

No. 755,749.

PATENTED MAR. 29, 1904.

G. T. COOLEY.
JIG TANK.

APPLICATION FILED DEC. 19, 1901.

NO MODEL.

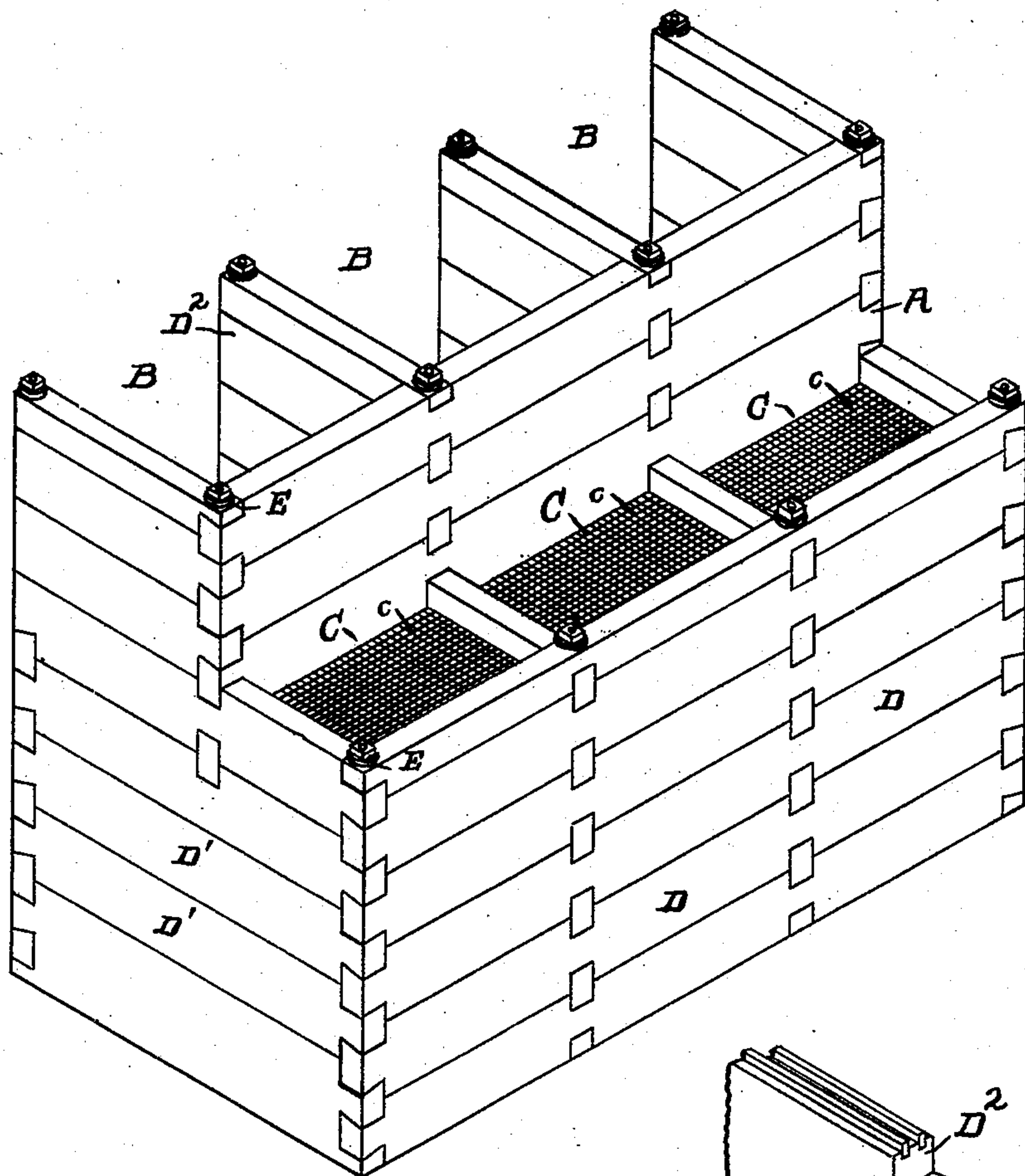


FIG. 1.

