

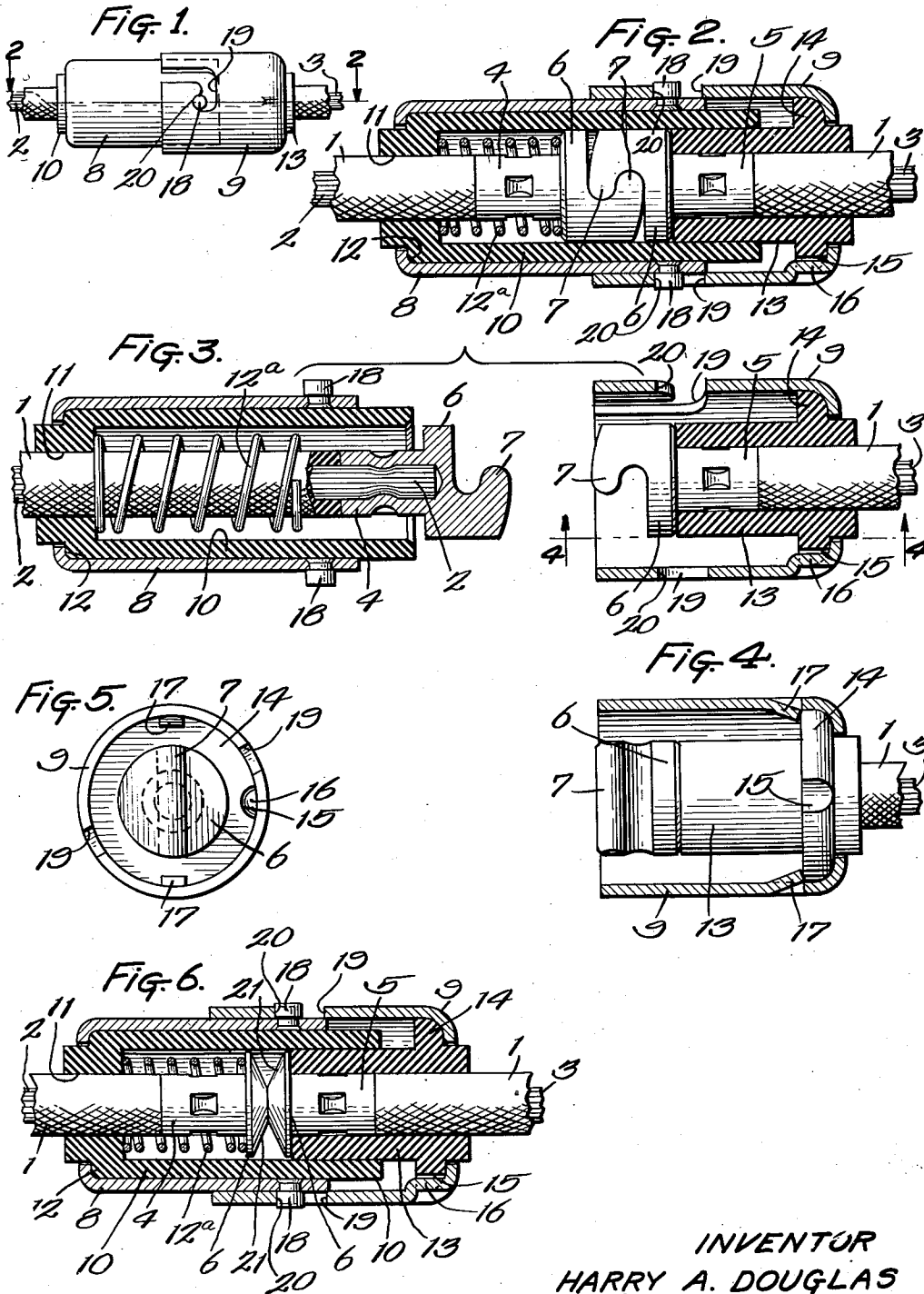
Sept. 14, 1937.

H. A. DOUGLAS

2,093,037

CONNECTER

Filed Feb. 5, 1934



INVENTOR
HARRY A. DOUGLAS
BY *Langdon M. M.*
ATTY.

UNITED STATES PATENT OFFICE

2,093,037

CONNECTER

Harry A. Douglas, Bronson, Mich., assignor to
Kingston Products Corporation, a corporation
of Indiana

Application February 5, 1934, Serial No. 709,693

8 Claims. (Cl. 173—328)

This invention relates to improvements in connectors and more particularly to a connector construction for connecting electric current conductors or wires.

5 It is an object of this invention to provide a simple and positive means for continuing the electric current from the end of one conductor to the end of the other, which can be easily connected or disconnected and in which one terminal is
10 resiliently engaged within the connector whereby the terminals of the conductors are normally held in contact and at the same time allowing a momentary breaking of the circuit upon an excessive tug or pull in service and immediately
15 thereafter again closing the circuit without disrupting the connector. It is another object of this invention to provide a connector of the type just described with means insulating both conductor terminals when continuing the current
20 within the connector and so enclosing the connection as to allow of a momentary separation of the terminals and, in the event of the current arcing at the moment of separation, the arc will occur within a chamber of insulating material.

