Office de la Propriété Intellectuelle du Canada
Un organisme d'Industrie Canada

Canadian Intellectual Property Office
An agency of Industry Canada

CA 2355944 A1 2003/02/24

(21) 2 355 944

(12) DEMANDE DE BREVET CANADIEN
CANADIAN PATENT APPLICATION

(13) A1

(22) Date de dépôt/Filing Date: 2001/08/24

(41) Mise à la disp. pub./Open to Public Insp.: 2003/02/24

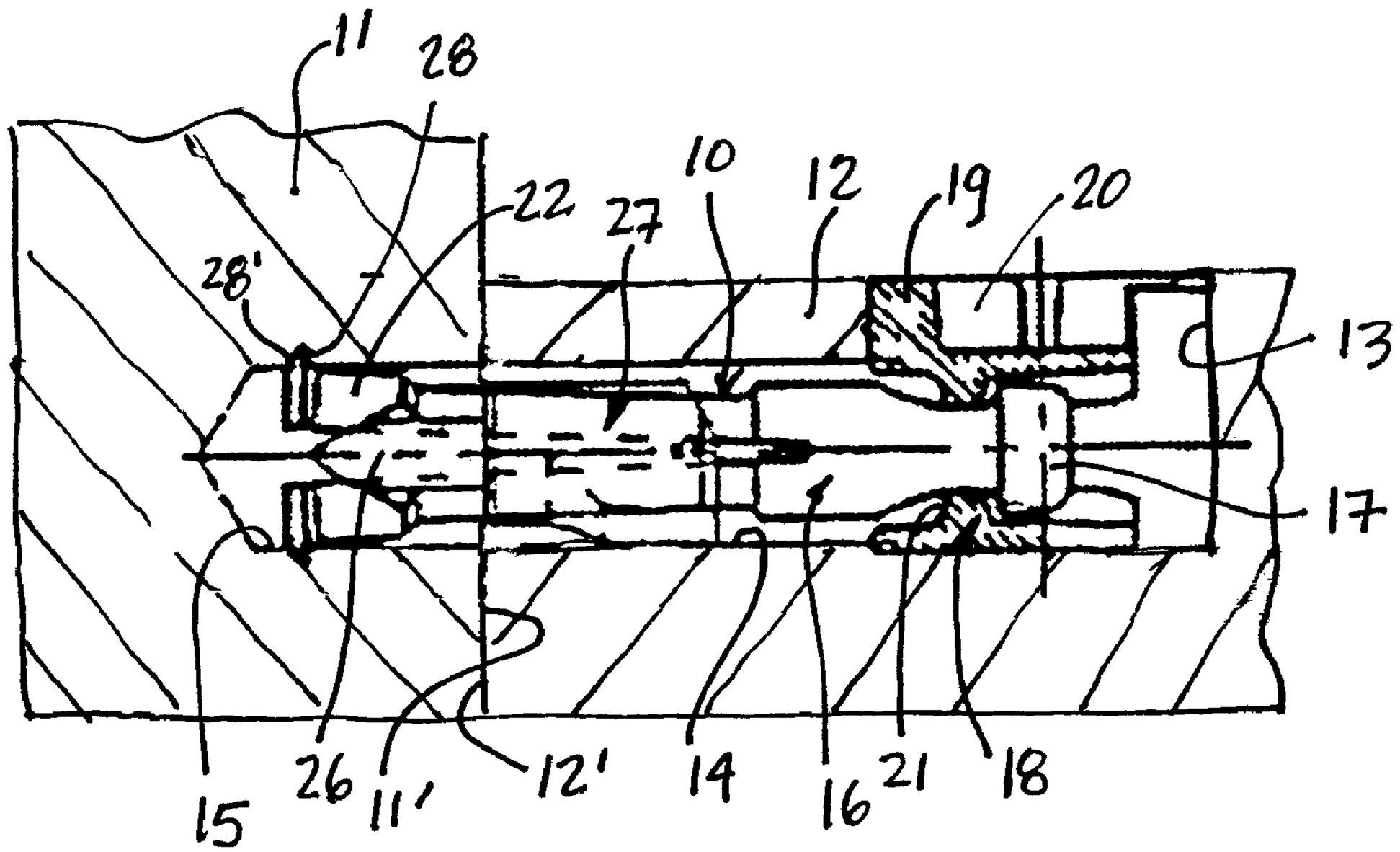
(51) Cl.Int.^{7}/Int.Cl.^{7} F16B 13/10

(71) Demandeur/Applicant:
RUBANO, PATRICK, CA

(72) Inventeur/Inventor:
RUBANO, PATRICK, CA

(74) Agent: OGILVY RENAULT

(54) Titre : ATTACHE AMELIOREE
(54) Title: IMPROVED FASTENER ASSEMBLY



IMPROVED FASTENER ASSEMBLY

TECHNICAL FIELD

The present invention relates to a fastener assembly for removably securing two adjoining parts together along flat mating surfaces. More particularly, but not exclusively, the fastener assembly of the present invention is for use in fastening flat furniture board pieces together whereby an article of furniture can be quickly and securely assembled and relatively easy to disassemble, if required.

BACKGROUND ART

The fastener assembly as described herein is an improvement of the fastener assembly as described in related PCT Application No. PCT/CA00/01275 filed on October 25, 2000. Specifically, the fastener assembly as herein-described is provided with a rotatable cam housing which is located spaced from the flat mating surfaces at a sufficient distance to provide easy access to a tool for engagement in a tool engaging head of the cam housing which is disposed in close fit in a circular bore. Accordingly, the stud of the present invention is much longer whereby to provide engagement with the rotatable cam housing and having its gripping head sections disposed in the dowel bolt hole of the adjoining panel. Not only does the positioning of the rotatable cam housing provide ease of access to the head engaging tool, such as a Philip screwdriver, it also does not weaken the horizontal panel at the mating edge as it is spaced from the mating edge a sufficient distance not to affect the integrity of the panel body which could be fabricated of presswood which can easily disintegrate or break.