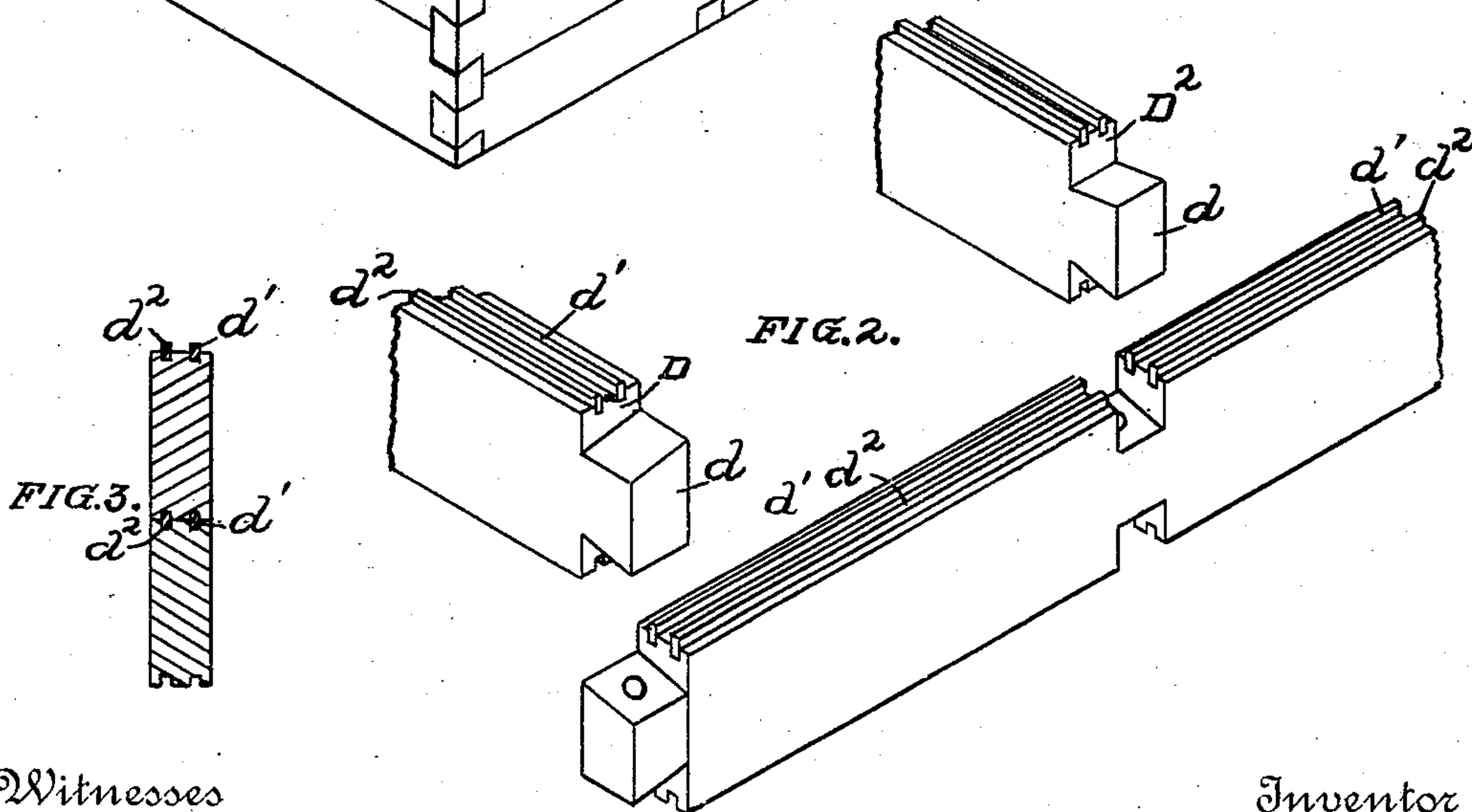


FIG. 2.

FIG. 3.

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JIG-TANK.

SPECIFICATION forming part of Letters Patent No. 755,749, dated March 29, 1904.

Application filed December 19, 1901. Serial No. 86,551. (No model.)

To all whom it may concern:

Be it known that I, GEORGE T. COOLEY, a citizen of the United States, residing at Oronogo, in the county of Jasper and State of Missouri, have invented certain new and useful Improvements in Jig-Tanks, of which the following is a specification.

Jig-tanks as usually constructed consist of heavy timbers permanently secured together, forming a solid and massive structure. The construction of a tank of average size requires some hundreds of pounds of nails and the work of skilled men, and the tanks have heretofore been built in factories and shipped to the place of use. A pair of tanks of average size constitutes a car-load, and it is obvious that such tanks cannot be transported to mining-camps beyond the territory of railroads or well-made roads. Jig-tanks are often required for use in rough mining countries remote from railways or well-made roads, where the only carriers are the man, the pack-mule, or the jack and where it is practically impossible to transport bulky apparatus. There has long been a recognized demand for a jig-tank which could be constructed in the factory, shipped in knockdown shape, transported in parts of comparatively light weight, and the parts readily assembled by unskilled workmen where required for use. Numerous attempts have been made to supply this demand, but without success. The downward strokes of the plunger produce an intense bursting pressure on all the water-inclosing walls, which is followed by a period of rest or non-pressure. The intermittent or pulsating pressure forces the water through the joints between the timbers. The walls of the tanks are soon thoroughly soaked with water and owing to their thickness never dry. The tanks are consequently moist, slimy, and unsightly and impart their moisture to their surroundings. The ever-present dampness rots the timbers and rusts the nails, and the heavy intermittent bursting strains soon destroy the walls and ruin the tank.

