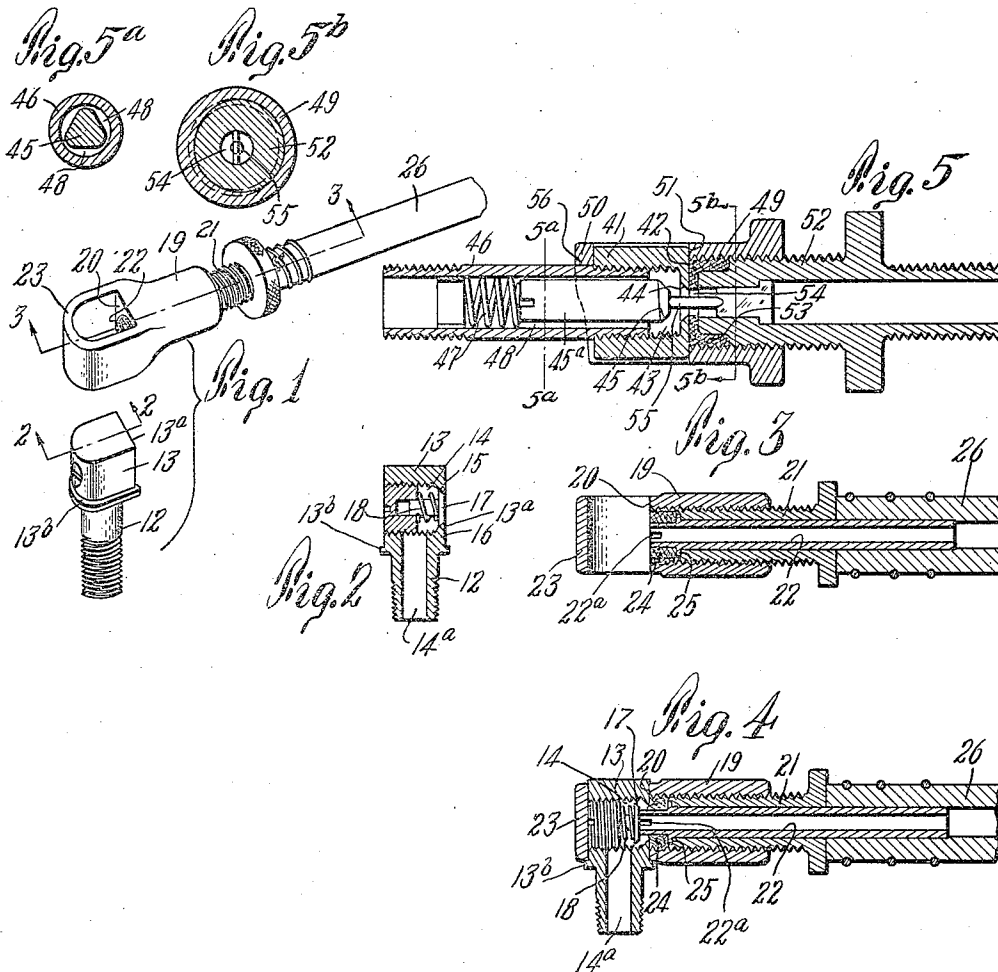


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H. E. WALKER
SEPARABLE CONNECTER

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SEPARABLE CONNECTER

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This invention relates to conduits composed of separable members or sections, and particularly to conduits used with motor vehicles to supply parts of such vehicles with conditioning means such as oil, grease, air, etc., although the invention may be otherwise used.

A separable connector constituting the preferred embodiment of the invention includes members which are separable, by a sidewise movement of one member relative to the other, the members being adapted to be quickly and conveniently connected and separated without being rotated.

Of the accompanying drawing forming a part of this specification,—

Figure 1 shows in perspective and separated from each other the members of a separable connector embodying the invention.

Figure 2 is a section on line 2—2 of Figure 1.

Figure 3 is a section on line 3—3 of Figure 1.

Figure 4 is a sectional view showing the members connected.

Figure 5 is a sectional view showing another embodiment of the invention.

Figure 5a is a section on line 5a—5a of Figure 5.

Figure 5b is a section on line 5b—5b of Figure 5.

My improved connector comprises a headed member, and a socketed member whose socket is complementary to the head of the headed member, and adapted to be engaged with said head by a sidewise movement of the socketed member relative to the headed member, the engagement of the socket with the head preventing swinging movement of either member relative to the other.

