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(54) **A clip**

Klammer

Une attache

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Description

[0001] The present invention relates to a clip that includes a pre-mounted screw fastener for fitting covering sheets, such as roof sheeting, to an underlying surface and that is of the kind defined in the preamble of Claim 1.

[0002] An earlier known clip includes a base plate which has a through-penetrating prefabricated circular opening through which the pointed tip of the screw extends, wherewith the screw is pre-assembled so as to extend generally normal to the plane of the base plate. The base plate carries an attachment tongue that is intended to be fastened to a covering sheet to be anchored to the underlying surface via the base plate and the screw. Extending from the edge of the opening and into the base plate are three radially extending slots that define three generally trapezoidal tongues. The short, free upper edges of the tongues co-act with the screw, wherein the tongues, which lie generally in the plane of the base plate prior to assembly, can be bent down into co-action with the head of the screw. The long edges of the base plate have downwardly folded edge-parts that at least initially hold the central part of the plate at a short distance above the underlying surface, wherewith the major part of the screw tip initially has room in the region between the underlying surface and the base plate.

[0003] WO 93 01376 A discloses such a clip having all the features of the preamble of claim 1.

[0004] In this regard, there is a desire to provide still greater stability with respect to the pre-mounted screw, so that the screw will retain correct alignment more positively, for fitting of the clip or in conjunction with fitting of the clip when the turnscrew is applied.

[0005] The object of the invention is to provide a clip that includes a pre-mounted screw and that can be given a simple construction and enable the pre-mounted screw to be connected more stably to the clip base plate.

[0006] This object is achieved with a clip according to Claim 1.

[0007] Further embodiments of the inventive clip are set forth in the accompanying dependent Claims.

[0008] In conjunction with the manufacture of a particularly preferred embodiment of the invention, in which the clip base plate is comprised of sheet metal, two mutually parallel slots are punched through the sheet metal in an inward region of the area of the metal plate, and a preferably square opening that extends diagonally between the slots in their longitudinal midway region is punched-out, so as to form two longitudinally extending and counter-directional, generally concave, for instance V-shaped, tongues whose free short-ends come into contact with mutually opposite sides of the screw stem. These tongues are bent up at an acute angle away from the plane of the plate, about their integral connection with the metal plate, so that the distance between the tongues will correspond to the diameter of the screw stem (the core) via said short ends. The pointed tip of the screw extends through the gap that is exposed in the plane of the metal plate, wherewith the gap-defining edges support against opposite sides of the core of the screw stem. This stabilises the pre-mounted screw shape-wise against swinging in a plane that is perpendicular to the plane of the metal plate and to the longitudinal extension of the slots. The screw is also stabilised against swinging in a plane that is perpendicular to the plane of the plate and parallel with the slots, due to high resistance against displacement of the screw tip along the gap, said resistance being achieved by friction and through the medium of the screw thread.

[0009] The slots of the inventive construction that delimit the longitudinal edges of the tongues are tangential to the screw opening in the plane of the plate.

[0010] The tongues are buckled as the screw is screwed into the underlying surface. When the screw head has a conical underside, it will penetrate down through the gap and therewith bend down the adjacent edge parts of the metal plate. The clip may be designed as a slide clip.

[0011] The invention will now be described by way of example with reference to the accompanying drawing.

[0012] Fig. 1 is a plan view of an inventive clip.

[0013] Fig. 2 is a view taken on the line II-II in Fig. 1.

[0014] Fig. 3 is a schematic section view taken on the line III-III in Fig. 1.

[0015] Fig. 4 is a sectioned view taken on the line IV-IV in Fig. 3.

[0016] Fig. 5 illustrates a variant of the subject of Fig. 3 in a view corresponding to Fig. 3, with the screw excluded.

[0017] Fig. 6 is a view taken on the VI-VI in Fig. 5.

[0018] The illustrated clip includes a base plate 1 that comprises a generally flat, elongated, rectangular piece of sheet metal that has along one long edge a bent rim 11 which receives a bent end-part 12 of an attachment tongue 13 intended for connection to a roofing sheet or like element. The ends 14 of the rim 11 are squeezed together so as to limit the extent to which the tongue 13 can be displaced along the rim. The plate 1 is also provided with a stiffening bead 16 along each of its long edges.