One of the objects of my invention is to provide a jig-tank which may be constructed in the factory, shipped in knockdown shape,

transported wherever man or beast can go, and set up by unskilled workmen.

Another object is to provide a jig having joints which will prevent the passage of water under the highest pressure.

My invention consists in the parts and construction and arrangement of the parts hereinafter described and claimed.

In the drawings, Figure 1 is a perspective view of a series of jig-tanks embodying my invention; Fig. 2, a perspective view, on an enlarged scale, of portions of the timbers comprising the jig-tanks; and Fig. 3, a transverse vertical section through two adjoining timbers.

Reference-letter A denotes a jig-tank; B, a plunger-compartment of the jig-tank; C, a separating-compartment; D, D', and D², side, end, and partition timbers, respectively, of the tanks A, and E bolts passed through the joints of the tanks.

The tanks A consist of plunger-compartment B and separating-compartment C, having open communication at the bottom. In operation a plunger is reciprocated in compartment B to produce intermittent upward currents of water through sieve *c* in compartment C. The form of the mechanism for producing and utilizing these upward currents constitutes no part of this invention and may be any of the usual mechanisms for that purpose. At the time of the downward stroke of the plunger in compartment B to produce the upward current through the sieve *c* an intense momentary bursting pressure is exerted on all the water-inclosing walls of the tank, followed by a period of rest or non-pressure when the plunger ascends. This intermittent or pulsating pressure is very trying on the walls of the tank, soon causing them to spread and leak.

To permit of shipping the jigs in knockdown form, I construct them with a peculiar dovetailed corner-joint, and to prevent the passage of water through the joints between the timbers I provide a dead-water space. The corner-joints are constructed by dovetailing the side and end timbers together by means of tongues *d* on the timbers having upper and

lower surfaces beveled at right angles to each other and drawing them together by bolts passed vertically through the tongues. In the form of the joint shown in Fig. 2 the upper surface of the tongue on side timbers D and the lower surface of the tongues on end timbers D' are beveled in the planes of the ends of the jig-tank, thus tending to resist direct outward movement of timbers D, while the lower surface of the tongue on timbers D and the upper surface of the tongue on timbers D' are beveled in the planes of the sides of the jig-tank, thus preventing direct outward movement of timbers D', so that when bound together by bolts E these surfaces tend to prevent movement of either timber, and the more the actual movement and the more pressure the tighter are they pressed together to prevent leakage. Owing to the double bevel of the tongues of the timbers outward movement of the timber must cause upward movement of those above from those below. This upward tendency is resisted and prevented by the threads on the bolts and nuts, so that before such movement can take place the threads must be sheared off, the nuts loosened, or the bolts broken by a tensile strain. Thus the intense outward bulging or bursting strains of the pulsations are converted into upward strains on the nuts and bolts, so that there is, in effect, no bending on the bolts, but a tensile strain, which they are best adapted to withstand. This, it will be noted, is the most advantageous utilization of a nut-and-bolt connection. The joints between the partition-timbers D² and side timbers D are only beveled to prevent the movement of the timbers D outwardly, as timbers D² have no tendency to move, being held by pressure on both sides. Between the joints leakage is prevented by setting two fillets d' and d'' in longitudinal grooves cut in the edges of the timbers some distance apart, the space between the fillets and the upper and lower edges of the timbers constituting a dead-water space. By this construction any water which is forced around the first fillet d' enters the comparatively large dead-water space against intense friction and in comparatively small

quantities, so that the water in the dead-water space can never have as much pressure to force it around the second fillet d'' as the water entering the space had to force it around the first fillet.

Experience has demonstrated that it is practically impossible to prevent the passage of water through jig-tank joints by a single fillet; but I find that by the use of two fillets and an intervening dead-water space a reduction in pressure and in the effect of the pulsations is obtained sufficient to wholly prevent leakage.

While I have shown and described my invention as applied to jig-tanks, it is obviously applicable to other structures in which the requirements are analogous.

I claim as my invention—

1. A jig-tank constructed of separate side timbers, having interlocking tongues to form the corner-joints, said tongues being beveled in the planes of the meeting sides, and held together by draw-bolts passing through the tongues, substantially as specified.

2. A jig-tank constructed of separate side timbers, having interlocking tongues to form the corner-joints, said tongues having one of their interlocking surfaces beveled in the planes of one of the meeting sides and the other surface beveled in the planes of the other meeting side, and held together by draw-bolts passing through the tongues, substantially as specified.

3. A jig-tank composed of planks laid one above the other, and having the seams between the planks packed by two longitudinal packing-strips having a dead-water space between them, substantially as specified.

4. A tank having dovetailed corner-joints with the engaging surfaces of the members beveled in the planes of the two meeting sides of the vessel, and its seams packed by two longitudinal packing-strips having a space between them, substantially as specified.

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Witnesses:

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