(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) Publication number: **0 032 411**
A1

(12) EUROPEAN PATENT APPLICATION

(21) Application number: **81200031.3**

(22) Date of filing: **09.01.81**

(51) Int. Cl.³: **E 06 B 1/60**

(30) Priority: **11.01.80 NL 8000186**

(43) Date of publication of application:
22.07.81 Bulletin 81/29

(84) Designated Contracting States:
AT BE CH DE FR GB IT LI LU NL SE

(71) Applicant: **METAAL- EN KUNSTSTOFINDUSTRIE BOMAR B.V.**
P.O. Box 24
NL-6690 AA Gendt(NL)

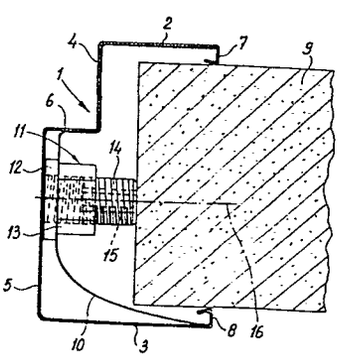
(72) Inventor: **Hakemulder, Dik**
Dr.Oppenraaystraat 74
NL-6681 ZC Bemmel(NL)

(74) Representative: **van der Beek, George Frans et al,**
Nederlandsch Octrooibureau Johan de Wittlaan 15 P.O. Box 29720
NL-2502 LS Den Haag(NL)

(54) Fastening device for a prefabricated door frame.

(57) A door frame-with a U-shaped cross-section with stepped bottom (4,5) and legs (2,3) with inwardly bent edges (7,8), especially a door frame of metal sheet sections (1), is fastened by a device consisting of an elastic sheet (10) with therein an adjustment member (13, 14), which elastic sheet (10) is lying resiliently against the innerside of the door frame section (1) and is such shaped and has such dimensions that the two opposite edges of the sheet (10) grip below the edges (7,8) of the legs (2,3) of the door frame section (1) and in outwardly direction are lying resiliently against the inner sides of the legs (2,3) of the door frame section (1).

Fig-1



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Fastening device for a prefabricated door frame.

The invention relates to a fastening device for a prefabricated door frame with a U-shaped cross-section with stepped bottom and legs with inwardly bent edges especially a door frame of metal sheet sections, which fastening device consists of an elastic sheet with therein an adjustment member, which elastic sheet is lying resiliently against the innerside of the door frame section.

Such fastening devices are known in practice and serve for fastening the sidemembers and the door-head member of a prefabricated door frame within a wall aperture in an adjustable way.

In the factory in the sections of the sidemembers and the door-head member a number of holes are made. On the spot of each hole in the sections a fastening device is clamped.

After arranging the sections within the wall aperture, whereby the legs of the sections grip around the edge of the wall aperture, the sections are adjusted by means of the adjustment members and after that are fastened by means of a screw or the like, which is screwed through the hole and through the adjustment member into the edge of the wall aperture.

The known fastenings devices contain substantially flat elastic sheets, which with their opposite ends are clamped against one of the legs of the U-shaped section and against the step in the bottom. This clamping action is sometimes lost during storage and transport of the sections, but especially during assembling there is a great chance, that the elastic sheets will loosen. At the assemblage the legs of the U-shaped section are sometimes pressed somewhat from each other. It will be clear, that assembling the door frame will be very difficult for these reasons, since the adjustment members are no longer aligned with the holes.

The invention aims to amend the fastening device,so that loosening from the sections is avoided.

According to the present invention, this is obtained, in that the elastic sheet is such shaped and has such dimensions that the two opposite edges of the sheet grip below the edges of the legs of the door frame section and in outwardly direction are lying resiliently against the inner sides of the legs of the door frame section.

In this way the clamping action is maintained even when the legs of the section are moved from each other at assembling the section on a wall, which is somewhat too thick.

The clamping action is, however, still amended in that according to a further embodiment of the invention the elastic sheet at one side of the adjustment member is bent twice by the square and at the other side is curved, whereby the parts which are bent twice are lying against the step in the bottom, one of the bottom parts and the adjoining leg of the door frame section.

In this way the sheet is locked twice, namely below the edges of the door frame section and between one end of one of the bottom parts of the door frame section.

In order to avoid rust forming during storage the elastic sheet consist preferably of stainless steel.

The invention will now be explained with reference to the drawing, in which:

Fig. 1 is a cross-section through one of the door frame sections and through the fastening device according to the invention, and

Fig. 2 is a perspectivic view of the fastening device in free condition.

