

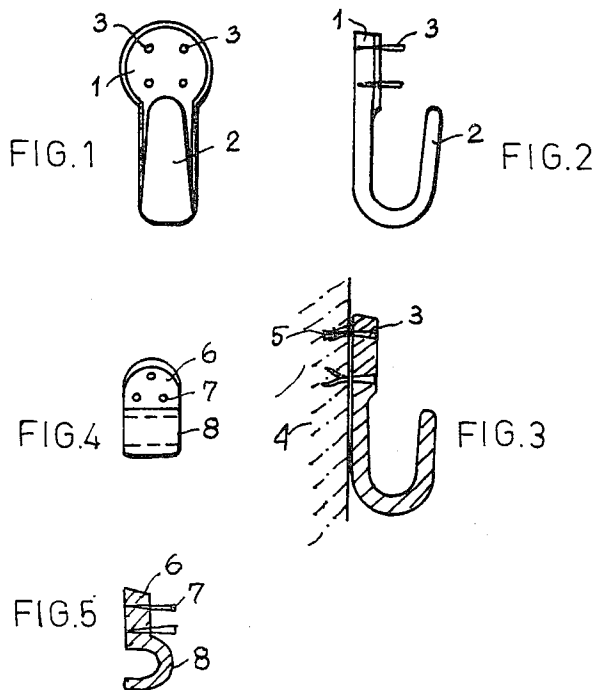
Feb. 1, 1966

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3,232,572

FASTENING DEVICE FOR WALL-HOOKS AND SIMILAR MOUNTING DEVICES

Filed June 25, 1963



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FASTENING DEVICE FOR WALL-HOOKS AND SIMILAR MOUNTING DEVICES

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Filed June 25, 1963, Ser. No. 290,491

Claims priority, application Sweden, July 3, 1962,

7,438/62

4 Claims. (Cl. 248—216)

The present invention relates to a fastening device for wall-hooks and similar mounting devices by which these can be fastened to a wall of concrete without prior treatment of the wall and in such a way that the mounting device may be subject to considerable forces especially in a direction substantially parallel to the wall but also to forces directed outwardly from the wall.

In order to fasten a mounting device to a wall of concrete it is usually necessary first to make a hole in the wall whereupon the mounting device which e.g. may be a hook is fastened to the wall with a screw or a nail which may be secured to the hole through friction with the aid of a suitable filler as intermediate agent. Alternatively a steel nail may be driven into the wall with a suitable gun employing an explosive charge. Provided that the concrete is not too hard it is sometimes possible to drive thin steel nails into the same and thus obtain a fastening for the mounting device at least with respect to forces parallel with the wall. Should the concrete be relatively hard, however, a fastening cannot be obtained in this way since the nail only can be driven into the concrete a very short distance without being bent or broken or causing the concrete to chip.

When using a fastening device according to the invention, however, a surprisingly good fastening of the mounting device is obtained although those parts cooperate with the fastening device and intended to be driven into the wall only penetrate the wall a very short distance; the fastening being altogether sufficient to allow the fastening device to be used for picture hooks or the like, for permanently securing electrical conductors to concrete or for similar purposes.

With these and other purposes in mind the object of the invention consists of a fastening device for fastening a mounting device to a concrete surface, which mounting device comprises a base member and steel pins for fastening said base member to the concrete surface, which pins are arranged parallel to each other and in configuration, as seen from a plane perpendicular to the pins, corresponding to the corners of a polygon and with their longitudinal axis substantially perpendicular to that surface of the base member which is intended to lie adjacent to the concrete surface, which pins preferably penetrate said base member, said base member being formed from an elastic, somewhat yielding material in such a way that the points of said pins at least partially extend through the base member and that the opposite end of said pins protrude on said other side of said base member.

The pins being preferably three or four in number should be arranged in such a way that they are situated substantially equally distributed along the periphery of a circle, which circle should have a radius of not more than 10 millimeters and not less than two millimeters, the radius preferably being 4 to 5 millimeters. The pins should have a length of about 2 to 6 millimeters greater than the thickness of the base member. The distances between the pins, as given above, are determined partly by the method of fastening the fastening device to the concrete wall and partly by the desired cooperation between the pins after the fastening to the wall which coop-

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eration is important in order to realize the surprisingly good fastening obtained with the fastening device.

