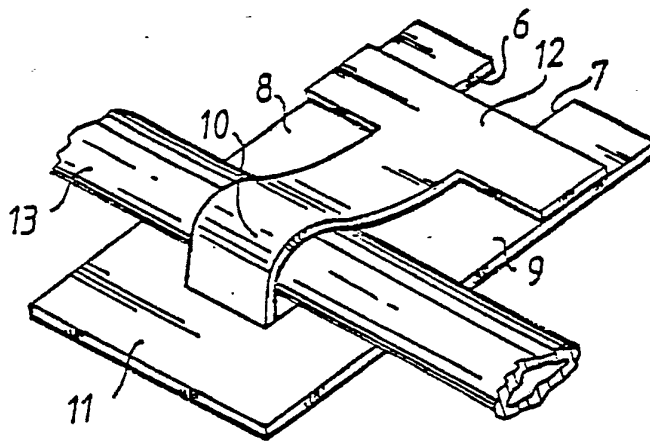




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(54) Title: A DEVICE FOR FASTENING ELONGATED OBJECTS ON A SUPPORTING SURFACE



(57) Abstract

Device for fastening elongated objects on a supporting surface, which device comprises a bottom part (8, 9) making contact with the supporting surface, and a holding member (10) which encircles the object (13). This type of fastening devices must be manufactured in many different sizes and the storage is expensive on account of the three-dimensional shape of the devices. These problems are eliminated by means of a fastening device which consists of three parallel material strips (8-10) made of a flexible material, whereby two strips (8, 9) make contact with the supporting surface and one strip (10) encircles the object (13) and is provided with a transverse portion (12) which can be fastened on the two other strips (8, 9) or on the supporting structure.

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A device for fastening elongated objects on a supporting surface

The present invention relates to a device for
5 fastening elongated objects on a supporting surface,
comprising a bottom part intended to be fixed on the
supporting surface, and a holding member attached to
the bottom part and intended to partially encircle the
elongated object, said holding member being formed by at
10 least one material strip protruding from the bottom part,
which strip is made of a flexible material and provided
with fastening means at the free end thereof.

It is previously known to fasten elongated
objects, such as electric wires, cables and ducts thereof,
15 on supporting surfaces, such as walls and ceilings, by
means of fastening devices made of metal and plastic.
A conventional fastening device comprises a rectangular
bottom part provided with a hole for a nail or screw
and a bow-shaped holding member which is attached to one
20 end of the bottom part and the radius of which essen-
tially corresponds to the radius of the elongated
object.

These known fastening devices have certain dis-
advantages. Due to the three-dimensional shape thereof
25 they require quite a lot of storage room, which increases
the cost of storage. In addition, it is necessary to
store this kind of fastening devices each size separa-
tely since a certain size is suitable to be used only
with ducts and wires having a certain diameter. Due to
30 the fact that the fastening device is asymmetrically
loaded as a result of the position of the bottom part
at one end of the device and the position of the hold-
ing member at the other end thereof, the device must
be fastened on the supporting surface by means of e.g.
35 a nail or screw, which in some cases is difficult or

even impossible on account of the properties of the supporting surface. It is also to be taken into account that the known devices do not usually fix the elongated object in the longitudinal direction thereof.

5 German Offenlegungsschrift 2,702,824 discloses a fastening device which comprises a rectangular bottom part and a T-shaped holding strip protruding from one side of the bottom part. When a cable is fastened on a supporting surface, the bottom part is fixed on the surface by means of an adhesive layer, the holding strip is
10 bent around the cable and the transverse portion of the strip is fixed on the bottom part by means of another adhesive layer.

Both the bottom part and the holding member of
15 this fastening device, too, are exposed to an asymmetrical load when a force acts on the cable to displace it in a direction away from the supporting surface, as a result of which the bottom part and the holding member easily come off the surface and the bottom part respectively. Further, this known fastening device also has the
20 disadvantage that the adhesive layer must be applied on both sides of the supporting metal layer, which increases the production costs.

The object of the present invention is to provide
25 a fastening device of the above-mentioned type, which is extremely simple to be manufactured and by means of which elongated objects can be fixed on a supporting surface quickly and reliably. The fastening device according to the invention is characterized in that the bottom part
30 is provided with material strips which extend on both sides of the strip of the holding member essentially in parallel therewith, said strips being shorter than the said strip of the holding member.

