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INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification 3 :		(11) International Publication Number: WO 84/ 01596
E04C 2/24, 3/12	A1	(43) International Publication Date: 26 April 1984 (26.04.84)

(21) International Application Number: PCT/FI82/00044

(22) International Filing Date: 13 October 1982 (13.10.82)

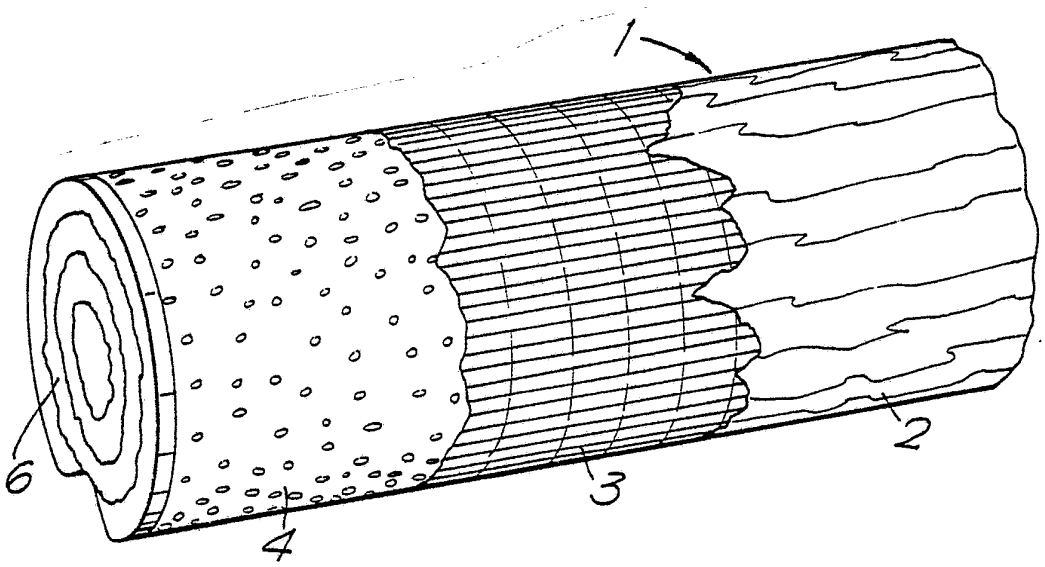
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(81) Designated States: AT (European patent), AU, BE (European patent), BR, CH (European patent), DE (European patent), DK, FI, FR (European patent), GB (European patent), JP, LU (European patent), NL (European patent), NO, SE (European patent), SU, US.

Published
With international search report.
In English translation (filed in Finnish).

(54) Title: CONSTRUCTION ELEMENT



(57) Abstract

Construction element whose interior part is at least partly hollow and/or whose interior consists of a preferably heat-insulating material (4) and at which construction element (1) at least the faces remaining visible at the outside and inside faces of the building are provided with wooden surface or at least with a pattern similar to a wooden surface. Those wooden faces, or faces with an appearance imitating wooden faces, that remain visible on the construction element (1) are made of thin material layers such as, for example, of a cover layer (2, 3) that has been glued out of layers off veneer, that is at both sides outwardly convex, and whose appearance corresponds to a traditional log made of timber. The cover layer (2, 3) of the construction element (1) is supported in its shape by means of end pieces (6) of the construction element (1), which have a corresponding convexity shape, and possibly by means of one or several support pieces (7) placed between the said end pieces (6) and having a shape corresponding to the shape of the end pieces.

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Construction element

The present invention is concerned with a construction element whose interior part is at least partly hollow and/or whose interior consists of a preferably heat-insulating material and at which construction element at least the faces remaining visible at the outside and inside faces of the building are provided with wooden surface or at least with a pattern similar to a wooden surface.

It is a very old custom to construct buildings out of logs cut out of tree trunks. The traditional log construction has many drawbacks. The sealing of the joint between the logs is problematic owing to the expansion and shrinkage of wood. As compared with the heat insulation capacity, the consumption of wood material is high. After the construction work, considerable movement of the structures takes place. However, a building made of logs is beautiful and therefore popular because of its appearance, and it usually fits well into the landscape.

