



(86) Date de dépôt PCT/PCT Filing Date: 2006/03/16

(87) Date publication PCT/PCT Publication Date: 2006/09/21

(45) Date de délivrance/Issue Date: 2011/10/18

(85) Entrée phase nationale/National Entry: 2007/09/12

(86) N° demande PCT/PCT Application No.: IB 2006/000590

(87) N° publication PCT/PCT Publication No.: 2006/097830

(30) Priorité/Priority: 2005/03/18 (FR0502683)

(51) Cl.Int./Int.Cl. *F16B 19/14* (2006.01),
F16B 43/00 (2006.01)

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(54) Titre : ENSEMBLE FORME PAR UNE PLAQUE SUPPORT ET UN BOUCHON DE FIXATION

(54) Title: ASSEMBLY FORMED BY A BASE PLATE AND FASTENING PLUG

(57) **Abrégé/Abstract:**

The fastening base plate includes a conduit (5) for receiving the plug and support means (1) intended to be applied to the component to be fastened. The plug (10) comprises a shank (11) and a head (14) and the means for receiving the fastening plug comprise the conduit (5) for guiding and damping the shank (11) of the plug. The base plate moreover includes a damping cup (4) in which the conduit (5), following compression by the head (14) of the plug having a larger diameter than the conduit, and the head of the plug (14) are intended to be housed once the plug has been driven through the base plate. The cup (4) made of elastic material and the conduit (5) are designed in such a manner that the cooperation between the plug shank (11, 13) and the conduit (5) when the plug is driven through the base plate leads the cup (4) to at least partially cover the head (14) of the plug. The invention is particularly suitable for fastening wiring ducts.

ABSTRACT

The fastening base plate includes a conduit (5) for receiving the plug and support means (1) intended to be applied to the component to be fastened. The plug (10) comprises a shank (11) and a head (14) and the means for receiving the fastening plug comprise the conduit (5) for guiding and damping the shank (11) of the plug. The base plate moreover includes a damping cup (4) in which the conduit (5), following compression by the head (14) of the plug having a larger diameter than the conduit, and the head of the plug (14) are intended to be housed once the plug has been driven through the base plate. The cup (4) made of elastic material and the conduit (5) are designed in such a manner that the cooperation between the plug shank (11, 13) and the conduit (5) when the plug is driven through the base plate leads the cup (4) to at least partially cover the head (14) of the plug. The invention is particularly suitable for fastening wiring ducts.

ASSEMBLY FORMED BY A BASE PLATE AND A FASTENING PLUG

The invention relates to an assembly comprising a base plate for fastening a component to a substrate and a fastening plug. The base plate includes conduit means for receiving the fastening plug and support means adapted to be applied to the component to be fastened. The fastening plug comprises a shank and a head. The conduit means is adapted for guiding and damping the shank of the fastener plug. The base further includes a damping cup in which the conduit means, following compression by the head of the fastener plug having a larger diameter than a diameter of the conduit means and the head of the plug is intended to be housed once the plug has been driven through the base plate. The cup is made of elastic material and the conduit means is designed in such a manner that the cooperation between the shank and the conduit means when the plug is driven through the base plate causes the cup to at least partially cover the head of the plug.

The possible components here are principally wiring ducts or mouldings, i.e. narrow ducts.

Upon firing, the plug is shot towards the front. Its pointed end and part of its shank traverse the base by passage through the conduit and penetrate into the substrate. The head of the plug then comes to bear against the rear edge of the conduit, axially compressing the conduit as a result of the impact. The flattened, compressed conduit is housed in the cup, as is the nail head.

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The nail head is made of metal. If a cable laid in the duct were accidentally to become exposed, the nail head disposed in the cup, generally made of plastic, could cause a short circuit.

The aim of the invention of this application is to eliminate a risk of this kind.

It therefore relates to an assembly of the type defined hereinabove, characterised in that the cup made of elastic material and the conduit are designed in such a manner that the cooperation between the plug shank and the conduit when the plug is driven through the base plate leads the cup to at least partially cover the head of the plug.

By virtue of the invention, with an electric cable extending above the cup, even an exposed cable, there is virtually no risk of a short circuit.

In the preferred embodiment of the assembly of the invention, the cup includes a skirt having an inner wall flared towards its opening.

The conduit of the base plate also preferably includes a bore having a truncated portion adapted to cooperate with the plug shank and to cause the opening rim of the cup to narrow above the plug head.

The invention will be more readily understood with the aid of the following description of the preferred embodiment of the assembly of the invention with reference to the accompanying drawings, in which:

Figure 1 is a sectional view of the fastening base plate of the assembly of the invention before fastening and bearing against a duct, and

Figure 2 is a sectional view of the base plate of Figure 1, after the duct has been fastened to a substrate material.