[0019] Two elongate and mutually opposing tongues 4 are punched in a central region of the plate 1 and extend in the longitudinal direction thereof, wherewith the free short-ends 41 of said tongues co-act with the stem core 51 of a screw 5 pre-mounted on the clip. The tongues 4 are raised from the plane of the plate 1 to an acute angle about the end integral with the plate 1, so that the free concave short-ends 41 of the tongues will support against the core 51 of the screw stem at generally the same level from the surface of the plate 1 with respect to the thread 52. The width of the tongues 4 corresponds to the diameter of the screw core 51. The tongues are punched-out the plate 1, thus resulting in two parallel slots 44 and a rhombic opening that bridges the slots 44 in their longitudinal midway region, and that has mutually opposing comers on the slots 44.

[0020] Fig. 3 shows that in a pre-mounted state the screw tip 53 extends through the gap 60 established in the plane of the plate 1 after raising the tongues 4. Because the pre-mounted screw is supported at two axially spaced positions, effective screw stability is achieved in relation to the base plate 1. The concave short-ends 41 of the respective tongues counteract swinging of the screw 5 in a plane perpendicular to the longitudinal extension of the tongues 4, and in the plane of the plate 1 about attachment of the screw tip in the gap 60. Swinging of the screw 5 about the attachment region between the opposing free ends 41 of the tongues in a plane perpendicular to the plane of the plate 1 and containing the longitudinal extensions of the tongues 4 is counteracted by slide friction of the screw tip 53 with the long edges 44 of the gap 60 and by interference between the screw thread 52 and the edges 44.

[0021] There is perhaps a tendency for the tongues/the screw holders 5 to swing in the plane of the clip plate 1 as a result of the ends 41 of the tongue being dogged or entrained by the screw as it is screwed into the underlying surface, particularly when the clip is comprised of stainless steel sheet. As the tongues/the holders 4 are then bent down towards the gap 60 by the screw head, there is a danger that the tongues 4 will overlap the edges of the opening 60. It is therefore preferred to broaden the openings 60 slightly, so as to provide room for the tongues 4 even though they should be swung slightly in their plane. The gap broadenings 61 are shown in Fig. 6. Buckling of the tongues 4 can be facilitated, by giving said tongues a slight bend 47 (Fig. 5) in the vertical plane and in the longitudinal midway region of respective tongues, preferably so that the free outer end-parts of the tongues are bent down relative to their inward end-parts prior to screwing the screw 5 into the underlying surface.

[0022] The attachment tongue 13 has a first part that is orientated perpendicular to the plate 1 and extends along its one edge. At the upper end of the first part there connects a second part which is bent at an angle of generally 90° from the first part, in a direction away from the plate 1 and about a line that is generally parallel with the adjacent long edge of the plate 1. This second part is, in turn, bent about a line that extends generally parallel with the bend line between the first and the second part, so as to form a third part which is bent to an angle greater than 90° from the plane of the second part, said third part being directed generally towards the plate 1. As a result of the bracing effect achieved by the attachment device 5 between the ends of the upwardly bent arms 4, the screw obtains a particularly effective flexurally rigid anchorage at the clip, even when only the pointed tip of the fastener elements engages the edges of the gap 60. Because the tip of the fastener element does not, in practice, protrude from the underside of the plate, it is possible to hook the edge of a roofing sheet or like element onto the angle between the second and the third part of the attachment tongue and swing the clip down so that the plate 1 will rest on the underlying sheet-supporting surface, without being impeded by the screw tip.

Claims

1. A clip that includes a pre-mounted fastener screw for mounting covering sheets, such as roof sheeting, onto an underlying surface, wherein the clip includes a base plate (1) that has an opening in which there is pre-mounted a screw (5) which extends generally normal to the plane of the base plate (1) with the pointed tip (53) of said screw extending through the opening, wherein the base plate (1) carries a fastener tongue (13) which is intended to be fastened to a covering sheet that is to be anchored to said underlying surface via the base plate (1) and the screw (5), and wherein tongues (4) firmly connected at one end to the base plate have an opposite free end that contacts the screw (5), **characterised in that** these tongues (4) are two elongated and counter-directional tongues (4) that extend in an axial plane to the opening perpendicular to the base plate; **in that** the tongues are bent up at an acute angle from the base plate and engage with their free short-edges (41), which are concave, the stem (41) of the screw (5) at a generally equal level above the plane of the base plate (1).

