

April 16, 1968

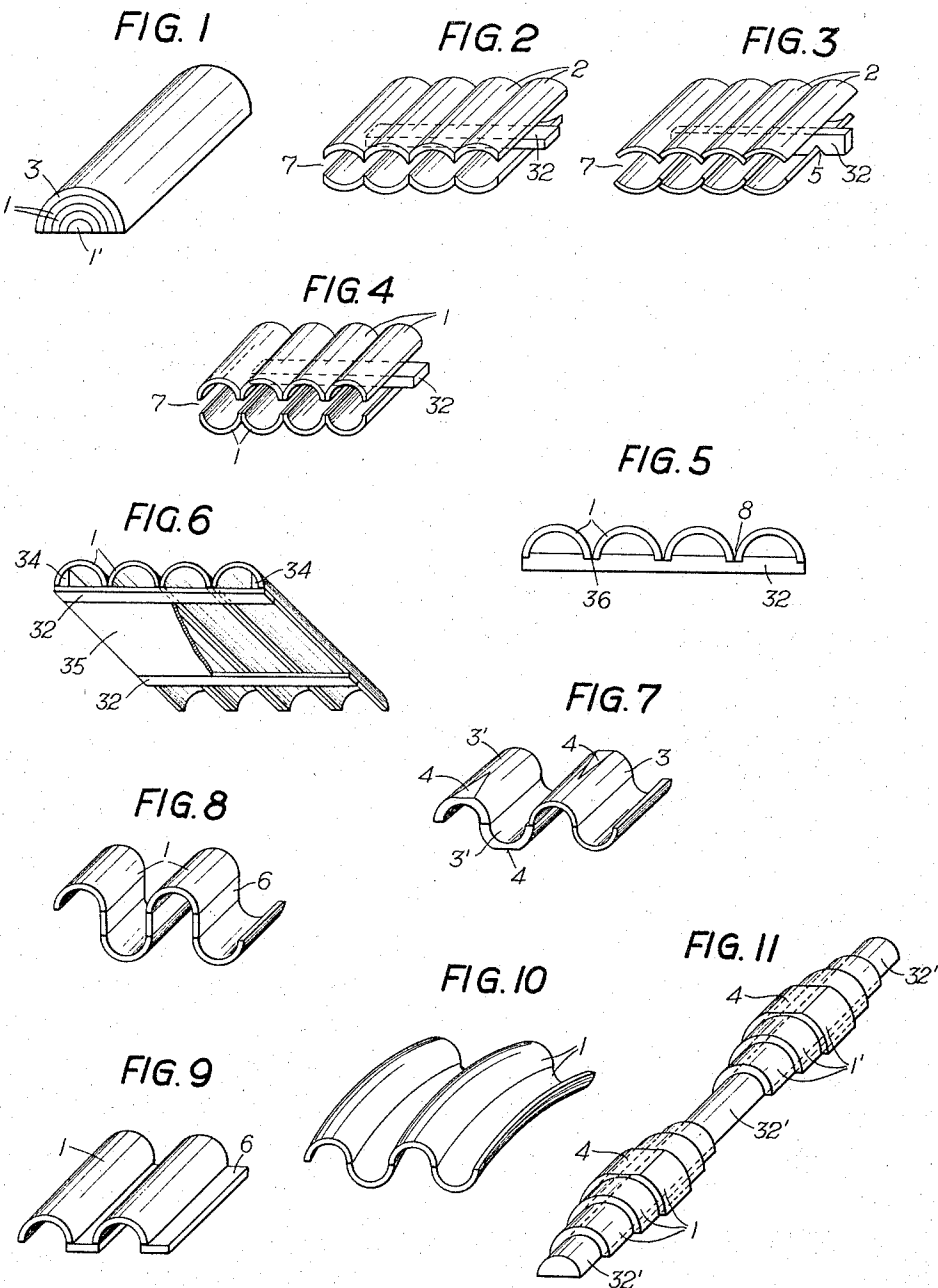
W. WITSCHNIG

3,377,758

LOG-TYPE CONSTRUCTION ELEMENT

Filed Feb. 3, 1965

4 Sheets-Sheet 1



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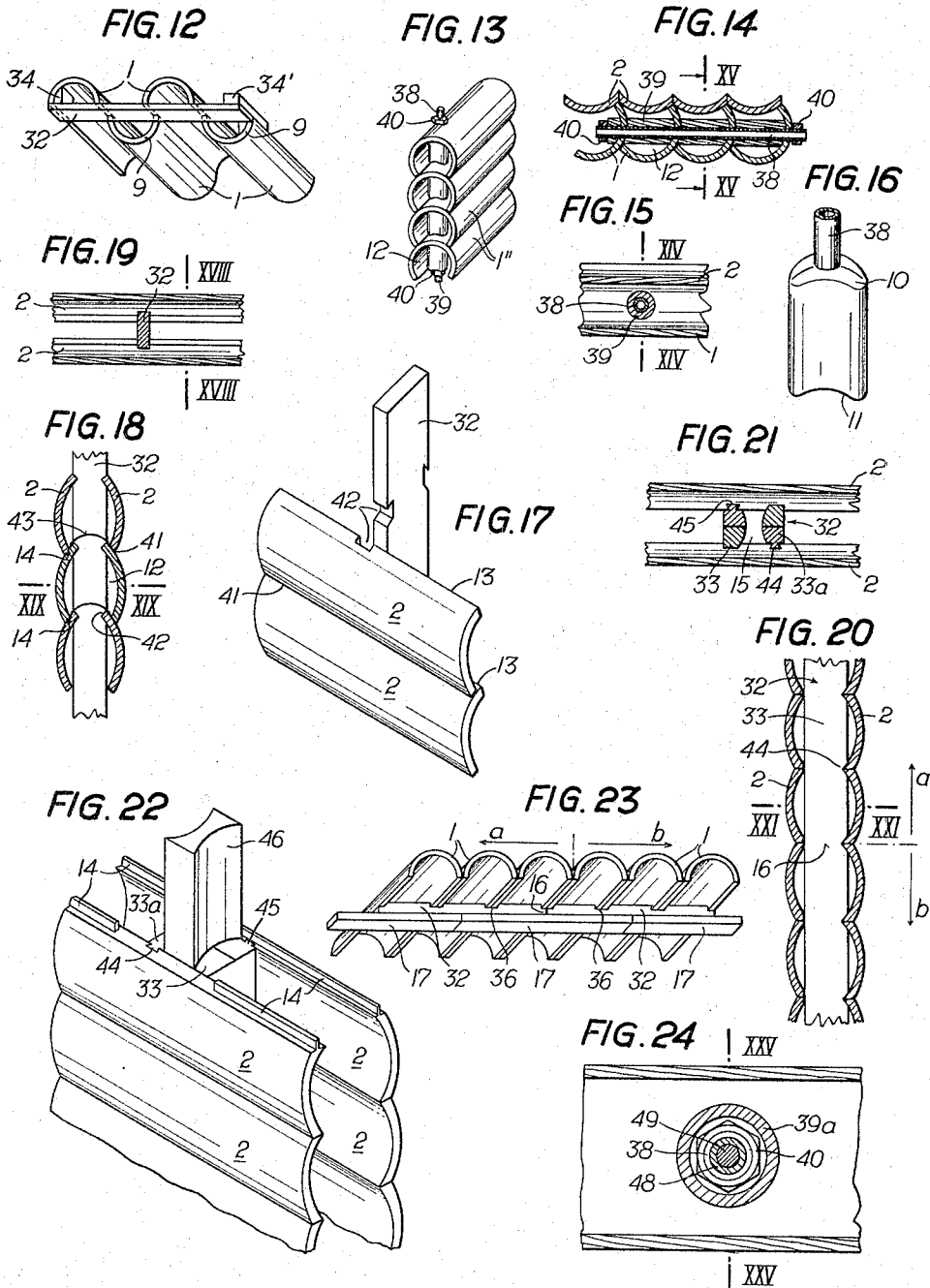
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FIG. 25