BRIEF DESCRIPTION OF DRAWINGS

A detailed description of the fastener assembly of the present invention will now be described with reference to the accompanying drawings in which:

FIGURE 1 is a cross-section view of two transverse panels interconnected together by the fastener assembly of the resent invention as hereinshown partly in section;

FIGURE 2 is a top view, partly fragmented, of Figure 1;

FIGURES 3A and 3B are perspective views showing the construction of the stud and the wedge secured thereto;

FIGURE 4 is a side view of the stud;

FIGURE 5 is a section view along section line V-V of Figure 4;

FIGURE 6 is a side view of the wedge;

FIGURE 7 is a top view of the wedge;

FIGURE 8 is a bottom view of the wedge;

FIGURE 9 is a perspective view of the wedge;

FIGURE 10 is a different side view of the wedge;

FIGURE 11 is a perspective view of the rotatable cam housing;

FIGURE 12 is a section view of the cam housing showing one of the eccentric shoulders thereof;

FIGURE 13 is a fragmented cross-section view of two transverse panels illustrating the portion of the gripping head section and the abutment shoulders; and

FIGURE 14 is a similar view but seen at a transverse view.

DESCRIPTION OF PREFERRED EMBODIMENTS

Referring now to Figure 1, there is shown generally at 10 the fastener assembly of the present invention for securing two adjoining parts, herein a vertical panel 11 to a horizontal panel 12 along flat mating surfaces 11' and 12'. A circular bore 13 is formed in the

horizontal panel 12 and spaced from the flat mating surface 12' a sufficient distance not to affect the integrity of the panel 12 adjacent the mating surface 12'. A dowel bolt hole 14 is formed in the flat mating surface 12' and extends to the circular bore 13. An aligned dowel bolt hole 15 is also formed in the vertical panel 11 and aligned with the dowel bolt hole 14. These holes are made by a jig, not shown.

As shown in Figure 1, the panels 11 and 12 are secured together by the fastener assembly 10 and wherein a stud 16, having a cam follower head 17, is engaged within a rotatable cam housing 18. The rotatable cam housing is of circular cross-section and located in close rotational fit within the bore 13. The rotatable cam housing 18 is provided with a tool engaging head 19 having a Philips cavity 20, or other shape cavity, therein for engagement by a screwdriver or fastening tool (not shown). The rotatable cam housing has an eccentric slotted cam wall 21 which engages with the shoulder 17' of the cam follower head 17. As hereinshown, the bolt has, at its opposite end, a gripping head section 22 which is engageable into the side wall of the dowel bolt hole 15 whereby to secure both vertical panels together as will be described later.

As shown in Figures 2 to 5, the stud 16 has an elongated body portion 23 which has a slot 24 extending therealong. The slot also extends through the gripping head section 22. The length of the body 23 is determined by the distance or the spacing between the bore 13 and the mating surface 12'.

As can be seen from the cross-section view of Figure 5 together with Figure 4, the gripping head section 22 is provided to each side of the slot 24 with a V-shaped cavity 25 whereby to receive therein a splitting finger 26 of a wedge 27 which is illustrated in Figures 7 to 10. The free ends of the gripping head sections 22 are also provided with gripping ribs 28 which have a slope projecting sharp edge 29 for engagement within the side wall of the dowel

bolt hole 15 when the gripping head is expanded, as shown in Figure 1, by the wedge.

As shown in Figures 3A and 3B, the wedge 27 is positioned about the elongated body portion 23 by simply disposing the body portion 23 in its slot 30. As shown in Figures 7, 8, 13 and 14, the wedge 27 is in the form of a sleeve 31 provided with abutment shoulders 32 which are arcuate thin wedges projecting from the sleeve outer side wall 31' and these abutment shoulders 32 are disposed between the flat mating surfaces 11 and 12' of the vertical and horizontal panels 11 and 12 when the fastener assembly 10 is fitted within the dowel bolt hole 14. The wedge fingers 26 are also integrally formed with the sleeve 31 and these have V-shaped free ends 33 which locate in close fit between the wedge sections 25 of the gripping head, as can be seen from Figure 2. As shown in Figure 13, the shoulders 32 abut against the surface 11' to maintain the wedge 26 stationary so that when the bolt is drawn in the hole 14 the gripping head will be wedged out to engage within the side wall of the hole 15. When the bolt is pushed into the hole 15 by turning the tool engaging head 19, the sloped gripping ribs will cause the gripping heads to move inwardly to disengage with the side wall of the hole 15. Accordingly, the panels can be connected and disconnected several times.

As shown in Figures 11 and 12, the rotatable cam housing 18 is provided with an entrance port 34 which is aligned with the dowel bolt hole 14 whereby to permit the gripping head section 17 of the stud 16 to be received within the eccentric cam chamber 35. The slotted eccentric cam is provided with a slot 36 which is dimensioned to receive the neck portion 37 of the stud 16 therethrough. A pair of eccentric shoulders or walls 37 and 37' extend to opposed sides of the slot 36 inside the chamber 35 whereby rotation of the screw head 19 in the direction of arrow 38 will cause the eccentric cam walls 37 and 37' to pull on the bolt head in the direction of arrow 39, thereby causing the

gripping head sections 22 to separate from one another due to the fact that the bolt is being pulled back on the wedge which is remaining stationary due to the abutment of its flanges 32 against the flat mating surface 12', thus causing the V-shaped free end 33 of the wedge finger 26 to push the gripping head sections apart whereby the gripping ribs 28 can enter into the side wall of the dowel bolt hole 15, as shown in Figure 1. By rotating the screw head 19, tension can be applied to the stud whereby the flat mating surfaces 11' and 12' are firmly pressed together. The stud remains in tension between its gripping ribs 28 and the shoulder 17' of the bolt head 17 against the inner walls 39 of the eccentric cam walls 37 and 37'.

