June 22, 1954 H. MORAWETZ 2,681,483

DOWEL CONNECTION

Filed Oct. 14, 1948

FIG. 1

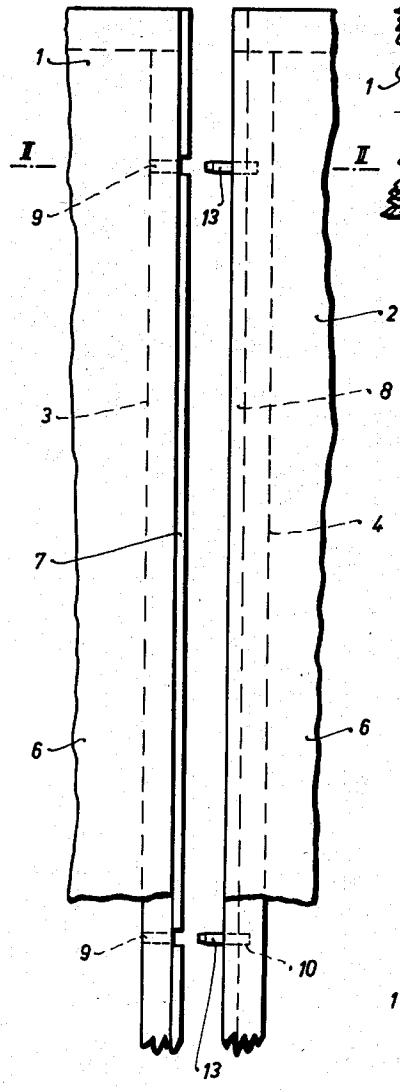


FIG. 2

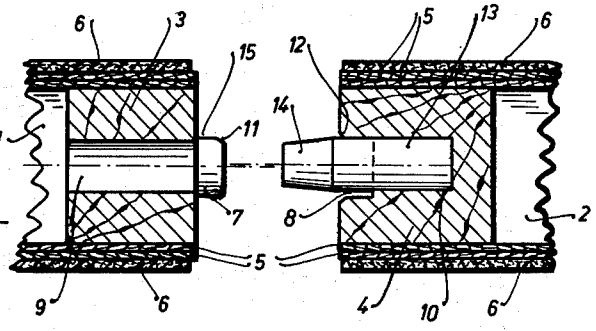


FIG. 3

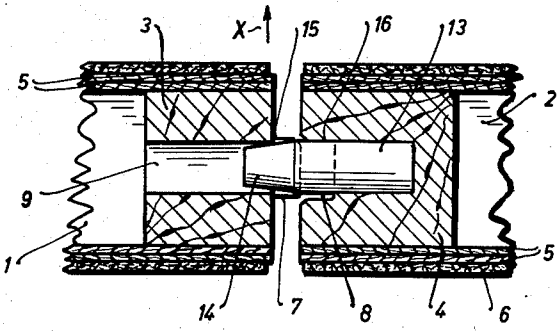
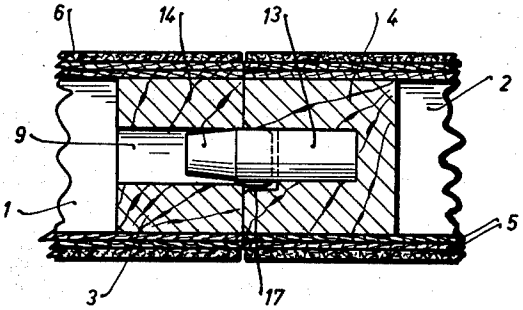


FIG. 4



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DOWEL CONNECTION

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4 Claims. (Cl. 20—92)

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This invention relates to a dowel connection for uniting juxtaposed elements, particularly wall elements or the like. The main object of this invention is to provide such a connection which is sufficiently strong and reliable so as to prevent the elements from being disconnected unintentionally. Another object of the invention is to provide such a connection which ensures tight joints between the juxtaposed elements, this being particularly important in the case of elements to be united so as to form the walls of a house. A further object of this invention is to provide a connection of the kind referred to above, in which the interengaging portions of the elements to be united, as well as the connecting means are particularly simple and can be made in an easy manner and at low costs. Other objects and advantages of my invention will be apparent from the following description.

The subject matter of the invention is illustrated by way of example in the accompanying drawings, in which

Fig. 1 is a fragmentary view of two wall elements to be united, and

Figs. 2 to 4 are cross-sections according to line II—II of Fig. 1 in an enlarged scale, showing three successive stages in establishing the connection.

Each of both wall elements 1 and 2 comprises a frame consisting of bars of wood, the bars extending on the abutting, vertical edges of these elements being designated with 3 and 4 respectively. On both sides of the frames are arranged two veneers of wood 5 and on the outside of the latter are provided covering sheets 6, for instance of asbestos cement. The veneers 5 and covering sheets 6 are cemented or glued together and to the frame under pressure so as to form composite wall elements, as it is more fully described in my copending application Serial No. 1983, filed January 13, 1948.