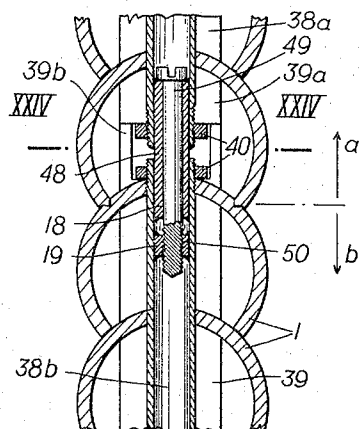


FIG. 26

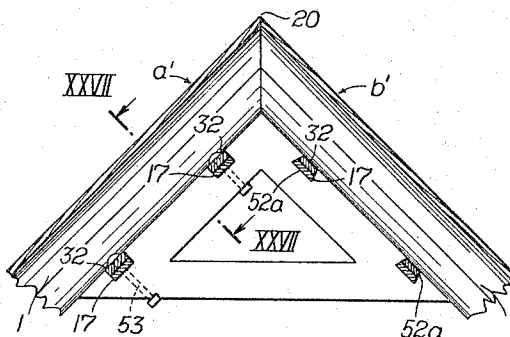


FIG. 27

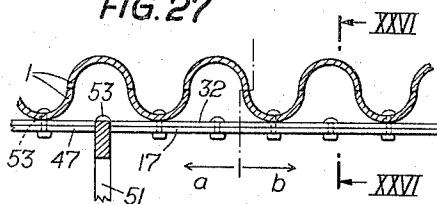


FIG. 28

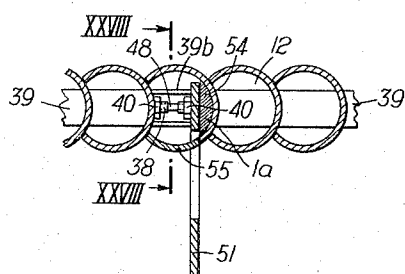


FIG. 30

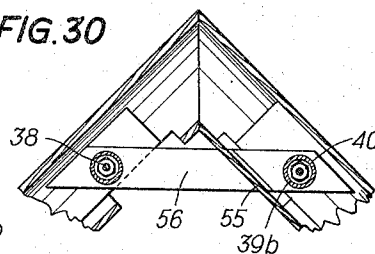
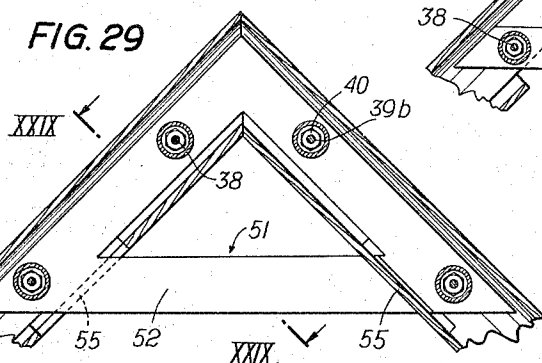


