

PATENTS EXAMINATION BOARD

Subject:	The drafting of patent specifications – Paper 1	2E
Date:	July 2010	
Time:	09h00 – 13h00	
Duration:	Four hours (Candidates requiring extra time are entitled to an additional two hours)	
Examiners:	J D Whittaker K F Bredenkamp	
Moderator:	K E F Brown	

The paper consists of two questions both of which must be answered. In each case, you are required to identify the inventive features of the invention and to draft a claim to protect the invention.

Marks will be allocated as follows:

- 10% of the marks will be allocated to the identification of the inventive features; and
- 90% of the marks will be allocated to the claim.

In order to obtain a pass for this paper, candidates must obtain not less than 50% in total.

DRAFTING OF PATENT SPECIFICATIONS: JULY 2010

QUESTION 1

A CLIP

1. Letter From Client

You receive the following letter from your client:

Dear Sirs

We invented a new clip, as shown in figures 1 to 5.

The clip consists of a rivet 2 and a sleeve 3. The rivet clips inside the sleeve. The rivet 2 has a rivet head 4 and a shaft 5. The shaft 5 extends from the rivet head terminating in a first engagement means 6 in the form of a circumferential thickening or flange. The sleeve 3 has complimentary second engagement means 7, being inwardly bent partially cut-out portions of a wall of the sleeve, in the shape of two tabs.

The rivet head 4 is disc-shaped with a domed upper surface. A lower surface of the head 4 is flat. The shaft 5 is circular in cross section with a diameter smaller than that of the head 4, and smaller than an inside diameter of the sleeve 3.

The circumferential flange 6 extends radially from a free end of the shaft 5. A front end of the flange is tapered. An engagement surface of the flange is normal to the shaft 5 and faces the head 4.

The inwardly bent partially cut-out portions or tabs in the wall of the sleeve, which are diametrically opposed, are u-shaped with the base of the u facing downwards. The cut-outs are bent inwardly.

In use, plates (8 and 9) to be joined are placed next to each other and a hole is drilled through them. The sleeve is held in line and co-axial to the hole behind the one plate 9 with free ends of the tabs pointing away from the plate 9.

The shaft 5 of the rivet 2 is pushed through the holes from the side of plate 8, and into the sleeve 3 so that the engagement surface of the flange engages in front of the free ends of the tabs 7. The tapered front surface of the flange facilitates pushing the tabs 7 in an outward or radial direction as the shaft is pushed into the sleeve. The engagement of the rivet 2 and the sleeve 3 causes the components 8 and 9 to be permanently joined together.

In a further application of the invention, the sleeve 3 may be embedded in a first component 10 and the head 4 embedded in a second component 11. The engagement of the rivet 2 and the sleeve 3 join the components (10 and 11) permanently together.

In a second embodiment of the invention, a sleeve 3 with two complimentary second engagement means 7 at opposite ends may be placed as indicated in Figure 5. Two rivets 4 may then be used to join components 12 and 14 to component 13.

We conducted a search and located US patent number 7,257,867. A copy of this patent is enclosed. This patent discloses a clip. A second clip component shown does not have cut-out tabs. Instead, it has pawls formed integrally with the second clip component. These pawls require additional material as they are not formed from part of a sleeve or wall of the second clip component. We believe that our clip is more cost effective as we form our tabs from part of the material of the wall of our sleeve. In essence, we deform part of the wall of our sleeve. The clip in the US disclosure does not have a deformed sleeve wall but an additional pawl extending therefrom.

Question

- 1.1 Identify and write down the inventive features of the invention (5 marks);
and
- 1.2 Draft an apparatus claim to protect the invention (45 marks).