In order to disconnect the panels from one another, it is simply necessary to rotate the cam housing in a counterclockwise direction to untension the stud 16. By pushing the cam follower head towards the dowel bolt hole 15, the slope wall 28' of the gripping rib 28 will cause the gripping head sections 22 to disengage with the side wall of the dowel bolt hole 15 permitting the panels to disconnect from one another.

It is within the ambit of the present invention to cover any obvious modifications of the preferred embodiment described herein.

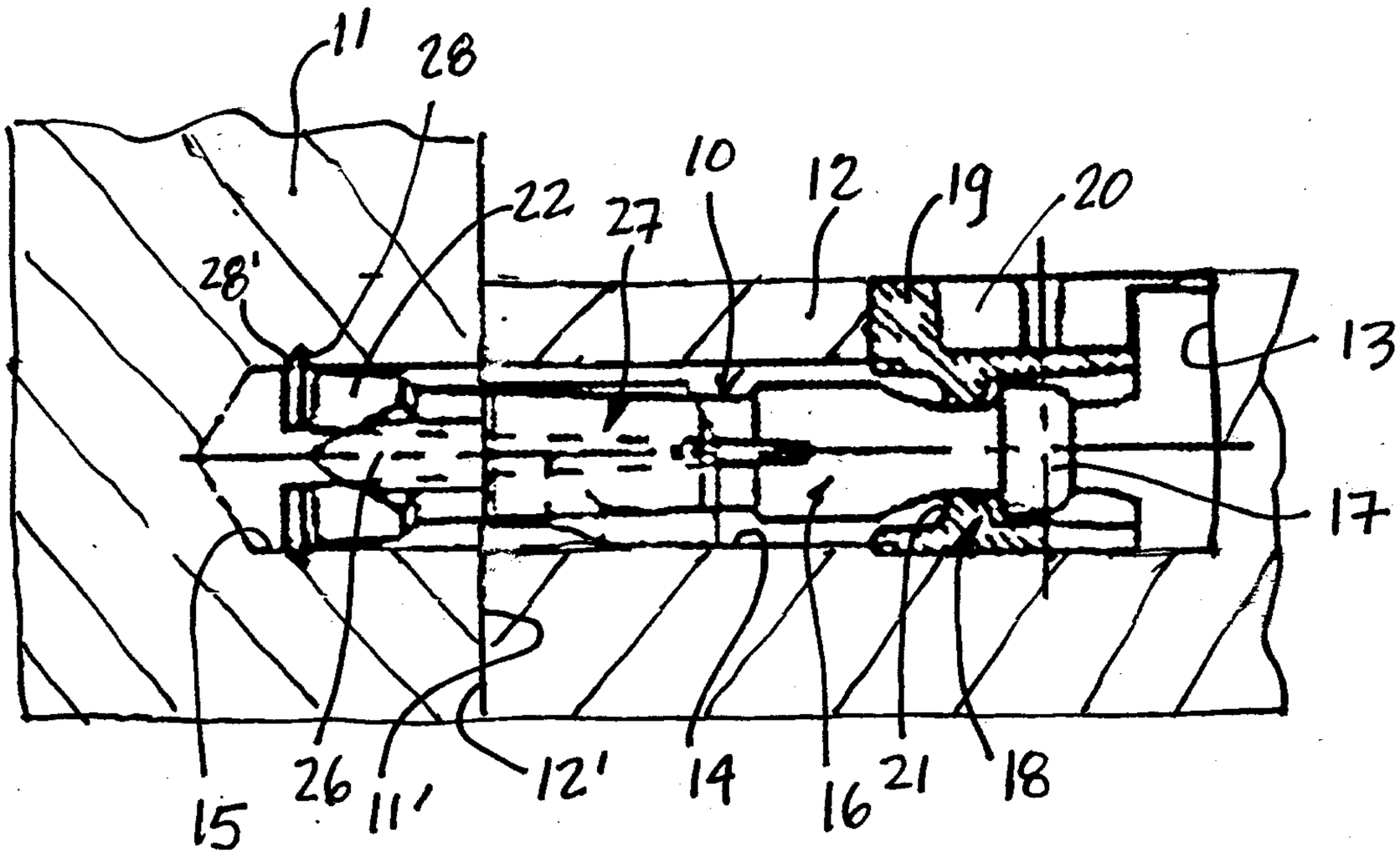


FIG. 1

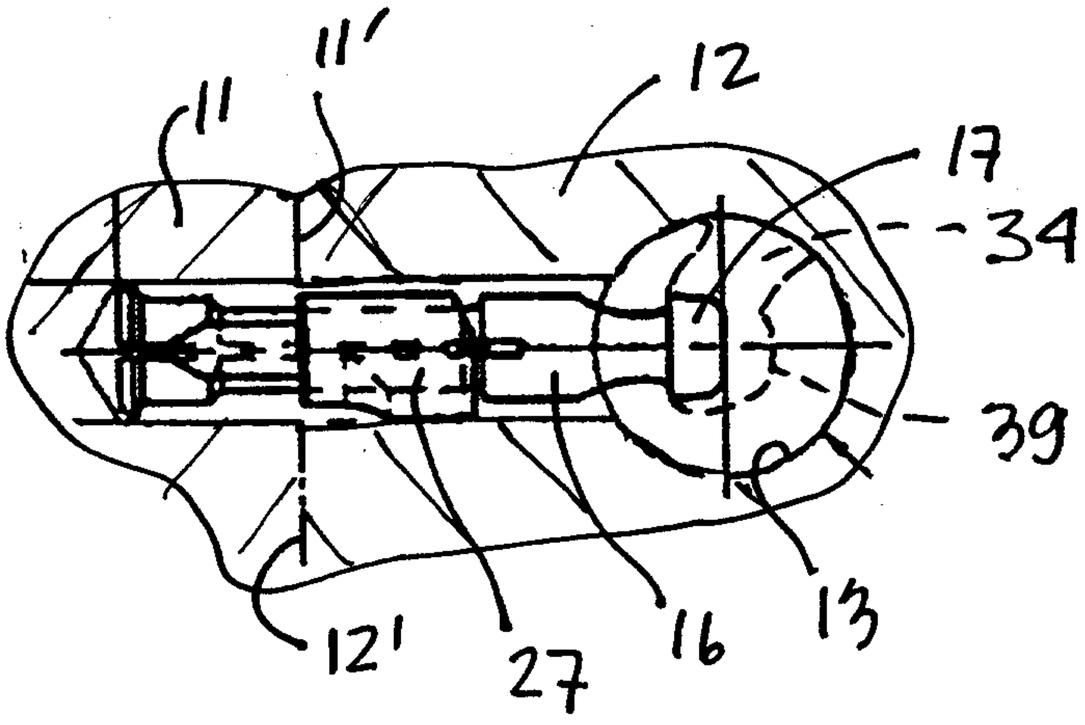


FIG. 2

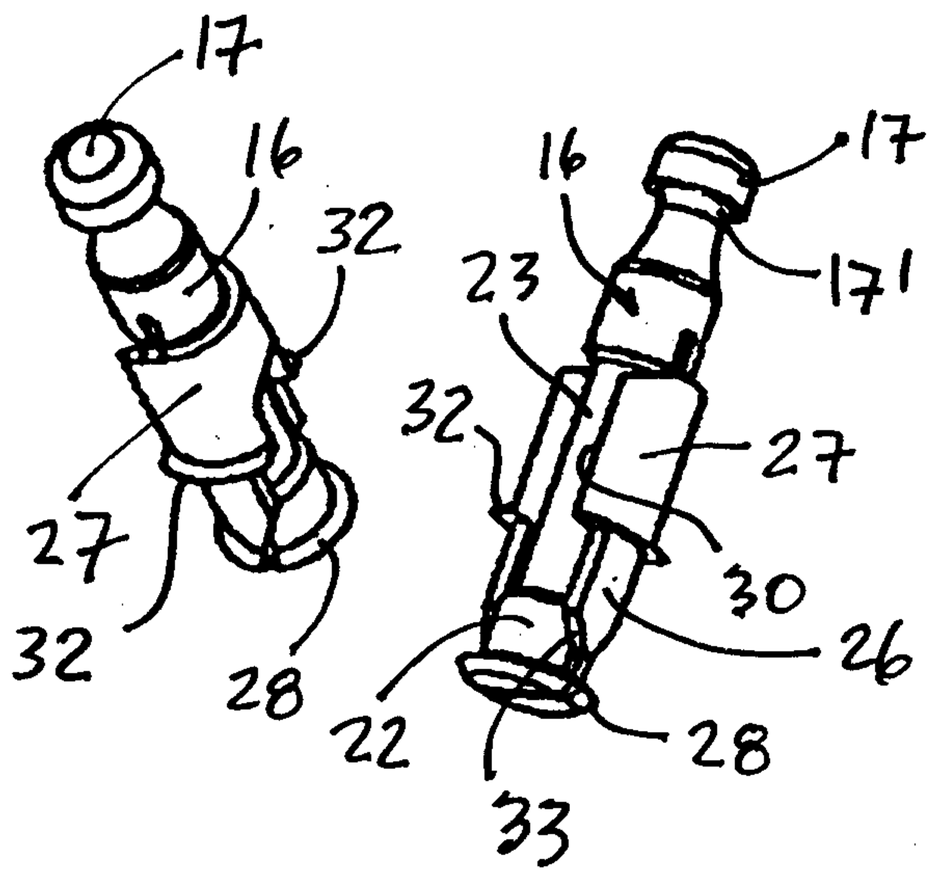


FIG. 3A

FIG. 3B

FIG. 4

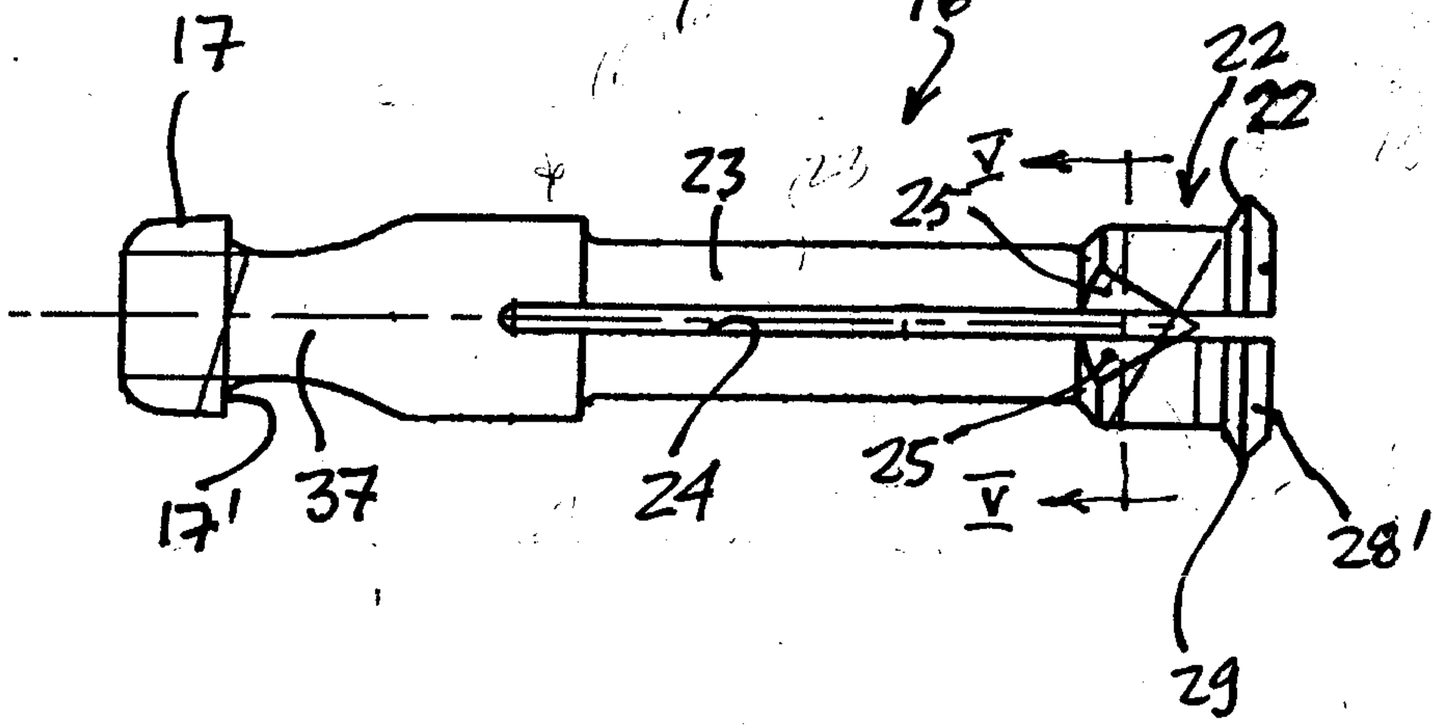
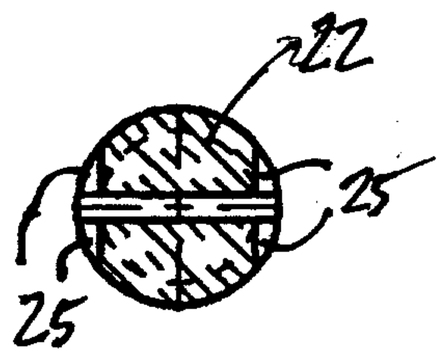