The bar 3 of the element 1 is provided with a longitudinal projecting tongue or rib 7 adapted to engage in a corresponding, longitudinal groove 8 in the bar 4 of the element 2. The tongue 7 and the groove 8 are slightly chamfered at 11 and 12 respectively in order to facilitate the introduction of the first into the latter. Holes 9 are provided at suitable distances apart in the bar 3 and corresponding blind holes 10 are provided in the bar 4. As it is to be seen from Fig. 1, the tongue 7 is interrupted at the points of the holes 9. The holes 9 and 10 in the bars 3 and 4 respectively have the same diameter and are in alignment in the longitudinal direction of these bars, but, as shown in Fig. 2, their axes are

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slightly staggered or displaced, for instance by one millimeter, relatively to each other laterally or transversely, that is the distances of these axes from the outer surfaces of each of the elements are slightly different. In the blind holes 10 are fixedly secured cylindrical dowels 13 of hard wood, slightly tapered at their outer ends 14.

For establishing the connection the wall elements 1 and 2 are brought into alignment (see Fig. 2) and are then approached each other, until the upper part of the tapered end 14 of the dowels 13 strikes against the wall of the holes 9, as shown in Fig. 3. Then the elements are further forced together so that the tongue 7 enters the groove 8. During this relative displacement the walls of the holes 9 slide along the upper part (see Fig. 3) of the dowel ends 14 whereby the left element 1 is forced in the direction of the arrow x relatively to the right element 2, so that the surface 15 of the tongue 7 is firmly pressed against the surface 16 of the groove 8. It is to be seen that the dowels 13 are allowed to completely enter the holes 9 only by deforming the material of the bar 3 and/or of the dowels so that in the end position according to Fig. 4 the dowels are jammed in the holes 9 and a firm, reliable and at the same time tight joint is obtained between both wall elements. As shown in Fig. 4, there is left a narrow clearance 17 between the lower surfaces of the tongue 7 and of the groove 8 respectively.

It is to be seen that the cross-section of the dowels and holes 9, 10 must not necessarily be circular, but may differ from the circular form.

It is therefore clear that the present invention provides a dowel connection including two juxtaposed elements interconnected in abutting end to end relation by axial movement toward one another. One of the elements has a series of parallel dowels mounted in an end surface thereof while the other element has a series of holes opening into its adjacent end surface accommodating said dowels. The axes of the holes and the axes of the dowels lie in a common plane extending transversely through the elements and perpendicular to the end surfaces thereof. Furthermore, the axes of the holes lie in a longitudinal plane transversely displaced with respect to the longitudinal plane containing the axes of the dowels. It thus follows that insertion of the dowels in the holes deforms, by lateral pressure, the walls of the holes on the side of the axes of the holes opposite to the direction of displacement. The abutting end surface of the element that carries the dowels has a groove therein and the abutting end surface having the dowel holes

therein is provided with a tongue. The tongue and groove embody interengaging shoulder surfaces arranged in substantial parallelism with the longitudinal plane that passes through the axes of the dowels so that the deformation of the walls of the holes by lateral pressure of the dowels firmly engages the shoulder surfaces of the tongue and the groove with one another on the side of the axes of the dowels opposite to the direction of displacement of the axes of the dowel holes with respect thereto.

What I claim is:

1. A dowel connection which comprises two juxtaposed elements interconnected in abutting end to end relation by axial movement toward one another, a series of parallel dowels mounted in an end surface of one of said elements, the other element having holes opening into its adjacent end surface accommodating said dowels, the axes of said holes being slightly laterally displaced relatively to the axes of said dowels and the walls defining the holes being correspondingly deformed by lateral pressure, and the abutting end surfaces of said elements including interengaging shoulder surfaces arranged in substantial parallelism with the plane passing through the axes of said dowels, the deformation of the walls of the holes by lateral pressure of the dowels firmly engaging the shoulder surfaces with one another in a direction opposite to the direction of displacement of the axes of the holes.

2. A dowel connection as claimed in claim 1, wherein said shoulder surfaces of said elements are chamfered at their outer ends.

3. A dowel connection as claimed in claim 1, wherein one of said elements is provided with a longitudinal groove, while the other element is provided with a longitudinal tongue engaging said groove.

4. A connection including two juxtaposed elements interconnected in abutting end to end relation by axial movement toward one another, one of said elements having a series of parallel dowels mounted in an end surface thereof, the other element having a series of holes opening into its adjacent end surface accommodating said dowels and the axes of the holes and the axes of the dowels lying in a common plane extending transversely through the elements and perpendicular to the end surfaces thereof, the axes of the holes further lying in a longitudinal plane transversely displaced with respect to the longitudinal plane containing the axes of the dowels whereby insertion of the dowels in the holes deforms, by lateral pressure, the walls of the holes on the side of the axes of the holes opposite to the direction of displacement, the abutting end surface of the element carrying the dowels having a groove therein and the abutting end surface having the dowel holes therein having a tongue thereon, the tongue and groove embodying interengaging shoulder surfaces arranged in substantial parallelism with the longitudinal plane passing through the axes of the dowels so that the deformation of the walls of the holes by lateral pressure of the dowels firmly engages the shoulder surfaces of the tongue and the groove with one another on the side of the axes of the dowels opposite to the direction of displacement of the axes of the dowel holes with respect thereto.

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