In prior art, such construction elements giving the impression of log are also known in which two board-like construction components have been joined together by means of intermediate pieces and the interior of the construction has been filled with a heat insulation. In such a construction element, the cover portion acts as the carrying structure, so that the cover portion becomes quite massive.

The said elements giving the impression of log construction are also subject to expansion and shrinkage after the construction work, because the cover portion carrying the structures is of board material. Under these circumstances, considerable movement of the structures takes place after the construction work. On the other hand, as regards its heat-insulation quality, such a construction is better

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than the traditional log construction, and the building can also be sealed well.

It is an object of the present invention to eliminate the drawbacks of traditional log construction as well as to provide an improvement in constructions made of construction elements imitating the log construction while, nevertheless, retaining the appearance of the construction very closely similar to the traditional log construction.

The construction element in accordance with the invention is characterized in that at least those wooden faces, or faces with an appearance imitating wooden faces, that remain visible on the construction element are made of thin material layers such as, for example, of a cover layer that has been glued out of layers of veneer, that is at both sides outwardly convex, and whose appearance corresponds to a traditional log made of timber, and that the cover layer of the construction element is supported in its shape by means of end pieces of the construction element, which have a corresponding convexity shape, and possbly by means of one or several support pieces placed between the said end pieces and having a shape corresponding to the shape of the end pieces.

By means of the log construction element in accordance with the invention, new good properties are achieved. The construction element is of low weight, its dimensional accuracy is good, and, what is most important, the dimensional accuracy is also retained. Thus, deformations in the complete building are very little. As regards the heat insulation, the construction is excellent, and in practical construction work, there are no limiting factors in respect of the length and thickness of the construction element.

The invention comes out in more detail from the following description and from the attached drawings, wherein

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Figure 1 is a perspective view of a construction element in accordance with the invention with the cover portion partly cut-off,

Figure 2 shows the frame construction of the construction element shown in Fig. 1,

Figure 3 shows the forming of the end pieces out of veneers by rolling,

Figure 4 shows a construction element provided with a notch for angle joint as a side view,

Figure 5 shows the construction element of Fig. 4 as viewed from below, and

Figure 6 shows the joining together of the construction elements.

Figure 2 illustrates the frame construction of the construction element, wherein the end pieces 6 and a support piece 7 are bound together by means of a frame piece 9. For the sake of their appearance, the end pieces 6 are manufactured so that the ends of the construction element 1 resemble a solid log. This is achieved either by cutting the end pieces 6 out of solid timber or by first rolling a log in the way schematically shown in Fig. 3 and by then cutting the end pieces out of it. The rolling of the veneers 10 and 11 may be performed around heartwood, or the heartwood or a piece corresponding to it may be fitted into the end pieces 6 afterwards, e.g., by machining. The end pieces 6, and possibly also the support pieces 7 to be manufactured in this way, are compressed into purposeful shape after the glueing and rolling, or the rolling is performed directly in view of obtaining the desired shape.

The pattern corresponding to annual rings is formed by glueing and rolling veneers of two species of wood of different colours alternatingly, whereby they in this way produce a cross-sectional pattern visually resembling the summer growth and the autumn growth.

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When the shape of the end pieces 6 and of the support pieces 7 is in accordance with Fig. 2, the top face of the construction element 1 is convex and the bottom face correspondingly concave. On the other hand, the top face and the bottom face of the construction element may also be plane faces, as is shown in Figures 4 to 6.

In the case of Fig. 1, a cover layer 2, 3 is formed around the frame construction (Fig. 2) so that the inner layer 3 is made of fibreglass laminate and the surface layer 2 of wood veneer.

At least the faces of the construction element that remain visible at the outer and inner faces of the building are wood-faced or at least wood-face-patterned. The faces of the construction element 1 that remain visible and that are made of wood or have an appearance imitating wood consist of thin material layers, such as, for example, of a cover layer 2, 3 that has been glued out of layers of veneer, that is at both sides outwardly convex, and whose appearance corresponds to a traditional log made of timber.