The headed member includes a head 13, having a longitudinally extending substantially flat external side face 13a, containing a port which may be surrounded by an internal valve seat 15. Said member includes a shank 12 having a passage 14a communicating with a passage 14 in the head, the valve seat 15 being in one end of said passage.

The passage 14 may contain a valve 17 normally closed on the seat 15 by a spring 18.

The socketed member of the connector includes a socket 23 complementary to the head 13, and having a substantially flat transversely extending internal face 20 constituting a wiping face adapted to bear closely on the side face 13a and containing a port adapted to communicate with the port in said side face. The socket port in the embodiment shown by Figures 1, 2, 3 and 4, is provided by slots 22a in the forward end of a tube 22 hereinafter described.

The said members are relatively movable to cause the socket to receive the head and register its port with the head port and thereby operatively connect the members. I provide stop means for arresting the relative movement in one direction when said ports register with each other, said means permitting the separation of the members.

The socket is formed to closely embrace the head and maintain the wiping face in close contact with the port-containing side face 13a, so that each face automatically wipes the other, and removes accumulations of foreign matter, such as dirt and grease, therefrom when the members are being connected, a close joint between said faces being thus ensured when the members are operatively connected.

The outer face of the valve 17 is flush with the end face 13a so that said faces are simultaneously wiped.

I preferably embody the above mentioned stop means in a shoulder 13b on the head 13, adapted to limit the movement of the socket onto the head 13, and thereby ensure registration of the socketed member port with the head port, so that when the members are operatively connected material is permitted to flow from one member into and through the other.

In the preferred embodiment of the invention shown by Figures 1, 2, 3, and 4, the socketed member includes an internally threaded outer tube 19 on which the socket is formed, the threaded bore of said tube opening on the flat end wall 20 of the socket, an externally threaded inner tube 21, longitudinally adjustable by rotation in the outer tube 19, and a central tube 22 secured in and

longitudinally adjustable with the inner tube. The central tube 22 has a flange or shoulder 25, bearing on one end of the inner tube 21, and an end portion containing slots 22a constituting the port of the socketed member. When the tubes 21 and 22 are retracted, as shown by Figure 3, the central tube 22 and its outlet ports are withdrawn from the socket, so that the latter is adapted to receive the head 13. When the tubes 21 and 22 are projected as shown by Figure 4, the outlet end of the central tube 22 bears on and opens the valve 17, the ports 22a being within the passage 14, as shown by Figure 4.

The adjustable inner tube 21 is provided with an annular compressible packing washer 24, bearing on the flange or shoulder 25 and compressible between said shoulder and the end face 13a of the head 13, to prevent leakage between said end face and the wiping face 20 of the socket, said faces being rigid and incompressible.

The socketed member may be secured in any suitable way to a hose 26, constituting the flexible main portion of a conduit communicating with a source of supply, and provided, if desired, with a valve (not shown) whereby it may be closed.

Figure 5 shows an embodiment of the invention suitable for use as a straight coupling, the members being in line with each other when connected, and adapted for use in connecting two lengths of hose.

In this embodiment the headed member includes a head 41, having a substantially flat end face 42 in which is a passage 43. An internal valve seat 44 surrounds a port in the end face 42. A valve 45 movable in the passage 43 and in the bore of the shank 46 of the headed member, is normally closed by a spring 47. The valve 45 is formed on a valve body 45a which is cut away at one or more sides to provide a passage 48 Figure 5a for fluid passing through the connector.

The socketed member includes a body portion 49, and a socket 50 complementary to the head 41 and adapted to be engaged with the head by a sidewise movement of the socketed member. The socket is formed on one end of the body 49 and has an end wall 51 formed to abut the end face 42.

The socketed member includes also an inner tube or terminal 52 externally threaded and engaged with an internal thread in the body 49.

The forward end of the tube 52 has a reduced portion on which is fitted an annular cup washer 53 having a central opening 54, constituting a port which registers with the bore of the tube 52 and communicates with the port surrounded by the valve seat 44.

Fixed in the forward end of the tube 52 and projecting therefrom, is a teat 55 which is arranged to bear on and open the valve 45 when the tube 52 is adjusted to the position

shown by Figure 6. This adjustment causes the tube 52 to compress the central portion of the washer 53 against the end face 42 of the head, so that leakage is prevented between the faces 42 and 51. Movement of the socket 50 onto the head 41 is, in this instance, limited by the closed end 56a of a slot 56 (Figure 5) formed in the socket, said closed end abutting the shank portion 46 of the headed member, so that the ports of the two members are caused to register with each other, when the members are operatively connected.