FIG. 5



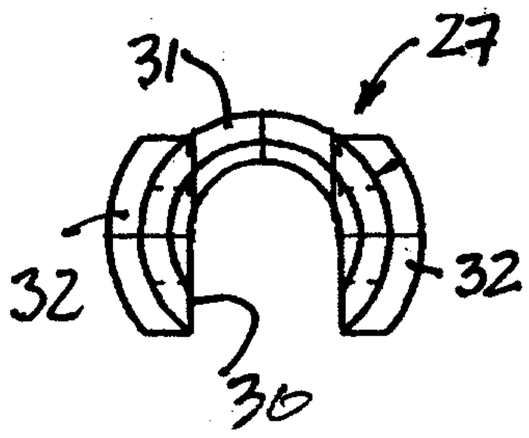


FIG. 7

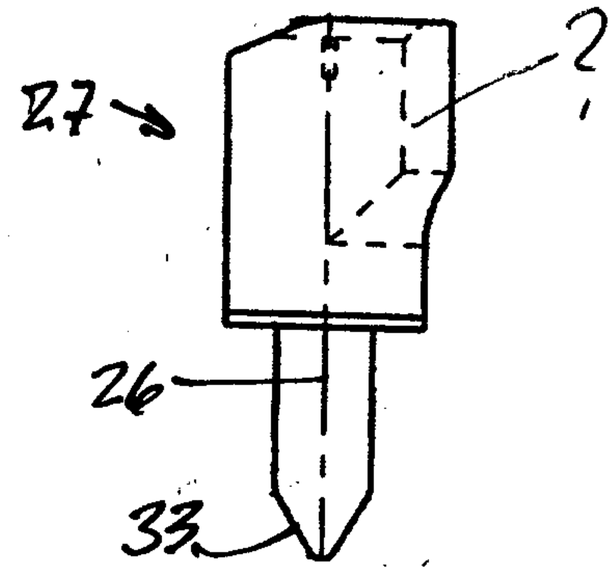


FIG. 10

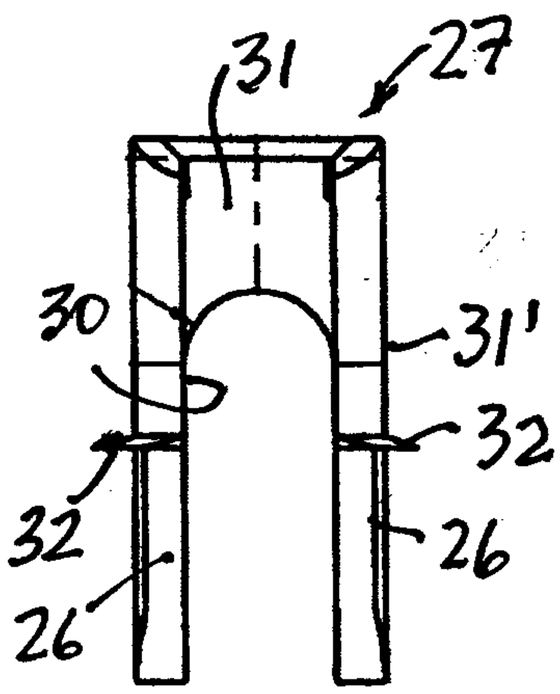


FIG. 6

FIG. 9

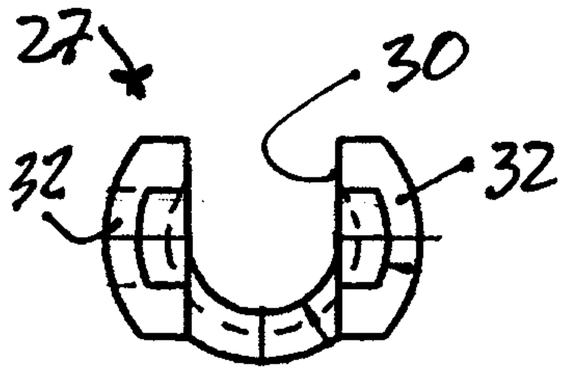
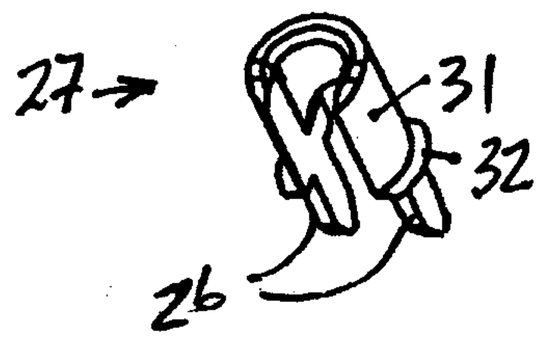