The fastening base plate of the invention allows a component to be fastened to a substrate, the fastening operation being effected with the aid of a plug-fastening device.

It will immediately be noted that the front designates the direction in which the plug is shot upon firing.

The base plate or clip comprises a support part 1 and a conduit 5 for receiving, guiding and damping a fastening plug or nail 10. The support part 1 and the conduit 5 have the same axis 2.

The support part 1 has a circular external cross section. It comprises a front bearing surface 3 perpendicular to the axis 2 and a rear damping cup or dish 4 hollowed out from the rear surface of the support part 1.

The cup 4 includes a skirt 7 having an inner wall 4a flared towards its rear opening and ending in an opening rim 15. The cup includes a base wall 4b around the conduit 5.

The conduit 5 projects towards the rear beyond the base wall 4b of the cup 4. It comprises a central bore 6 having an axis 2 for the passage of the plug 10. The bore 6

extends towards the front and traverses the support part 1. The bore 6 includes a front portion 6c having a narrowed cross section connected to the rear portion 6a by means of a truncated portion 6b.

The base plate 1 includes at the front of the bearing surface 3 a damping block 8 extended at the front by a central locating pin 8a. The portion 6c of the bore 6 of the conduit 5 having a narrowed cross section extends in the block and the pin.

The plug 10 comprises a shank 11 having an axis 2 including at the front a pointed free drilling end 13 and extended at the rear by a head 14. The cross section of the shank 11 is substantially equal to that of the enlarged rear portion 6a of the bore 6. On the other hand, the cross section of the head 14 is greater than that of the conduit 5.

The base plate is made of elastic, compressible material so that the conduit 5 can be compressed by the impact of the head 14 of the plug upon firing and thus damps the plug 10.

The base plate is intended to be rigidly connected to the end of the plug guide of a plug-fastening device by introducing the skirt 7 into the end of the plug guide.

Following the description of the structure and function of the base plate, the operation for fastening a component, in this case a duct 20, to a substrate 30 (in this case a ceiling) with the aid of the base plate and a fastening plug 10 will now be described. Fastening is effected with the aid of a plug-fastening device including a plug guide end or "nose" adapted to receive the skirt 7.

The duct 20 comprises a plate including a front surface 22 intended to be attached to the substrate 30, a rear surface 23 and a plurality of through holes 21 having a cylindrical shape and an axis 2. Only one of these holes 21 is shown in Figures 1 and 2. The two front 22 and rear 23 surfaces are parallel to one another and perpendicular to the axes 2 of the holes 21 in the duct 20.

1. Positioning of the base plate

Once the base plate and the end of the plug guide have been rigidly connected together, the base plate is positioned at right angles with a hole 21 in the duct 20 by introducing the block 8 and the pin 8a into the hole 21. The base plate is brought to bear against the duct 20 by attaching the front bearing surface 3 to the rear surface 23 of the duct 20. In this position, the large base of the block 8 having a cross section substantially smaller than that of the hole 21 cooperates with the edge of the rear inlet opening of the hole 21 in order to position the base plate laterally in such a manner that the axis of the base plate and the axis of the hole 21 substantially coincide. The pin 8a moreover projects slightly towards the front beyond the hole 21. As a result of the truncated shape of the block 8, an empty space remains inside the hole 21, not occupied by the block 8 and intended to receive the compressed pin 8a and moreover part of the support portion 1 and part of the conduit 5, as will be described hereinafter.

The front end of the pin 8a is then brought to bear against the ceiling 30, the axes 2 in this case extending substantially vertically and the front of the base plate being directed upwards.

2. Fastening the base plate to the substrate

In order to fasten the base plate to the substrate 30, a fastening plug 10 is fired with the aid of the device.