FIG. 29



April 16, 1968

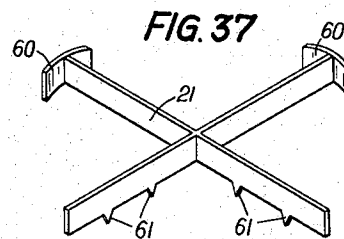
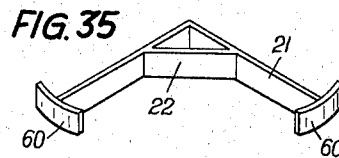
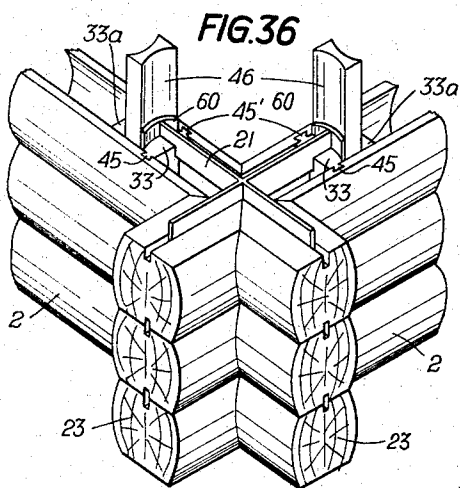
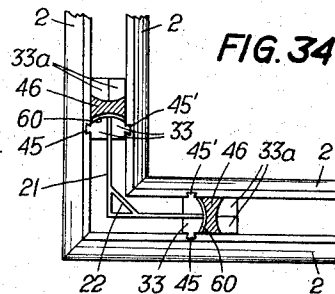
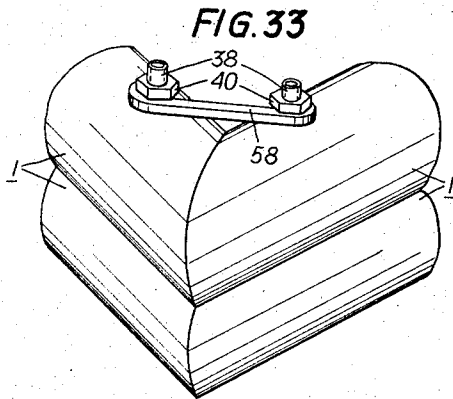
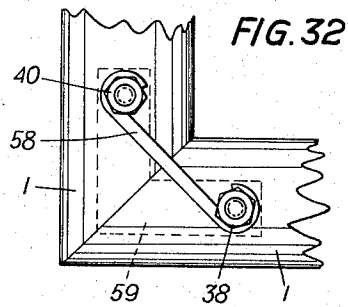
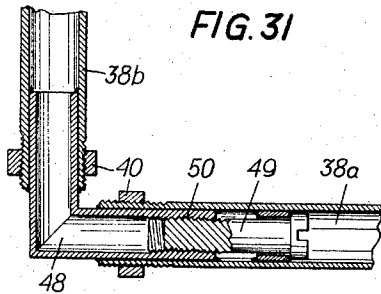
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3,377,758

LOG-TYPE CONSTRUCTION ELEMENT

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Filed Feb. 3, 1965, Ser. No. 430,085

Claims priority, application Austria, Feb. 4, 1964,

A 885/64

24 Claims. (Cl. 52-233)

ABSTRACT OF THE DISCLOSURE

A prefabricable wooden construction element of parts of cylinders cut from logs parallel to the annual growth rings of the log, which is so stiffened that it can be transported without being substantially deformed, said wooden construction element having the property that the shrinkage and swelling behavior can easily be predicted.

The present invention relates to a construction element comprising a plurality of wooden elemental parts joined together, each of which forms part of a circular hollow cylinder, the outer and inner surface of which essentially passes along the annual rings of the wood. Such elemental parts can be machined out of trunk halves in machines in which a plurality of saw cylinders are provided which, with respect to transport direction of the trunk half, are arranged one behind the other, whereby the diameters of the saw cylinders are graduated according to the wall thickness of the wooden elements to produce which have the cross section of a circular hollow cylinder. Such a machine is shown and described in my United States Patent No. 3,203,456 dated Aug. 12, 1965.

It has already been proposed to connect several groove-like parts of the kind described by mortise and tenon and so to make such elemental parts applicable for wood construction. By such a connection of the single groove-like elemental parts by means of mortise and tenon, however, the wall thickness of such elemental parts is weakened adjacent the joints and furthermore the manufacture of such a joint is rather time-consuming. Furthermore, the elemental parts joint in the manner indicated represent no rigid unit so that at application and transport of parts manufactured from such elemental parts difficulties are often encountered.

The invention essentially consists in that the elemental parts are joined to a rigid unit and in that this unit is rigidly supported with respect to its shape by at least one stiffening element. In this manner the elemental parts rigidly connected with one another act against bending stresses or buckling stresses as a static unit so that the resistance of a construction element against bending and buckling stresses, respectively, is materially increased with least possible material consumption. So, not only transport of the construction elements in the factory and the site, respectively, is facilitated but, in many cases in which only the use of construction elements with relatively large surface is economically feasible, made possible at all. The stiffening elements provide the advantage of the single construction elements over the board construction used up till now to not show swell or to shrink because now swelling and shrinking of the construction element in total is avoided or restricted to a minimum. Thereby it becomes feasible to rigidly join the single elemental parts, f.i. by glueing or screwing, because in absence of a material swelling and shrinking, respectively, of the construction elements, no or but very unimportant stresses act on the joints which stresses might cause bursting of the joint between the single elemental parts.