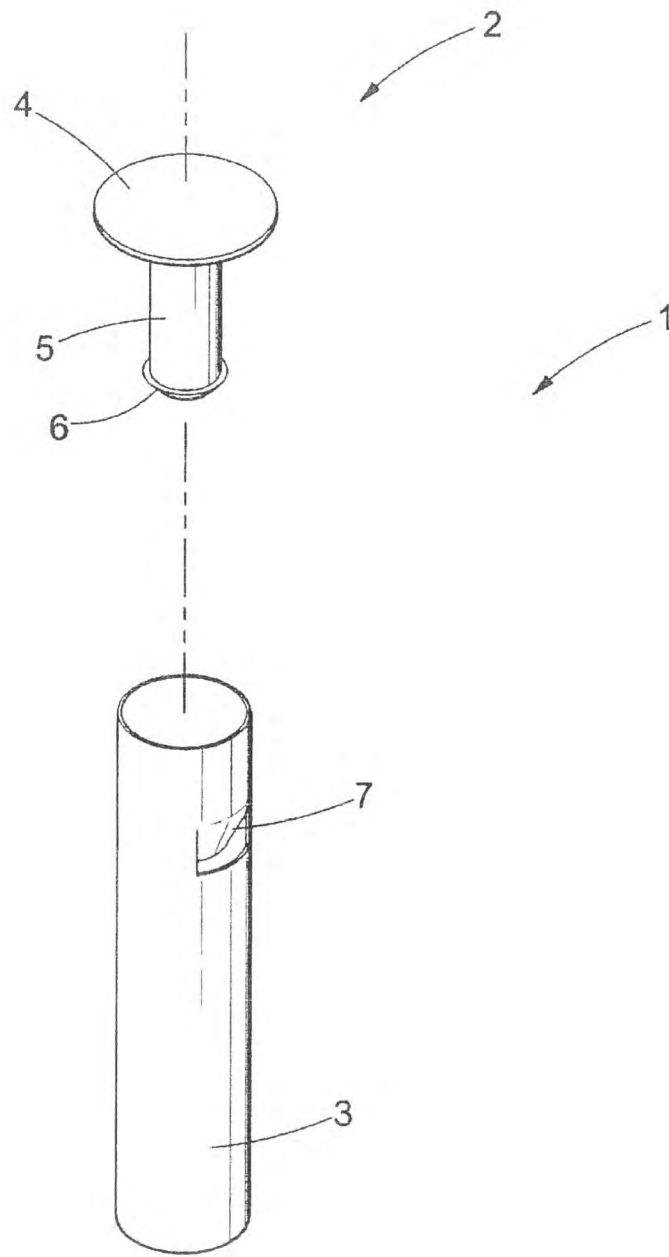


FIGURE 1

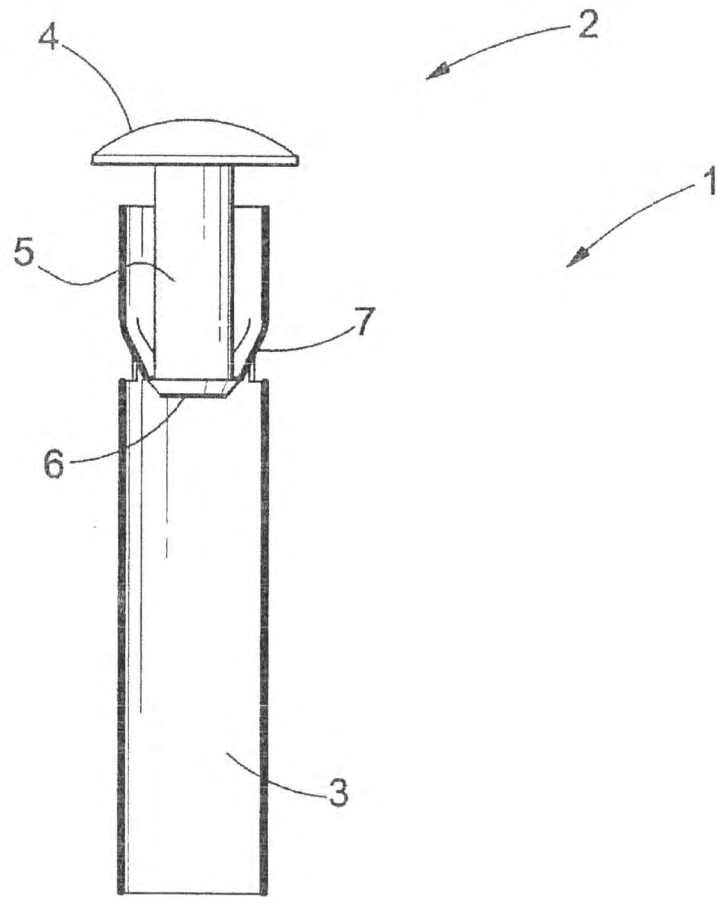


FIGURE 2

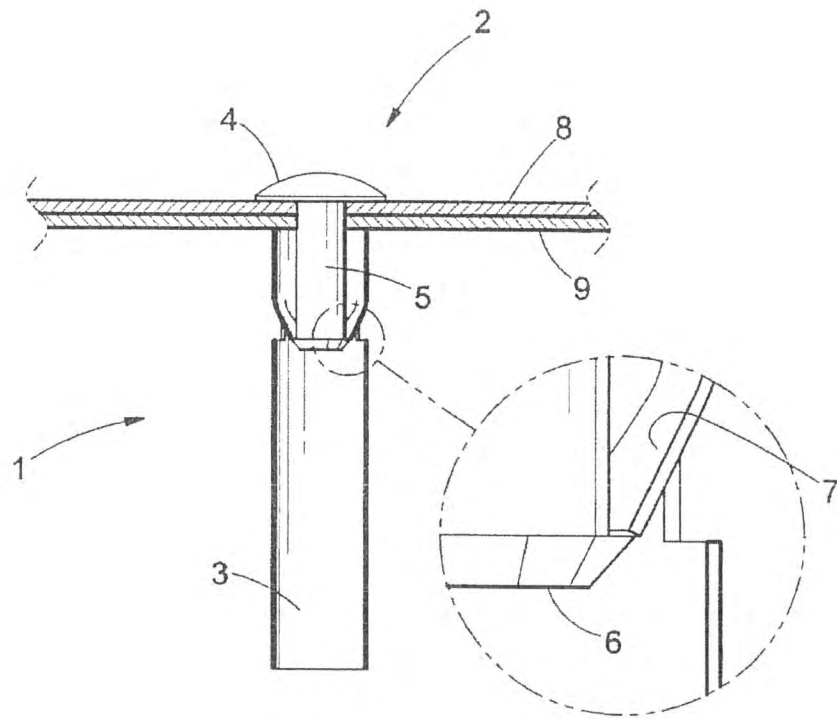


FIGURE 3

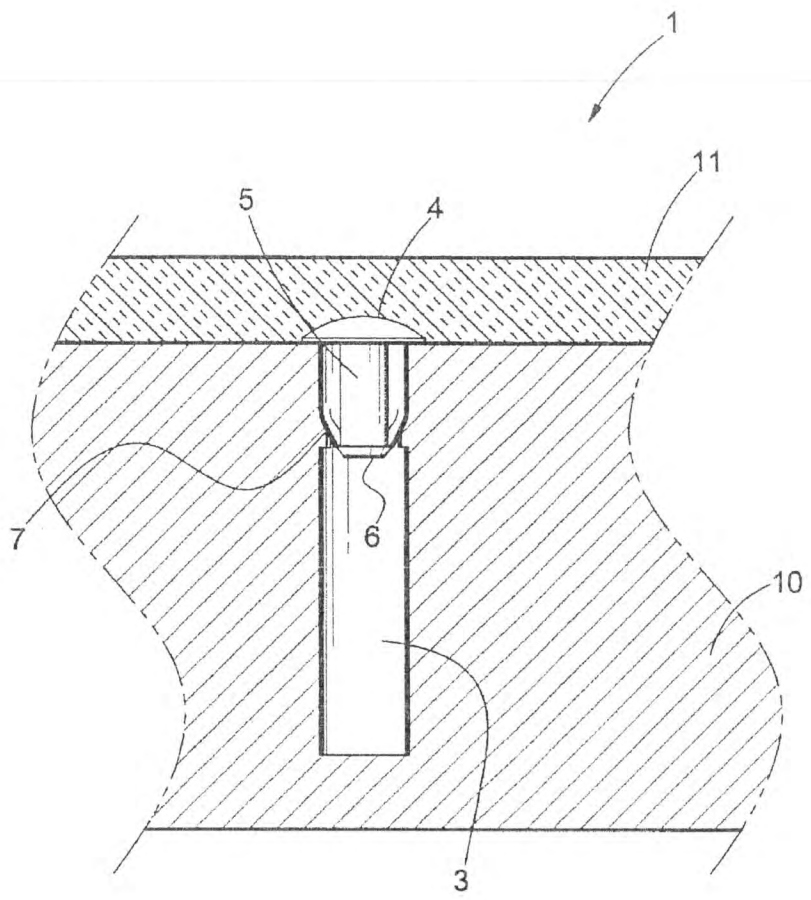


FIGURE 4

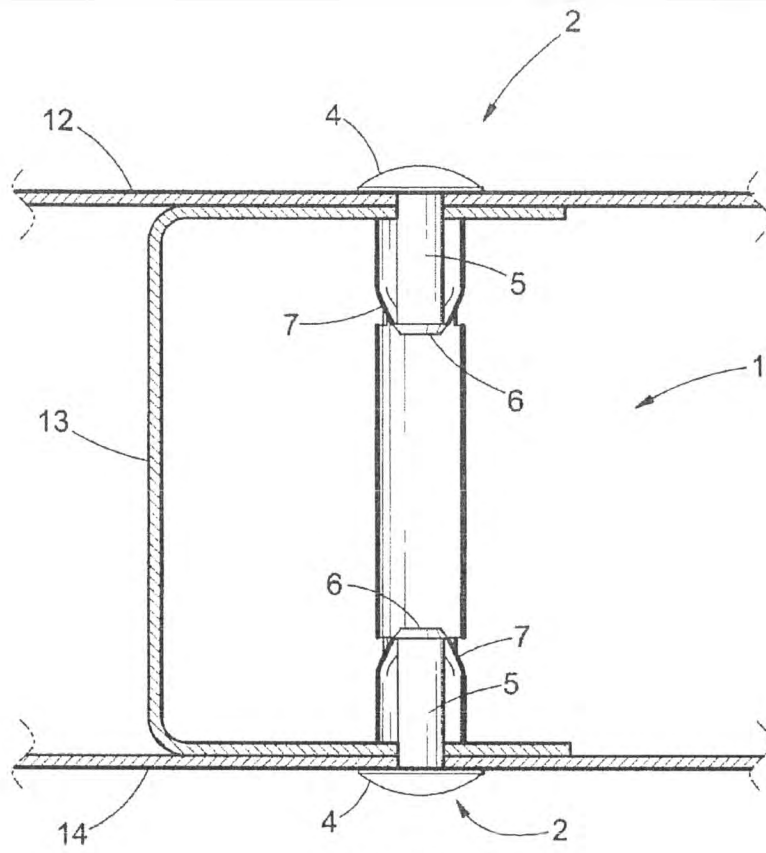


FIGURE 5

(12) **United States Patent**
Mizukoshi et al.

(10) **Patent No.:** **US 7,257,867 B2**
 (45) **Date of Patent:** **Aug. 21, 2007**

- (54) **CLIP FOR ATTACHING TWO MEMBERS**
- (75) Inventors: **Suguru Mizukoshi, Utsunomiya (JP);**
Hiroyuki Kato, Utsunomiya (JP)
- (73) Assignee: **Newfrey LLC, Newark, DE (US)**
- (*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 112 days.
- (21) Appl. No.: **11/115,297**
- (22) Filed: **Apr. 27, 2005**

3,988,808 A	11/1976	Poe et al.	24/73
4,716,633 A	1/1988	Rizo	24/453
5,975,820 A *	11/1999	Kirchen	411/339
7,017,239 B2 *	3/2006	Kurily et al.	24/297
2004/0049895 A1 *	3/2004	Draggou et al.	24/297

FOREIGN PATENT DOCUMENTS

EP	0163360	12/1985
FR	1,452,925	9/1966
GB	2 165 298	4/1986
JP	1-87310	6/1989
JP	827022	1/1992
JP	7-12611	3/1995

* cited by examiner

(65) **Prior Publication Data**
 US 2005/0241118 A1 Nov. 3, 2005

Primary Examiner—James R. Brittain
 (74) *Attorney, Agent, or Firm*—Miles & Stockbridge PC

(30) **Foreign Application Priority Data**
 Apr. 28, 2004 (JP) 2004-133379

(57) **ABSTRACT**

- (51) **Int. Cl.**
F16B 5/00 (2006.01)
 - (52) **U.S. Cl.** 24/297; 24/453
 - (58) **Field of Classification Search** 24/453,
 24/297, 606, 607; 174/138 D; 403/408.1;
 411/508-510, 44-53, 71-75, 77, 340, 341,
 411/344
- See application file for complete search history.

A clip for attaching a second member such as an insulator to a first member such as a car body, includes a first clip component attached to the first member and a second clip component working with the first clip component to support the second member. The first clip component has a flange for contacting the first member, a leg extending from the flange for insertion into a mounting hole in the first member, and a shank extending from the flange in a direction opposite to the leg for engaging the second clip component. The second clip component has a flange for contacting the second member, a tube for receiving the shank, and pawls inside the tube. The end of the shank has a portion for engaging the pawls to clamp the second member between the flanges.

- (56) **References Cited**
U.S. PATENT DOCUMENTS
 3,577,603 A 5/1971 Seckerson et al. 85/5