FIG. 8



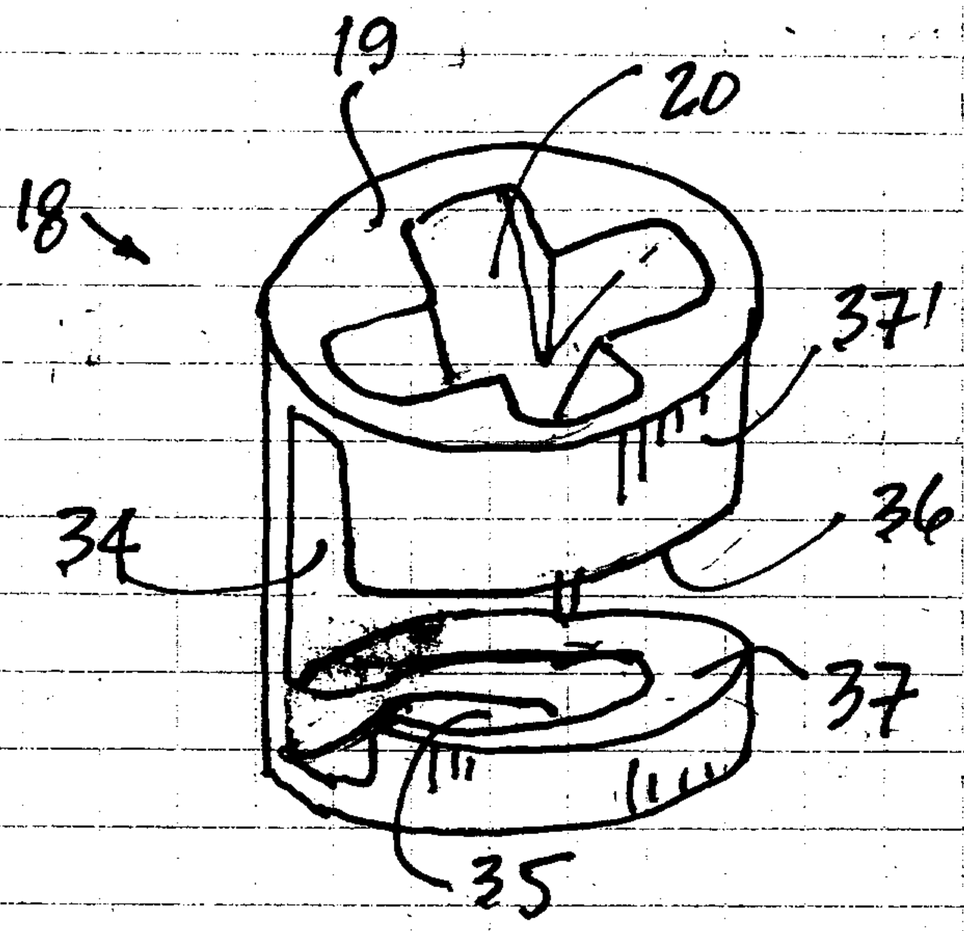


FIG. 11

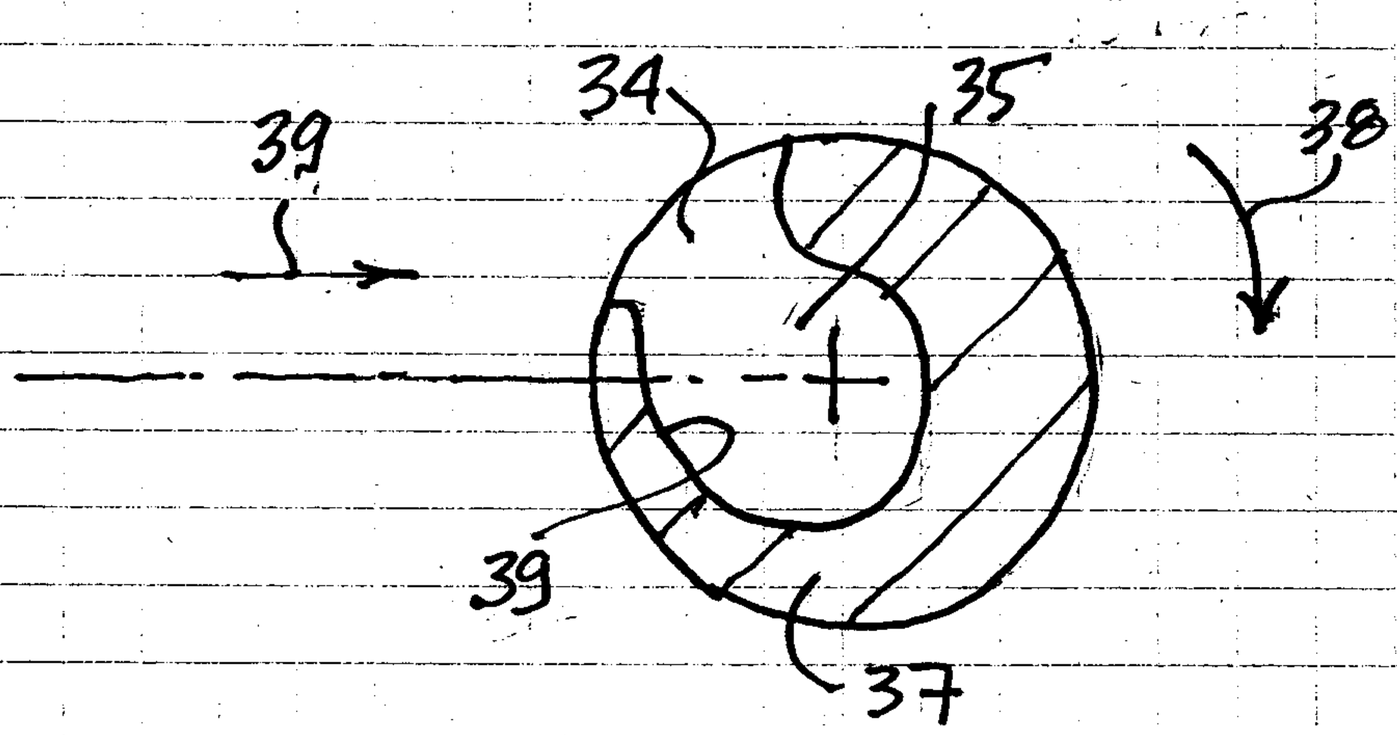