25 With these and other objects in view, reference is made to the accompanying sheet of drawing which illustrates preferred forms of this invention, with the understanding that detail changes may be made without departing from the scope
30 thereof.

In the drawing:—

Figure 1 is a view in side elevation of an embodiment of this invention with the ends of two electric conductors connected thereby.

35 Figure 2 is a view in section taken on the line 2—2, Figure 1, with parts shown in elevation.

Figure 3 is a detail projected view of the parts shown in section as in Figure 2 before the connection is completed.

40 Figure 4 is a detail view in section taken on the line 4—4, Figure 3, with parts in elevation showing a means for securing the shell upon the insulation of the immovable terminal.

Figure 5 is a view in end elevation of Figure 4, looking at the end adjacent thereto.

45 Figure 6 is a view similar to Figure 2 of a modified form of this invention.

In carrying out this invention the insulation
50 1 is stripped from each end of the commercial electric conductors 2 and 3 and terminals 4 and 5 secured to the respective ends, preferably by swedging, as shown in Figure 3. Each terminal is provided with a similar enlarged cylindrical portion 6 formed to closely engage the other by extending opposite halves of each cylindrical por-

tion to provide interlocking members 7 having reverse curved surfaces of semi-cylindrical conformation constructed on equal radii on opposite sides of the longitudinal axis of the terminal with the external semi-cylindrical surface
5 extended over the said axis and joined tangentially to the curved end surface of the terminal extension, as shown in Figures 3, 4, and 5, whereby when the interlocking members are in engagement with each other the terminals and their
10 respective conductor ends will lie in the same axis, as clearly shown in Figure 2.

The terminals when interlocked are all surrounded by telescoping metallic cylindrical shells 8 and 9 which are insulated from the respective
15 terminals and from each other by providing the inner cylindrical sleeve 8 with a sleeve 10 of insulating material extending beyond each end of the shell and having an axial bore 11 at one end of sufficient size to snugly receive the conductor
20 2 and its insulation casing 1. The exterior of this end of the sleeve is of reduced diameter to provide an annular shoulder 12 and the metal of that end of the shell 8 spun thereover. The bore
25 11 of the sleeve 10 after entering the shell 8 is increased in diameter to slidably receive the cylindrical portion 6 of the terminal 4 which is surrounded by a coil spring 12^a bearing against the reduced end of the sleeve and the cylindrical
30 part 6 of the terminal. The outer telescoping shell 9 supports the terminal 5 in axial alignment therewith within a sleeve 13 of insulating material having an exterior diameter coincident with that
35 of the cylindrical part 6 of said terminal which it engages and having adjacent the other end, but spaced apart therefrom, an integral annular flange 14 centering the sleeve 13 within the shell
40 9 and the metal of the end of the shell is spun over the outer side of the flange 14. The sleeve 13 is preferably held against rotation within the shell 9 by providing a transverse groove 15 in the edge of the flange 14 adapted to receive a rib
45 16 struck in from the surrounding shell. If desired, the sleeve may be held against axial movement after having been received within the shell by striking in tongues 17 from the surrounding shell
50 to engage the flange 14, as shown in Figures 4 and 5. The sleeve 13 positions the terminal 5 of the conductor 3 with its locking member 7 substantially flush with the open end of the shell 9.

To connect the conductors 2 and 3 the terminal
55 4 of the conductor 2 is extended beyond its sleeve 10, as shown in Figure 3, interlocked with the terminal 5 of conductor 3 and then the sleeve 10 is telescoped over the cylindrical interlocking

members of both terminals and the sleeve 13, against the tension of the spring 12^a, as shown in Figure 2. To maintain this telescoping relation of the sleeves 10 and 13, whereby the connection between the conductors is contained within the insulated chamber formed thereby, bayonet pins 18 are provided upon the shell 8 coacting with bayonet slots 19 upon the shell 9 having the usual bayonet seat 20 within which the pins 18 are held seated by the spring 12^a exerting pressure on the sleeve 10 and thereby upon shell 8.

In the modification shown in Figure 6, the terminals 4 and 5 are not interlocked. In this embodiment of the invention the cylindrical portion 6 of the said terminals are each formed with a frusto-conical terminal 21, the flat ends of which are held in contact with each other by the tension of the spring 12^a. Should this tension be overcome in service so that an arcing occurs between the normally engaged surfaces of the terminations 21 of the terminals 4 and 5, such arcing occurs entirely within the chamber formed by the sleeves 10 and 13, and any danger from conflagration caused thereby is eliminated.