A fastening device formed as described above can
35 be manufactured in a very simple manner e.g. by punching

a material plate. By virtue of the material strips thereof the bottom part of the fastening device according to the invention is exposed to a fairly symmetrical load when a force acts on the duct in the upward direction. It is also to be noted that the fastening device according to the present invention is simple to be manufactured since the adhesive layer is positioned on the same side all over the device.

It is also to be noted that the size of the fastening device according to the invention is not to any higher degree dependent on the diameter of the object because the final form of the holding member is adjusted to the size of the object at the installation stage. On account of this fact and the simple flat shape of the fastening device during the storage thereof, the storage is simple as well as inexpensive.

According to a preferred embodiment, the strip(s) of the holding member is (are) in a known manner T-shaped, having the transverse portion at the free end(s) thereof. It is thereby of advantage if the transverse portion of the strip(s) of the holding member is positioned at a distance from the free ends of the strips of the bottom part. It is obvious that this structure enables the fastening device according to the invention to be manufactured by punching a flat material piece.

In order to ensure the fastening of the holding member to the bottom part, it is of advantage that the transverse portion has a width which corresponds to the combined width of the strip of the holding member and the strips of the bottom part. In this way it is possible to fix the holding member to the strips of the bottom part if these are sufficiently long, which naturally makes the fixing reliable.

According to another preferred embodiment, the transverse portion is provided with material strips on

both sides of the strip of the holding member, which strips are shorter than the strip of the holding member. The transverse portion has thereby essentially the same construction as the bottom part. This embodiment provides a simple, balanced construction in which both the bottom part and the transverse portion of the holding member are loaded symmetrically.

The holding strip can be provided with an adhesive layer on that side which faces the object. This brings about the advantage that the object is secured to the fastening device in the longitudinal direction, too.

A preferred embodiment of the fastening device according to the invention will be described more closely below with reference to the attached drawing, wherein

Figure 1 is an axonometric view of a fastening device according to the invention,

Figure 2 is an enlarged side view of a detail of the fastening device,

Figure 3 shows the fastening device in a fastening position,

Figure 4 is a planar view of another embodiment of the invention, and

Figure 5 shows the fastening device of Figure 4 in a using position.

The fastening device shown in Figures 1 to 3 is made of a rectangular aluminium plate 1, one side of which is provided with an adhesive layer 2 on which a layer 3 of cellular plastic is fastened. Said layer 3 is on the outside thereof provided with an adhesive layer 4 and a cover paper 5. The aluminium plate 1 has such a stiffness that it can be bent easily by hand.

It appears from Figure 1 that the flat rectangular fastening device is provided with two slits 6 and 7 which go through all the layers 1-5 and extend inwards over a distance from the respective longitudinal side in the vicinity of one end of the fastening device and there-

after in parallel with the longitudinal sides up to a point in the vicinity of the opposite end of the device. In this way three parallel material strips 8, 9 and 10 are formed, which join at one end of the device to form a part 11 common to all the strips.

The middle strip 10 is longer than the two other strips and the free end thereof has a transverse portion 12 extending over the whole width of the device.

According to the invention the strips 8 and 9 form the bottom part of the device, which part is intended to be fixed on a supporting surface, e.g. a wall, whereas the strip 10 forms the holding member of the device, which in turn is intended to partially encircle the elongated object. The transverse portion 12 forms the fastening means of the holding member.

Figure 3 shows how a duct 13 for electric wires is fixed in place by means of the fastening device according to the invention. After the cover paper 5 has been removed to expose the adhesive layer 4, the strip 10 is bent upwards, whereafter the device is fitted around the duct 13 in such a manner that the strips 8, 9 of the bottom part are positioned between the duct and the supporting surface, while the strip of the holding member extends over the outer side of the duct. The strip of the holding member is pressed into contact with the duct, and the transverse portion 12 thereof with the upper face of the strips 8, 9. The strips 8, 9 of the bottom part are fastened on the supporting surface, the strip 10 of the holding member on the duct 13 and the transverse portion 12 on the upper face of the strips 8, 9 by virtue of the selfadhering tape provided on one side of the device, whereby the device is fixed in place against the supporting surface and the duct is fixed against the fastening device both in the sideward and in the longitudinal direction.