2 Claims, 3 Drawing Sheets

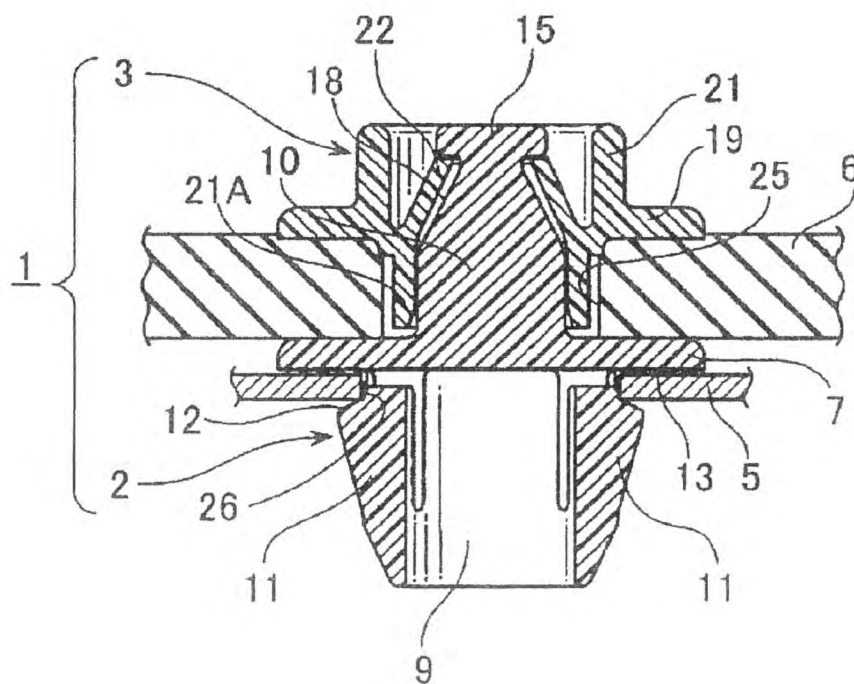


FIG. 1

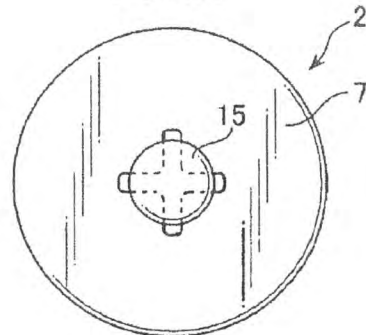


FIG. 2

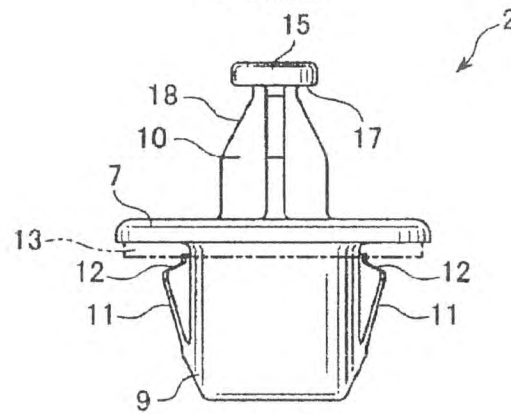


FIG. 3

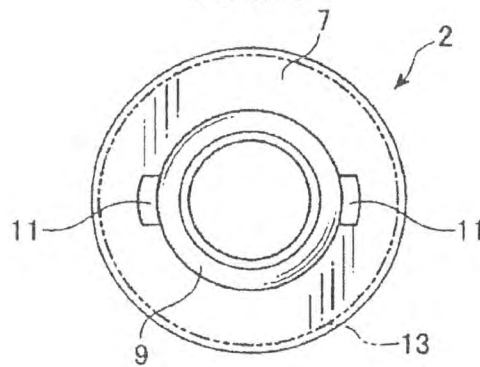


FIG. 4

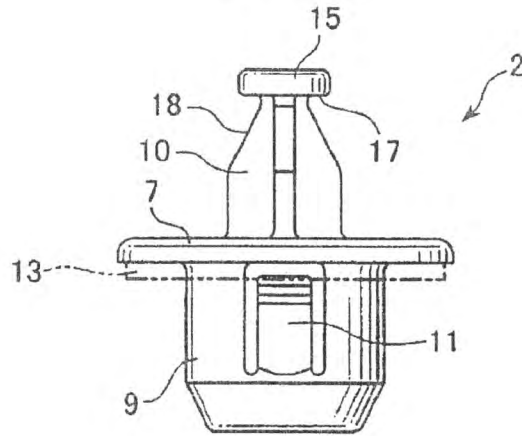


FIG. 5

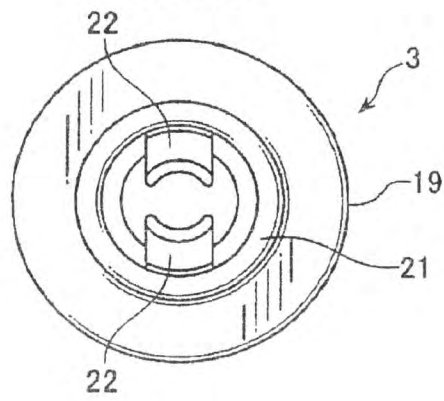


FIG. 6

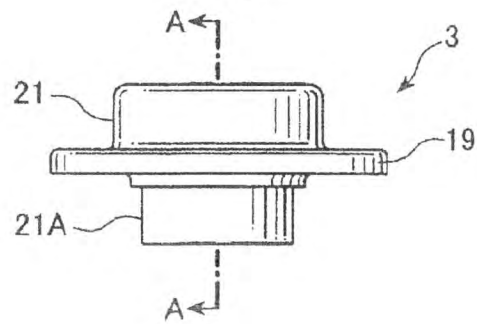


FIG. 7

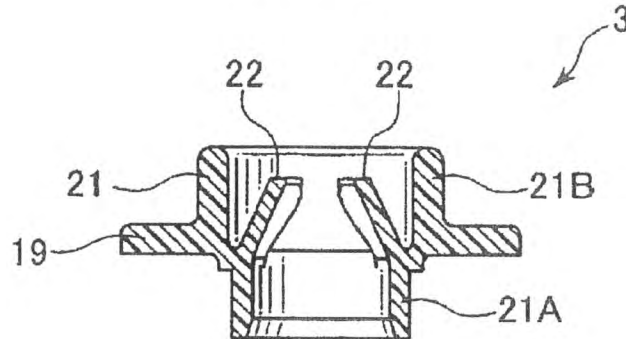
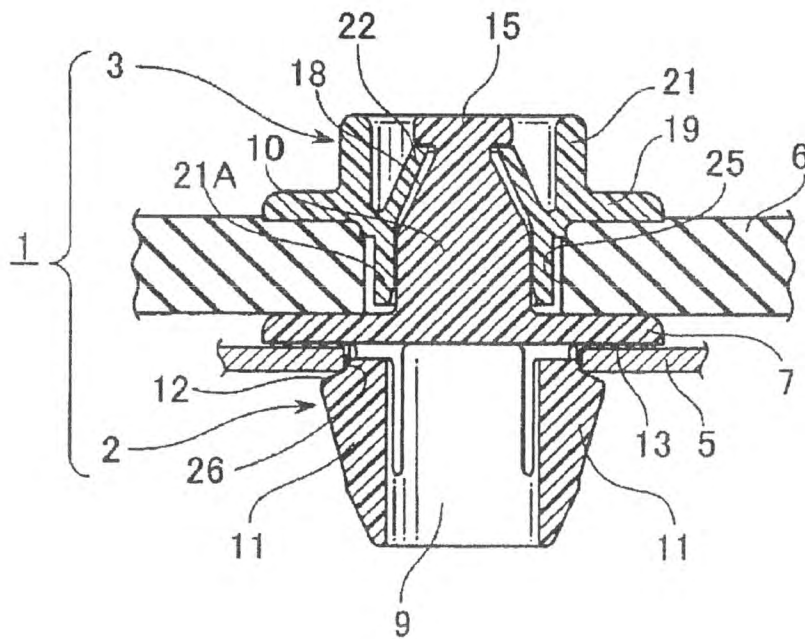


FIG. 8



US 7,257,867 B2

1

CLIP FOR ATTACHING TWO MEMBERS

CROSS-REFERENCE TO RELATED APPLICATION

This application claims the benefit of Japanese Application No. 2004-133379 filed Apr. 28, 2004 (incorporated herein by reference).

BACKGROUND OF THE INVENTION

The present invention relates to a clip for attaching a second member such as an insulator to a first member such as a car body.

An insulator is often attached to a car body, such as in the dashboard, to provide sound proofing or heat insulation to the car, and the insulator is attached using a clip. In Unexamined Utility Model Application Publication 1-87310 (Patent Document 1: Corresponding to Examined Utility Model Application Publication 4-29123), the clip is attached to the insulator beforehand so that the clip with attached insulator can be inserted into a mounting hole in the car body and attached to the car body on an assembly line, thereby simplifying the attachment of an insulator to a car body.

A joining pin is disclosed in Design Registration 827022 (Patent Document 2) for connecting two members. This joining pin is attached to one member and then joined at a predetermined interval to the other member. The clip disclosed in Unexamined Utility Model Application Publication 7-12611 (Patent Document 3: Corresponding to Utility Model Registration 2599660) is used to attach a decorative member such as door trim to a car body. This clip is designed to be able to block the mounting hole for the decorative member.

