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(54) A glazing support

(57) A glazing support 1 for use in supporting suspended glazing panels comprises a boss 6 having a central through hole 7 through which a bolt is inserted for mounting the glazing support 1 to a structural support 10. Support arms 11 extend from the boss 6. Mounting feet 15, 16, 17, 18 are mounted at the ends of each arm 11. The feet 15, 16, 17, 18 provide supports for bolting attachment to glazing panels 5. Each boss 6, 12, 13, 14 has a vent passageway 50 extending from a base of each socket 30 to the central through hole 7. The boss engaging end 25 of each support arm 11 is coated with an adhesive 51. On insertion of the adhesive-coated spigot end 25 of the arm 11 into the socket 30, air is displaced from the socket 20 and exits through the passageway 50. Each foot 15, 16, 17, 18 has a flattened

chamfer 60 to facilitate drilling of a hole 61 in the foot. A vent passageway 70 extends from a base of each socket 35 in a foot through to the centre hole or slot in the foot. The foot engaging end 30 of each support arm 11 is coated with an adhesive 75. On insertion of the adhesive-coated foot engaging end 30 of the support arm 11 into the socket 35, air is displaced from the socket 35 and exits through the passageway 70. This ensures that a tight fit and good adhesive bond is achieved between the spigot end 30 and the socket 35 in the foot. To further enhance the fixing of the foot to the arm 11, a hole is drilled through the foot from the chamber 60 and into the spigot end 30 of the arm 11. A dowel pin 80 is inserted into the drilled hole to further fix the foot to the arm 11.

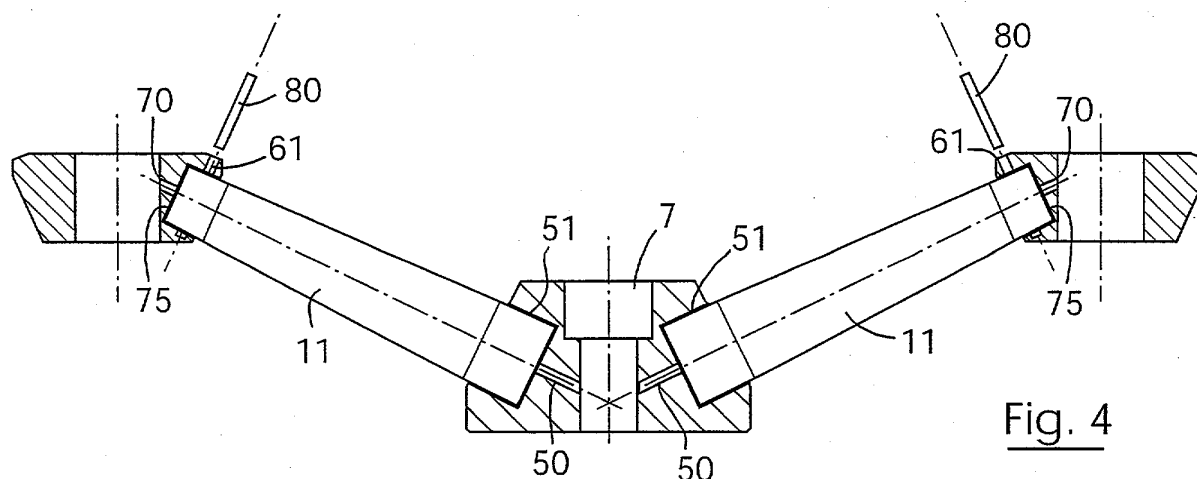


Fig. 4

Description

Introduction

[0001] The invention relates to a glazing support of the type comprising a boss for mounting to a structural support, the boss having a number of support arms for mounting to suspended glazing panels. Glazing supports of this type are widely used in providing large uninterrupted glass surfaces.

[0002] A problem arises in use of such glazing supports in that a very large number of separate support types must be available to cater for the wide variation in the application of such supports. This is not only expensive but also leads to potential problems if the correct support for a particular structural requirement is not available on site.

[0003] Currently available supports comprise either fully casted support or a combination of part machined and part cast supports. These castings, even when of good quality require some fine machining and polishing to bring them to an acceptable standard both technically and aesthetically.

[0004] This invention is therefore directed providing a glazing support which will overcome at least some of these problems.

Statements of Invention

[0005] According to the invention there is provided a glazing support for suspended glazing panels comprising:-

a boss for mounting to a structural support, the boss having a boss spigot or socket;

an outer foot for attachment to a glazing panel, the outer foot having a foot spigot or socket;

a support arm extending between the boss and the outer foot, the support arm having a boss-engaging end for engagement in the boss spigot or socket and a foot-engaging end for engagement in the foot spigot or socket; and

the support arm is bonded to the foot and/or the boss.

[0006] Preferably the boss has a boss socket and the support arm has a corresponding boss-engaging spigot.

[0007] Preferably the foot has a foot socket and the support arm has a corresponding foot-engaging socket.

[0008] Preferably the support arm is adhesively bonded to the boss. In a preferred embodiment the boss has a vent hole leading from the boss.

[0009] In one embodiment the foot is adhesively bonded to the support arm. Preferably the foot is mounted to the support arm by a fixing pin or dowel. Ideally

the foot has a vent hole leading from the foot.

[0010] In a preferred embodiment the boss comprises a through hole for receiving a fixing for mounting to a structure.

[0011] Preferably the fixing is a bolt which extends through the fixing-receiving hole in the boss to engage a structure.

[0012] In one case wherein the boss comprises one arm receiving socket and the glazing support comprises one support arm carrying a mounting foot.

[0013] In another version the boss comprises two arm receiving sockets and the glazing support comprises two support arms, each carrying a mounting foot.

[0014] In a further version the boss comprises three arm receiving sockets and the glazing support comprises three support arms, each carrying a mounting foot.

[0015] In another version the boss comprises four arm receiving sockets and the glazing support comprises four support arms, each carrying a mounting foot. The mounting feet may be the same or different.

[0016] The invention provides a glazing system comprising a number of glazing panels and at least one glazing support of the invention.

[0017] In another aspect the invention provides a method for manufacturing a glazing support for suspended glazing panels comprising:-

providing a boss having a boss spigot or socket;

providing an outer foot having a foot spigot or socket;

providing a support arm having a boss engaging end and a foot engaging end;

bonding the boss engaging end of the support arm to the boss; and

bonding the foot engaging end of the support arm to the foot.