According to the invention the elemental parts may be arranged in a great number of variants. With numerous variants the single elemental parts are arranged side by

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side or annexed with one another so that the generatrices of these elemental parts, having the cross section of part of a circular hollow cylinder, are in parallel relation. In such a case the stiffening elements are arranged transverse to the generatrices of the elemental parts and rigidly connected with these elemental parts. With this the stiffening elements not only can be used to connect the single elemental parts to a rigid unit but it is also possible to use these stiffening elements for stiffening single annular hollow cylindrical elemental parts, particularly of elemental parts subjected to severe stresses. Further, according to the invention, to provide the stiffening elements with connection means for connecting adjacent construction elements these connection means can be formed by extensions of the stiffening elements, which extensions may be introduced in correspondingly shaped recesses of the adjacent construction element, whereby adjacent construction elements may be, so to speak, put together. With this respect a constructional simple solution is present if, according to the invention, the stiffening elements are formed by wooden ledges which are glued to the elemental parts adjacent the ends of the legs of the C- or U-shaped cross section thereof, which elemental parts, if desired, may be glued with one another. Conveniently the stiffening ledges and the ends of the legs of the elemental parts, respectively, have recesses into which are put the ends of the ledges of the elemental parts and of the stiffening ledges respectively. In this manner a snugly seated joint between stiffening ledges and elemental parts is achieved so that the rigid connection of the single parts to a unit not only is secured by glueing but also assisted by the snugly seated joints. Such a construction makes it possible to arrange the elemental parts so that they form two walls being essentially in parallel relation and being connected with one another by the stiffening ledges. In this manner a twin wall is provided, whereby the air filled space between the single walls has an insulating effect. If desired, this space may be filled by suitable insulating filling material or the like. There exists also the possibility to join, according to the invention, two opposed elemental parts of the two walls with one another between the stiffening ledges, so that between the two walls adjacent chambers are formed through which transversely extend the stiffening ledges. Thereby the air filled space between the two walls is subdivided and air circulation in the space between the two walls is reduced.

The stiffening elements may be, according to the invention, also formed by rods which pass through the elemental parts and join these elemental parts by pressing means, f.i. screws, to a unit, whereby between adjacent elemental parts spacing elements are provided. These spacing elements prevent damaging of the elemental parts when these elemental parts are pressed together to form a unit. According to the invention the spacing elements may be formed by bushings surrounding the rods, the front ends of the bushings being shaped according to the shape of the circumference of the adjacent elemental part. Thereby a snug seat of the elemental part on these bushings is provided. With such a construction adjacent construction elements can simply be connected by using tubes as the construction elements having the form of rods, whereby the connection means are formed by a female thread in each of these tubes and an extension thereof, respectively, and of a pin screw to be screwed into said female thread and supporting within the tube against an abutment. With this, adjacent construction elements may be joined so that the joint not only can be subjected to pressure but also to tension.

There is also the possibility to provide for the connection of adjacent construction elements connection means having the form of ledges, which may be intro-

duced into a slot confined by two adjacent stiffening ledges.

These connection means and also the stiffening elements can also be used for introducing and fixing, respectively, rigid connection parts, which are used particularly when forming corner joints or the like.

A further possibility for arrangement of the single elemental parts consists in putting the elemental parts in at least one layer over part of the length of the stiffening elements and rigidly connecting, preferably by glueing, the elemental parts with the stiffening element, whereby the stiffening element is provided with an upper surface formed according to a surface of a circular cylinder and the generatrices of the elemental parts are in parallel relation with respect to the generatrices of the upper surface of the stiffening element. In this manner a construction element is provided, which is strengthened at single portions of its axial length, so that the construction element has a greater resistance moment at these portions. By suitably choosing number and thickness of the elemental parts to be put onto the stiffening element practically any requirements with respect to bending moment can be accounted for and with this a wide adaptability in practice is provided. Such elements for instance may be used as rail sleepers but also as carrier element in wooden constructions and so on. In the usual wooden sleepers, which in view of its production are not tension free, cracks may form through which water might protrude to points insufficiently impregnated or not impregnated at all. At these points rotting starts. With the construction according to the invention this danger is essentially reduced on account of the groove like elemental parts having essentially no shrinking and swelling tendency, respectively, which elemental parts therefore are less subjected to the danger of becoming cracked. Furthermore the rounded shape of the upper side of the sleeper favors a more rapid draining of water after rain and a better anchorage of the sleeper in the ballast. Further, with respect to volume, wood can be saved and the formation of grooves by pressing in the bottom plate can be avoided.