The clip in Patent Document 1 allows for greater assembly line efficiency because the clip is attached to an insulator beforehand at a site other than an assembly line. However, because of the configuration of the clip, the manner in which the clip is inserted into a mounting hole is critical and relies on the technical expertise of the operator to insert the clip properly into the mounting hole. The joining pin in Patent Document 2 is designed for attachment to one member and then joined at a predetermined interval to another member. This joining pin is not appropriate for attaching an insulator to a car body. The clip in Patent Document 3 is designed to attach a decorative member such as door trim to a car body and seal the mounting hole for the decorative member. As a result, it has an intricate configuration and is not designed to be attached beforehand to the decorative member.

BRIEF DESCRIPTION OF THE INVENTION

The present invention is intended to provide a clip for attaching a second member such as an insulator to a first member such as a car body, the clip being capable of attachment to a second member first, and then to a first member readily and properly, even with the second member already attached.

In a preferred (but non-limiting) embodiment, the present invention is a clip for attaching a second member such as an insulator to a first member such as a car body, wherein the clip comprises a first clip component attached to the first member and a second clip component working with the first clip component to support the second member, wherein the first clip component has a flange for contacting the first member, a leg extending from the flange for insertion into a mounting hole in the first member, and a shank extending

2

from the flange in a direction opposite to the leg for engaging the second clip component, wherein the second clip component has a flange for contacting the second member, a tube for receiving the shank, and an engagement portion formed inside the tube for engaging the shank, and wherein a tip of the shank of the first clip component has an engagement portion for engaging the engagement portion of the second clip component, so as to clamp the second member between the flange of the first clip component and the flange of the second clip component.

In this configuration, the clip is first attached to the second member such as an insulator. For this purpose, the tube of the second clip component is inserted into the mounting hole in the second member, and the tip of the shank of the first clip component is inserted into the tube to clamp the second member between the flange of the first clip component and the flange of the second clip component. The tip of the shank of the first clip component is guided and accommodated by the tube of the second clip component. As a result, the attachment process is simple, and the attachment is reliably performed in a proper position.

Preferably, the engagement portion of the second clip component comprises a pair of pawls formed with an inclined posture so that tips of the pawls approach one another in the insertion direction of the first clip component shank, and wherein the engagement portion of the first clip component is formed as a round plate with a shoulder for engaging the tips of the pawls that have returned to the inclined posture after they have been bent outward. Preferably also, the shank of the first clip component has a small diameter portion near the round plate engagement portion, so the pawls are received in the inclined posture. In this way, the clip does not become deformed even when the second member has been attached for a long time (several years). Moreover, it is preferable that the pawls quickly return to the inclined posture and snap in place when the round plate engagement portion passes between the pawls to spread them. In this way, the operator reliably knows from a click sound that the mounting process has been completed.

It is also preferable that the inner diameter of the tube of the second clip component is formed so as to be about 1.5 times or more the outer diameter of the tip of the shank of the first clip component for easy insertion of the shank. Preferably, the flange of the second clip component is formed in a round plate shape surrounding the tube midway of its height.

BRIEF DESCRIPTION OF THE DRAWINGS

The invention will be further described in conjunction with the accompanying drawings, which illustrate a preferred (best mode) embodiment, and wherein:

FIG. 1 is a plan view of a first clip component of the clip in a first example of the present invention;

FIG. 2 is a front view of the first clip component in FIG. 1;

FIG. 3 is a bottom view of the first clip component in FIG. 1;

FIG. 4 is a side view of the first clip component in FIG. 1;

FIG. 5 is a plan view of the second clip component of the clip in the first example of the present invention;

FIG. 6 is a front view of the second clip component in FIG. 5;

FIG. 7 is a cross-section view of the second clip component from line A-A in FIG. 6; and

US 7,257,867 B2

3

FIG. 8 is a cross-section view of the second clip component attached to the first clip component in the first example of the present invention.

DETAILED DESCRIPTION OF THE
INVENTION

The following is an explanation of a non-limiting embodiment of the present invention with reference to the drawings. The clip 1 in a first example of the present invention includes a first clip component 2 shown in FIG. 1 through FIG. 4 and a second clip component 3 shown in FIG. 5 through FIG. 7. As shown in FIG. 8, the clip 1 is used to join a second member 6 such as an insulator to a first member 5 such as a car body. In this example, each of the first clip component 1 and the second clip component 3 is molded in hard plastic as a single unit. The first member 5 may be a metal panel for a car body and the second member 6 may be a thick sheet of a flexible material such as an insulator appropriate for sound proofing or heat insulation.

The first clip component 2 has a round plate flange 7 for contacting the first member and the second member, a leg 9 extending from the flange 7 for insertion into a mounting hole in the first member, and a shank 10 extending from the flange 7 in a direction opposite to the leg 9 for engaging the second clip component 3. In this example, the leg 9 is a hollow cylinder, in order to save on material costs and reduce weight.

A pair of elastic protrusions 11 project outwardly from the leg 9 and extend axially, opposing one another diametrically. A shoulder 12 is formed on each protrusion 11 to engage an edge region of the mounting hole in the first member. When the leg 9 is inserted into the mounting hole in the first member, the shoulders 12 work with the flange 7 to attach the first clip component 2 to the first member. As indicated by the dotted lines in FIG. 2 and FIG. 4, packing 13 is preferably disposed on the bottom of the flange 7 in order to improve the mounting strength with respect to the first member, increase the adherence to the first member, and protect the surface of the first member from damage.

The shank 10 can be a simple round cross-section rod or a rod with a cruciform cross-section, for example, as shown in FIG. 2 and FIG. 3, so as to save on material costs and reduce weight while maintaining adequate strength. An engagement portion 15 in the form of a small diameter round head is formed at the tip of the shank 10 and has a shoulder 17 on the bottom surface to engage an engagement portion of the second clip component. Pawls 22 (described below) form the engagement portion of the second clip component 3 and engage the shoulder 17 on the head 15. The shank 10 of the first clip component has a portion 18 near the head 15 that gradually tapers to a small diameter, so the pawls are received thereon in an inclined posture. In this way, the clip does not become deformed, and the engagement force of the pawls is maintained even when the second member has been attached to the first member for a long time (e.g., several years). The pawls, after being bent outward by the head 15, quickly return to the inclined posture and snap in place when the head 15 passes between the pawls. In this way, the operator reliably knows from a click sound that the mounting of the first clip component 2 and the second clip component 3 has been completed.