2. A clip according to Claim 1, **characterised in that** the base plate is comprised of sheet metal; **in that** the tongues (4) are integral with the metal sheet of the base plate and are punched-out therefrom; and **in that** the width of the tongues (4) corresponds to the diameter of the screw stem (51), so that bending of the tongues (4) away from the base plate will expose an elongate gap (60) through said base plate.

3. A clip according to Claim 1 or 2, **characterised in that** the longitudinal extension of the tongues (4) is parallel with the longitudinal extension of the base plate (1).

4. A clip according to any one of Claims 1-3, **characterised in that** each end of the base plate has a through-penetrating circular opening (48) for additional fastener elements.

5. A clip according to any one of Claims 1-4, **characterised in that** the attachment tongue (13) has a slideable connection (11, 12) to the base plate (1) for displacement therealong, said clip being a slide clip.

6. A clip according to any one of Claims 1-5, **characterised in that** the screw head has a conical underside.

7. A clip according to any one of Claims 1-5, **characterised in that** the screw head has a generally flat underside.

8. A clip according to any one of Claims 2-7, **characterised in that** the gap (60) is widened (61) outside its longitudinal midway region, to enable the tongues (4) to be received in said gap (60, 61) even when they are swung slightly in a clockwise direction by the screw.

9. A clip according to any one of Claims 1-8, **characterised in that** the tongues (4) are pre-bent (47) in the vertical plane, to facilitate buckling of the tongues as the screw (5) is screwed into the underlying surface.

Patentansprüche

1. Klammer mit einer vormontierten Befestigungsschraube zum Befestigen von Abdeckplatten, wie zum Beispiel Dachplatten, auf einer darunter liegenden Oberfläche, wobei die Klammer eine Grundplatte (1) aufweist, die eine Öffnung hat, in der eine Schraube (5) vormontiert ist, die sich im wesentlichen senkrecht zur Ebene der Grundplatte (1) erstreckt, wobei das spitze Ende (53) der Schraube sich durch die Öffnung erstreckt und wobei die Grundplatte (1) eine Befestigungszunge (13) trägt, die an einer an der darunter liegenden Oberfläche über die Grundplatte (1) und die Schraube (5) zu verankernden Abdeckplatte befestigt werden soll, und wobei fest an einem Ende mit der Grundplatte verbundene Zungen (4) ein gegenüberliegendes freies Ende aufweisen, das die Schraube (5) kontaktiert,
dadurch gekennzeichnet, dass diese Zungen (4) zwei längliche und entgegengesetzt ausgerichtete Zungen (4) sind, die sich in einer zur Öffnung axialen Ebene senkrecht zur Grundplatte erstrecken, und dass diese Zungen unter einem spitzen Winkel von der Grundplatte hochgebogen sind und mit ihren freien, kurzen, konkaven Kanten (41) mit dem Schaft (41) der Schraube (5) auf dem im wesentlichen gleichen Niveau über der Ebene der Grundplatte (1) in Eingriff stehen.

2. Klammer nach Anspruch 1, **dadurch gekennzeichnet, dass** die Grundplatte aus Metallblech besteht, dass die Zungen (4) mit der Metallplatte der Grundplatte integral sind und daraus ausgestanzt sind und dass die Breite der Zungen (4) dem Durchmesser des Schraubenschaftes (51) entspricht, so dass das Biegen der Zungen (4) von der Grundplatte weg einen länglichen Schlitz (60) durch die Grundplatte freilegt.

3. Klammer nach Anspruch 1 oder 2, **dadurch gekennzeichnet, dass** die Längserstreckung der Zungen (4) zur Längserstreckung der Grundplatte (1) parallel ist.