FIG. 12

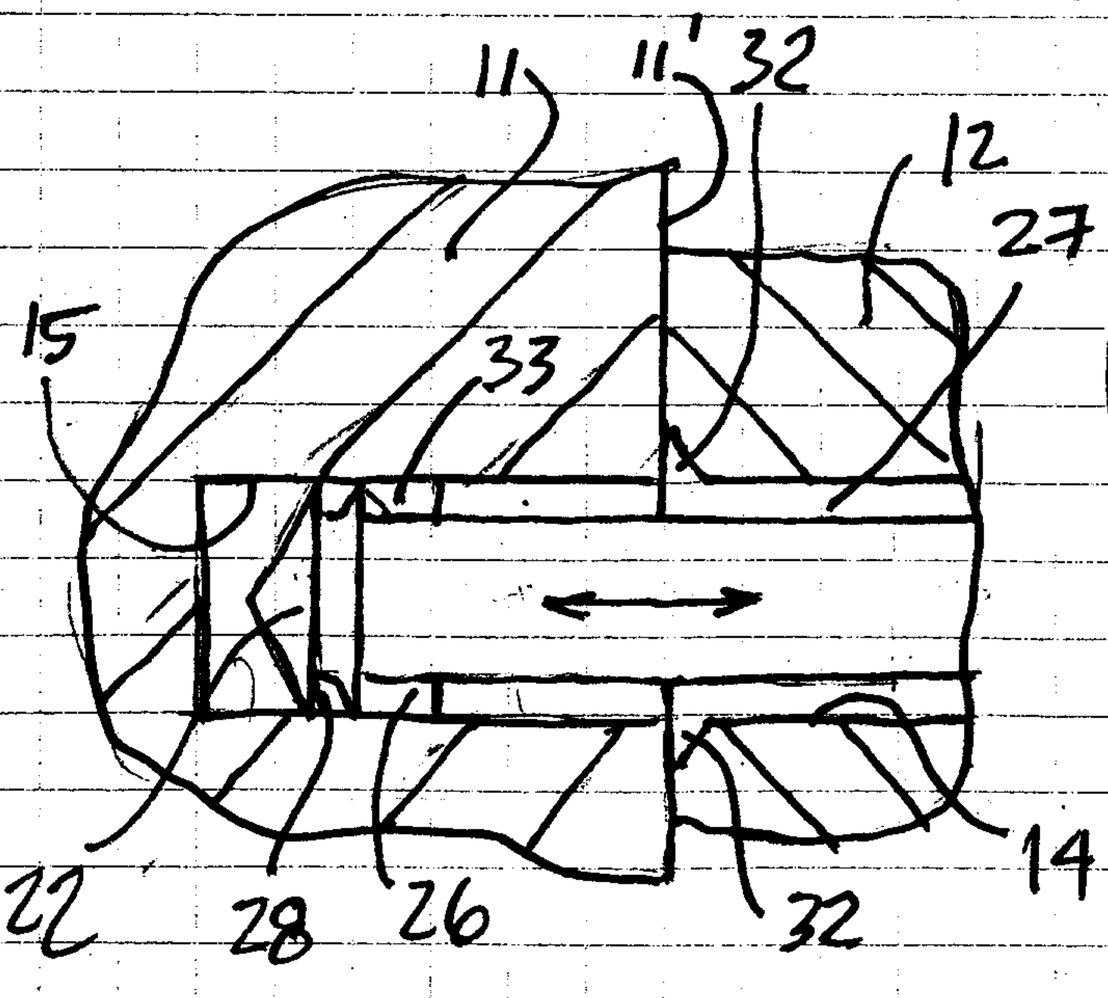


FIG. 13

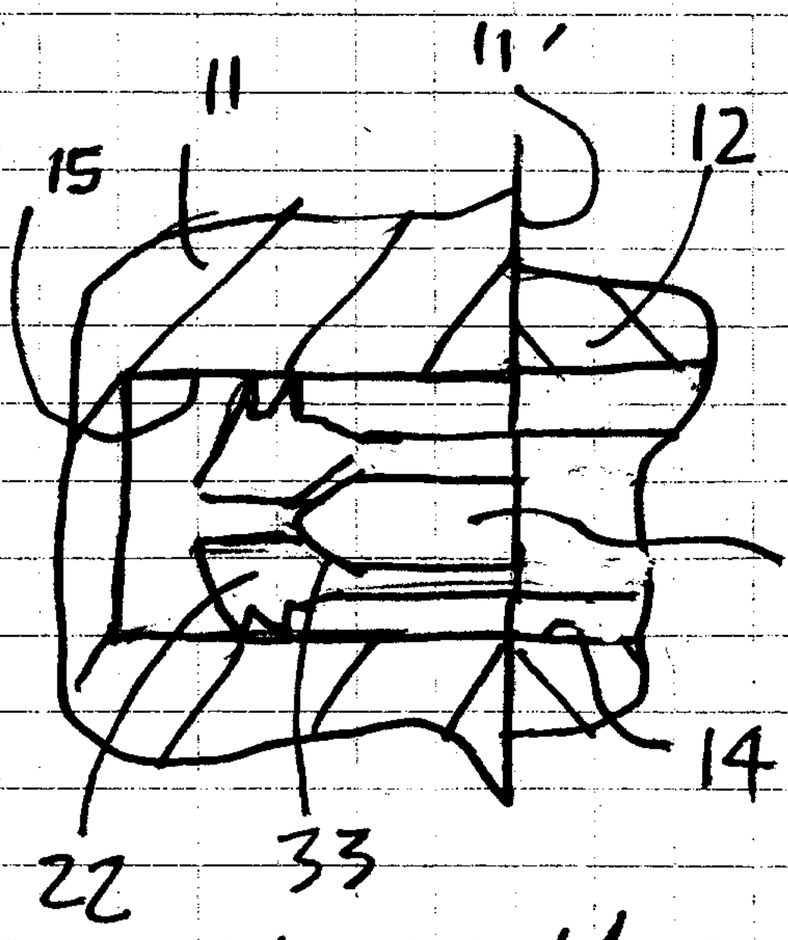