The following is an explanation of the second clip component 3 with reference to FIG. 5 through FIG. 7. The second clip component 3 has a flange 19 for contacting the second member, a tube 21 for receiving the shank 10 of the first clip component 2, and pawls 22 formed inside the tube

4

21 for engaging the shank 10. As shown in FIG. 6 and FIG. 7, the tube 21 has a guide portion 21A below the flange 19 for receiving the head 15 at the tip of the shank 10 of the first clip component 2, and a main body 21B surrounding the pawls 22 above the flange 19. The entry of the guide portion 21A may be tapered, as shown, and the inner diameter of the guide portion 21A of the tube 21 is preferably about 1.5 times or more the outer diameter of the head 15 of the shank 10 of the first clip component for easy insertion of the shank

FIG. 8 shows a second member 6 such as an insulator attached to a first member 5 such as a car body (e.g., the dashboard) using a clip 1 including a first clip component 2 and a second clip component 3. The clip 1 is preferably attached beforehand to the second member 6 in order to mount the second member 6 on the first member 5, such as a car body on an automotive assembly line. If the second member 6 with the attached clip is moved to the site where the first member 5 is placed, the clip on the second member 6 can be attached to the first member 5 during assembly, thereby reducing the required assembly time and man-hours.

The clip 1 in the present invention is designed for prior attachment to the second member 6. For attachment of the clip 1 to the second member 6, the guide portion 21A of the tube 21 of the second clip component is inserted in the mounting hole 25 in the second member 6, the head 15 at the tip of the shank 10 of the first clip component 2 is inserted into the guide portion 21A of the tube 21, and the first clip component 2 is pushed into the second clip component to spread the pawls 22 and then to seat the tips of the pawls on the shoulder 17 of the head 15, trapping the second component 6 between the flanges 7 and 19. The connection is easy and reliable because the engagement portion 15 of the shank 10 is easily led in by the guide portion 21A of the tube 21.

The second member 6 with the clip 1 attached is moved to the site where the first member 5 is placed. The operator positions the second member 6 over the first member 5 to align the leg 9 of the first clip component 2 with the mounting hole 26 in the first member 5. Next, when the operator inserts the leg 9 of the first clip component 2 into the mounting hole 26 in the first member 5, the protrusions 11 on the leg 9 are compressed and then spread apart underneath the first member 5, and the shoulders 12 engage edge regions of the mounting hole 26. This engagement, as shown in FIG. 8, joins the second member 6 to the first member 5.

The foregoing discussion of the operation of the invention refers to flanges which contact members to be joined. However, it is apparent from the provision of the packing 13, for example, that such contacting is not intended to require direct touching, because there may be an intermediate element, such as a packing, between a flange and a member to be contacted by the flange.

While a preferred embodiment of the invention has been shown and described, it will be apparent that changes can be made without departing from the principles and spirit of the invention, the scope of which is defined in the claims which follow.

What is claimed is:

1. A clip for attaching a second member to a first member, wherein the clip includes a first clip component to be attached to the first member and a second clip component working with the first clip component to support the second member, wherein the first clip component has a flange for contacting the first member, a leg extending from the flange for insertion into a mounting hole in the first member, and

US 7,257,867 B2

5

a shank extending from the flange in a direction opposite to the leg, wherein the second clip component has a flange for contacting the second member, a tube for receiving the shank therein, and an engagement portion inside the tube, and wherein a tip of the shank of the first clip component has an engagement portion for engaging the engagement portion of the second clip component so that the second member is clamped between the flange of the first clip component and the flange of the second clip component,

wherein the engagement portion of the second clip component comprises a pair of pawls, having an inclined posture so tips thereof approach one another in an insertion direction of the first clip component shank into the tube of the second clip component, and wherein the engagement portion of the first clip component comprises a shank head with a shoulder for engaging the tips of the pawls when the pawls return to the inclined posture after the pawls have been bent outward,

wherein the shank of the first clip component has a tapered portion near the head to receive the pawls in the inclined posture,

6

wherein the pawls are constructed so that, after being bent outward, they quickly return to the inclined posture and snap in place against the tapered portion when the head passes between the pawls,

wherein the flange of the second clip component is formed in a round plate shape to surround the outer periphery of the tube intermediate its length,

wherein the tube has a first portion at one side of the flange of the second component constructed to enter a mounting hole in the second member and to guide the shank of the first clip component into the tube, and a second portion at the opposite side of the flange of the second component, in which the engagement portion of the first clip component engages the engagement portion of the second clip component.

2. The clip described in claim 1, wherein the inner diameter of the tube of the second clip component is about 1.5 times or more the outer diameter of the head of the shank of the first clip component for easy insertion of the shank.

* * * * *

DRAFTING OF PATENT SPECIFICATIONS: JULY 2010

QUESTION 2

BUTTERFLY ANCHOR

2. Letter From Client

You receive the following letter from your client:

Dear Sirs

I attach drawings of our butterfly anchor invention:

figure 1 shows a perspective front view of the butterfly anchor;

figure 2 shows a perspective rear view of the butterfly anchor;

figure 3 shows a side view of the butterfly anchor with the butterfly channel sections hinged to a folded position;

figure 4 shows a cross sectional side view of the butterfly anchor being inserted through a hole 14 in one panel 10a of a double panel dry wall;

figure 5 shows a cross sectional side view of the butterfly anchor with the channels now free of panel 10a so that the channels open up in a hollow 9 between the panels 10a and 10b;

figure 6 shows the butterfly anchor being forced in the direction of arrow A pulled out of the hole 14 so that free ends of the channel sections frictionally engage at 12 with a rear surface of panel 10a;

figure 7 shows the butterfly anchor fastened to panel 10a and holding a work piece 11 between its head 3 and panel 10a of the dry wall.

The butterfly anchor will have many uses. The most obvious application would be to use it as an anchor to anchor a work piece 11 to a panel 10a of a dry wall. The dry wall consists of two spaced apart panels 10a and 10b forming a hollow 9 therebetween.

A normal nut and bolt will not be convenient to use as the nut cannot be held in place behind the panel 10a of the dry wall, as it is normally impossible to reach between the panels 10a and 10b. An alternative would be to drill a hole through both the panels so that the prior art bolt extends through both panels. It is not desirable and not aesthetically pleasing to have a front end of the bolt and a nut visible from the other side 16 of a dry wall, especially when it is not used to hold something in place on that side of the dry wall. The butterfly anchor provides a solution in that it attaches only to one panel of the dry wall without a nut having to be attached to it once its bolt 2 is inserted through a hole 14 in the dry wall panel 10a.

The anchor bolt consists of a screw threaded bolt 2 having a head 3 at its one end. Screwdriver receiving formations 4 are formed in the head to facilitate rotation of the bolt about its own axis, as is known in the art.

The anchor includes a nut 5 screwed on to the bolt 2. Two tapered butterfly channel sections 6 are hingedly connected to the nut with pins 7. The pins 7 extend from opposite sides of the nut, through apertures in inner ends of the channel sections. A wire spring 8 is welded, at its centre, to the nut 5. Opposite outer portions of the wire spring 8 seat within the channel sections 6. The wire spring forces the channel section to their open positions as shown in figures 1, 2, 5, 6 and 7.

