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(54) Conduit connector

(57) A connector is described for use with a low pressure air conduit which comprises male and female tubular parts, the male part (Fig. 3) having a groove 10 for reception of the legs 5 of a spring 4 carried by the female part (Fig. 1) when the two parts are assembled together and a portion of the groove 10 in the male part being shaped so as to move the legs 5 apart when the two parts are rotated relatively to one another and thus permit the two parts to be disassembled.

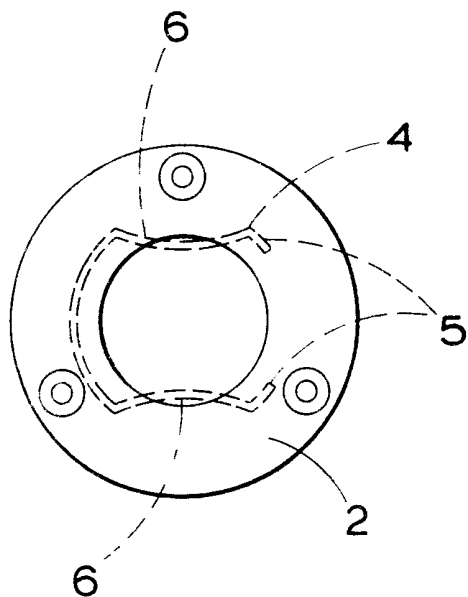


Fig. 1

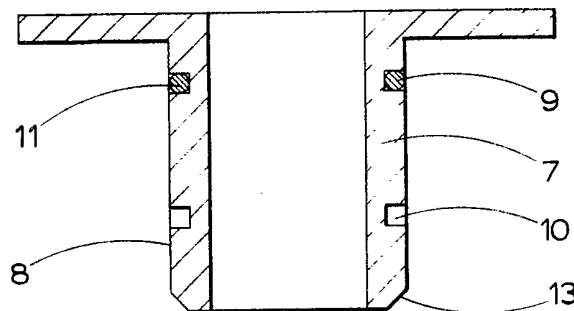


Fig. 3

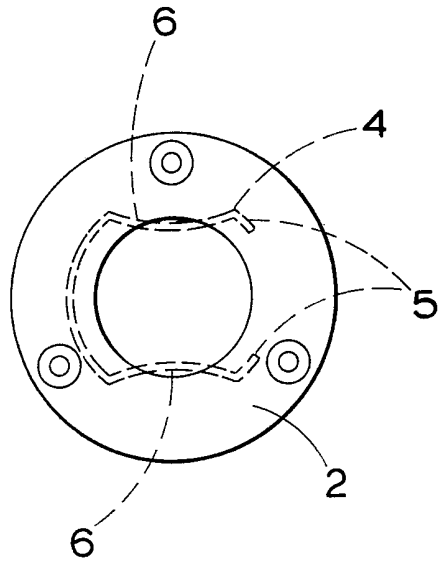


Fig. 1

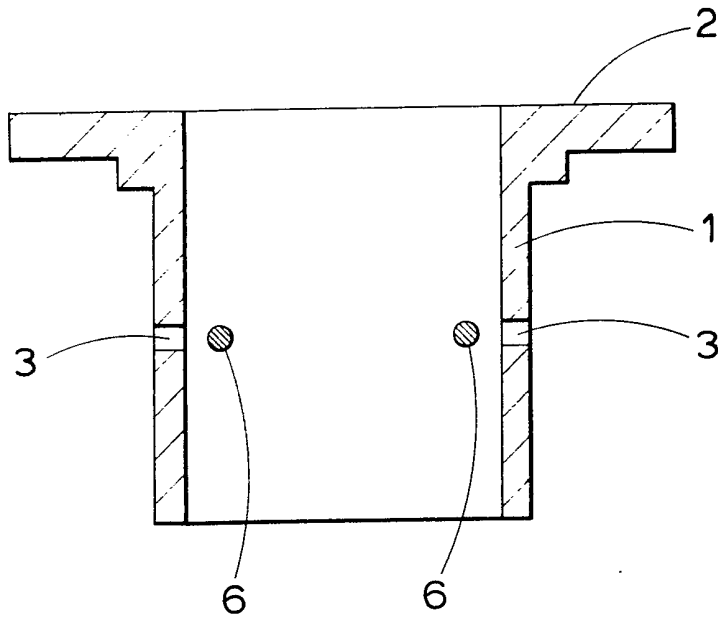


Fig. 2

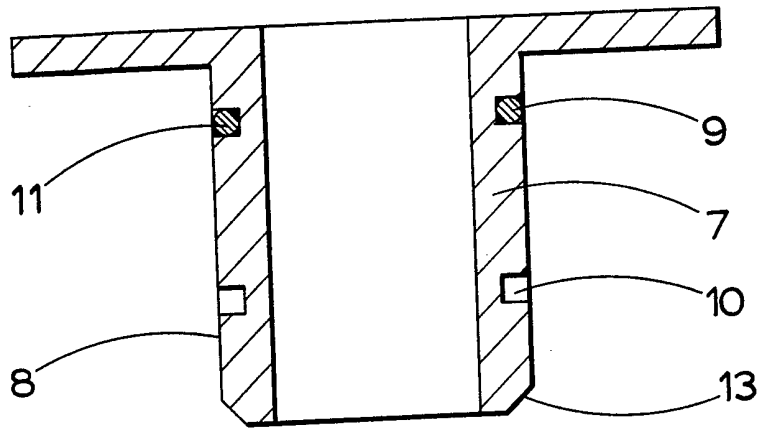


Fig. 3

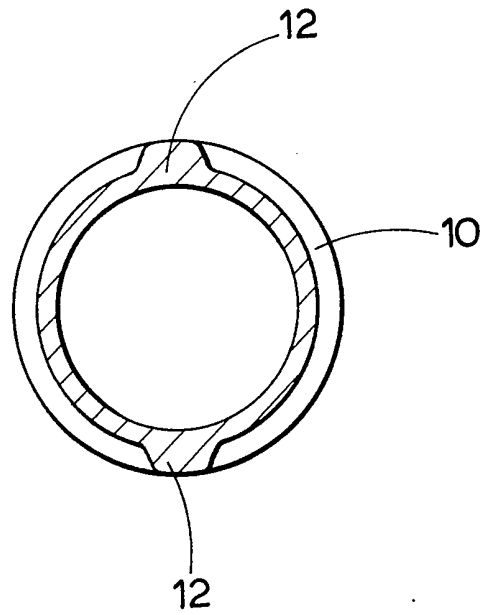


Fig. 4

SPECIFICATION

Connector

5 This invention relates to a connector for use with a low-pressure air supply system. The connector has been designed particularly for use with a low-pressure air bed, of the kind described in British Patents 1,442,994 and
 10 1,474,018. However, the connector may be used with any kind of low-pressure air supply systems, for example, inflatable mattresses, vacuum cleaners and inflatable boats.

There is a need for a connector which
 15 enables rapid assembly and disassembly of two air supply conduits or an air supply conduit and an appliance to which the air is supplied or exhausted. Such a connector should desirably be capable of withstanding
 20 air pressures up to about 2 lbs. per square inch and be capable of rapid assembly and disassembly.

According to the present invention there is provided a connector for use with a low-
 25 pressure air supply conduit which comprises male and female tubular parts, the male part having a recess for reception of a resilient latch member carried by the female part when the two parts are assembled together and a
 30 portion of the male part being shaped so as to raise the latch when the two parts are rotated relatively to one another and thus to enable the two parts to be disassembled.

One or both of the tubular parts may be
 35 fitted with a seal to reduce or eliminate leakage of air when the two parts are assembled. Preferably, the male part carries an 'O' ring which is received in a groove in the wall of the male part.

The resilient latch is most conveniently
 40 formed from a spring, a portion of which protrudes into the tubular passage of the female part so that it engages in a groove in the male part. Other types of latch are how-
 45 ever possible. For example, the latch may comprise one or more spring-loaded plungers housed in the female part or a plastics spring which may be a separate part or formed integrally with the female part.