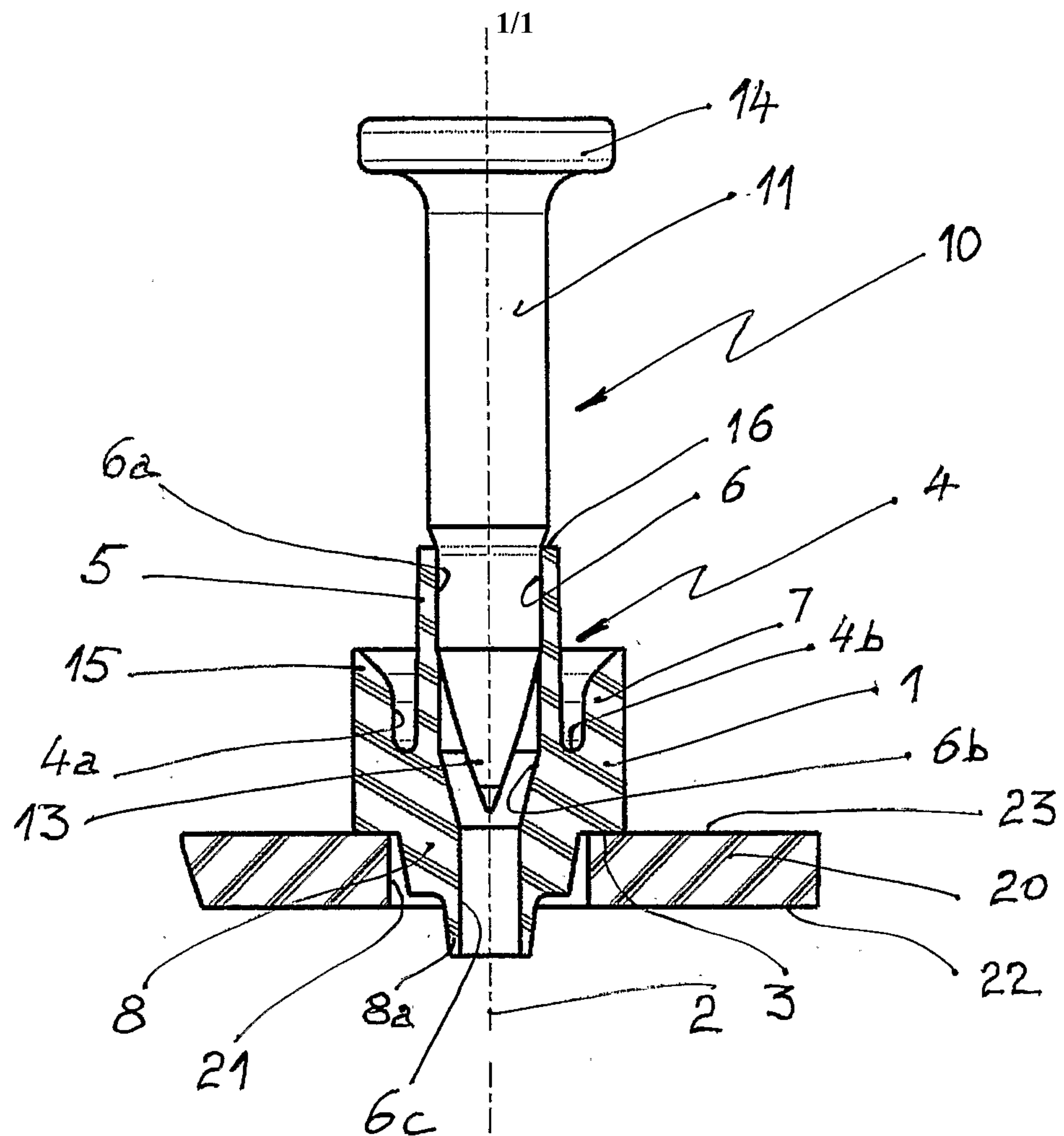
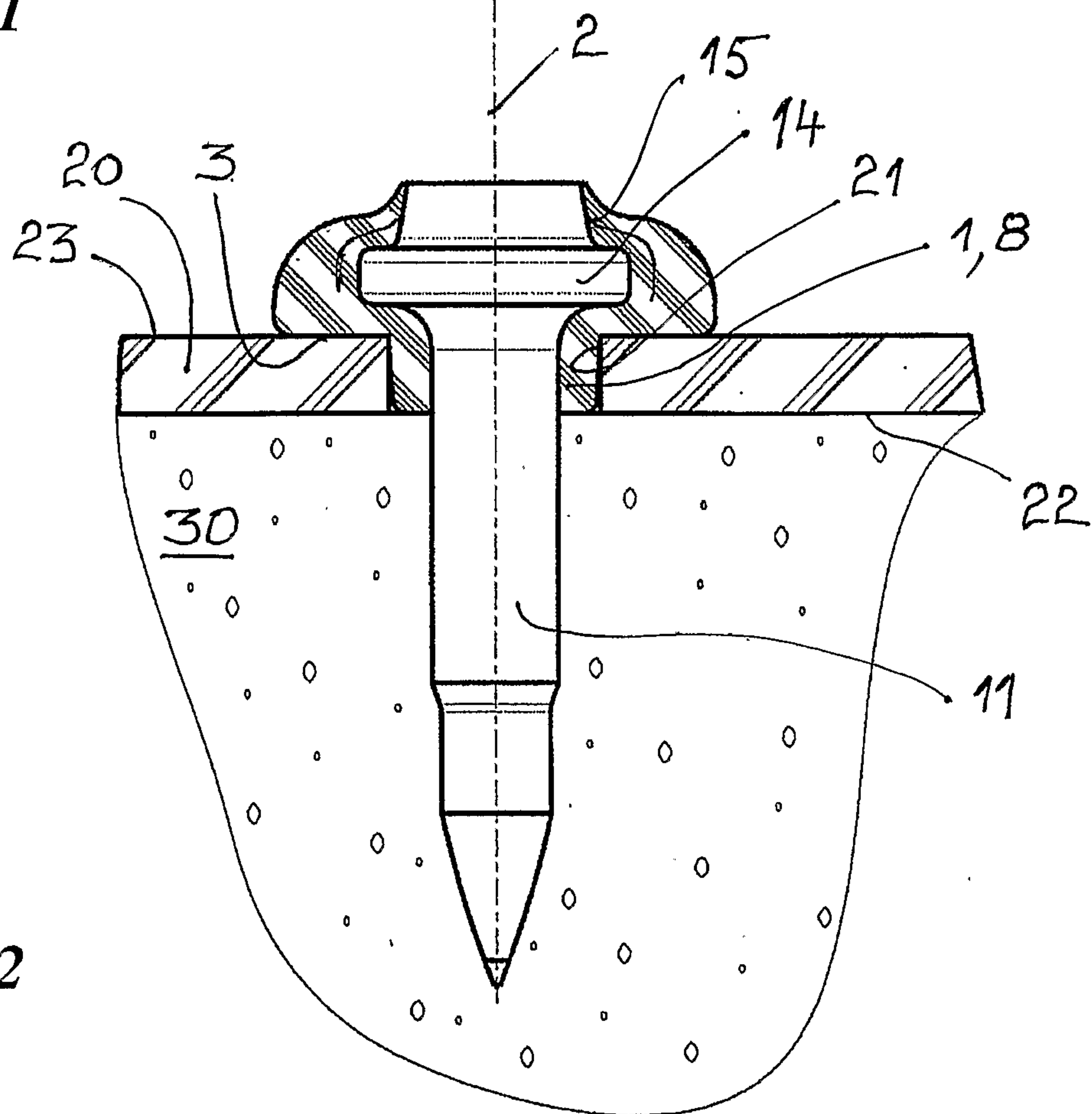
Upon firing, the plug 10 is shot towards the front. Its front end 13 and part of the shank 11 traverse the base plate and penetrate into the substrate 30. The head then comes to bear against the rear edge 16 of the conduit 5, compressing it axially. As a result of, on the one hand, of the shape of the bore 6 and the shape of the shank 11 of the plug 10 and, on the other hand, the shapes of the cup 4 and the conduit 5, the driving of the plug through the base plate and the cooperation between the pointed end 13 of the shank 11 and the truncated ramp 6b of the bore 6 lead the opening rim 15 of the skirt 7 of the elastic cup 4 to narrow above the plug head 14, the axially flattened conduit 5 first being housed in the cup 4 and slightly also in the hole 21, as is