[0018] In one embodiment the method comprises applying an adhesive to a boss engaging spigot of the support arm, and inserting the adhesive coated spigot of the support arm into a socket in the boss.

[0019] The method preferably comprises venting the boss socket on insertion of the adhesive coated spigot into the boss socket.

[0020] In one embodiment the method comprises applying an adhesive to a foot engaging spigot of the support arm, and inserting the adhesive coated spigot of the support arm into a socket in the foot. Preferably the method comprises venting the foot socket on insertion of the adhesive coated spigot into the boss socket.

[0021] In one embodiment the method comprises the step of providing a fixing hole at a foot engaging end of the socket aligned with a corresponding fixing hole in the foot, and inserting a dowel or pin into the fixing holes

in the foot and support arm. The fixing holes may be provided by drilling a fixing hole in the support arm and foot after bonding of the foot to the support arm.

Brief Description of the Drawings

[0022] The invention will be more clearly understood from the following description thereof given by way of example only with reference to the accompanying drawings in which:-

Fig. 1 is a perspective view of a glazing support of the invention;

Fig. 2 is a top plan view of the glazing support;

Fig. 3 is a side elevational view of the glazing support;

Fig. 4 is a cross-sectional view illustrating assembly of the glazing support;

Fig. 5 is an elevational view of a support arm of the glazing support;

Fig. 6 is a cross-sectional view of a mounting foot of the glazing support;

Fig. 7 is an enlarged view of a portion of the foot of Fig. 6;

Figs. 8(a) to 8(d) are top plan views of various mounting feet of the assembly;

Fig. 9 is an underneath plan view of the centre boss of Fig. 4;

Fig. 10 is a cross-sectional view of the boss;

Figs. 11(a) to 11(d) are top plan views of various centre bosses;

Fig. 12 is an underneath plan view of another centre boss;

Fig. 13 is a cross-sectional view of the centre boss of Fig. 12;

Figs. 14(a) and 14(b) are top plan views of centre bosses of the type of Figs. 12 and 13;

Fig. 15 is a cross-sectional view of another foot;

Figs. 16(a) to 16(c) are top plan views of feet of the type of Fig. 15;

Fig. 17 is an elevational view of a support arm for use with the boss of Fig. 12;

Fig. 18 is a cross-sectional view of an assembled support comprising the boss of Figs. 12, the foot of Fig. 15, and the arm of Fig. 17;

Fig. 19 is a cross-sectional view of a further centre boss;

Fig. 20 is a top plan view of the boss of Fig. 19;

Fig. 21 is a cross-sectional view on the line A-A in Fig. 20;

Fig. 22 is a top plan view of another centre boss of the type of Fig. 19;

Fig. 23 is a cross-sectional view on the line B-B in Fig. 22;

Fig. 24 is a cross-sectional view of a support foot for a centre boss of the type of Fig. 19;

Fig. 25 is an enlarged view of portion of the foot of Fig. 24;

Fig. 26 is a top plan view of the foot;

Fig. 27 is a side-elevational view of a support arm for a centre boss of the type of Fig. 19; and

Fig. 28 is a cross-sectional view of an assembled glazing support.

Detailed Description

[0023] Referring to the drawings there is illustrated a glazing support 1 for use in supporting suspended glazing panels. The support 1 comprises a boss 6 having a central through hole 7 through which a bolt is inserted for mounting the glazing support 1 to a structural support 10. In this case four identical support arms 11 extend from the boss 6. Respective mounting feet 15, 16, 17, 18 are mounted at the ends of each arm 11. The feet 15, 16, 17, 18 provide supports for bolting attachment to the glazing panels 5.

[0024] Referring in particular to Figs. 4 to 11 the glazing support 1 may comprise one of four different bosses, each of which is of generally frustoconical shape. The boss 6 of Fig. 11(d) has four sockets 20 which are equispaced circumferentially around the conical portion of the boss 6. A second boss 12 (Fig. 11a) has a single socket 20, a third boss 13 (Fig. 11b) has two sockets 20, and a fourth boss 14 (Fig. 11c) has three sockets 20. The selection of boss will depend on the number and configuration of support arms 11 required. It will be appreciated that a single boss may be provided with four sockets 20, some of which may be blanked off with inserts, if required.

[0025] Each support arm 11 has a spigot 25 at one

end for engagement in a boss socket 20 of a boss such as the boss 6. A spigot 30 at an opposite end of the support arm 11 is engagable in a corresponding foot socket 35 of a mounting foot 15, 16, 17, 18.

[0026] There are four different mounting feet 15, 16, 17, 18 one 15 with a relatively small hole, another 16 with a larger hole and two 17, 18 (one right, one left) with an elongate slot. The arrangement of Figs. 1 and 2 is typical to facilitate attachment to four adjacent glazing panes.

[0027] A kit comprising a single boss type, a single arm type and a number of different mounting discs may be used to assemble either on site or off site, appropriate glazing supports for a given structure. This is achieved by mounting the support arms 11 to the boss 6 and mounting the appropriate mounting feet discs 15, 16, 17, 18 to the ends 30 of the support arms 11.

[0028] Each boss 6, 12, 13, 14 has a vent passageway 50 extending from a base of each socket 20 to the central through hole 7. The boss engaging end 25 of each support arm 11 is coated with an appropriate adhesive such as code 638 available from Loctite. The adhesive coating is indicated by a thick black line 51 in Fig. 4. On insertion of the adhesive-coated spigot end 25 of the arm 11 into the socket 30, air is displaced from the boss socket 20 and exits through the passageway 50. This is important in ensuring that a tight fit and good adhesive bond is achieved between the spigot end 25 and the socket 20 in the boss.

[0029] Each foot 15, 16, 17, 18 has a flattened chamfer 60 to facilitate drilling of a hole 61 in the foot as illustrated particularly in Figs. 6 and 7. A vent passageway 70 extends from a base of each foot socket 35 through to the centre hole or slot in the foot. The foot engaging end 30 of each support arm 11 is coated with an appropriate adhesive such as code 638 available from Loctite. The adhesive coating is indicated by a thick black line 75 in Fig. 4. On insertion of the adhesive-coated foot engaging end 30 of the support arm 11 into the foot socket 35, air is displaced from the socket 35 and exits through the passageway 70. This ensures that a tight fit and good adhesive bond is achieved between the spigot end 30 and the socket 35 in the foot. To further enhance the fixing of the foot to the arm 11, a hole is drilled through the foot from the chamfer 60 and into the spigot end 30 of the arm 11. A dowel pin 80 is then inserted into the drilled hole to further fix the foot to the arm 11. This improves the load bearing/transmission characteristics of the system

[0030] Referring to Figs. 12 to 18 there is illustrated another support comprising an assembly of a centre boss, support arms and feet. The parts and the method of assembly are similar to those described above and like parts are assigned the same reference numerals. This support is typically used when a straight connection is required.

