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<p>(21) International Application Number: PCT/SE90/00567 (22) International Filing Date: 5 September 1990 (05.09.90) (30) Priority data: 8902980-5 12 September 1989 (12.09.89) SE (71) Applicant (for all designated States except US): TRÄFORM AB [SE/SE]; Värmlandsgatan 12, S-652 22 Karlstad (SE). (72) Inventors; and (75) Inventors/Applicants (for US only) : BRANDT, Jerker [SE/SE]; Trädgårdsgatan 5, S-652 26 Karlstad (SE). HELLBERG, Lennart [SE/SE]; Visterudsgatan 6, S-654 68 Karlstad (SE). (74) Agent: LAUTMANN, Kurt; Box 245, S-691 25 Karlskoga (SE).</p>		<p>(81) Designated States: AT (European patent), AU, BB, BE (European patent), BG, BR, CA, CH (European patent), DE (European patent)*, DK (European patent), ES (European patent), FI, FR (European patent), GB (European patent), HU, IT (European patent), JP, KP, KR, LK, LU (European patent), MC, NL (European patent), NO, RO, SE (European patent), SU, US.</p> <p>Published <i>With international search report.</i></p>
<p>(54) Title: AN INDIVIDUAL STUD FOR CONSTRUCTING A FRAME, THE VERTICAL AND HORIZONTAL STUDS HAVING THE SAME CROSS SECTION</p> <div style="text-align: center;"> </div> <p>(57) Abstract</p> <p>A stud generally has rectangular cross section. A great deal of timber is wasted in the normal manufacture of studs. However, sawing a timber unit from a log, said unit having a cross section with three right-angled corners and one corner deviating from a right angle, and then joining two such units so that one side surface has an axial groove, enables a considerable saving in timber.</p>		

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An individual stud for constructing a frame, the vertical and horizontal studs having the same cross section

The present invention relates to an individual stud for constructing a frame, the vertical and horizontal studs having the same cross section. Such studs are used for constructing a framework designed to limit certain areas or to effect walls for buildings, packing, moulds, etc. The frame is generally covered on both sides
5 by slabs or sheets, usually of gypsum.

The object of the present invention is to provide an individual stud which, thanks to its self-centering and locking construction, is easy and quick to assemble. The sheet-stud assembly can be achieved in various ways. If permanent walls are to be made the sheet can be glued, or possibly screwed to the stud and then perhaps
10 coated with putty afterwards. If the partition is to be dismantled and the studs and sheets re-used, then the sheets can be secured by means of a vertical fillet, for instance, which is preferably screwed into the wooden stud. This is possible if each stud is constructed in accordance with the appended claim.

According to the present invention top plates, ground plates and vertical studs
15 are all composed of the same individual studs. Said stud is provided with a longitudinal groove having triangular cross section. The vertical studs have pointed ends so as to fit into corresponding grooves in top and ground plates. Should there be a gap between a vertical and a horizontal stud, the gap can be compensated by a spacer element in various ways such as: 1) One or two hard
20 wedges with adjustable angle for structural stud frames; 2) A wedge (soft material or spring steel) which locks non-structural stud frames, thus eliminating the use of nails, and as the same time taking up any difference in height (e.g. calculation of prevailing tolerances while building). This enables exact cutting.

An alternative way of locking studs in the event of gaps is to press the bottom or
25 top plates against vertical studs at suitable points. This can be effected by "screwing" the bottom or top plates from their support.

The dimensions and cross-sectional shape of the stud enables logs of smaller diameter to be used than is possible for studs having traditional cross section.

5 A slim log to be used for producing a stud can be sawn into four equal parts, each part having three right-angled corners and a fourth rounded corner. Two parts of the sawn log are then used for each stud. They are glued together so that a central groove is formed on one side of the stud. This groove is then bevelled to give the groove two rectangular wall surfaces. The two parts of the stud are so oriented that that centres of the growth rings are spaced apart so that the outermost growth rings will be substantially at a tangent to each other.

The stud will be stable and resistant to deformation since each stud blank is composed of two parts glued firmly together.

10 A stud according to the invention, consisting of two parts, can naturally be sawn from any plank with rectangular shape.