The invention will now be illustrated with
 50 reference to the embodiment described in the accompanying drawings in which

Figure 1 is a plan view of one end of the female part,

55 *Figure 2* is a sectional elevation of the female part shown in Fig. 1,

Figure 3 is a sectional elevation of the male part and

60 *Figure 4* is a sectional view taken on the line A-A in Fig. 3.

Referring to the drawings, the female part comprises a tubular member 1 having a flange portion 2 to facilitate attachment of the female part to an air supply heater header
 65 tank not shown. As can be seen, the tubular

part 1 is formed with a pair of slots 3 which are disposed opposite to one another for reception of a metal spring 4 which provides the latch in the embodiment illustrated.

70 Spring 4 is of generally U-shaped form and is provided with inturned legs 5 to ensure retention of the spring in the slots 3. As can be seen best from Fig. 1 the opposite arms of spring 4 have portions 6 which extend into
 75 the space contained by tubular member 1.

The other part of the connector comprises a male part 7 having a tubular portion 8 which is sized so as to slide easily into the tubular part 1 of the female half of the connector.

80 Tubular part 8 is formed with two pairs of grooves 9 and 10. Groove 9 is arranged to receive an O-ring 11 and extends around the entire circumference of tubular part 8. Groove
 85 10 is dimensioned so as to receive the portions 6 of spring 4 when the two halves of the connector are assembled. In this position,

with the portions 6 of spring 4 nested in the grooves 10 and the O-ring 11 bedded against the inner wall of tubular portion 1, the two
 90 halves of the connector are secured against being pulled apart under the pressure of air passing through the connector. As shown best in Fig. 4, the groove 10 does not extend completely around the tubular portion 8 but
 95 consists of two separate grooves which are cut so as to leave two short portions of the outer wall 12 intact in diametrically opposite portions of tubular part 8. Thus, when the two halves of the connector are rotated relatively
 100 to one another, portions of spring 6 ride up on the uncut portions 12 of tubular part 8 and allow the two sections to be pulled apart. The end of male part 7 remote from the flange is formed with a lead chamfer 13 to
 105 enable the spring to be displaced as the part 7 is inserted into the part 1.

The two parts 1 and 7 of the connector are conveniently manufactured from a plastics material, such as nylon or polypropylene, and are preferably injection moulded. One particularly advantageous use of the connectors described above is in the low air loss bed described in the above mentioned British patents for the purpose of connecting the support sacs to the header conduits which supply and exhaust air from the sacs during use. Thus, for example, referring to British patent 1,442,994 the air sac 2 shown in Figs. 1 and 2 of this patent may be fitted with male parts of the connector described above in place of
 110 connectors 20 shown in this patent and the female half fitted to the blocks 6 so that the flange 2 of the female halves of the connectors are recessed into the blocks 6. In a particularly preferred form the base of the low air loss bed provides a flat surface as described in our co-pending British patent application number 53045/76 and the female halves of the connectors are fitted into the
 125 base of the bed so as to connect with the

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 130 base of the bed so as to connect with the

supply and exhaust conduits.

CLAIMS

1. A connector for use with a low pressure
5 air supply conduit which comprises male and
female tubular parts, the male part having a
recess for reception of a resilient latch mem-
ber carried by the female part when the two
10 parts are assembled together and a portion of
the male part being shaped so as to raise the
latch when the two parts are rotated relatively
to one another and thus permit the two parts
to be disassembled.
2. A connector according to Claim 1
15 wherein the latch member is a spring which
protrudes into the tubular passage of the
female part so that it engages in a groove in
the male part.
3. A connector according to Claim 1 or
20 Claim 2 wherein the male member is formed
with a groove in which a sealing ring is
received.

CLAIMS (6 Apr 1981)

- 25 1. A bed or mattress which comprises a
plurality of inflatable sacs arranged to provide
a support surface, when inflated, for an occu-
pant, conduit means for admitting air to the
sacs and conduit means for exhausting air
30 from the sacs, said conduit means being re-
movably connected to the air sacs by connec-
tors as claimed in any one of the preceding
claims.

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