[0031] Referring to Figs. 19 to 28 there is illustrated another support comprising an assembly of a centre

boss, support arms, and feet. The parts and the method of assembly are again similar to those described above and like parts are assigned the same reference numerals. In this case, the arms are short and there is an additional support element 90 to which the centre boss is attached by fixing screws 91.

[0032] In the preferred embodiment described above the support arm has a boss engaging spigot at one end and a foot engaging spigot at the other end. This is advantageous both in terms of load transmission and ease of manufacture. It is relatively easy to coat the spigots with adhesive as described above for adhesive bonding with the boss socket and foot socket respectively. It may however be possible but not as advantageous to provide a spigot on one or both of the foot or boss for engagement with a socket(s) in the support arm.

[0033] This invention provides a relatively simple kit that may be used to assemble a very large number of different glazing supports. Assembly is optimised as the supports can be very quickly assembled and fixed together to provide load bearing and transmission characteristics.

[0034] All the individual parts of the support assembly of the invention may be manufactured by machining processes and therefore they are capable of achieving acceptable standard both technically and aesthetically directly from the machine without any further enhancement by polishing or otherwise.

[0035] Other advantages include a more economical stocking arrangement because bosses, arms and mounting feet or discs can be procured in economical quantities and taken from stock and assembled as required.

[0036] Lead-in times for procurement are much improved as the raw material (solid stainless steel tube) is a standard off the shelf item. In contrast, castings must be produced in large quantities to be economical due to set up charges involved. With the present invention, even small quantities can be procured quickly and at economic cost.

[0037] The invention is not limited to the embodiments hereinbefore described which may be varied in construction and detail.

Claims

1. A glazing support for suspended glazing panels comprising:-

a boss for mounting to a structural support, the boss having a boss spigot or socket;

an outer foot for attachment to a glazing panel, the outer foot having a foot spigot or socket;

a support arm extending between the boss and the outer foot, the support arm having a boss-

engaging end for engagement with the boss spigot or socket and a foot-engaging end for engagement with the foot spigot or socket; and

the support arm is bonded to the foot and/or the boss.

2. A support as claimed in claim 1 wherein the boss has a boss socket and the support arm has a corresponding boss-engaging spigot. 10
3. A support as claimed in claim 1 or 2 wherein the foot has a foot socket and the support arm has a corresponding foot-engaging spigot. 15
4. A support as claimed in any preceding claim wherein the support arm is adhesively bonded to the boss. 20
5. A support as claimed in any preceding claim wherein the boss has a vent hole leading from the boss. 25
6. A support as claimed in any preceding claim wherein the foot is adhesively bonded to the support arm. 30
7. A support as claimed in any preceding claim wherein the foot is mounted to the support arm by a fixing pin or dowel. 35
8. A support as claimed in any preceding claim wherein the foot has a vent hole leading from the foot. 40
9. A support as claimed in any preceding claim wherein the boss comprises a through hole for receiving a fixing for mounting to a structure. 45
10. A support as claimed in claim 9 wherein the fixing is a bolt which extends through the fixing-receiving hole in the boss to engage a structure. 50
11. A support as claimed in any preceding claim wherein the boss comprises one arm receiving socket and the glazing support comprises one support arm carrying a mounting foot. 55
12. A support as claimed in any preceding claim wherein the boss comprises two arm receiving sockets and the glazing support comprises two support arms, each carrying a mounting foot.
13. A support as claimed in any preceding claim wherein the boss comprises three arm receiving sockets and the glazing support comprises three support arms, each carrying a mounting foot.
14. A support as claimed in any preceding claim wherein the boss comprises four arm receiving sockets and the glazing support comprises four support arms, each carrying a mounting foot.

15. A glazing system comprising a number of glazing panels and at least one glazing support as claimed in any preceding claim.

16. A method for manufacturing a glazing support for suspended glazing panels comprising:-

- providing a boss having a boss spigot or socket;
- providing an outer foot having a foot spigot or socket;
- providing a support arm having a boss engaging end and a foot engaging end;
- bonding the boss engaging end of the support arm to the boss; and
- bonding the foot engaging end of the support arm to the foot.
17. A method as claimed in claim 16 comprising applying an adhesive to a boss engaging spigot of the support arm, and inserting the adhesive coated spigot of the support arm into a socket in the boss.
18. A method as claimed in claim 17 comprising venting the boss socket on insertion of the adhesive coated spigot into the boss socket.
19. A method as claimed in any of claims 16 to 18 comprising applying an adhesive to a foot engaging spigot of the support arm, and inserting the adhesive coated spigot of the support arm into a socket in the foot.
20. A method as claimed in claim 19 comprising venting the foot socket on insertion of the adhesive coated spigot into the boss socket.
21. A method as claimed in any of claims 16 to 20 including the step of providing a fixing hole at a foot engaging end of the socket aligned with a corresponding fixing hole in the foot, and inserting a dowel or pin into the fixing holes in the foot and support arm.
22. A method as claimed in claim 21 wherein the fixing holes are provided by drilling a fixing hole in the support arm and foot after bonding of the foot to the support arm.