also part of the support portion 1 of the base plate. In other words, the cup 4 at least partially covers the plug head 14 by means of its opening rim 15.

The duct 20 then bears at the front against the ceiling 30 and at the rear against the bearing surface 3 of the base plate. In other words, the front 22 and rear 23 surfaces of the duct 20 are attached respectively to the ceiling 30 and to the bearing surface 3 of the base plate. Once the plug 10 has been fastened in the substrate 30, the duct 20 is then held fixedly against the substrate 30 by the base plate.

WHAT IS CLAIMED IS:

1. An assembly comprising a base plate for fastening a component (20) to a substrate and a fastening plug (10), the base plate including conduit means (5) for receiving the fastening plug (10) and support means (1) adapted to be applied to the component to be fastened, the fastening plug (10) comprising a shank (11) and a head (14), the conduit (5) means adapted for guiding and damping the shank (11) of the fastener plug (10) the base further including a damping cup (4) in which the conduit means (5), following compression by the head (14) of the fastener plug (10) having a larger diameter than a diameter of the conduit means (5) and the head (14) of the plug (14) are intended to be housed once the plug has been driven through the base plate, wherein the cup (4) is made of elastic material and the conduit means (5) are designed in such a manner that the cooperation between the shank (11, 13) and the conduit means (5) when the plug is driven through the base plate causes the cup (4) to at least partially cover the head (14) of the plug.
2. The assembly according to claim 1, in which the cup (4) includes a skirt (7) having an inner wall (4a) flared towards an opening rim (15) of the cup (4).
3. The assembly according to claim 1 or 2, in which the conduit means (5) of the base plate includes a bore (6) having a truncated portion (6b) adapted to cooperate with the plug shank (11, 13) and to cause the opening rim (15) of the cup (4) to narrow above the plug head (14).
4. The assembly according to claim 3, in which the truncated portion (6b) of the bore (6) of the conduit means (5) connects a front bore portion (6c) having a narrowed cross section and a rear bore portion (6a).

**Figure 1****Figure 2**