In the accompanying drawing embodiments of the invention are schematically illustrated. FIG. 1 shows a trunk half from which the elemental parts may be produced. FIGS. 2, 3 and 4 show a twin walled construction element, while FIGS. 5 and 6 show a single walled construction element. FIGS. 6 to 10 show various embodiments of elemental parts joined with one another and being suited to be connected by stiffening elements to a construction element. FIG. 11 shows a construction element in form of a railway sleeper, while FIGS. 12 and 13 show further embodiments of a construction element. FIG. 14 represents a section through a further embodiment along line XIV—XIV of FIG. 15 which represents a section along line XV—XV of FIG. 14. FIG. 16 shows a spacing element in enlarged scale, while FIGS. 17 to 19 show a further embodiment. Hereby FIG. 18 is a vertical section through the construction shown in FIG. 17 and along line XVIII—XVIII of FIG. 19, which again represents a section along line XIX—XIX of FIG. 18, FIGS. 20 and 21 each show a further embodiment in a section whereby FIG. 21 represents a section along line XXI—XXI of FIG. 20. FIGS. 22 to 25 show various embodiments for connecting adjacent construction elements, whereby FIG. 24 is a section along line XXIV—XXIV of FIG. 25. FIGS. 26 to 30 show various forms of using construction elements of the invention for roofing or thatching. FIG. 27, in this connection, represents a section according to line XXVII—XXVII of FIG. 26, which again represents a section along line XXVI—XXVI of FIG. 27. FIG. 29 is a section along line XXIX—XXIX of FIG. 28, which again is a section along line XXVIII—XXVIII of FIG. 29.

The trunk half shown in FIG. 1 is subdivided into single groove-like elemental parts 1 by a sawing machine

known per se, so, that the surfaces of each of these elemental parts are concentric relative to the trunk axis. In spite of the trunk having frustoconical shape, at subdividing the trunk half the wall thicknesses of the single elemental parts 1 may be so graduated that even at the outermost portion of the trunk a usable elemental part can be obtained the outer surface of which corresponds to the mantle surface of the trunk half. Such an elemental part is in the following called outer shell. Also the core piece, which can not be further subdivided, may be used according to the invention. Subdividing the trunk in the indicated manner secures a good yield, because there is no waste with the exception of saw dust.

The elemental parts 1 obtained may be used in its initial form of full shells, i.e. in form of one half of a hollow circular cylinder, but can be subdivided prior to joining to a construction element as desired, f.i. in sector elements. Such partial elements are called partial shells in the following.

FIGS. 2 and 3 show partial shells 2 obtained from partial elements 1, shown in FIG. 1, by suitable subdividing and joint to a construction element. The partial shells 2 are put side by side and connected along its longitudinal ledge whereby the connection can be effected along radial faces and mantle faces (FIG. 3), respectively, or cheek to cheek (FIG. 2). Conveniently the partial shells 2 are glued together although the parts may be screwed together or the like, if desired. The adhesive, by which said glueing is effected, may be of any kind suitable for glueing wooden elements. The adhesive layers are not shown in the drawings, but it may be easily understood that such adhesive layers may be present wherever two wooden parts of the construction element are positioned close to each other or where these elements contact each other.

The wave like plates obtained by glueing the partial shells 2 are supported by stiffening elements 32 in a manner to stiffen its shape. These stiffening elements 32 are formed of wooden ledges, which are glued with the single partial shells 2. The partial shells may simply be put onto the stiffening ledge 32 and glued. However it is better to provide recesses 5 (FIG. 3) in the stiffening ledge into which recess the longitudinal edges of the sector like partial shells 2 can be put and glued. As can be seen, between the two walls formed of the partial shells 2 a cavity 7 is formed, which for its own has a silencing and heat insulating effect, which effect can be increased by filling this cavity with an insulating material, such as glass wool or the like. Within this cavity 7 various installation such as warm air heating equipment may be included.

FIG. 4 shows an embodiment with which full shells are arranged to be tangent to one another, whereby glueing is effected along the side faces of these full shells.

In any case it is possible to arrange wave like plates formed of full shells 1 or of partial shells 2 so that the convex faces of these wave like plates are either directed in only one direction or are alternately directed in one direction and in the opposite direction. Moreover the single partial shells and full shells, respectively, may be connected with one another so that they are arranged in superimposed relation and either a radial face is connected with a cylindrical mantle face (FIG. 3) or both radial faces are connected with a cylindrical mantle face.

FIG. 5 shows a construction element the stiffening ledge 32 of which has recesses 36 into which are introduced both longitudinal edges of the full shells 1. With this the pressure in the gap 8, necessary for glueing the full shells 1, can be established by pressing the full shells 1 with its longitudinal edges into the recess 36.

According to FIG. 6 between the stiffening ledges 32, boards 35, consisting of insulating material, are arranged, the thickness of which corresponds to the thicknesses of the stiffening ledges 32 so that the so formed construc-

tion elements are even seen from below. The joint between the full shells 1 and the stiffening ledges 32 can be improved by stiffening inserts 34.

FIG. 7 shows a wave like plate formed of outer shells 3, 3'. The outer shells 3 are arranged opposed to the outer shells 3' so that with the outer shells 3' the portion with the greater wall thickness lies at the front end but with the outer shells 3 lies at the rear end of the construction element. Thereby results, over the full length of the wave like plate, essentially the same cross sectional area and with this essentially the same resistance of the wave like plate so formed over its entire length is ensured. To facilitate connection of these wave like plates with adjacent construction elements and the stiffening ledges, not shown, the outer mantle faces of the outer shells 3, 3' are flattened at 4.

As shown in FIGS. 8 and 9 also flat plate like elemental parts may be used at forming wave like boards or construction elements, respectively. FIG. 8 shows plate like elements 6, which at their side faces are connected with the side faces of the full shells 1. In this manner a wave like course of the wave like board results. According to FIG. 9 the full shells 1 are arranged so that the cavities are all directed in the same direction and the adjacent longitudinal edges of the ends of the legs of the cross section of the full shells 1 are connected by plates 6 arranged in vertical relation to these ends of the legs.

