

No. 683,391.

Patented Sept. 24, 1901.

B. F. ELLIS.
TANK.

(Application filed Feb. 11, 1901.)

(No Model.)

Fig. 1.



Fig. 2.

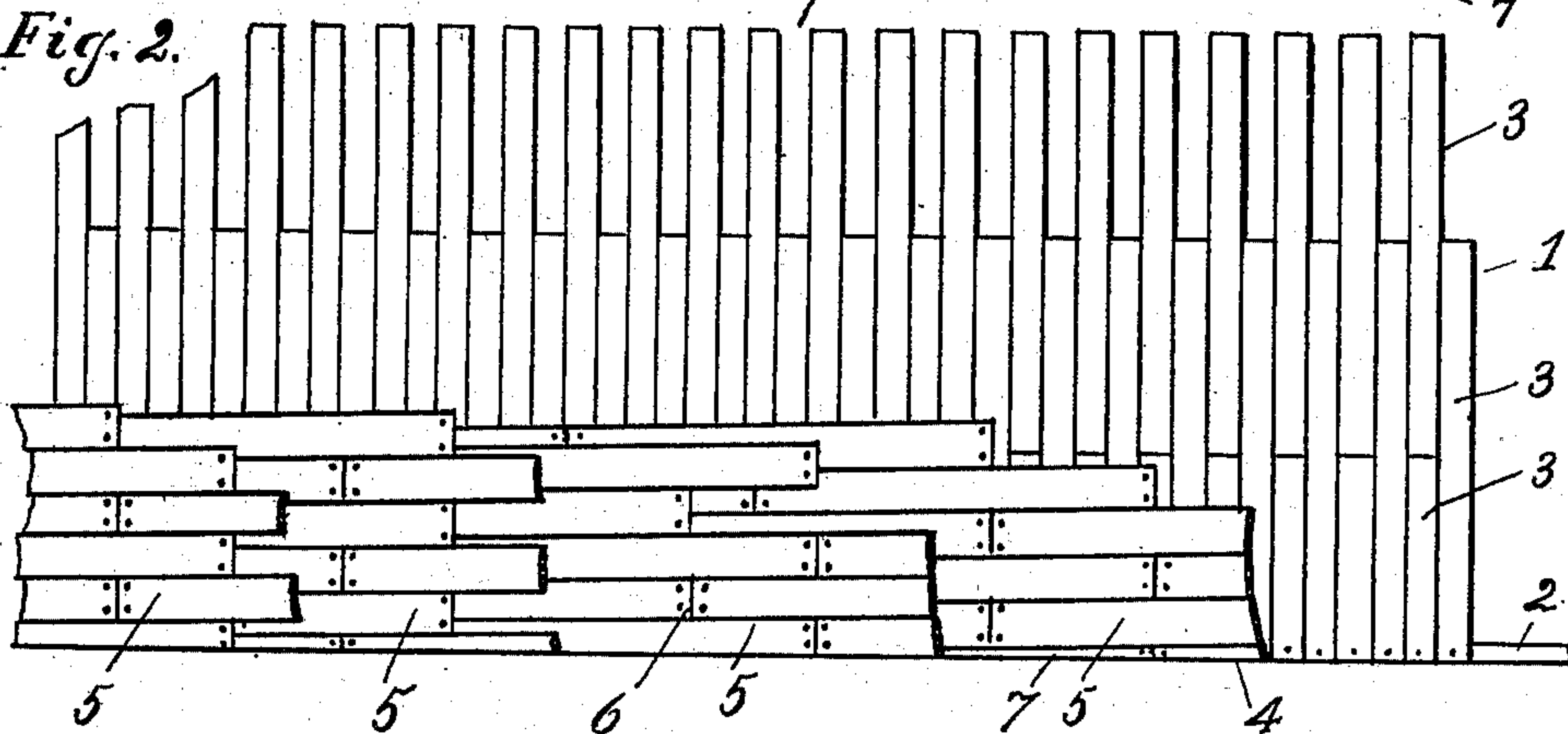


Fig. 3.