4. Klammer nach einem der Ansprüche 1 bis 3, **dadurch gekennzeichnet, dass** jedes Ende der Grundplatte eine zu durchgehende kreisförmige Öffnung (48) für zusätzliche Befestigungselemente aufweist.

5. Klammer nach einem der Ansprüche 1-4, **dadurch gekennzeichnet, dass** die Befestigungszunge (13) eine gleitbare Verbindung (11, 12) mit der Grundplatte (1) zur Verschiebung an ihr entlang aufweist, wobei die Klammer eine Gleitklammer ist.

6. Klammer nach einem der Ansprüche 1-5, **dadurch gekennzeichnet, dass** der Schraubenkopf eine konische Unterseite aufweist.

7. Klammer nach einem der Ansprüche 1-5, **dadurch gekennzeichnet, dass** der Schraubenkopf eine im wesentlichen flache Unterseite aufweist.

8. Klammer nach einem der Ansprüche 2-7, **dadurch gekennzeichnet, dass** die Lücke (60) in ihrem Längsmittelbereich nach außen erweitert (61) ist, um die Aufnahme der Zungen (4) in der Lücke (60, 61) zu ermöglichen, selbst wenn sie durch die Schraube leicht in Uhrzeigerrichtung geschwenkt werden.

9. Klammer nach einem der Ansprüche 1-8, **dadurch gekennzeichnet, dass** die Zungen (4) in der vertikalen Ebene vorgebogen sind, um das Knicken der Zungen zu erleichtern, wenn die Schraube (5) in die darunter liegende Oberfläche geschraubt wird.

Revendications

1. Fixation qui comprend une attache à vis pré-montée pour ajuster des tôles de couverture telles que des tôles de toit, sur une surface de base, dans laquelle la fixation comprend une plaque de base (1) ayant une ouverture dans laquelle se trouve une vis pré-montée (5) qui s'étend généralement normalement par rapport au plan de la plaque de base (1), la pointe (53) de ladite vis s'étendant à travers l'ouverture, dans laquelle la plaque de base (1) comporte une languette de fixation (13) destinée à être fixée à une tôle de couverture qui doit être fixée à ladite surface de base via la plaque de base (1) et la vis (5), et dans laquelle les languettes (5) solidement reliées à une extrémité à la plaque de base possèdent une extrémité libre opposée en contact avec la vis (5), **caractérisée en ce que** deux lan-

guettes allongées en sens inverse qui s'étendent dans un plan axial par rapport à l'ouverture perpendiculairement à la plaque de base ; **en ce que** les languettes sont recourbées selon un angle aigu depuis la plaque de base et se mettent en prise avec les bords courts libres (41), qui sont concaves, la tige (41) de la vis (5) à un niveau généralement égal au dessus du plan de la plaque de base (1).

2. Fixation selon la revendication 1, **caractérisée en ce que** la plaque de base est composée de tôle : **en ce que** les languettes (4) font partie intégrante de la tôle de la plaque de base et sont découpées dans celle-ci ; et **en ce que** la largeur des languettes (4) correspond au diamètre de la tige de la vis (51), de sorte que lorsque l'on recourbe les languettes (4) de la plaque de base un écartement de forme allongée (60) apparaisse à travers ladite plaque de base.

3. Fixation selon la revendication 1 ou 2, **caractérisée en ce que** le prolongement longitudinal des languettes (4) est parallèle au prolongement longitudinal de la plaque de base (1).

4. Fixation selon l'une quelconque des revendications 1 à 3, **caractérisée en ce que** chaque extrémité de la plaque de base a une ouverture circulaire traversante (48) destinées à des éléments de fixation supplémentaires.

5. Fixation selon l'une quelconque des revendications 1 à 4, **caractérisée en ce que** la languette de fixation (13) est reliée à la plaque de base (1) de manière à pouvoir coulisser pour se déplacer le long de celle-ci, ladite fixation étant une fixation coulissante.

6. Fixation selon l'une quelconque des revendications 1 à 5, **caractérisée en ce que** le dessous de la tête de vis est conique.

7. Fixation selon l'une quelconque des revendications 1 à 5, **caractérisée en ce que** le dessous de la tête de vis est généralement plat.

