereon for snapping over bulbous terminal plugs receivable in the recesses.

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