The embodiment shown in Figures 4 and 5 corre-

sponds to the embodiment described above in all essential parts. In Figure 4 the material strips 8, 9 of the bottom part, however, are considerably shorter than in Figure 1, wherefore the ends of the strips are spaced
5 from the transverse portion 12 of the holding member. In addition, the transverse portion 12 is provided with material strips 14 and 15 extending on both sides of the strip of the holding member similarly to the bottom part. These strips, however, are somewhat shorter than
10 the material strips 8, 9 of the bottom part.

It is apparent from Figure 5 that the strips 8, 9, 14, 15 have such a length that they are spaced from each other also in the using position of the fastening device so that the duct 13 will be in direct
15 contact with the supporting surface.

Even if the embodiments described above should provide the simplest possible construction and use, it is possible to vary the shape of the fastening device within the scope of the attached claims. So the strips
20 can vary in number. Nor do they need to be formed of a single continuous material piece, and the portion 12 can be left out so that the strip 10 of the holding member is fixed directly to the supporting surface in the embodiment of Figures 1-3, too. If the duct 13 is
25 not to be fixed in the longitudinal direction thereof, the adhesive layer can be left out from the strip 10 with the exception of the portion 12. It is also to be understood that the self-adhering tape can be replaced by some other fastening means, such as nails, in the
30 fastening of the bottom part and/or the holding member. The fastening means of the holding member thereby possibly comprise only a hole or a notch for a nail.

Claims:

1. A device for fastening elongated objects on a supporting surface, comprising a bottom part (8, 9, 11) intended to be fixed on the supporting surface, and a holding member (10) attached to the bottom part and intended to partially encircle the elongated object (13), said holding member being formed by at least one material strip (10) protruding from the bottom part (8, 9, 11), which strip is made of a flexible material and provided with fastening means (12) at the free end thereof, characterized in that the bottom part is provided with material strips (8, 9) which extend on both sides of the strip (10) of the holding member essentially in parallel therewith, said strips being shorter than the said strip (10) of the holding member.

2. A device according to Claim 1, in which the strip(s) (10) of the holding member is (are) T-shaped, having the transverse portion (12) positioned at the free end thereof, characterized in that the transverse portion (12) of the strip(s) of the holding member is spaced from the free ends of the strips (8, 9) of the bottom part.

3. A device according to Claim 2, characterized in that the transverse portion (12) has a width which corresponds to the combined width of the strip (10) of the holding member and the strips (8, 9) of the bottom part.

4. A device according to Claim 2, characterized in that the transverse portion (12) is provided with material strips which are positioned on both sides of the strip (10) of the holding member and which are shorter than said strip (10).

5. A device according to Claim 1, characterized in that an adhesive layer (4) is provided

on that surface of the strip (10) of the holding member which faces the elongated object (13).

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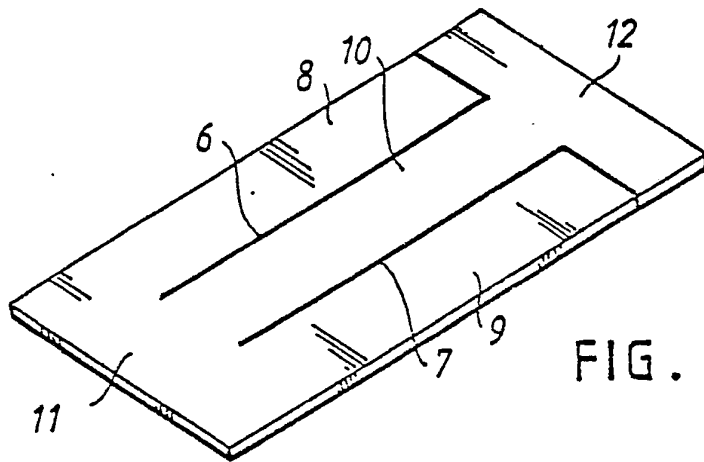