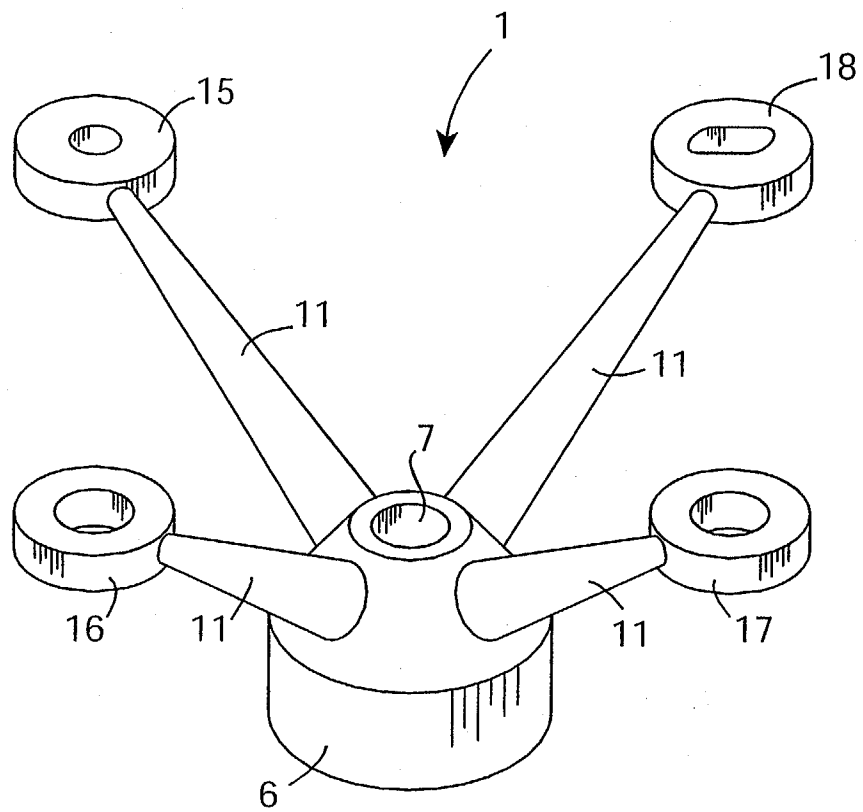


Fig. 1

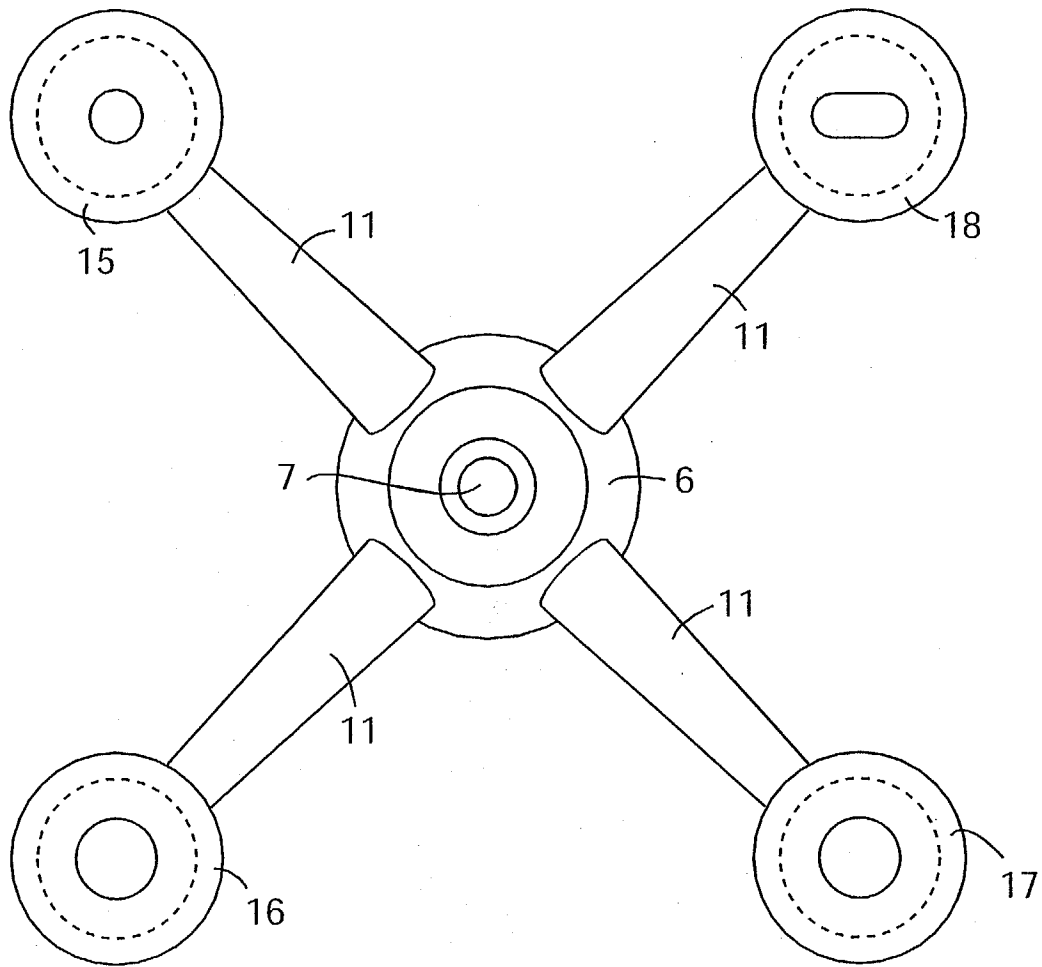


Fig. 2

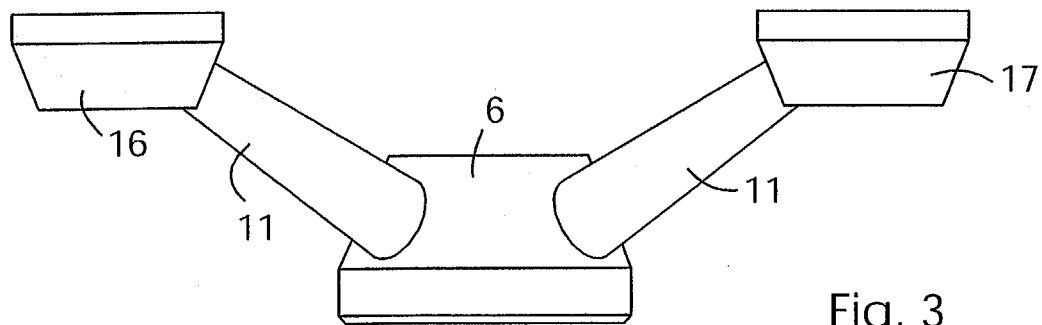


Fig. 3

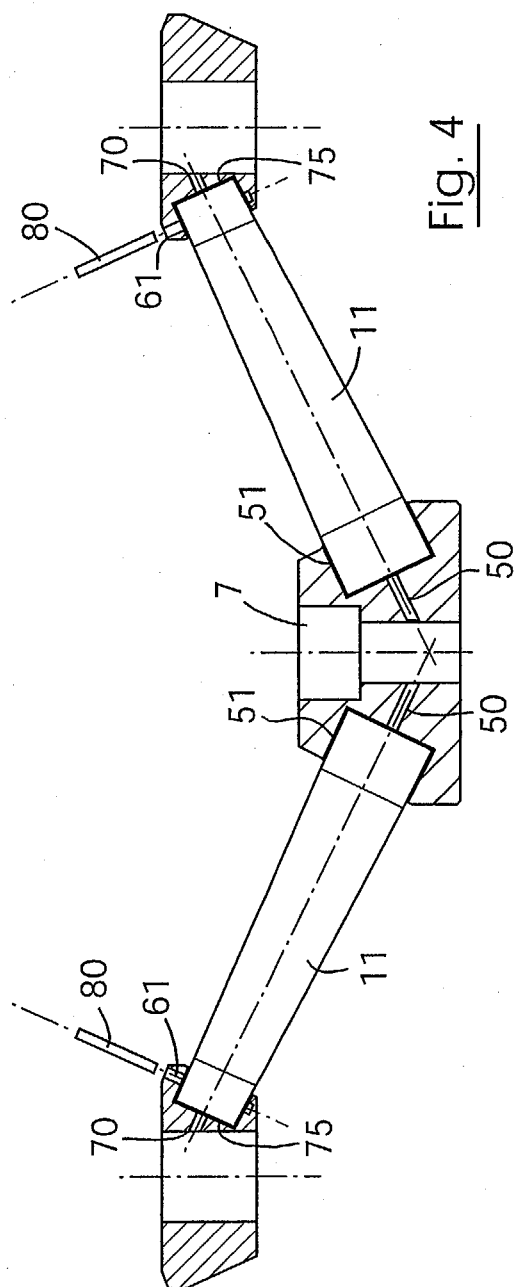


Fig. 4

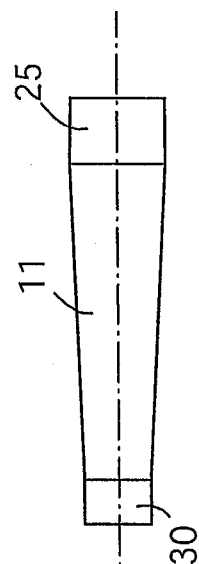


Fig. 5

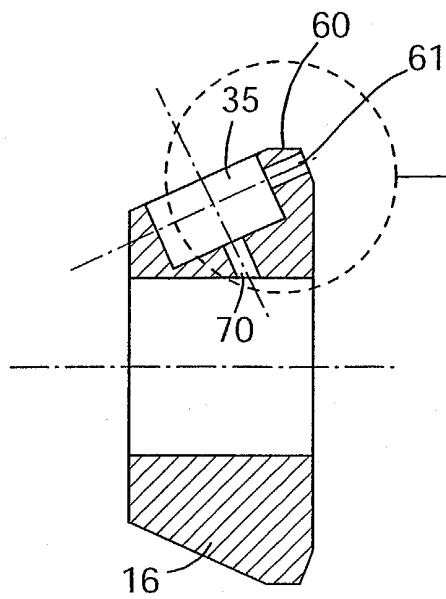


Fig. 6

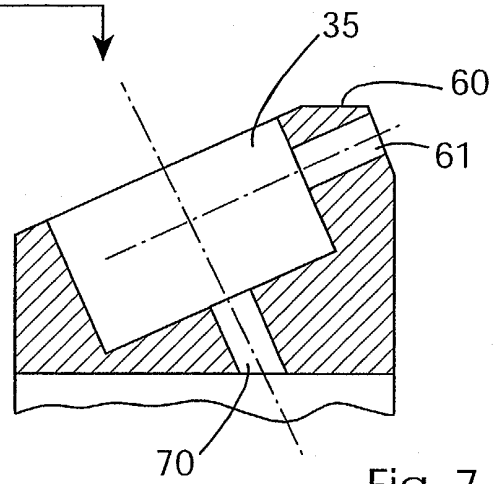


Fig. 7