The embodiment shown in FIGS. 8 and 9 may be assembled with stiffening ledges in similar manner as shown in FIGS. 2 to 6. In FIG. 8 the stiffening ledges could, if desired, also extend through the plate like elements 6. FIG. 10 shows that the elemental parts 1, which according to this FIG. 10 are formed of full shells, can be bent prior to glueing. In this manner a prestressed wave like plate is obtained, which afterwards may be connected with the stiffening element (not shown). Such a prestress is statically favourable, as known per se with respect to certain use.

FIG. 11 shows a construction element, which represents a rail sleeper. The essential difference over construction elements shown in FIGS. 2 to 10 consists in that according to FIG. 11 the stiffening element 32' has the cross section of a half circle and for instance can be formed by the core piece 1' (FIG. 1). Over this stiffening element 32', which extends over the total length of the sleeper, full shells 1 are put in steplike manner so that the cross section of the sleeper is steplike increased and reduced, respectively. Varying of the cross section conveniently is effected according the vending moment to which the sleeper is subjected by the rails fixed at the flat faces 4 of the outermost full shells 1 with interposition of commonly used base plates.

In the embodiment shown in FIG. 12 the stiffening ledges 32 also provide supporting faces by means of which the construction element rests on supports (not shown). For this purpose the lower full shells 1 are reduced in length as compared with the upper full shells 1, whereby the stiffening ledge 32 extends along the front faces 9 of the lower full shells 1 and is connected with these front faces and with the upper full shells 1. For obtaining a better joint also with this embodiment stiffening inserts 34 and connection pieces 34' may be provided, which are glued to the full shells 1 and the stiffening ledge 2, respectively. In this manner the construction element may be supported in reliable manner by the stiffening ledges 32 arranged at both sides, also if this construction element is loaded, f.i. when used as a ceiling element and loaded by rubble work.

By a steam treatment and by pressing operation, respectively, the groove-like elemental parts 1, 2, 3 can be given any desired cross sectional form. In this manner the radii of the mantle faces of the hollow cylindrical elemental parts can be reduced so that the mantle face of the elemental part extends over more than 180°. Such elemental parts are of special use when block walls are

to be erected. FIG. 13 shows such a construction element, which can be used for erecting such a block wall and this construction element comprises elemental parts 1'', the mantle surface of each of which, on account of corresponding forming operation, extends over more than 180°. Each elemental part 1'' is glued with its radial faces, i.e. the end faces of the ends of the legs seen in a cross section, to the exterior mantle face of the preceding elemental part. Stiffening is effected by a rod, conveniently having the form of a tube 38, which at both of its ends is provided with threads onto which nuts 40 are screwed, so that the single elemental parts 1'' may be pressed together to effect the pressure necessary for glueing. To avoid too strong a flattening of the elemental parts 1'' at pressing them together and to avoid damaging of the elemental parts, between adjacent elemental parts a wooden spacing element 39 (FIG. 16) is inserted, which can be produced from two core pieces 1' (FIG. 1). The upper surface 10 and the lower surface 11 of both spacing elements 39 are formed according to the curved mantle face of the elemental parts 1'' so that the elemental parts 1'' are snugly seated on the faces 10, 11. Such a stiffening by light metal tubes 38 and spacing elements 39, respectively, can also be used with an arrangement shown in FIG. 14 according to which full shells are combined with partial shells 2 to a block wall. As shown in FIGS. 13 and 14, between the single elements 1'' (FIG. 13) and 1 (FIG. 14), respectively, cavities 12 are formed, which extend over the entire lengths of these elements and which cause an excellent heat insulating effect. For the purpose of forming such cavities also in the embodiment shown in FIG. 18, with which the partial shells 2 are connected to two walls extending essentially in parallel relation by means of a stiffening ledge 32 and the partial shells of these two walls are not in contact with one another, covering leaves 43 of insulating card board or the like can be provided, which connect the edges of opposed partial shells 2 between two adjacent stiffening ledges 32. Herewith, as shown in FIG. 17, the partial shells 2 are formed with grooves 42 as is the case with the stiffening ledges, so that the partial shells 2 with its longitudinal edge 13 engage the stiffening ledge 32, while the other longitudinal edge 41 is either bluntly put onto the outer mantle face of the adjacent partial shell 2 or is connected with the mantle face by means of mortise and tenon 14, as shown in FIG. 18.

FIGS. 20 and 28 show a twin wall construction element, where each stiffening element consists of a pair parallel ledges 33, 33a. These ledges 33, 33a preferably are machined out of the core piece 1' (FIG. 1). The ledge 33 and the ledge 33a, respectively, are connected with the wall formed of partial shells 2 by dove tail 45 and 44, respectively. In the case that the connection between the walls formed of the partial shells 2 does not provide the necessary security, in the cavity 15 located between the ledges 33, 33a a ledge 46 (FIG. 22) may be inserted, which will be glued with the ledges 33 and 33a. This ledge 46 may protrude over the lateral margin of the construction element in question, as shown in FIG. 22, and so serve for connecting purposes with adjacent construction elements. Adjacent partial shells of adjacent construction elements may also be connected by mortise and tenon connection 14. As shown in FIG. 22 tenon 15 may extend over the entire length of the partial shell 2 or only provided in certain longitudinal portions thereof.

Of course it is also possible to bluntly connect adjacent construction elements a, b (FIG. 20), i.e. to glue them with one another at the joints 16.

FIG. 23 shows another embodiment of a connection of adjacent construction elements a, b. Here, onto the stiffening ledge 32 connection ledge 17 is screwed or glued, which extends over the joint 16 at which the two construction elements a, b contact one another.