The construction element 1 is, in the way of the logs of a conventional log building, provided with preferably machined notches 8 for angle joints in view of joining the said construction elements 1 together in the way of logs as layers one above the other, as comes out from Fig. 6.

The joining together and sealing of two construction elements 1 to be placed one above the other is performed preferably by means of some adhesive substance suitable for the purpose.

In construction elements 1 placed one above the other, the support pieces 7 must be placed one above the other, because they, together with the end pieces 6, carry the load.

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The construction element 1 may be allowed to remain hollow by omitting the heat insulation 4, in which case the construction element is supported by the frame construction in accordance with the principle of Fig. 2. The frame piece 9 is by no means indispensable in the construction, but it facilitates the handling of the end and support pieces 6 and 7 when the cover part 2, 3 is being glued around them.

The construction element 1 is, however, preferably filled with heat insulation 4 partly or completely. The heat insulation may be fixed, e.g., as ready pieces to the frame construction shown in Fig. 2 before the cover layer 2, 3 is applied, or, on the other hand, the heat insulation, such as polyurethane, may be extruded into the construction element 1 after glueing of the cover layer 2, 3.

The parts supporting the cover layer 2, 3 of the construction element 1 in its shape may be made of one piece with the heat-insulating part in its interior, in which case the end pieces 6, the support pieces 7, and the heat insulation 4 in the interior are included in one unified frame piece, which has been brought into the form required by the construction element concerned and which is made, e.g., of polyurethane.

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WHAT IS CLAIMED IS:

1. Construction element whose interior part is at least partly hollow and/or whose interior consists of a preferably heat-insulating material (4) and at which construction element (1) at least the faces remaining visible at the outside and inside faces of the building are provided with wooden surface or at least with a pattern similar to a wooden surface, c h a r a c - t e r i z e d in that at least those wooden faces, or faces with an appearance imitating wooden faces, that remain visible on the construction element (1) are made of thin material layers such as, for example, of a cover layer (2, 3) that has been glued out of layers of veneer, that is at both sides outwardly convex, and whose appearance corresponds to a traditional log made of timber, and that the cover layer (2, 3) of the construction element (1) is supported in its shape by means of end pieces (6) of the construction element (1), which have a corresponding convexity shape, and possibly by means of one or several support pieces (7) placed between the said end pieces (6) and having a shape corresponding to the shape of the end pieces.

2. Construction element as claimed in claim 1, c h a r a c t e r i z e d in that the element is, in the way of the logs of a conventional log building, provided with preferably machined notches (8) for angle joints in view of joining the said construction elements (1) together in the way of logs as layers one above the other.

3. Construction element as claimed in claims 1 and 2, c h a r a c t e r i z e d in that both the upper and the lower faces of the elements (1) are plane faces or that the upper face of the element (1) is convex and the lower face is, in a corresponding way, concave, and that the joining together and sealing of two construction elements (1) placed one above the other

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is performed preferably by means of an adhesive substance suitable for the purpose.

4. Construction element as claimed in claims 1 to 3, c h a r a c t e r i z e d in that the heat-insulating part (4) in its interior is, in a way in itself known, made of polyurethane.

5. Construction element as claimed in claims 1 to 3, c h a r a c t e r i z e d in that the parts supporting the cover layer (2, 3) of the construction element (1) in its shape are made of one piece with the heat-insulating part in its interior, whereby the end pieces, the support pieces, and the heat insulation in the interior are included in one unified frame piece, which has been brought into the shape required by the construction element concerned and which is made, e.g., of polyurethane.

6. Construction element as claimed in claim 1, c h a r a c t e r i z e d in that the end pieces (6) and possibly also the support pieces (7), to be fitted between the said end pieces (6), of the construction element (1) have been formed out of veneers by rolling and glueing so as to produce an effect of the annual rings of a tree, and that the rolling of the veneers is carried out around heartwood, or the heartwood or a corresponding piece is fitted into the end or support pieces afterwards, e.g.,by means of machining.

