Jan. 14, 1947. J. COUËLLE 2,414,094

BUILDING FRAMEWORK

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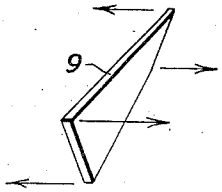


Fig. 1.

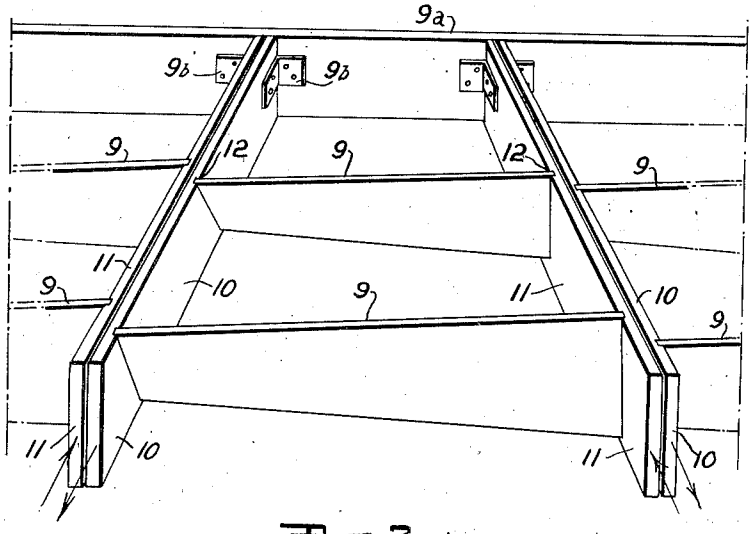


Fig. 2.

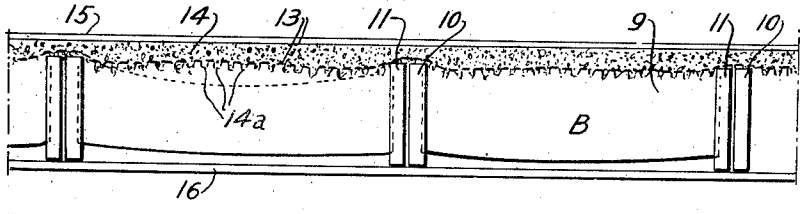


Fig. 3.

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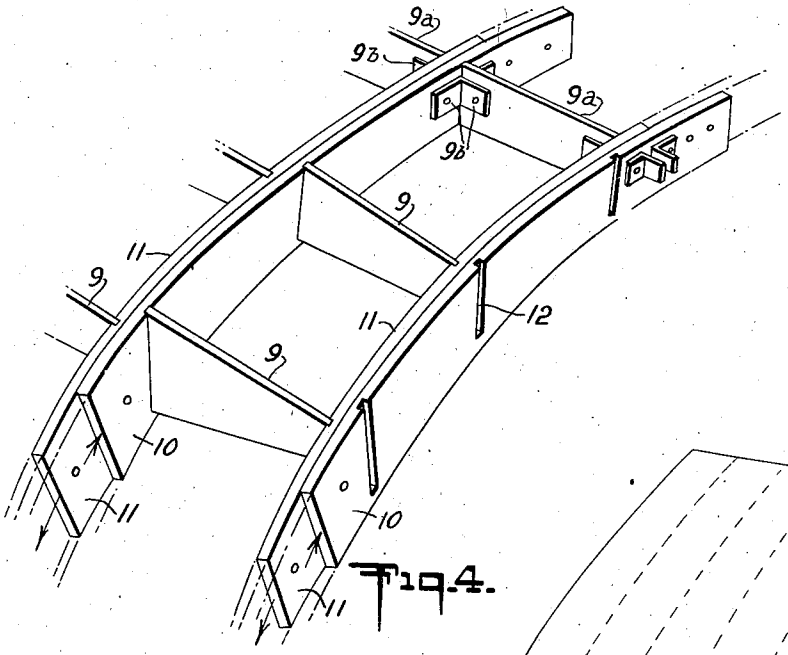


Fig. 4.