The present invention will be described in more detail with reference to the accompanying 4 sheets of drawings in which

- 15 Figure 1 shows how a slim log is sawn into four parts, thus constituting the starting material for an individual stud,
Figure 2 shows how two parts from the sawn log are joined together,
Figure 3 shows how the groove obtained is machined to give it flat walls,
Figure 4 shows how two stud parts are obtained from a plank with rectangular cross section,
20 Figure 5 shows how a stud is obtained from the log according to the previous Figure,
Figure 6 shows how the vertical part of a stud framework is constructed,
Figure 7 shows how the distance between stud and support can be adjusted, and
25 Figure 8 shows a cross section through a wall constructed from studs and gypsum slabs.

30 Figure 1 shows a slim log 1 which is normally only usable for the production of pulpwood. This is thus an inexpensive type of timber. Figure 1 shows how the log is sawn into four parts 2, 3, 4 and 5. It is clear from the figure that each part has a rounded corner. Two parts have been designated I and II. These two parts have been joined together by glueing as shown in Figure 2. When the log parts I and II are joined together, a longitudinal groove 6 is automatically formed

due to the rounded corners, the groove being located on the upper side of the stud thus formed. Thanks to the manner in which the two log parts I and II have been joined, the growth rings in each part will have their centres spaced apart. The rings will appear to be more or less at a tangent to each other. The groove in the stud blank according to Figure 2 is planed so that two rectangular groove walls 7 and 8 are obtained, as seen in Figure 3. The stud shown in Figure 3 also has a side surface 9, a side surface 10 and a bottom surface consisting of two parts 11 and 12. Figure 3 shows the extension of the stud when in use. The stud is also provided with two pointed ends which will be described later on. It can be seen that the stud according to Figure 3 has five flat surfaces around its circumference.

Figure 4 shows a blank having rectangular cross section. Two parts I and II can be sawn from said log which, when glued together, form a stud as shown in Figure 5, identical to the stud shown in Figure 3. The only difference is that the studs according to Figures 3 and 5 have been produced from different starting material.

Figure 6 shows how the stud according to Figure 3 or Figure 5 can be used in a stud framework, in this case as one of the vertical parts of the framework. Figure 6 shows that the stud 2 and 3 has an upper pointed end consisting of two rectangular surfaces 13 and 14. Said upper end has the same cross section as the stud shown in Figure 3 and in this case the stud according to Figure 3 is used as a top plate 17 with rectangular surfaces 18 and 19. The lower end of the stud 2 and 3 is identical to its upper end and the rectangular surfaces have been designated 20 and 21. The lower end cooperates with a bottom plate 22. The spaces between top plate, bottom plate and stud 2 and 3 can be eliminated with the aid of wedges to clamp them tightly. All that is necessary for dismantling such a framework is to remove the wedges and the studs can then be re-used.

Figure 7 shows how the distance between the bottom plate 22 and its contact surface can be adjusted by means of a screw joint 23 with a protruding part 24 with the aid of which the bottom plate 22 can be raised or lowered in relation to its ground support.

Figure 8, finally, shows the cross section of an assembled wall consisting of a vertical stud 2 and 3, a top plate 17 and a bottom plate 22. The top plate abuts a

ceiling structure 25 and the bottom plate abuts against a floor structure 26. A sheet 27 is secured to the right side of the stud frame and a sheet 28 to the left side.

5 Building up frames with the aid of studs according to the present invention gives the advantage that, thanks to their pointed ends and longitudinal grooves, the studs are easy to orientate and easy to secure since the spacing between longitudinal and transverse studs can be adjusted. The studs are also firmly locked due to the use of wedges at the contact surfaces by the use of screw joints allowing longitudinal studs to be adjusted vertically in a simple manner.

10 Both screw joints and wedges can be used to advantage for constructions which are intended to be dismantled.

CLAIMS

1. An individual stud for constructing a frame, the vertical and horizontal studs having the same cross section, **characterised** in that said stud comprises two identical parts joined together in such a manner as to produce five sides, where two adjacent sides narrower than the other sides form an inwardly directed groove with triangular cross section and where the middle side of the other three following sides forms a right angle with each of the two outer sides and that the vertical studs in the frame have pointed ends fitting into the triangular cross section in the horizontal studs.