FIGS. 24 and 25 show how to connect construction elements *a*, *b* by means of stiffening elements having the form of tubes. Into the lower end of the stiffening tube 38*a* of the upper construction element *a* a sleeve 48 is inserted, f.i. by welding. This sleeve 48 with its lower end engages into the upper end of the stiffening tube 38*b* of the lower construction element *b*, which has a bore 18 in which a pin screw 49 is arranged, the head of which abuts against the upper end of the sleeve 48. Further, into the lower tube 38*b* a ring 19 provided with thread 50 is put and fixed by welding, whereby into the thread of the ring 19 the thread of the pin screw 49 may be screwed by introducing into the tube 38*a* a box-spanner. At the joint, the spacing element 39 is divided into two halves 39*a'*, 39*b'*; the lower half 39*b* of which has a larger bore diameter for accomodating nuts 40.

FIGS. 26 and 27 show a ridge connection with which two construction elements *a*, *b*, obliquely cut in the range of the ridge 20, are connected by means of a stiffening triangle 51. Each construction element consists of full shells 1, which are connected to form a wave like cross section 27. The lower full shells are connected with the stiffening ledge 32 as by glueing or screwing at 53. Adjacent stiffening ledges 32 are connected with connecting ledges 17, f.i. by screwing, in a manner similar to that shown in FIG. 23. The connection ledges 17 and the stiffening ledges 32 may together have a trapezoidal cross section (FIG. 26) with which they are inserted into a trapezoidal recess 52*a* in the stiffening triangle 51. The stiffening ledges 32 and the connection ledges 17 may be connected with the stiffening triangle 51 also by means of screws 53.

FIGS. 28 and 29 show another embodiment of the connection at the ridge of a roof when using construction elements according to FIGS. 13 and 14. Here the stiffening triangle 51 is inserted between a wooden cushion 54 contacting the adjacent full shell 1 (FIG. 28) and the spacing element 39*b* which now has a greater length than in FIG. 25. The stiffening triangle 51 is fixed by means of nut 40. To enable introducing of the stiffening triangle 51, prior to introducing, a piece 55 is spared out of the full shell 1*a* (FIG. 28) and reinserted after fixing the stiffening triangle 51, f.i. by glueing. Of course, this shell piece 55 has a recess through which the lower horizontal side 52 of the stiffening triangle 51 protrudes. In the case of roofs of little span, instead of the stiffening triangle 51, a board 56 (FIG. 30) may be used, which is connected with the tubes 38 in a manner similar to that shown in FIG. 28.

Such roofs not only have but little weight but can also be mounted in a simple way and show a good heat and sound insulating effect. The construction elements can be provided with an impregnation at its surface. It is also possible to put onto the roof sheet material.

In the FIGS. 31 to 36 corner joints between construction elements are shown. The construction shown in FIG. 31 can be used with construction elements (FIGS. 13, 14), which are stiffened by tubes. In a manner similar to that shown in FIG. 25 the stiffening tubes 38, 38*b* of the construction elements are connected by means of a corner sleeve 48, welded with the tube 38*b* and connected with the tube 38*a* by means of a pin screw 49. The spacing elements 39*a*, 39*b* and also the full shells 1 of FIG. 25 are for better representation not shown in FIG. 31.

FIGS. 32, 33 show another corner joint for construction elements shown in FIGS. 13 or 14. The ends of the stiffening tubes 38 now are connected by C-shaped iron connecting pieces 58 or rectangular connecting angles 59 (FIG. 32), whereby the iron connecting pieces 58 and the connecting angles 59 respectively are fixed by the nuts 40.

FIGS. 34 and 36 show corner joints for construction elements as shown in FIGS. 20, 21 or 22, with FIG. 34, between the stiffening ledges 33 and the connecting ledge

46 the ends of connecting angles 21 (FIG. 35), which ends have the form of hooks 69, are inserted, whereby the connecting angles are stiffened by a cross piece 22. The hooks 69 are supported against the stiffening ledges 33, which, therefore, are connected with both walls by means of dove tail 45 and 45'.

FIG. 36 shows a construction similar to that shown in FIG. 34, whereby, for esthetical reasons only, head pieces 23 of compact wood are connected with the partial shells 2. The cylindrical mantle face of the head pieces 23 is similar to the mantle pieces of the partial shells 2. The metal connection angle 21 (FIG. 37) has the form of a cross, whereby its thorn 61, driven into the front pieces 23, fixes the head pieces to the corner joint. Hereby, the head pieces are connected with the construction elements and the partial shells 2 thereof by means of a 45°-bevel.

What I claim is:

1. A prefabricated construction element comprising a plurality of wooden elemental parts joined together, each of said elemental parts forming part of a circular hollow cylinder cut from a log coaxially of the log and generally along the annual rings thereof, said elemental parts being joined to form a unit, and a stiffening element rigidly supporting this unit with respect to its shape.

2. The prefabricated construction element as claimed in claim 1, wherein said wooden elemental parts are arranged side by side, said stiffening element extending in transverse direction relative to the axes of the elemental parts and rigidly connecting said elemental parts to form said unit.

3. The prefabricated construction element as claimed in claim 2, wherein said stiffening element is formed by a wooden ledge glued to said wooden elemental parts, said elemental parts being oblong and having a C- or U-shaped cross section, said cross section providing legs, whereby said wooden ledge is glued to said elemental parts adjacent the ends of said legs.