7. Construction element as claimed in claim 6, c h a r a c t e r i z e d in that the end or support pieces (6, 7) are, after glueing and rolling, pressed into the shape suitable for the purpose, or that the rolling is carried out directly so that the desired shape is obtained.

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Fig. 1.

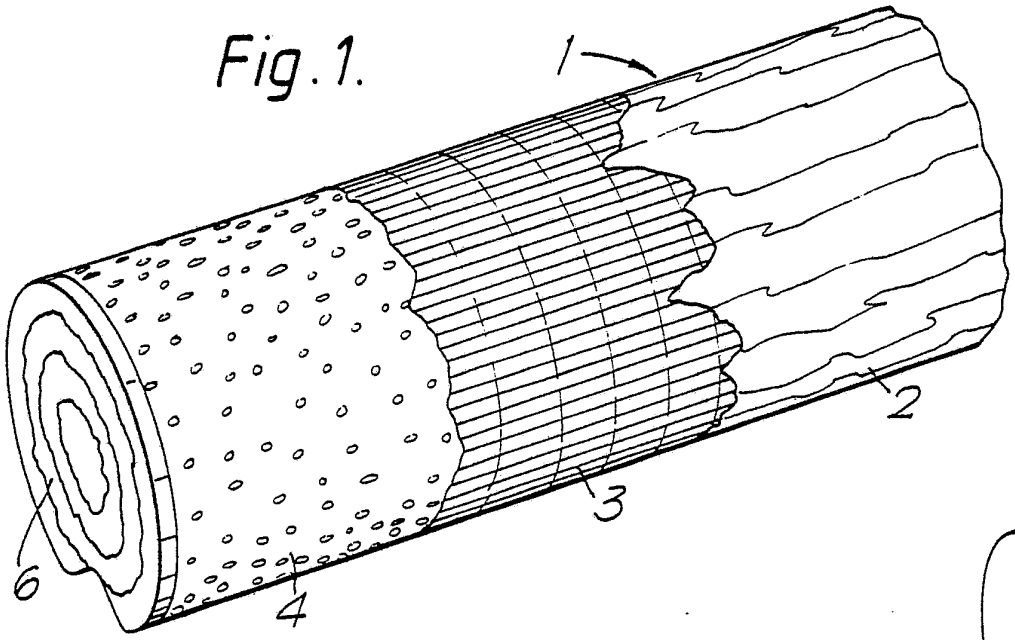


Fig. 2.