FIG. 1

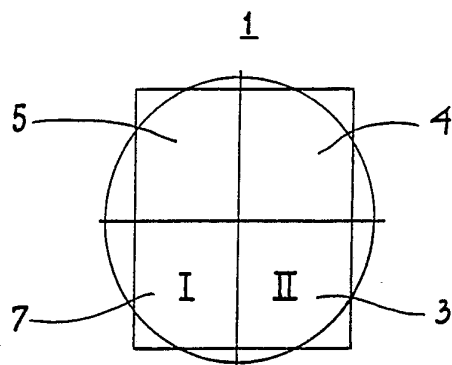


FIG. 2

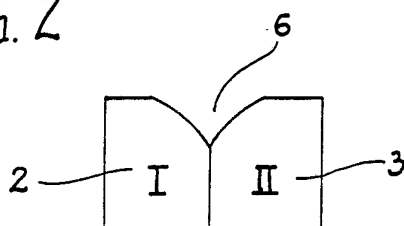


FIG. 3

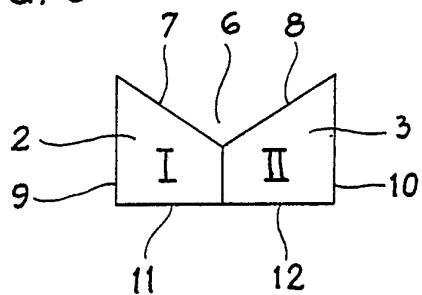


FIG. 4

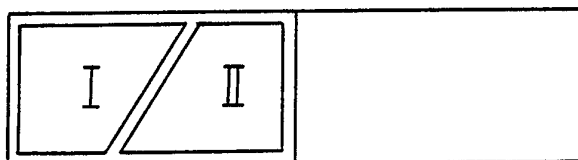


FIG. 5

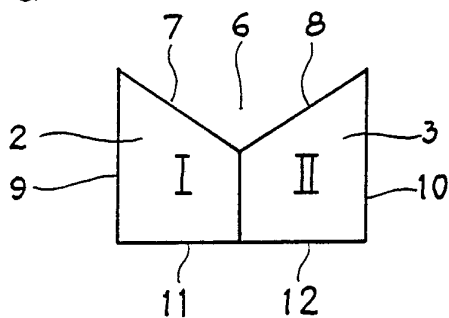


FIG. 6

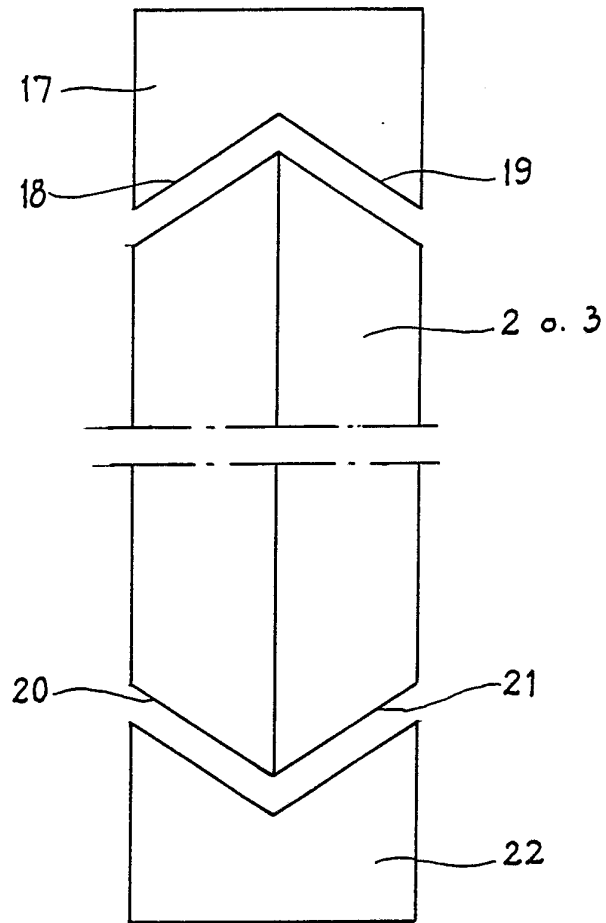


FIG. 7

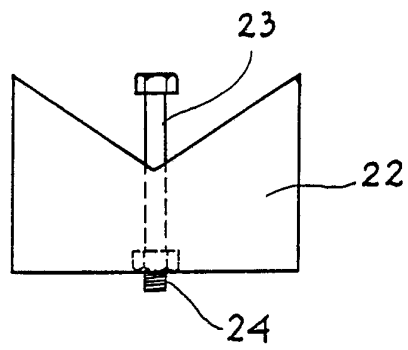
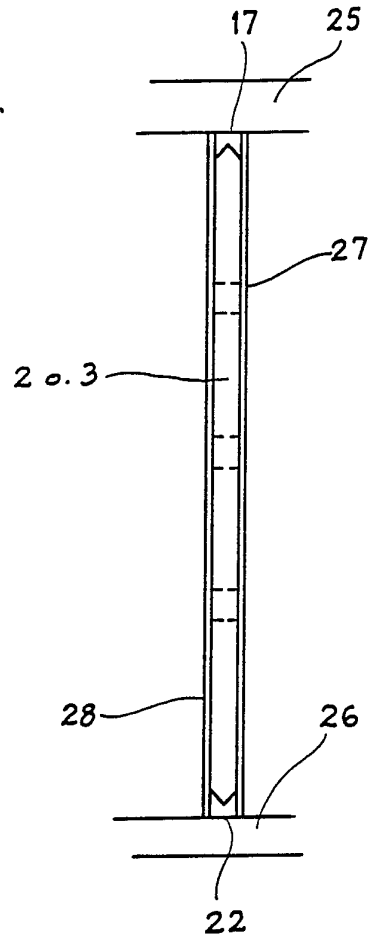


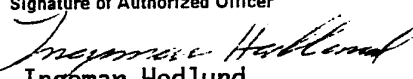
FIG. 8



SUBSTITUTE SHEET

INTERNATIONAL SEARCH REPORT

International Application No PCT/SE 90/00567

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 IPC5: E 04 C 3/12 // B 27 M 3/00				
II. FIELDS SEARCHED				
Minimum Documentation Searched ⁷				
Classification System	Classification Symbols			
IPC5	E 04 C; B 27 M			
Documentation Searched other than Minimum Documentation to the Extent that such Documents are Included in Fields Searched ⁸				
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III. DOCUMENTS CONSIDERED TO BE RELEVANT⁹				
Category *	Citation of Document, ¹¹ with indication, where appropriate, of the relevant passages ¹²	Relevant to Claim No. ¹³		
A	DE, C1, 351824 (HAUCK, F.) 26 May 1922, see page 2, line 18 - line 48; figures 1-6 --	1		
A	DE, C1, 803253 (WITWAR, K.W.) 2 April 1951, see the whole document --	1		
A	DE, B1, 1140331 (ESSER, G.) 29 November 1962, see the whole document --	1		