8. Fixation selon l'une quelconque des revendications 2 à 7 **caractérisée en ce que** l'écartement (60) est élargi (61) à l'extérieur de sa partie centrale longitudinale afin de permettre aux languettes (4) d'être logées dans ledit écartement (60, 61) même lorsqu'elle oscillent légèrement dans le sens des aiguilles d'une montre sous l'effet de la vis.

9. Fixation selon l'une quelconque des revendications 1 à 8, **caractérisée en ce que** les languettes (4) sont pré-courbées (47) dans un plan vertical, afin de faciliter la fixation des languettes lorsque la vis (5) est vissée dans la surface de base.

Fig. 1

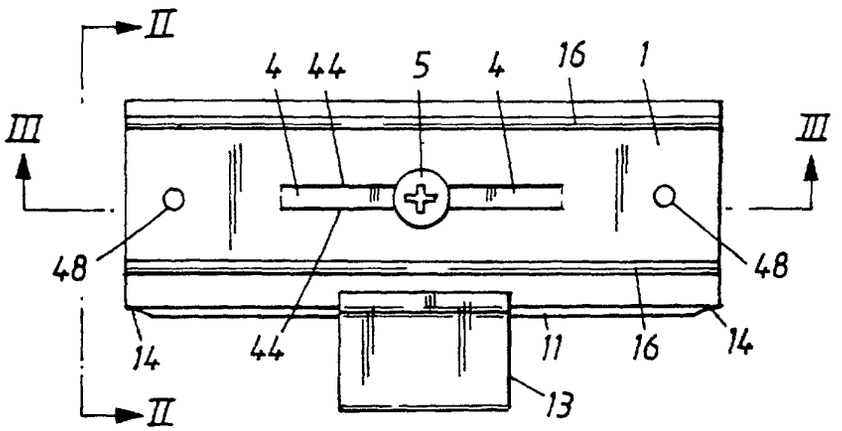

Fig. 2

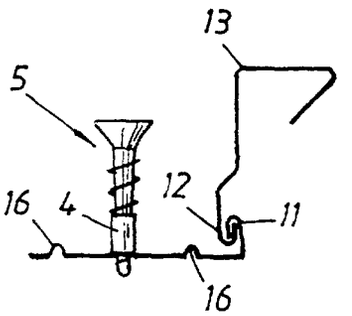

Fig. 3

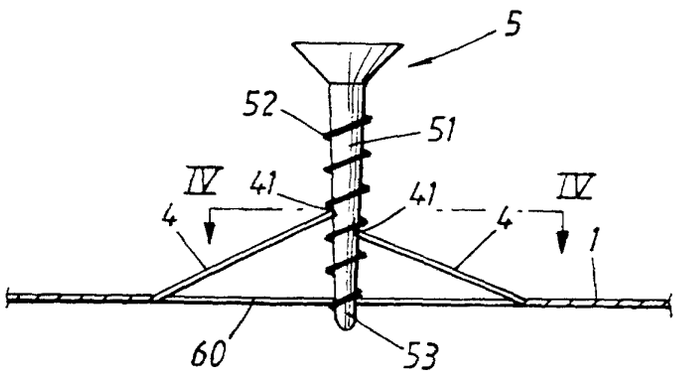

Fig. 4

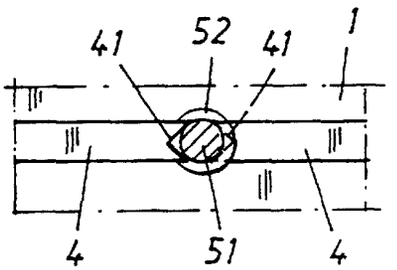

Fig. 5

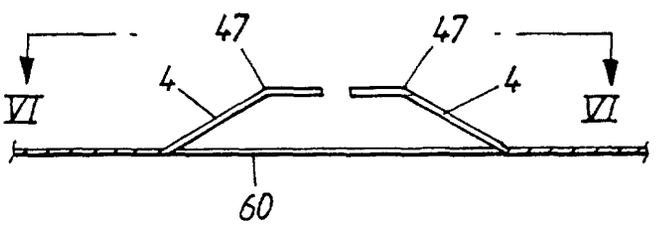

Fig. 6