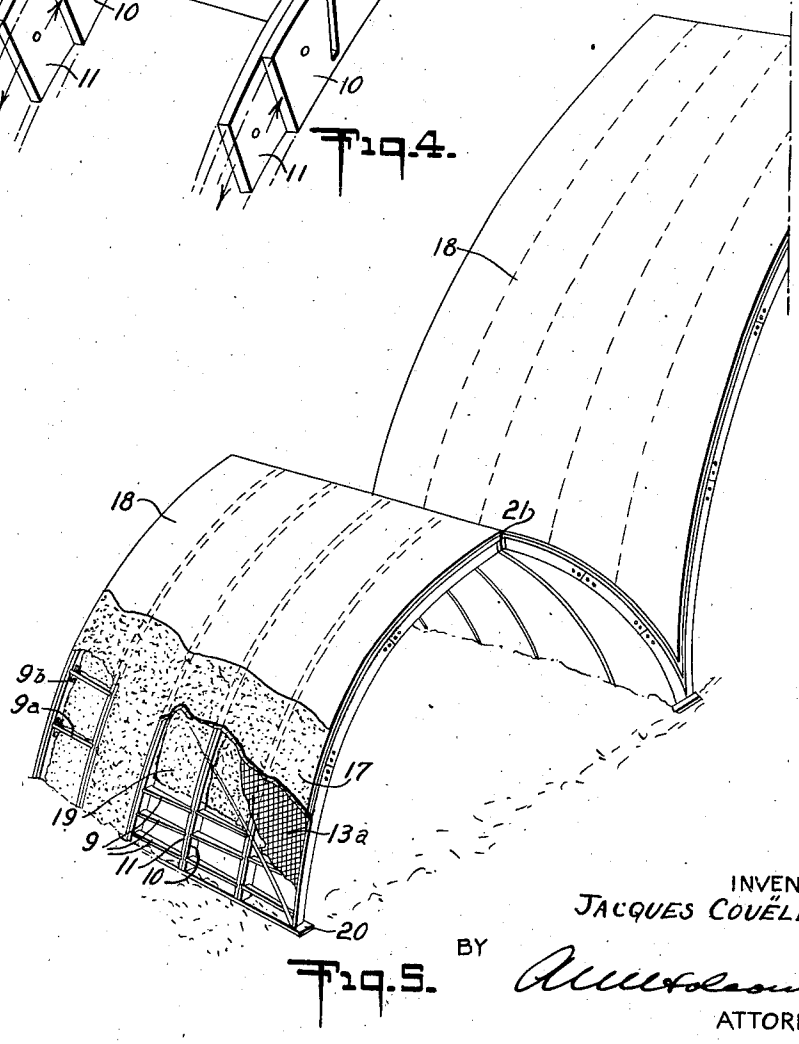


Fig. 5.

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BUILDING FRAMEWORK

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Application January 31, 1942, Serial No. 428,980

9 Claims. (Cl. 20—1)

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This invention relates to framework formed of relatively light planks of wood or other material, and the primary object of the invention is to provide frameworks of this character of larger size and greater strength than have heretofore been available, by associating the planks in a novel manner under tension.

Other important objects and advantages of the invention will be apparent in the following description and the accompanying drawings, wherein for purposes of illustration only, preferred embodiments of the invention are set forth.

In the drawings:

Figure 1 is a perspective view of a plank showing it twisted to endow it with tension in accordance with the present invention.

Figure 2 is a fragmentary perspective view showing an embodiment of the present invention in a framework for supporting flooring or the like.

Figure 3 is a sectional and elevational view on a reduced scale showing completion of flooring on a framework of the type shown in Figure 2.

Figure 4 is a fragmentary perspective view of an embodiment of the invention in heavy framework of curved construction, and,

Figure 5 is a group perspective view partly in elevation and partly diagrammatic, of constructions of different sizes utilizing the type of framework illustrated in Figure 4, and partly broken away to show structural details.

It is well known that planks of such material as young green wood react strongly when placed under tension by twisting them, and that the resultant tension endows the planks with very substantial strength and resistance to other stresses when assembled in such tensioned condition, which the planks would not have in their ordinary state of rest. Because of these phenomena, I find it possible to provide larger and stronger frameworks constructed from planks of much lighter than usual material and of smaller than usual cross section, through assembling the planks under tension as disclosed herein.

The embodiment of the invention shown in Figure 2 of the drawings, is a framework for supporting flooring or the like, consisting of at least one joist or the like 9*a* with at least two longitudinal laterally spaced members each composed of planks 10 and 11, with their ends rigidly connected as at 9*b* to the joist, and with transverse members 9 having their opposite ends anchored, as in saw slots 12 cut in the planks, the transverse members 9 being longitudinally twisted as indicated in Figure 1, and the saw slots

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12 being oppositely angulated to receive the twisted ends and thereby hold the transverse members 9 in their twisted condition. The tension exerted by the twisted cross members 9 on the planks 10 and 11 stresses these planks and hence the entire framework, and thereby the framework has rigidity and resistance to distortion by outside stress substantially greater it would otherwise have with the component elements not under internal stress.