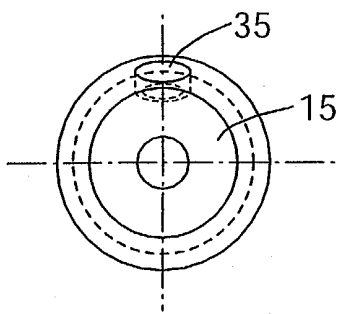


Fig. 8(a)

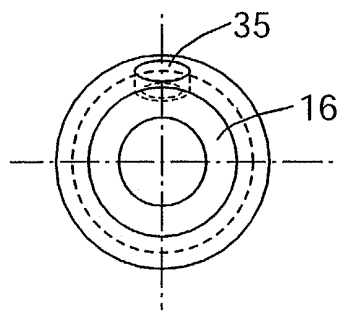


Fig. 8(b)

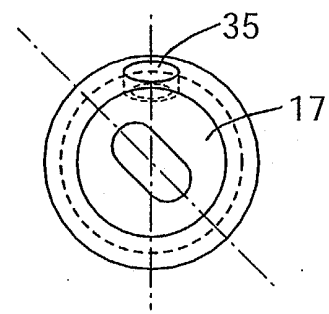


Fig. 8(c)

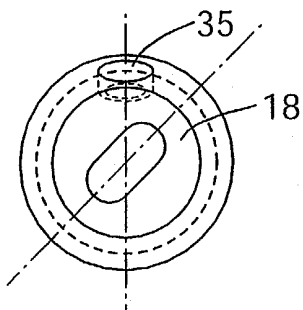


Fig. 8(d)

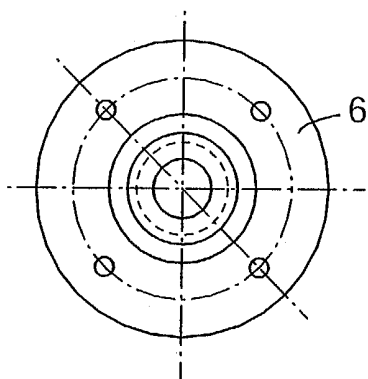


Fig. 9

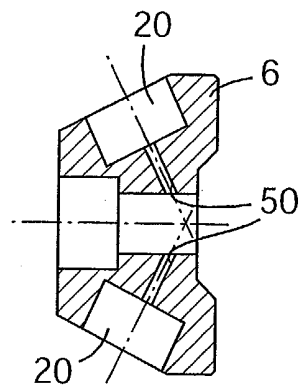


Fig. 10

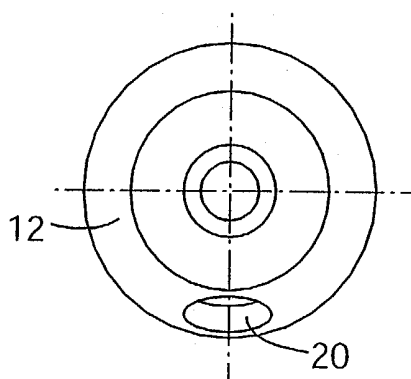


Fig. 11(a)