It will be seen that the inner tube 21 shown by Figures 1, 3 and 4 serves as an annular presser adapted to back the annular washer 24 with its outer side flush with the internal end wall of the socketed member as shown by Figure 3, when the members are disconnected, so that the washer does not protrude into the socket and therefore does not oppose the connection of the members, said presser being adapted to compress the washer after the connection of the members to prevent leakage between the said head end face and socket wall.

It will also be seen that the tube 52 shown by Figure 6 also serves as an annular presser adapted to function like the inner tube 21.

It will be seen that the automatic wiping of the faces 13a and 20 by the operation of assembling the members is accomplished whether the head member be provided with the valve 17 or not.

In each of the described embodiments the socketed member includes a laterally movable annular washer such as 24, (Figures 3 and 4), or 51, (Figure 5), and pressing means for forcing the washer laterally or sidewise against the ported side face of the headed member, so that the washer is caused not only to prevent leakage of material between the contacting faces of said members, but also to clamp the opposite side faces of the headed member against an internal face of the socketed member to oppose separation of the connected members, for example, by an upward movement of the socketed member from the position shown by Figure 4 and by a downward movement of the socketed member from the position shown by Figure 5. Said pressing means may include the inner tube 21 (Figure 4), or the inner tube 52 (Figure 5) each of said inner tubes being provided with a terminal such as the outer end of the inner tube 22 (Figure 4) or the projecting teat 55 (Figure 5). Said terminal extends into the annular washer, and is adapted to enter the port of the headed member and not only open the valve therein, but also act as a stop positively preventing the separation of the connected members as indicated by Figures 4 and 5.

I claim:

1. A separable connector comprising a headed conduit member, the head whereof

has a longitudinally extending external side face containing a port which is flush with said face and forms an end of a passage extending to one end of the headed member, a spring-pressed valve within said head having an outer face which is flush with the ported side face of the head when said valve is closed, and a socketed conduit member the socket whereof is formed to receive said head, and has a transversely extending internal wiping face containing a port which forms an end of a passage extending to one end of the socketed member, said members being relatively movable to cause the socket to receive the head and register its port with the head port and thereby operatively connect the members, the socket being formed to closely embrace the head and maintain the wiping face in close contact with the port-containing side face of the head, so that each face automatically wipes and cleans the other when the members are being connected, the socketed member being provided with a laterally movable compressible annular washer surrounding the port therein, and with pressing means for forcing said washer laterally against the ported side face of the headed member to prevent leakage between said contacting faces, and clamp the opposite side face of the headed member against an internal face of the socketed member to oppose separation of the connected members.

2. A separable connector as specified by claim 1, said pressing means including a conduit member having a terminal extending into the annular washer, and means for longitudinally adjusting said conduit member to cause said terminal to enter the port of the headed member to open said valve and positively prevent separation of the connected members.

3. A separable connector comprising a headed conduit member, the head whereof has a longitudinally extending external side face containing a port which is flush with said face and forms an end of a passage extending to one end of the headed member, and a socketed conduit member the socket whereof is formed to receive said head, and has a transversely extending internal wiping face containing a port which forms an end of a passage extending to one end of the socketed member, said members being relatively movable to cause the socket to receive the head and register its port with the head port and thereby operatively connect the members, stop means being provided for arresting the relative movement in one direction when the ports register with each other, the socket being formed to closely embrace the head and maintain the wiping face in close contact with the port-containing side face of the head, so that each face automatically wipes and cleans the other when the members are being connected, the socketed member being

telescopic and including an internally threaded outer tube whose threaded bore opens on the wiping face of the socket, an externally threaded inner tube adjustable endwise by rotation in the outer tube, and a central tube fixed in and adjustable with the inner tube and constituting a terminal portion which constitutes the port of the wiping face, the forward end of the inner tube being offset inwardly from the forward end of the outer tube to form an annular cavity, and a compressible annular packing washer in said cavity surrounding the central tube and adapted to be pressed by the inner tube against the ported side face of the head to prevent leakage between said face and the wiping face of the socket.

4. A separable connector as specified by claim 1, said socketed member being telescopic and forming the pressing means and including an internally threaded outer tube whose threaded bore opens on the wiping face of the socket, an externally threaded inner tube adjustable by rotation in the outer tube, and having a terminal portion which constitutes the port of the socketed member, said terminal portion being adapted to enter the port of the headed member to open said valve and constitute a stop positively preventing separation of the connected members.

In testimony whereof I have affixed my signature.

HARRY E. WALKER.

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