The section consisting of steel sheet or the like, for instance a sidemember of the door frame is indicated with 1. In a known way it has a U-shaped form with legs 2 and 3 and a bottom 4, 5 consisting of two parts and separated by a step 6. The legs 2 and 3 are provided with inwardly directed edges 7 and 8.

The wall part defining the aperture, in which the door frame must be assembled, is indicated with 9.

The fastening device consists as well as the known fastening device of a sheet 10 of spring steel and of an adjustment member 11 of resin.

The adjustment member 11 consists of a nut part and a bolt part. The nut part comprises a collar 12 and a part 13 with at least two flat sides. The part 13 is entered through an opening in the sheet 10 and is locked against the rotation by not-shown means, for instance lips.

The bolt part is indicated with 14 and is provided with an internal hexagon 15 or the like extending through the part. Before assembling the door frame or already before the transport of the door frame to the building site in each section 1 a number of fastening devices are arranged, whereby the hexagonal passage 15 in the bolt part 14 is aligned with a non-shown opening in the bottom part 5 of the section 1.

The section 1 is then arranged around the edges of the wall 9 and the bolt part 14 is rotated sofar outwardly by means of a hexagonal spanner or the like, until the free end engages the head side of the wall aperture. By means of an adjusting lath or the like the required distance between the sidemembers of the door frame is determined.

Subsequently through the opening in the bottom part 5 and through the passage 15 in the fastening device a screw is arranged into the wall 9, which screw is indicated with the axis 16.

This all belongs to the prior art.

At the fastening device known from the practice the elastic metal sheet 10 is substantially flat and is clamped between the leg 3 and the step 6.

At assembling the door frame on a wall 9 which is something too thick, the legs 2 and 3 are pressed outwardly somewhat, so that the clamping action is lost and the fastening device is not longer aligned with the opening in the bottom part 5.

This loosening can occur already during transport of the door frame.

It will be clear that in this way the assemblage will be very difficult.

According to the invention the elastic metal sheet 10 is such formed and such dimensions, that the clamping action is maintained, even if the legs 2 and 3 move apart.

The sheet 10 has also a substantially rectangular shape, but on one side of the opening for the fastening device 11 is bent twice by the square and on the other side is curved.

As appears from fig. 1 the sheet 10 extends until below the bent edges 7 and 8 of the section 1.

The first bent part 10a, 10b is lying against the bottom part 4 and the leg 2 of the section 1 and the edge 7.

The part 10c of the sheet is lying against the step 6 of the section 1.

In this way the sheet 10 is very positively locked in the section.

The bent part 10d engages with its end below the edge 8 of the section 1 and supports against the leg 3. The collar 12 of the adjustment member 11 is lying against the bottom part 5 of the section 1.

The sheet 10 with therein the adjustment member 11 is shifted into the section 1 from one open end, until the hexagonal passage 15 is aligned with the hole 16 in the section.

Owing to the good locking of the sheet 10 in the section 1 there is no danger that the sheet will be lost.

In order to prevent rust forming during the storage the sheets are preferably made of stainless steel.

It is obvious that the fastening device according to the invention can also be used with sections prepared by extrusion, thus prefabricated door frames made of aluminium. However, sections made by extrusion can be provided with lips or the like without problems, which lipts or the like can be used for fastening the adjustment members 11, so that at door frame members made of aluminium there is less need for clamping sheets 10.

C L A I M S

1. Fastening device for a prefabricated door frame with a U-shaped cross-section with stepped bottom and legs with inwardly bent edges especially a door frame of metal sheet sections, which fastening device consists of an elastic sheet with therein an adjustment member, which elastic sheet is lying resiliently against the innerside of the door frame section, characterized in that the elastic sheet is such shaped and has such dimensions that the two opposite edges of the sheet grip below the edges of the legs of the door frame section and in outwardly direction are lying resiliently against the inner sides of the legs of the door frame section.

2. Fastening device according to claim 1, c h a r a c t e r - i z e d in that the elastic sheet at one side of the adjustment member is bent twice by the square and at the other side is curved, whereby the parts which are bent twice are lying against the step in the bottom, one of the bottom parts and the adjoining leg of the door frame section.

3. Fastening device according to claim 1 or 2, c h a r a c t e r - i z e d in that the elastic sheet consists of stainless steel.