Flooring can be made by placing on the framework of the type illustrated in Figure 2, a frame 13, on which is then spread a concrete beton 14 which clings to the frame and enters the perforations 14*a* thereof. A coating 15 completes the readiness of the frame 14 to receive the parquet, brick or other flooring on its upper part, while its lower part is ready to receive the elements 16, such as reeds or laths which can support a coating, forming the airspaces B between this coating and the flooring 15, the coated elements 16 forming the ceiling for the next lower story or the like.

Referring now to Figures 4 and 5 of the drawings, showing heavy framework in accordance with the present invention, in a curved form, and utilizing the construction shown in Figure 3, there are present the framing 12*a*, light mortar 17, and a tight coating 18, and the interior panels 19 of cork, laminated wood, agglomerates or other materials suited to the particular use for which the building is intended.

The framework of the present invention can be satisfactorily made from fresh cut green young wood. Also, if desired, in the constructions shown in Figures 2 and 3, the framing B may be omitted and the airspaces B taken up by some porous filling leaving the wood free to breathe, in which cases the flooring 15 and the ceiling forming elements 16 are fixed directly to the beams 10 and 11.

An important feature of the invention is that units such as shown in Figure 2 of the drawings made be standardized and made portable, so that they can be readily transported to the job and be set up by the workmen, the joining of the required assemblies being easily effected by means of bolts or the like. In the arrangement of Figures 4 and 5, the wall plates 20 and ridge poles 21 may be in sections accommodating one or more of the building units described hereinabove. It will be apparent that the present invention is readily adaptable for the construction and lining of such buildings as tunnels, silos, bins and the like.

I claim:

1. A building framework comprising at least two relatively rigid elongated longitudinal members, means fixing said longitudinal members in laterally spaced relation, at least two elongated transverse members extending between the longitudinal members, said transverse members being relatively flexible and having the opposite ends twisted in opposite directions in a manner to impose persistent torsional stresses thereon, and means fixedly securing the twisted ends of the transverse members to the corresponding longitudinal members in a manner to transmit the stresses of the transverse members to the longitudinal members.

2. A building framework according to claim 1 wherein said longitudinal members are formed of wood and are of relatively large cross section, and wherein said transverse members are formed of wood and are of relatively small cross section.

3. A building framework according to claim 1 wherein said longitudinal members are formed of wood and are of relatively large cross section, and wherein said transverse members are formed of wood and are of relatively small cross section and have the grain of the wood running longitudinally therein.

4. A building framework according to claim 1 wherein said longitudinal members are formed of wood and are of relatively large cross section, and wherein said transverse members are formed of wood and are of relatively small cross section and have the grain of the wood running longitudinally therein and substantially coaxial with the axis of the twisting stresses present in the opposite ends of said transverse members.

5. A torsion resistant prefabricated unit for building framework construction, said unit comprising a frame comprising at least two elongated relatively rigid longitudinal members, at least two rigid cross members connected to and between opposite end portions of and laterally spacing said longitudinal members in fixed relationship, at least two elongated transverse members within said cross members and extending between the longitudinal members, said transverse members

being substantially more elastic than said longitudinal members and having their opposite ends twisted in opposite directions in a manner to impose persistent torsional stresses in said transverse members, and means fixedly securing the twisted ends of said transverse members to the corresponding longitudinal members in a manner to impose some of the stresses of said transverse members on said longitudinal members.

6. A torsion resistant prefabricated unit for building framework construction according to claim 5, wherein said longitudinal members are formed of wood and are of relatively large cross section, and wherein said transverse members are formed of wood and are of relatively small cross section.

7. A torsion resistant prefabricated unit for building framework construction according to claim 5, wherein said longitudinal members are formed of wood and are of relatively large cross section, and wherein said transverse members are formed of wood and are of relatively small cross section and have the grain of the wood running longitudinally therein and substantially on the axis of the twisting stresses present in the opposite ends thereof.

8. A torsion resistant prefabricated unit for building frame construction according to claim 5, wherein said unit is made of relatively thin planks of light wood, and wherein said longitudinal members are made of at least two plies of such planks and said transverse members are made of single planks.

9. A torsion resistant prefabricated unit for building frame construction according to claim 5, wherein said unit is made of relatively thin planks of light wood, and wherein said longitudinal members are made of at least two plies of such planks and said transverse members are made of single planks, and wherein the twisted ends of the transverse members are secured to the longitudinal members in slots formed in the sides of the longitudinal members in which the twisted ends of the transverse members are inserted.

JACQUES COUËLLE.