4. The prefabricated construction element as claimed in claim 3, wherein said ledge is provided with recesses receiving the ends of said legs of the cross section of said wooden elemental parts.

5. The prefabricated construction element as claimed in claim 3, wherein the ends of said legs of said wooden elemental parts are provided with recesses receiving said ledge.

6. The prefabricated construction element as claimed in claim 3, wherein said ledge and the ends of said legs of said wooden elemental parts are provided with recesses, said recesses of the ledge co-acting with said recesses of the legs so that the ledge is inserted in said legs when in assembled condition.

7. The prefabricated construction element as claimed in claim 3, wherein said wooden elemental parts form two walls, said walls being substantially in parallel relation with one another, said walls being connected with each other by means of said ledge.

8. The prefabricated construction element as claimed in claim 7, wherein in each of said walls one of said wooden elemental parts is opposed to one of said wooden elemental parts of the other of said two walls, so that said wooden elemental parts are arranged in pairs, means for joining each pair of wooden elemental parts in the region in which said pairs are not joined together by said ledge, so that between said two walls chambers are formed, said chambers extending substantially parallelly to the generatrices of said wooden elemental parts, said ledge extending transversely through said chambers.

9. The prefabricated construction element as claimed in claim 8, wherein at least two stiffening ledges are provided, said means for joining said pairs of said wooden elemental parts extending between two adjacent ledges.

10. The prefabricated construction element as claimed in claim 2, wherein said stiffening element is formed by a rod, said rod passing through said wooden elemental

parts, pressing means co-acting with said rod so as to join said wooden elemental parts to said unit, spacing elements being provided between two adjacent wooden elemental parts.

11. The prefabricated construction element as claimed in claim 10, wherein said pressing means are formed by nuts, screw threads being provided on said rod, said nuts being screwed on said screw threads.

12. The prefabricated element as claimed in claim 10, said spacing elements being formed by bushings, said bushings surrounding said rod and having front ends, said front ends of said bushings being shaped according to the shape of the circumference of the adjacent one of said wooden elemental parts.

13. The prefabricated construction element as claimed in claim 2, wherein said stiffening element is formed by a stiffening ledge, said wooden elemental parts having front ends, said stiffening ledge being arranged at said front ends in a manner projecting over these front ends, said stiffening ledge being shaped so as to serve as a support for the construction element.

14. The prefabricated construction element as claimed in claim 2, wherein said stiffening element is provided with connection means, said connection means serving for connection of adjacent construction elements in assembled condition.

15. The prefabricated construction element as claimed in claim 14, wherein said connection means are formed by an extension of each of said stiffening ledges, a recess being provided, said recess being formed corresponding to said extension of said stiffening ledge so that said stiffening ledge is engageable by said recess of the adjacent construction element when in assembled condition.

16. The prefabricated construction element as claimed in claim 14, wherein rods are provided which pass through said wooden elemental parts, pressing means co-acting with said rods to join said wooden elemental parts to a unit, said rods being hollow so that they have the form of tubes, threads arranged in each of these tubes, a pin screw adapted to be screwed into said threads, an abutment within said tube, said pin screw being adapted to be supported by said abutment.

17. The prefabricated construction element as claimed in claim 14, wherein said connection means are formed by ledges adapted to be screwed onto said stiffening elements, said stiffening elements being formed of ledges.

18. The prefabricated construction element as claimed in claim 14, wherein said connection means are formed by a ledge, a slot being provided in the adjacent construction element provided with two adjacent stiffening ledges, said slot being confined by said two adjacent stiffening ledges, said connection ledge being adapted to be introduced into said slot when in assembled condition.

19. The prefabricated construction element as claimed in claim 14, rigid connection parts for connecting two construction elements when corner joints are to be made, said connection parts being adapted to be connected with said connection means and said stiffening means.

20. The prefabricated construction element as claimed in claim 19, wherein said connection parts are formed by metal angles having ends, said ends being provided with hooks, said hooks being adapted to be connected with said connection means and said stiffening elements.

21. A prefabricated construction element comprising a plurality of wooden elemental parts joined together, each of said elemental parts forming part of a circular hollow cylinder cut from a log coaxially of the log and generally along the annual rings thereof, said elemental parts being joined to form a unit, and a stiffening element rigidly supporting this unit with respect to its shape, said stiffening element being provided with an upper surface, said upper surface being formed as the surface of a circular cylinder, said wooden elemental parts being assembled onto said stiffening element over parts of the axial length of said stiffening element in at least one layer, said wooden elemental parts being rigidly connected with said stiffening element, the generatrices of said hollow cylindrical wooden elemental parts being parallel with respect to the generatrices of the cylinder-shaped upper surface of said stiffening element.

22. The prefabricated element as claimed in claim 21, wherein said wooden elemental parts are glued to said stiffening element.

23. The prefabricated element as claimed in claim 2, adjacent ones of said wooden elemental parts being glued with one another.

24. The prefabricated construction element as claimed in claim 1, wherein the wooden elemental parts are bent out of their longitudinal axis and are glued together after this bending so that the generatrices of these wooden elemental parts are curved, whereby all elemental parts together form a pre-stressed plate.

References Cited

UNITED STATES PATENTS

1,978,494	10/1934	Junkers	52—586 X
2,619,686	12/1952	Dombrowski	52—233
2,635,303	4/1953	Poynter	52—233 X
2,669,060	2/1954	Kalvig	52—233 X
2,700,799	2/1955	Griffith	52—233
2,787,029	4/1957	Johnson	52—220 X

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