What I claim is:

1. Electrical connection means, comprising: connectible members, comprising complementary insulating means so constructed and arranged that when said members are connected, said insulating means provide a chamber having outlet apertures; a pair of current conducting bodies movably disposed within said chamber, each of said bodies having an electrical conductor secured thereto and movable therewith, said electrical conductors extending through respective outlet apertures, and said bodies being so constructed and arranged as to be engageable within said chamber, and disengageable within said chamber by pulling one of said conductors in an outward direction with respect to the outlet aperture through which said conductor extends; and resilient means, interposed between a wall of said chamber and said one of said bodies, and constructed and arranged to yieldably hold said bodies in engagement.

2. Electrical connection means, comprising: connectible members, comprising complementary insulating means so constructed and arranged that when said members are connected, said insulating means provide a chamber having outlet apertures; a pair of engageable current conducting bodies movably disposed within said chamber, each having an electrical conductor secured thereto and movable therewith, said electrical conductors extending through respective outlet apertures; and resilient means, interposed between a wall of said chamber and one of said bodies, and constructed and arranged to yieldably hold said bodies in engagement.

3. Electrical connection means, comprising: connectible members, comprising complementary insulating means so constructed and arranged that when said members are connected, said insulating means provide an elongated chamber having outlet apertures at its ends; a pair of engageable current conducting bodies disposed within said chamber, and constructed and arranged so as to be movable axially of said chamber, each of said bodies having an electrical conductor secured thereto and movable therewith, said electrical conductors extending through respective outlet apertures; and resilient means, interposed between a wall of said chamber and one of said bodies, and constructed and arranged to yieldably hold said bodies in engagement.

4. Electrical connection means, comprising: connectible members, comprising complementary insulating means so constructed and arranged that when said members are connected, said insulating means provide an elongated chamber having outlet apertures in its end walls; a pair of engageable current conducting bodies disposed within said chamber and constructed and arranged so as to be movable axially of said chamber, each of said bodies having an electrical conductor secured thereto and movable therewith, said electrical conductors extending through respective outlet apertures; one of said bodies being limited in axial movement in one direction by abutment with one of the end walls of said chamber; and resilient means, interposed between the other end wall of said chamber and the other of said bodies, and constructed and arranged to urge said other body into engagement with said one body.

5. Electrical connection means, comprising: a pair of complementary connectible members; one of said members comprising a first tubular shell, an insulating sleeve carried within said first shell, a first contact body movably arranged within said insulating sleeve, and having an electrical conductor secured thereto and movable therewith, said conductor extending out of said sleeve, and resilient means interposed between said body and a wall of said sleeve; and the other of said members comprising a second tubular shell, having means cooperable with means on said first tubular shell to hold said shells in assembled relation, an insulating body, having an outlet aperture, carried within said second shell, and a second contact body, having an electrical conductor secured thereto and movable therewith, said conductor extending through said outlet aperture; said connectible members being so constructed and arranged that when said first and second shells are connected, said insulating sleeve and said insulating body cooperate to form an elongated chamber in which said first and second contact bodies are axially movable, said resilient means yieldably holding said contact bodies in engagement.

6. Electrical connection means, comprising: a pair of connectible members, including a bayonet pin carried by one member and a bayonet slot carried by the other member, for releasably holding said members connected; said members carrying complementary insulating means so constructed and arranged that when said members are connected, said insulating means provide a chamber having outlet apertures; a pair of engageable current conducting bodies movably disposed within said chamber, each having an electrical conductor secured thereto and movable therewith, said electrical conductors extending through respective outlet apertures; one of said bodies bearing against one wall of said chamber; and resilient means, interposed between an opposite wall of said chamber and the other of said bodies, and constructed and arranged to urge said other body into engagement with said one body, the urging force of said resilient means being transmitted by abutment of said one body and said resilient means with said opposite walls of said chamber to yieldably oppose disconnection of said bayonet pin and slot.

7. Electrical connection means, comprising: connectible members, comprising complementary insulating means so constructed and arranged that when said members are connected, said insulating means provide a chamber having outlet

apertures; a pair of current conducting bodies, having interlocking means constructed and arranged to releasably hold said bodies in coupled relation, said bodies being movably disposed within said chamber, and each of said bodies having an electrical conductor secured thereto and movable therewith, said electrical conductors extending through respective outlet apertures; and resilient means, interposed between a wall of said chamber and one of said bodies, and constructed and arranged to yieldably hold said bodies in electrical engagement.

8. Electrical connection means, comprising: connectible members, comprising complementary insulating means so constructed and arranged

that when said members are connected, said insulating means provide a chamber having outlet apertures; a pair of current conducting bodies, having complementary hook portions constructed and arranged to releasably hold said bodies in coupled relation, said bodies being movably disposed within said chamber, and each having an electrical conductor secured thereto and movable therewith, said electrical conductors extending through respective outlet apertures; and resilient means, interposed between a wall of said chamber and one of said bodies, and constructed and arranged to yieldably hold said bodies in electrical engagement.

HARRY A. DOUGLAS. 15