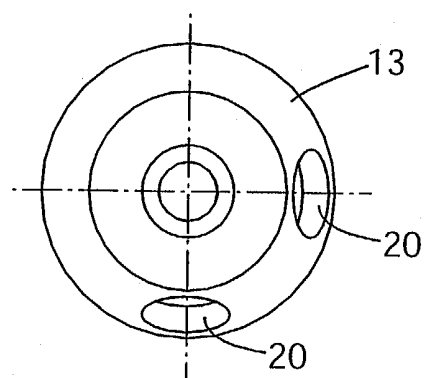


Fig. 11(b)

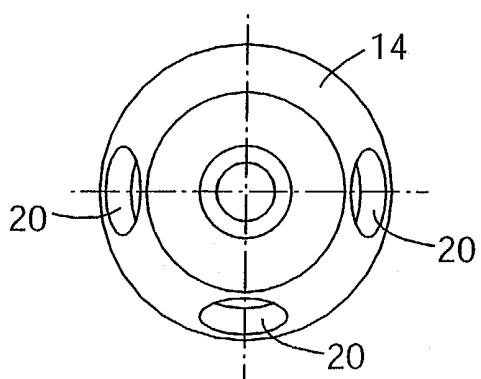


Fig. 11(c)

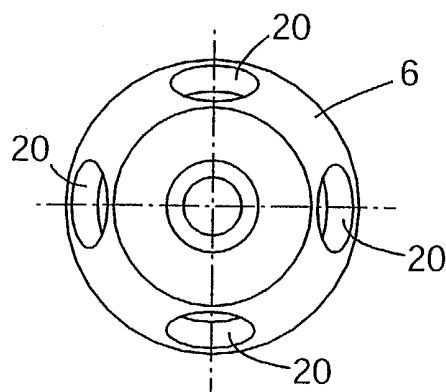


Fig. 11(d)

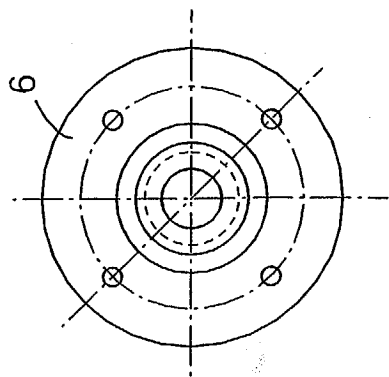


Fig. 12

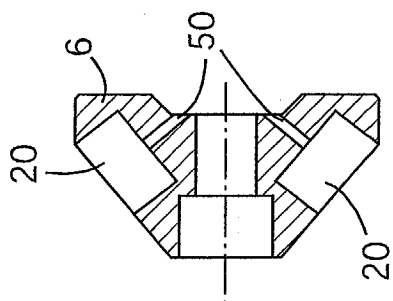


Fig. 13

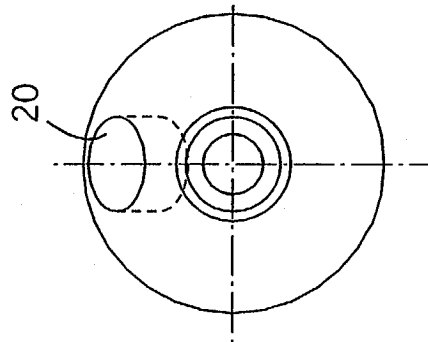


Fig. 14(a)

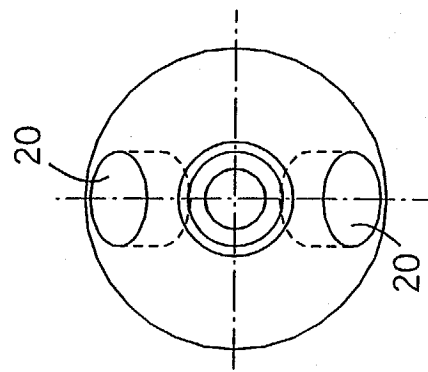


Fig. 14(b)

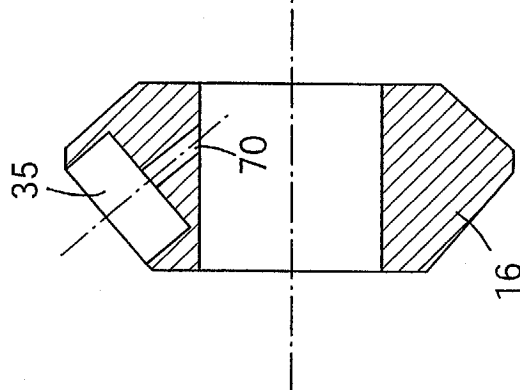


Fig. 15

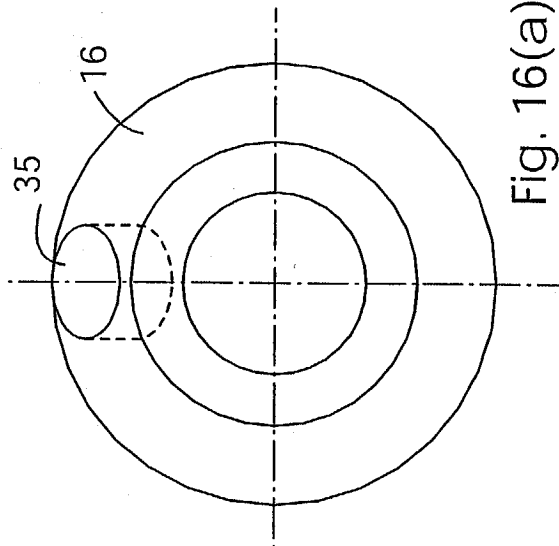


Fig. 16(a)