When fastening for example a hook equipped with the fastening device according to the present invention to a concrete wall, the pins simultaneously are subject to one or several blows from a hammer, the pins thus simultaneously being driven into the concrete whereby they are being deformed by the concrete. If the base member is made from a hard but somewhat yielding plastic material a grip in the concrete is thereby obtained even for relatively large forces acting perpendicular to the wall surface, that is, in the longitudinal direction of the pins. This would, of course, neither be the case if a single pin was used nor if the pins for example were arranged on a straight line with respect to each other. Thus, with the device according to the invention a fastening is obtained which is due both to form and friction-binding making use of the high compression strength and at the same time being independent of the low tensile strength of concrete. Another feature according to the invention is that after removing the device from the wall only very small marks are left behind by the thin pins.

It is, however, not necessary that the base member in the fastening device is manufactured from a relatively hard but elastic yielding plastic material; it can also be manufactured from a material that tightly encloses the pins and yields in such a way that after the pins have been driven into the concrete they are being held in a tight grip in the base member.

The invention will be further described with reference to the drawing which by way of an example shows a hook provided with a fastening device according to the invention whereby the hook is manufactured from a somewhat elastic yielding but comparatively hard plastic material.

FIG. 1 is a front view of a hook according to the invention.

FIG. 2 shows the same hook as viewed from the side. FIG. 3 shows how the grip in the concrete is obtained with the aid of the pins which are being held together by the base member.

FIGS. 4 and 5 show a holder for an electric conductor according to the invention.

Referring to FIGS. 1, 2 and 3 the fastening device proper consists of a plate 1 manufactured integral with the hook 2 from a comparatively hard but not brittle plastic material. Inserted into the plate are, in the embodiment shown, the points of four pins 3 which are arranged in such a way that they are corresponding to the corners of a square and situated at such distances from each other that they can be struck at the same time with an ordinary hammer of modest size.

The pins 3 as shown have no heads, which for various reasons is advantageous, are manufactured from a comparatively hard but not too brittle steel and provided with a sharp point. When striking a hard blow to all the four pins simultaneously with the hammer, which pins by the way do not have to be guided by hand due to the comparatively hard base member 1, the pins penetrate the concrete 4 and are thereby being deformed, the deformation for the various pins taking place in different directions depending upon the structure of the concrete as shown by the reference numeral 5 whereby the pins, because of the elastic holding provided by the base member, are kept in such relation with respect to each other, that a very good grip is obtained. Although a single pin practically on its own accord would fall out from the concrete when subjected even to a very small force the actual grip provided by the several pins which are distributed around the centre point is very strong.

In FIGS. 4 and 5 a holder for an electric conductor is shown provided with a fastening device which consists

of a hard though elastic plastic plate 6 in which three pins 7 are inserted in such a way that they can be driven by a blow from a hammer. The device is also equipped with a clamp 8 intended to hold the conductor.

What I claim is:

1. A fastener for securing a mounting device to a concrete wall or other concrete surface comprising a base member having a substantially coplanar wall engaging surface and an opposite side, a group of at least three pointed entirely straight smooth surfaced steel pins arranged substantially parallel to each other and perpendicular to said wall engaging surface and having their points extending into said base member with their opposite ends protruding from said opposite side, said base member being of an elastic somewhat yielding plastic material, and said group of pins being substantially equally distributed about the periphery of a circle having a diameter of from 4 to 20 mm. to represent the corners of a polygon, and the length of said pins being from 2 to 6 mm. greater than the thickness of said base.

2. A fastener as claimed in claim 1 in which said diameter is from 8 to 10 mm.

3. A fastener as claimed in claim 1 in which said group consists of three pins, the distribution thereof representing the corners of an equilateral triangle.

4. A fastener as claimed in claim 1 in which said group consists of four pins, the distribution of which represents the corners of a square.

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