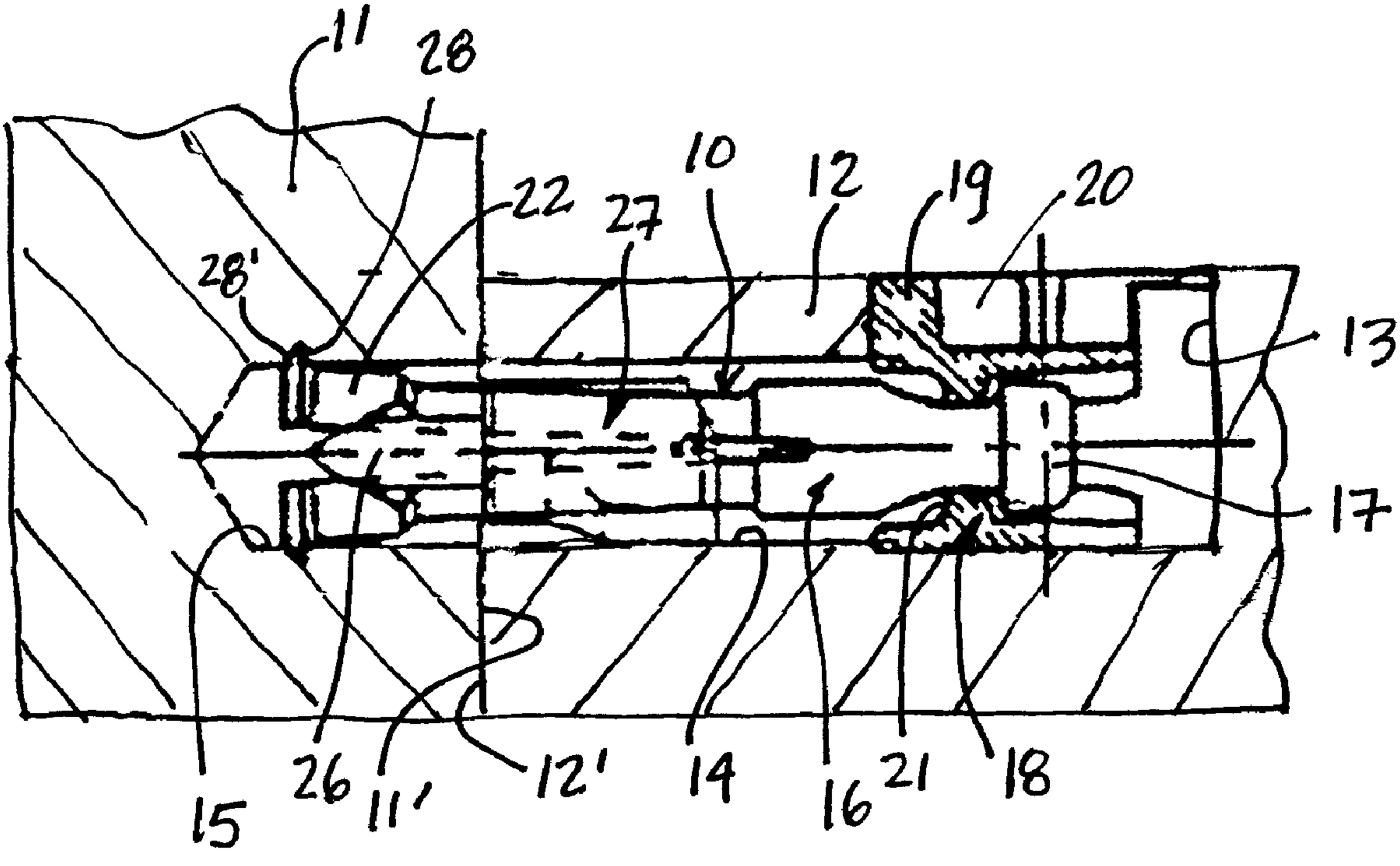


FIG. 14


11
28
22
28'
27
10
12
19
20
13
17
15
26
11'
12'
14
16
21
18