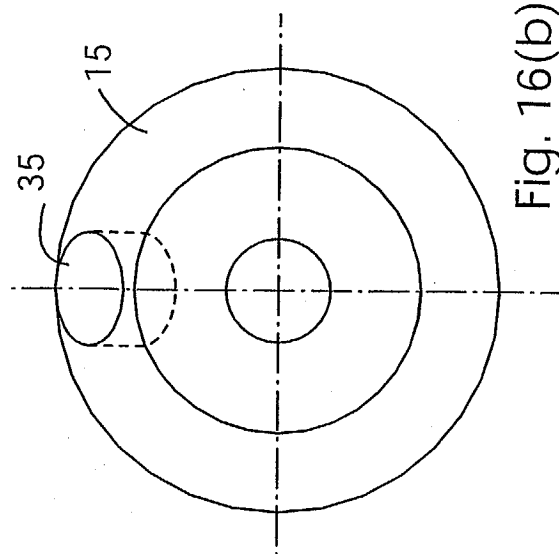


Fig. 16(b)

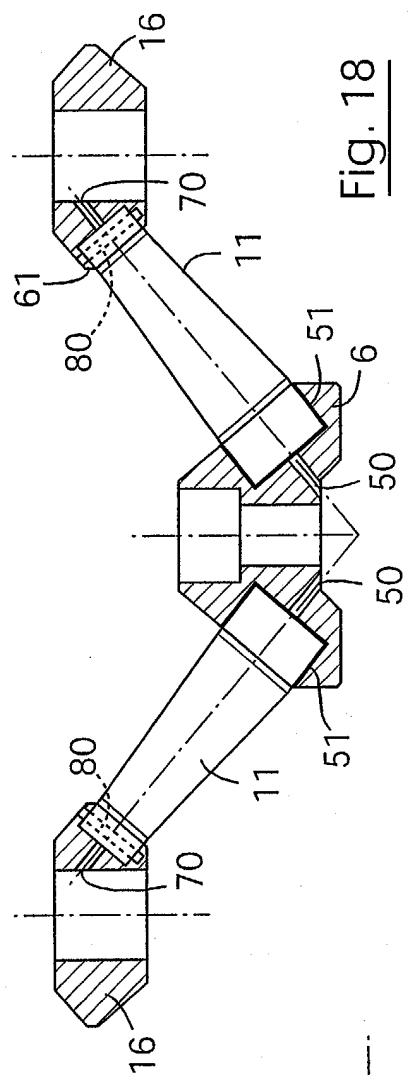


Fig. 18

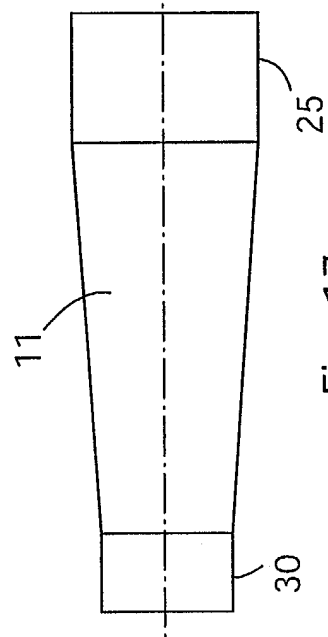


Fig. 17

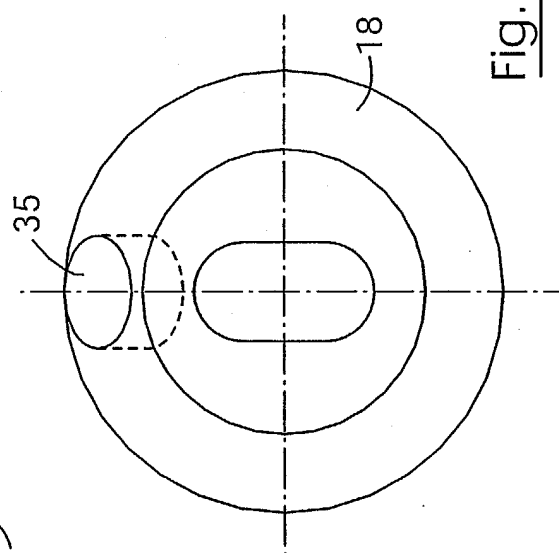


Fig. 16(c)