A rear wall of each channel section is shorter than the rest of the channel section and the edge 17 of each wall seats on opposite sides of the nut 5, when the channel sections are in their open positions. This prevents the channel section

from opening further and holds them in their open positions as shown in figures 1, 2, 5, 6 and 7.

Outer ends of the channel sections may be hinged towards the bolt against the wire spring 18 so that the effective diameter of the anchor, indicated by "d" in figure 3, will fit through a hole 14 of similar diameter.

In use, a hole 14 of diameter "d" is drilled in panel 10a. The nut 5 is unscrewed from the bolt so that the bolt may be inserted through a hole 15 in a work piece 11. Once the bolt is so inserted, the nut 5 with the channel sections is again screwed onto the bolt 2 on the other side of the work piece. The outer ends of the channel sections are now hinged towards the bolt so that the channel sections and the nut will fit through the hole 14 when the bolt is pushed through the hole.

Once the channel sections 6 are free of the panel 10a, they open under the force of the wire spring 8, to their normal open positions. The bolt can now be pulled back in the direction of the arrow A so that the edges 19 of the outer ends of the channel sections frictionally engage with an inner surface of the panel 10a at points 12. The bolt is now screwed in whilst outward tension is maintained until slack is taken up and the work piece is held in position against the outer surface of the panel 10a. Further rotation of the bolt will further tighten the work piece without rotating the channel sections as the channel sections are frictionally engaged with the inner surface of the panel at 12.

It is important that an inner edge 18 of each channel section does not form a 90° angle with the bolt. This edge must form an angle smaller than 90° so that outer edges 19 bite into a panel or other medium to which the anchor is attached.

We are not aware of any prior art except a normal bolt and nut, as is well known in the art.