A	DE, A1, 1658960 (RIGIPS BAUSTOFFWERKE GMBH) 26 November 1970, see the whole document --	1		
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IV. CERTIFICATION				
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Category *	Citation of Document, with indication, where appropriate, of the relevant passages	Relevant to Claim No
A	FR, A, 1253372 (ROLLAND, R. ET AL) 17 May 1961, see the whole document --	1
A	SE, -, 115667 (FOSSUM, P.D.) 15 January 1946, see page 1, 3th paragraph - page 2, 1st paragraph ; figures 1-6 --	1
A	SE, -, 146165 (BROSENIUS, K.H.) 13 July 1954, see page 1, 3th paragraph - 4th paragraph; figures 1-4 --	1
A	SE, -, 177509 (SCHUTTER, W.F.) 12 December 1961, see page 1, 4th paragraph - 5th paragraph; figures 1, 3 --	1
A	SE, A, 8702626-6 (HAMMARSTRÖM, L.) 26 December 1988, see page 1-page 3, 1st paragraph; page 4-page 5, 3th paragraph; figures 1-5 -- -----	1

**ANNEX TO THE INTERNATIONAL SEARCH REPORT
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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
DE-C1- 351824	22-05-26	NONE	
DE-C1- 803253	51-04-02	NONE	
DE-B1- 1140331	62-11-29	NONE	
DE-A1- 1658960	70-11-26	NONE	
FR-A- 1253372	61-05-17	NONE	
SE--- 115667	46-01-15	NONE	
SE--- 146165	54-07-13	NONE	
SE--- 177509	61-12-12	NONE	
SE-A- 8702626-6	88-12-26	NONE	