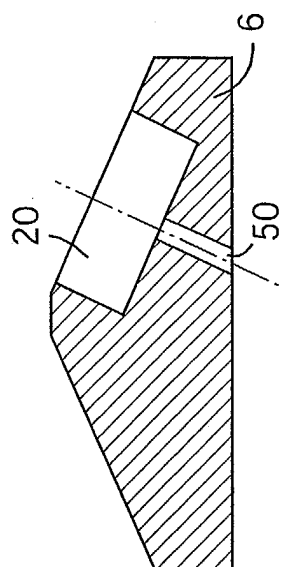


Fig. 19

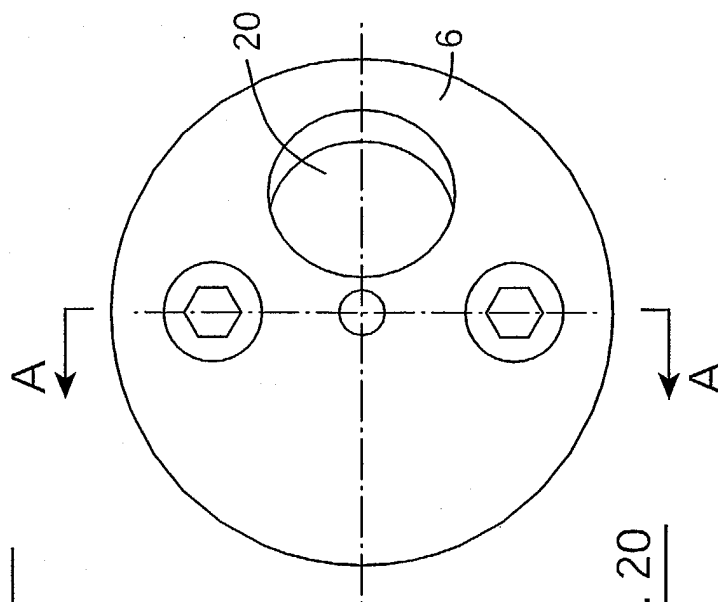


Fig. 20

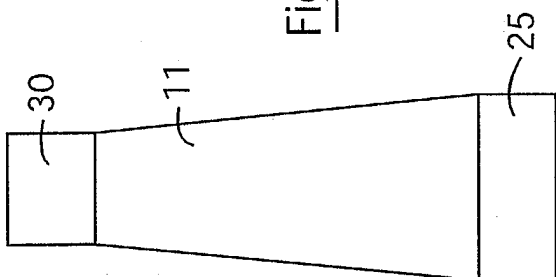


Fig. 27

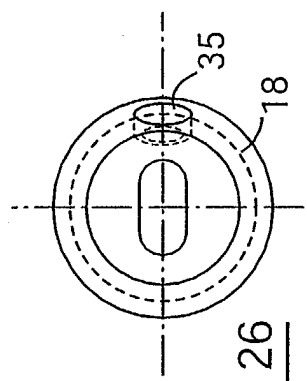


Fig. 26

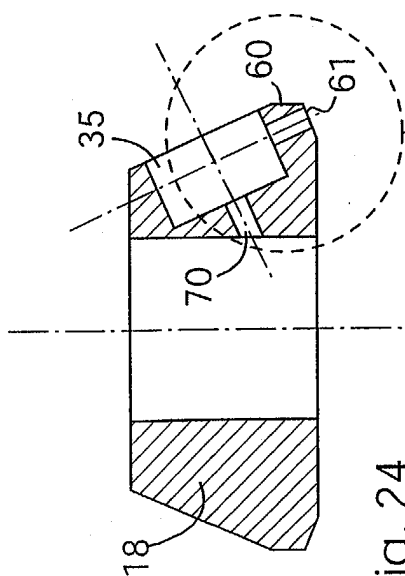


Fig. 24

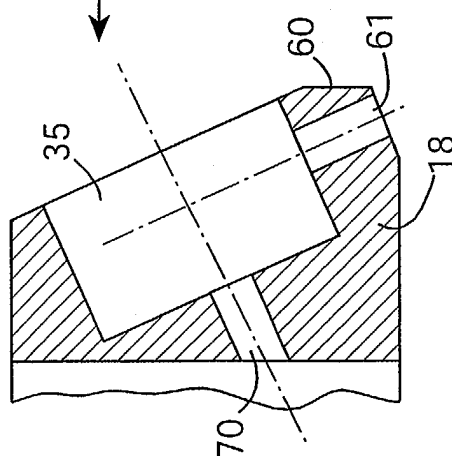


Fig. 25

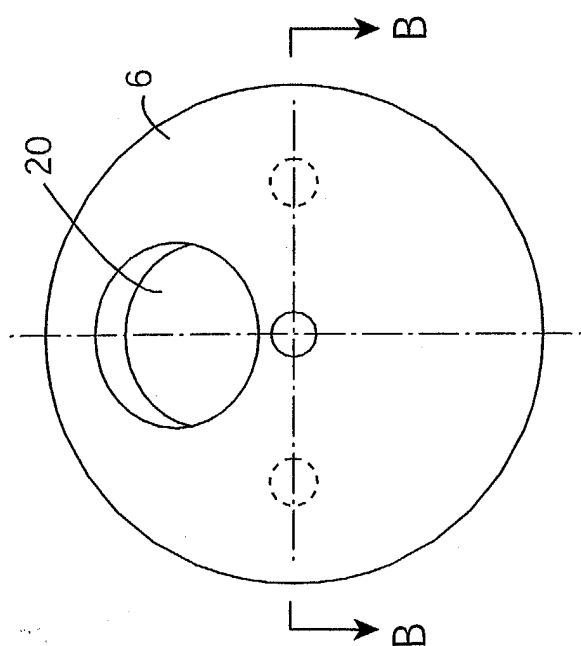


Fig. 22

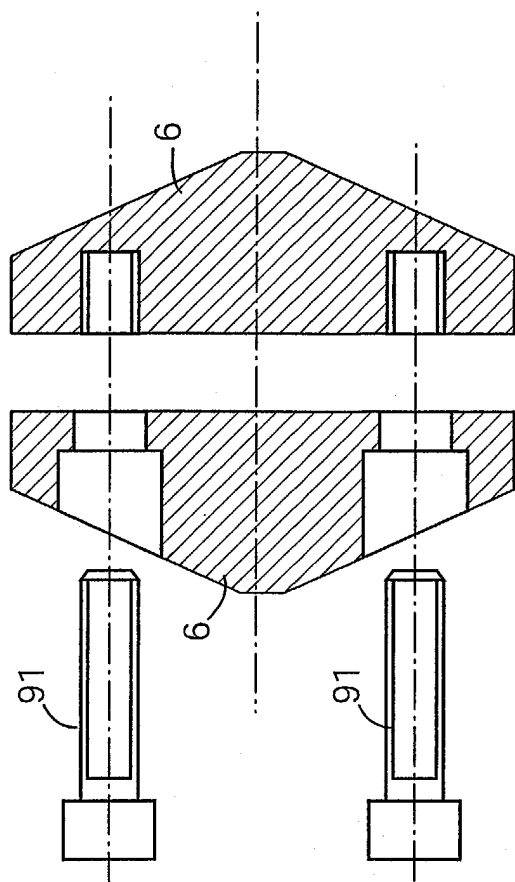


Fig. 21

Fig. 23

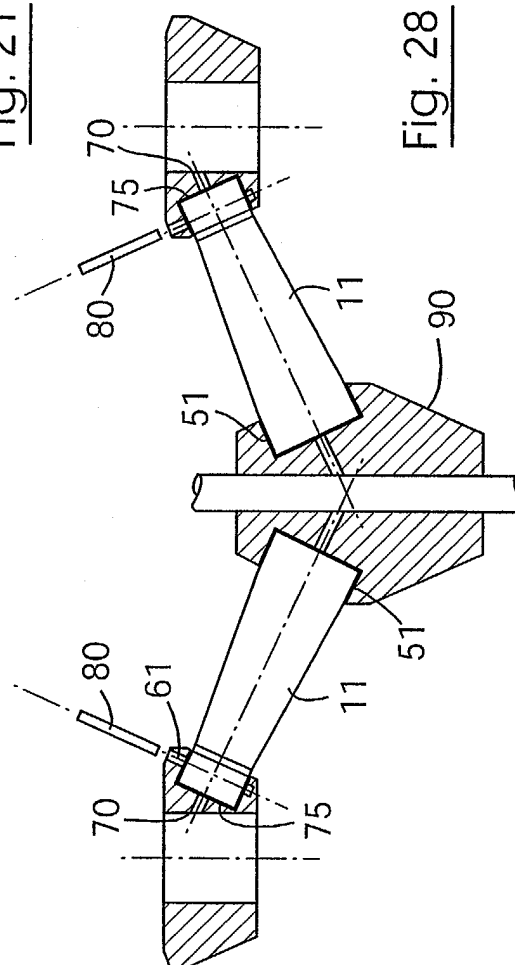


Fig. 28