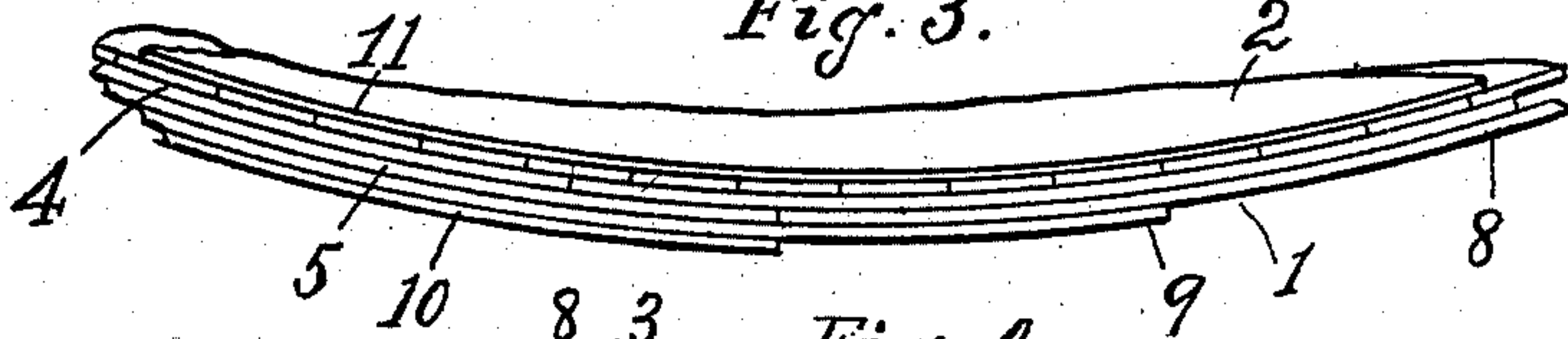
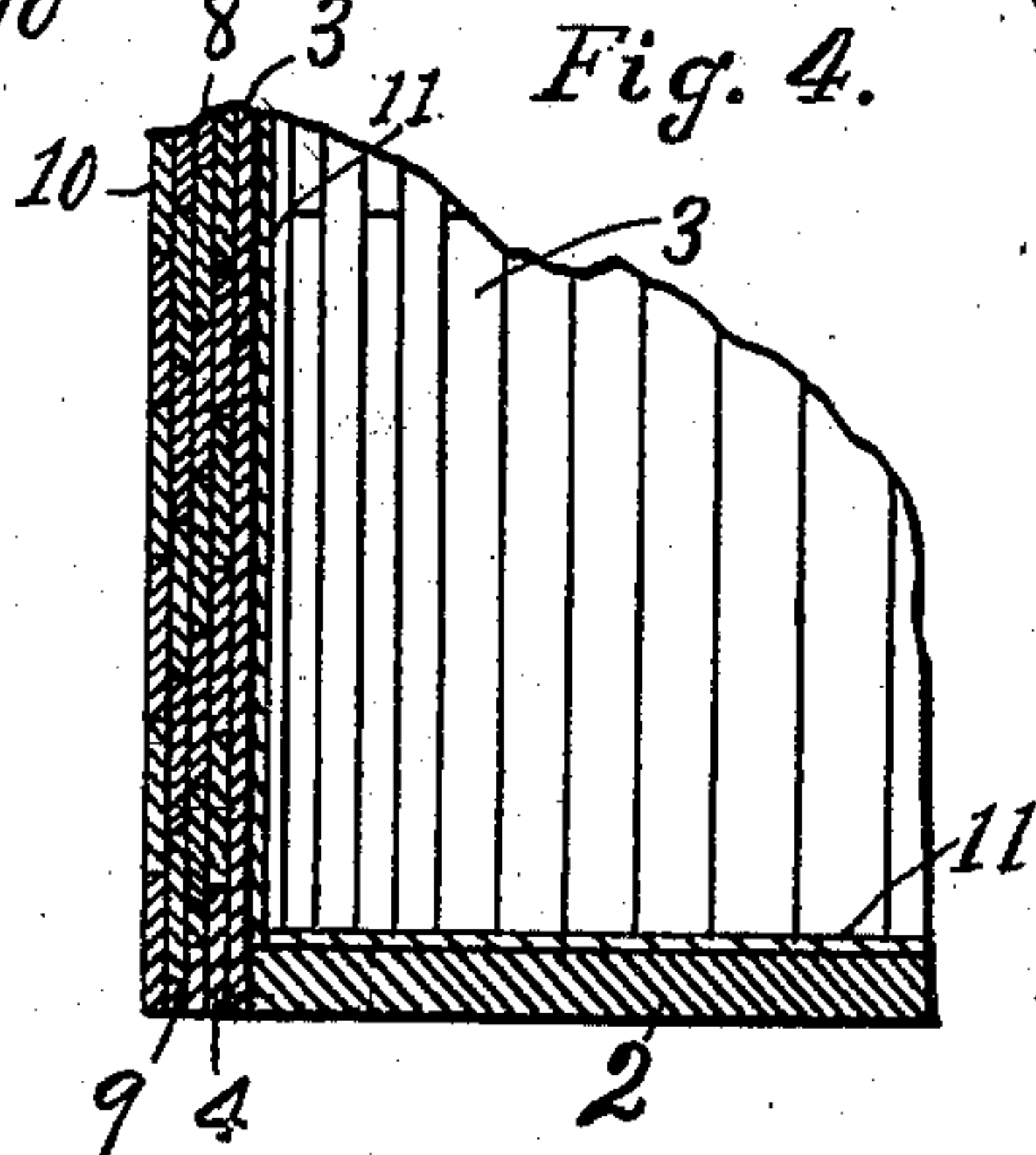


Fig. 4.



WITNESSES:

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TANK.