FIG. 1

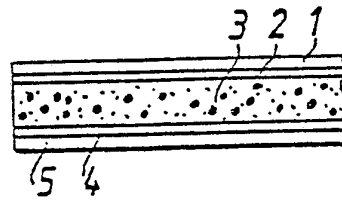


FIG. 2

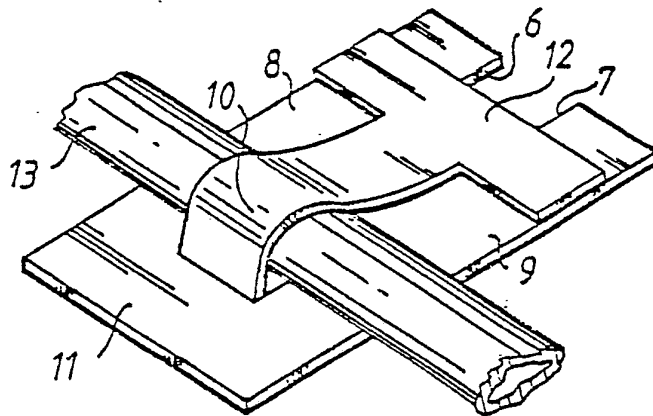


FIG. 3

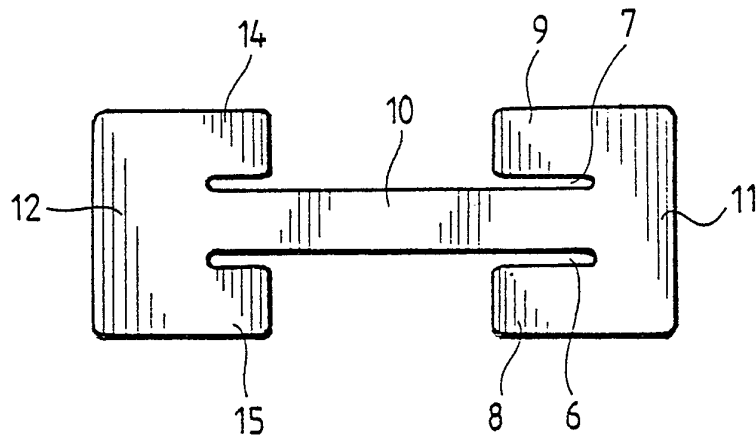


FIG. 4

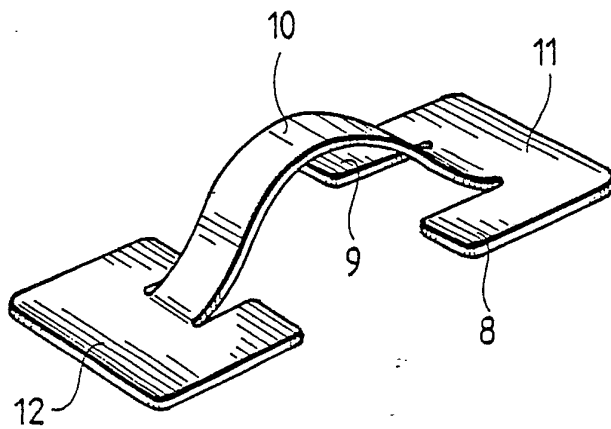
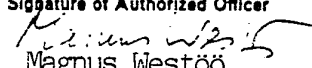


FIG. 5

INTERNATIONAL SEARCH REPORT

International Application No PCT/FI86/00048

I. CLASSIFICATION OF SUBJECT MATTER (if several classification symbols apply, indicate all) ⁶		
According to International Patent Classification (IPC) or to both National Classification and IPC 4		
H 02 G 3/26		
II. FIELDS SEARCHED		
Minimum Documentation Searched ⁷		
Classification System	Classification Symbols	
IPC US CI	H 02 G 3/00, /24, /26; F 16 L 3/00-/12, /22 248: 65, 67.5-68, 70-74	
Documentation Searched other than Minimum Documentation to the Extent that such Documents are Included in the Fields Searched ⁸		
SE, NO, DK, FI classes as above		
III. DOCUMENTS CONSIDERED TO BE RELEVANT ⁹		
Category ⁹	Citation of Document, ¹¹ with indication, where appropriate, of the relevant passages ¹²	Relevant to Claim No. ¹³
X	US, A, 3 016 224 (V B HALL) 9 January 1962	1-5
A	DE, A1, 2 702 824 (PETIT) 4 August 1977	1
A	DE, A1, 3 231 236 (NIWA) 23 February 1984	1
A	Western Electric Technical Digest No 64, October 1981, R J O'Connor, Wire and Cable Holding Clip, page 43	1
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IV. CERTIFICATION		
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