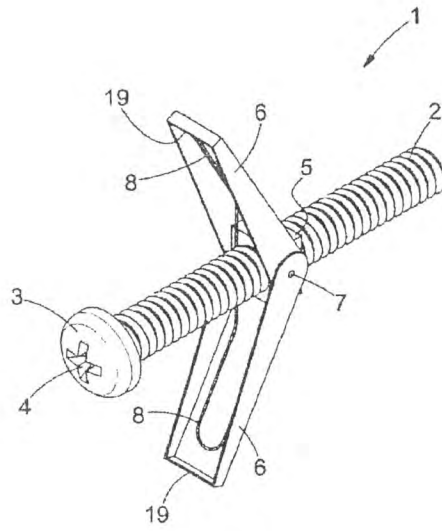


FIGURE 1

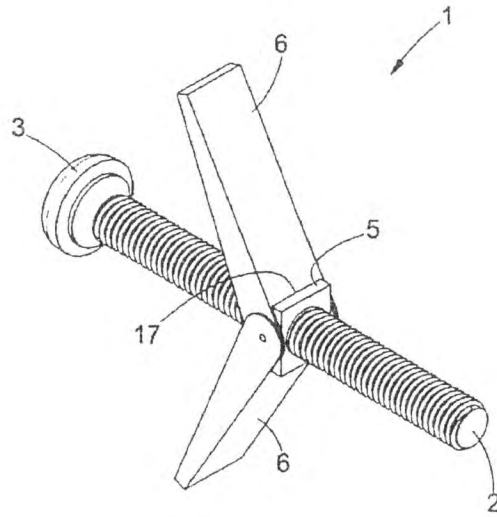


FIGURE 2

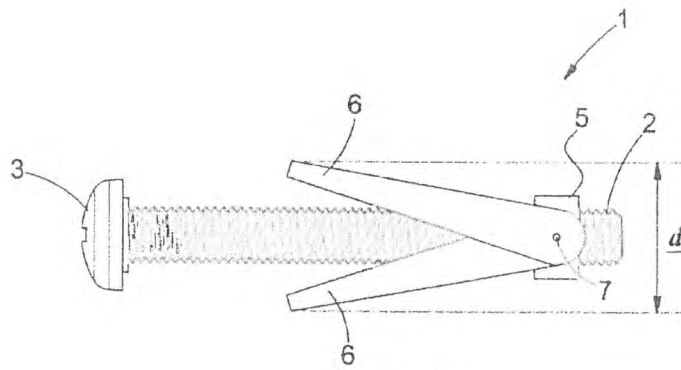


FIGURE 3

3/6

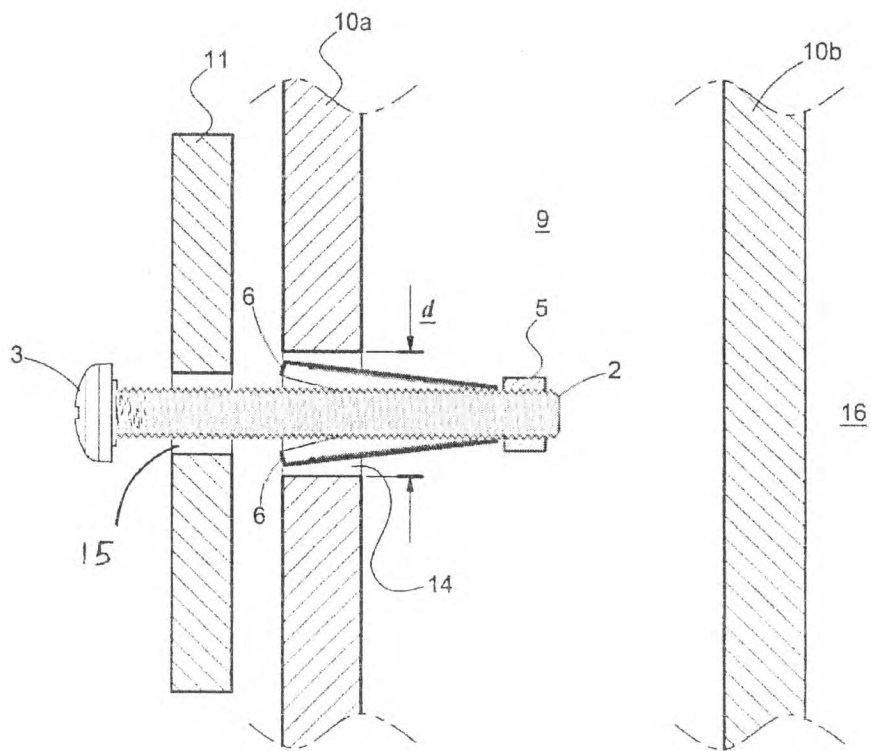


FIGURE 4

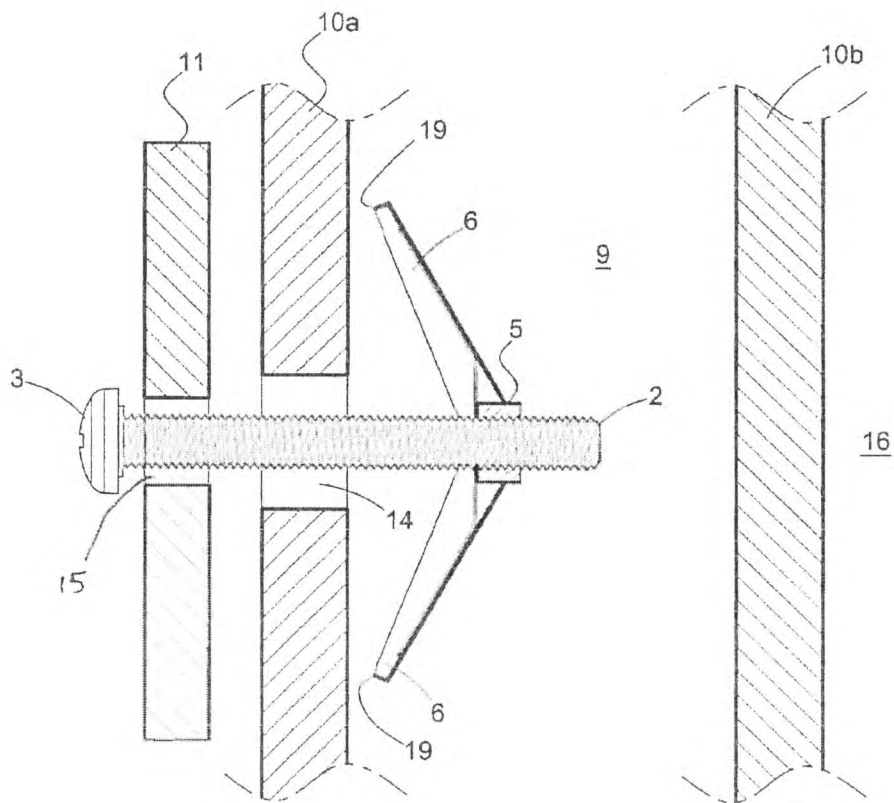


FIGURE 5

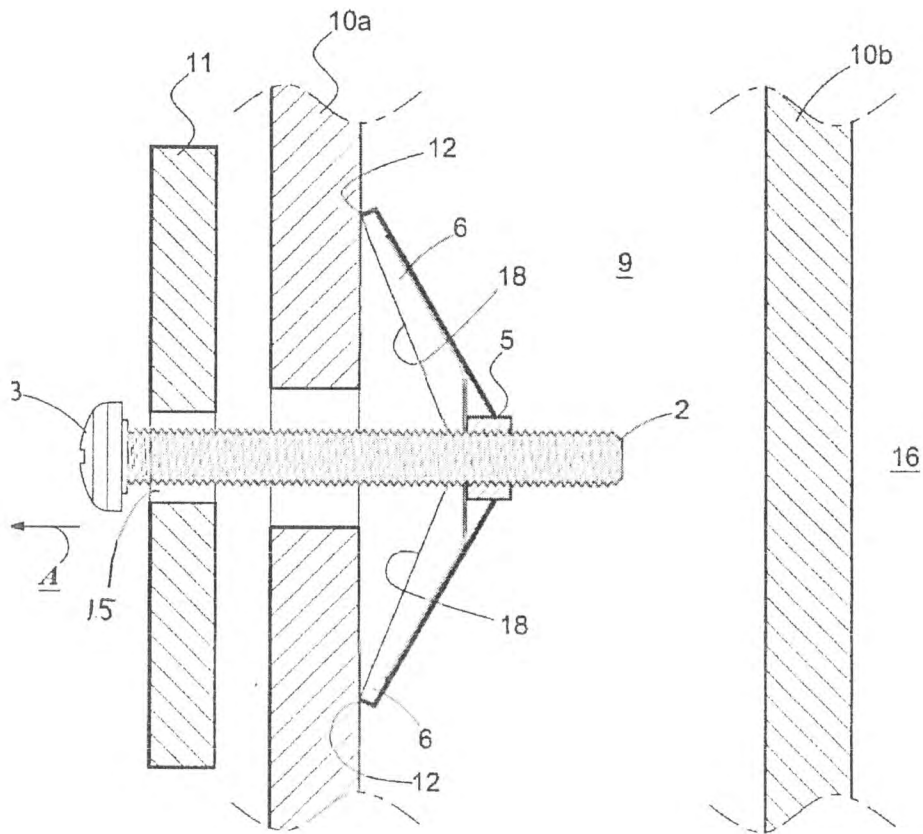


FIGURE 6

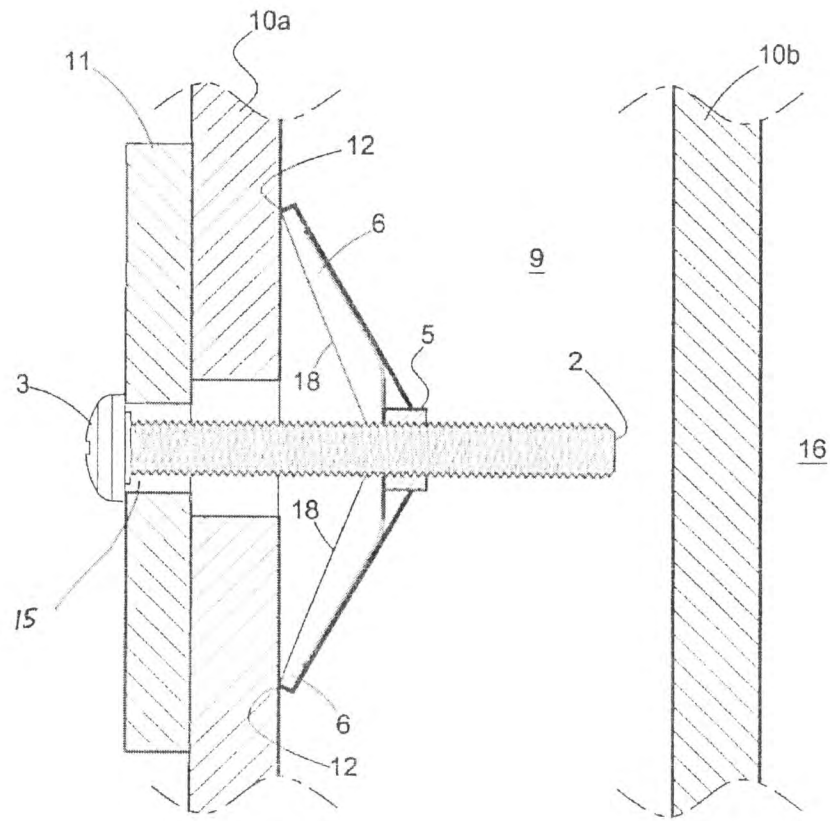


FIGURE 7