SPECIFICATION forming part of Letters Patent No. 683,391, dated September 24, 1901.

Application filed February 11, 1901. Serial No. 46,927. (No model.)

To all whom it may concern:

Be it known that I, BENJAMIN F. ELLIS, a citizen of the United States, residing at Berkeley, in the county of Alameda and State of California, have invented certain new and useful Improvements in Tanks, of which the following is a specification.

My invention relates to improvements in tanks, the object of my invention being to provide a tank which shall be more economical in construction than those heretofore made.

Wooden tanks as at present constructed are formed of vertical staves of wood bound together with hoops of iron. In this construction the pressure of the liquid contained in the tank is resisted almost entirely by the iron hoops, the wood serving merely as a casing to transmit the pressure from the liquid to the hoops. When large tanks are required, the material made use of is generally iron on account of the great resistance required to be offered to the pressure of the liquid.

The object of my invention is to provide an improved construction of wooden tank which shall be as strong as an iron tank of the same dimensions, while costing much less. The tensile strength of iron is five or six times that of wood, but the cost is very much more than that. Therefore by using wood in such a manner that its tensile strength may be made use of the construction of the tank can be cheapened. In the present method of constructing wooden tanks the tensile strength of the material is hardly utilized at all. My object is to utilize the tensile strength, and thereby economize in construction.

In the accompanying drawings, Figure 1 is a side elevation of a tank constructed in accordance with my invention. Fig. 2 is an enlarged elevation of a portion of the tank in the process of construction. Fig. 3 is an enlarged horizontal section of a portion of the tank, and Fig. 4 is an enlarged vertical section of a portion thereof.

Referring to the drawings, 1 represents my improved tank, having a bottom 2 of common construction. I form the wall of the tank in the following manner: To the edge of the circular bottom of the tank are nailed short upright staves 3 of varying lengths, fitting closely side by side and forming a complete annulus

around said circular bottom. Around the lower edge of said annulus is nailed a ring or coil 4, formed by a succession of bent wooden boards 5, arranged with abutting ends, as shown at 6, the first board so secured being pointed at one end, and said board and the succeeding boards gradually increasing in width around the bottom 2, as shown at 7, until the full width has been reached, which it is desired shall be the uniform width of the succeeding boards. Other boards of uniform width are then nailed in like manner on the upright staves 3 in succession, thus forming a spiral coil of bent boards around the annulus formed by the staves 3. When this coil has reached the height of the top of the shortest staves, other staves 3 are inserted between the longer staves, with their lower ends resting on the top of the short staves, and the inner annulus is maintained complete and is gradually extended in height to correspond with the height of the coil 4. In this manner said coil and annulus are carried to the height to which it is desired to erect the tank. While the first coil 4 is being constructed as described a second coil 8 is begun and constructed around the first coil precisely in the same manner as the first, care being taken to break joints with the first coil both vertically and horizontally, as clearly shown in Figs. 3 and 4, and when the second coil has reached a sufficient height other coils 9 10 are added in successive laminations, the number of such laminations varying with the pressure to be resisted. I have herein shown four such laminations; but for a larger tank more than four laminations will be used and for a smaller less.

By reason of the laminations being nailed together at frequent intervals and being formed of long thin bent boards, the joints between which are broken in successive laminations, said laminations form substantially a continuous annulus resisting the outward pressure of the inclosed liquid by the tensile strength of the boards, and the vertical staves being all nailed at frequent intervals to the several coils are as firmly bound together and held in place as if they were as long as the height of the tank.

The interior of the tank will be lined, as

shown at 11, to render the same liquid-tight, as by pitching the same inside for water or lining with sheet metal for oil.

I have herein shown the laminations as formed of boards spirally arranged, that being the preferred form of my invention; but I do not desire to limit my claims thereto, as the laminations may also be made of vertically-successive rings of boards without departing from the spirit of my invention.

I claim—

1. A tank comprising a circular base, upright staves having their sides at their lower ends in contact with the cylindrical periphery of said base, and nailed thereto, fitting closely side by side, and forming a complete annulus around said base, and concentric laminations, each lamination being formed of bent boards having abutting ends, the joints between the boards being broken vertically and horizontally and the whole firmly bound together by nails through the laminations and annulus, substantially as described.

2. A tank comprising a circular base, upright staves nailed at their lower ends to the periphery of said base, fitting closely side by side and forming a complete annulus around said base, and of length less than the height of the tank, and staves supported upon the first-named staves, vertically-successive staves having abutting ends, and annularly-successive staves breaking joints, and concentric laminations, each lamination being formed of bent boards having abutting ends, the joints between the boards being broken vertically and horizontally and the whole firmly bound together by nails through the laminations and annulus, substantially as described.

In witness whereof I have hereunto set my hand in the presence of two subscribing witnesses.

B. F. ELLIS.

Witnesses:

FRANCES M. WRIGHT,
Z. A. DANIELS.