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Fig-1

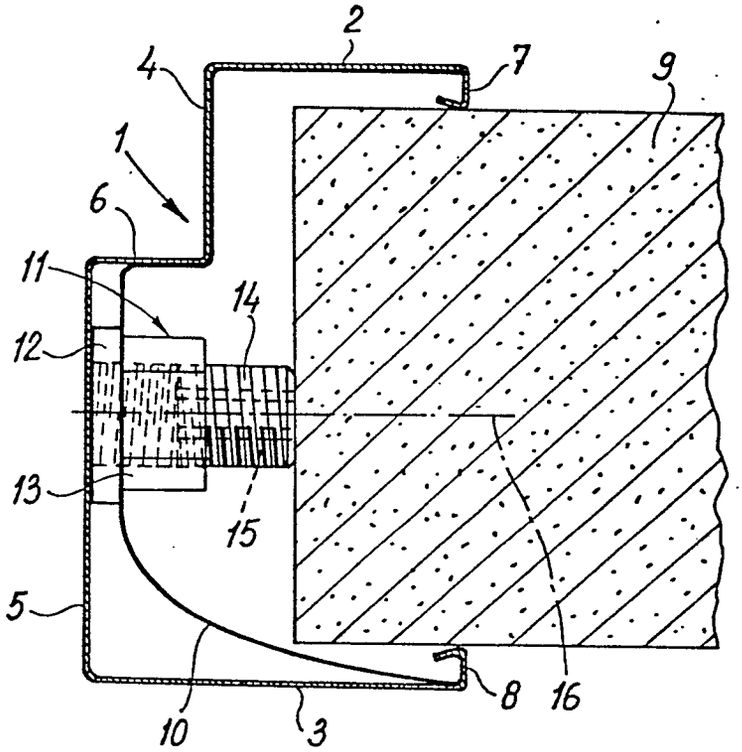
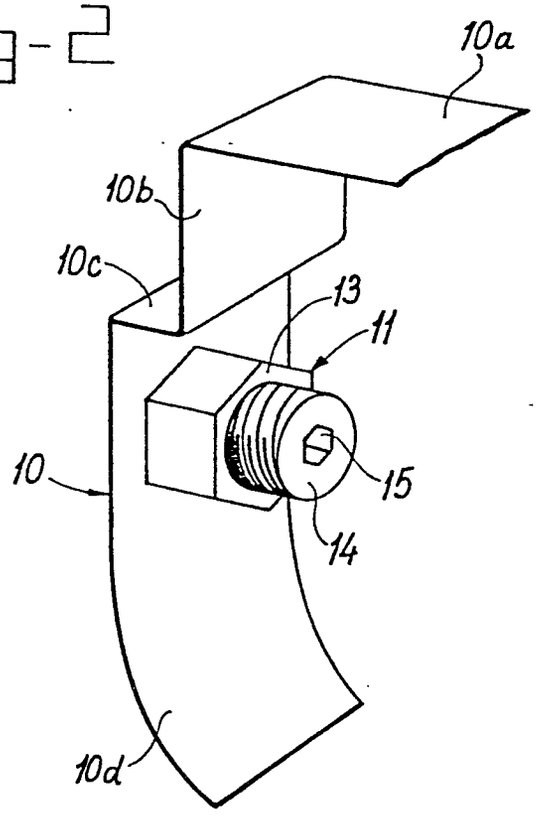


Fig-2



European Patent Office

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Application number
EP 81 20 0031

EUROPEAN SEARCH REPORT

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim
	NL - A - 66 17 385 (B.I.P.) * page 5, lines 26-35; page 7, lines 4-36; page 8, lines 1-6 and 28-36; figures 1,3,6,7,8 * & LU - A - 52 570 --	1
	NL - A - 74 14 633 (COMPRI-ALUMINIUM) * page 7, lines 16-19; page 9, lines 19-36; figures 3 and 3a * --	1
	NL - A - 75 08 176 (BERTRAMS) * page 4, lines 15-35; page 5, lines 1-35; page 6, lines 1-7; figures 1-3 * & BE - A - 831 433 --	1
	NL - A - 74 04 943 (HOLTERMAN) * page 6, lines 6-19 and 24-35; page 7, lines 1-2; page 8, lines 32-36; page 9, lines 1-19 and 30-36; page 10, lines 1-3; figures 1,2 and 4 * --	1,2
	GB - A - 1 522 476 (MARLEY TILE) * page 1, lines 52-81; figures 1 and 2 * ------	3

CLASSIFICATION OF THE APPLICATION (Int. Cl.³)

E 06 B 1/60

TECHNICAL FIELDS SEARCHED (Int. Cl.³)

E 06 B

CATEGORY OF CITED DOCUMENTS

X: particularly relevant
A: technological background
O: non-written disclosure
P: intermediate document
T: theory or principle underlying the invention
E: conflicting application
D: document cited in the application
L: citation for other reasons

&: member of the same patent family, corresponding document

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	13-04-1981	DEPOORTER