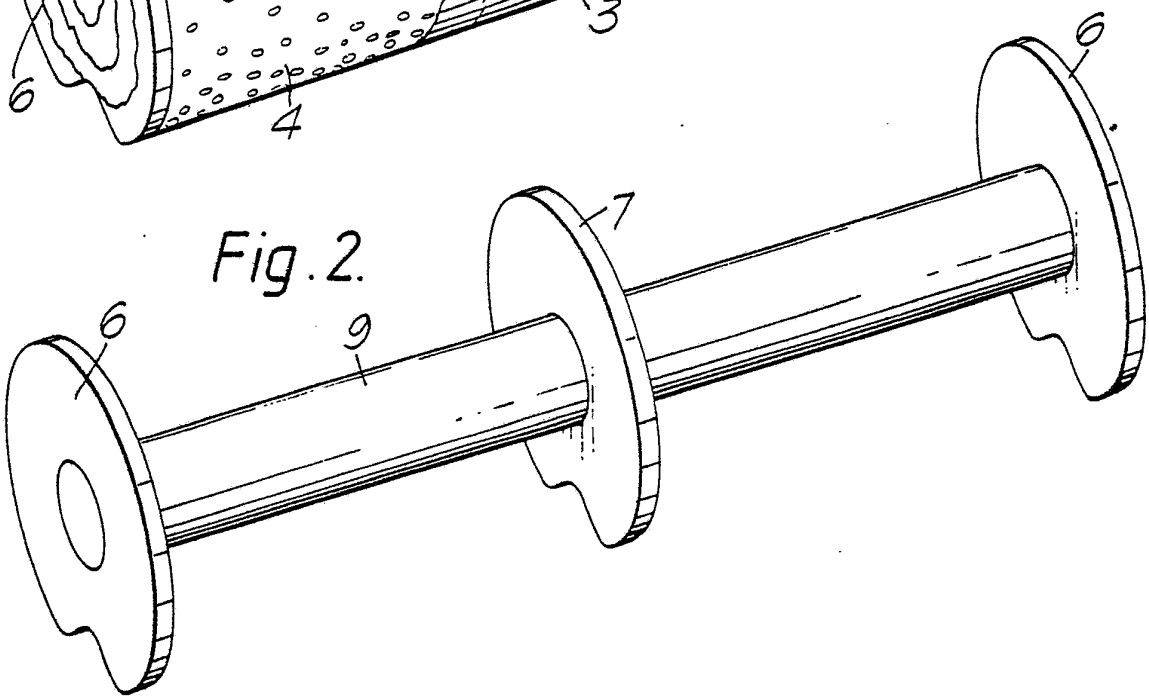
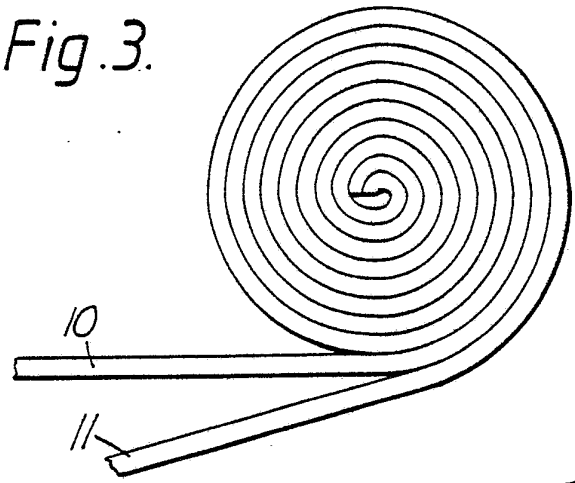


Fig. 3.



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Fig. 4.

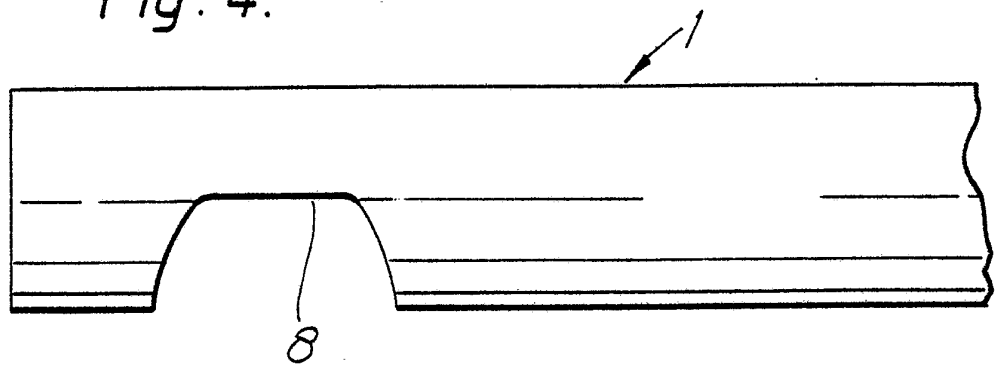


Fig. 5.

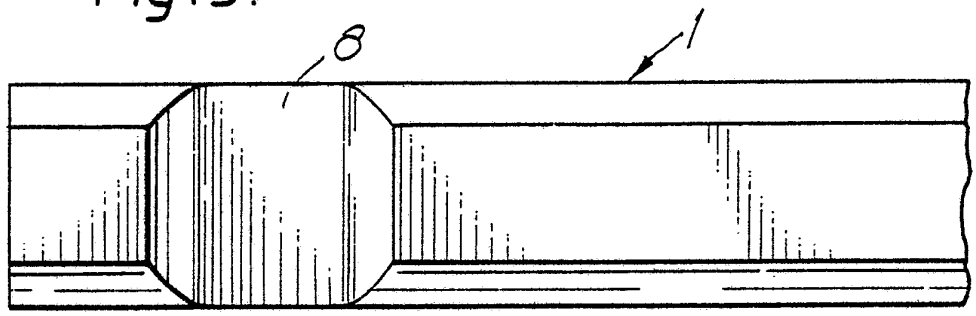
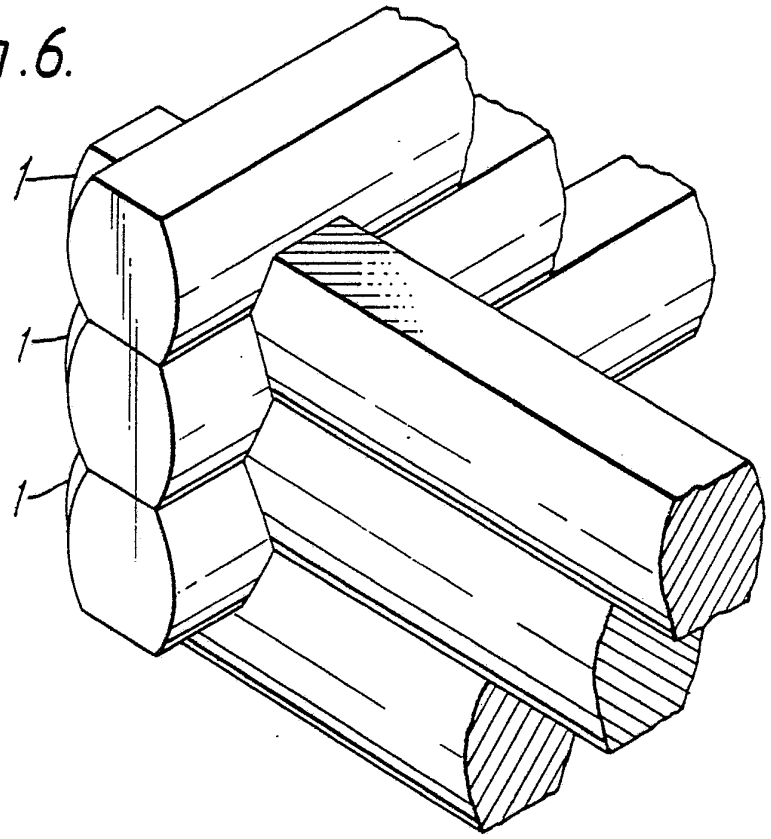


Fig. 6.



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INTERNATIONAL SEARCH REPORT

International Application No PCT/FI82/00044

I. CLASSIFICATION OF SUBJECT MATTER (if several classification symbols apply, indicate all) [2]

According to International Patent Classification (IPC) or to both National Classification and IPC [3]

E 04 C 2/24, E 04 C 3/12

II. FIELDS SEARCHED

Minimum Documentation Searched [4]

Classification System	Classification Symbols
IPC 3	E 04 C 2/24, 3/12, 3/14, 3/28, 3/29, 3/292
US Cl	52:233, 272, 282, 582, 731

Documentation Searched other than Minimum Documentation to the Extent that such Documents are included in the Fields Searched [5]

SE, NO, DK, FI classes as above

III. DOCUMENTS CONSIDERED TO BE RELEVANT [14]

Category *	Citation of Document, [16] with indication, where appropriate, of the relevant passages [17]	Relevant to Claim No. [18]
X	SE, B, 303 580 (P G ROSEN) 2 September 1968	1-5
A	SE, B, 312 221 (W WITSCHNIG) 7 July 1969	1-7
A	SE, B, 400 798 (B STAFFAS) 25 September 1977	1-5
A	FI, B, 51 242 (R AHONEN) 2 August 1976	1-5
A	FI, C, 23 035 (I FREDRIKSEN) 10 July 1948	6-7
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IV. CERTIFICATION

Date of the Actual Completion of the International Search [1]	Date of Mailing of this International Search Report [1]
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Swedish Patent Office	Vilho Juvonen

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