May 10, 1932. R. L. LEWIS 1,857,560

TIE MEMBER FOR TANKS

Filed April 15, 1929

Fig. 1

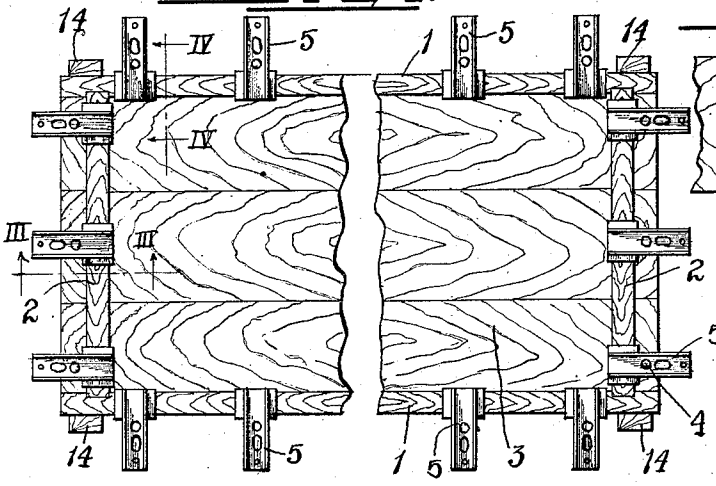


Fig. 6

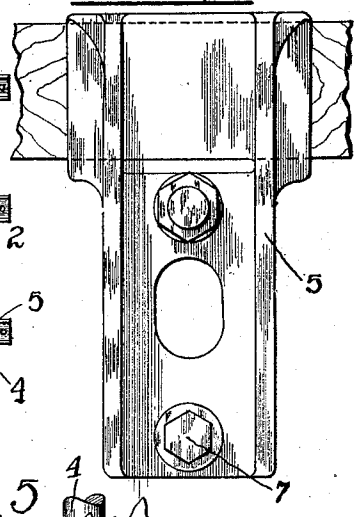


Fig. 2

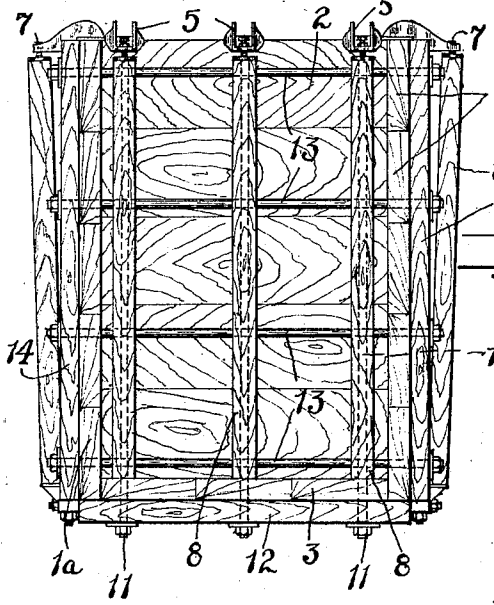


Fig. 5

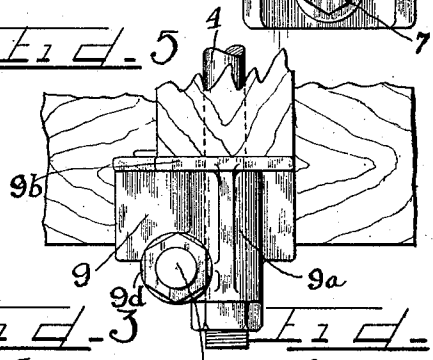


Fig. 3

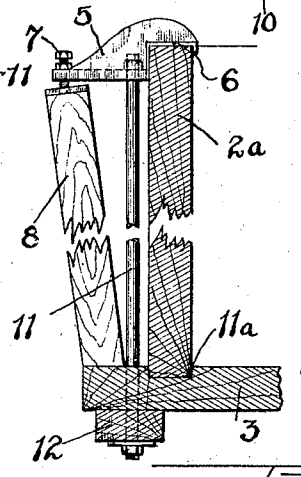
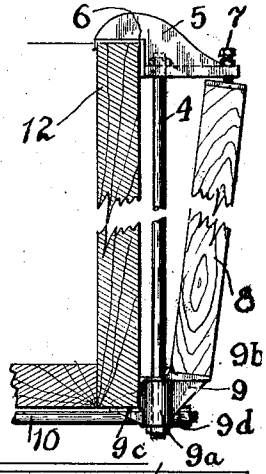


Fig. 4



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UNITED STATES PATENT OFFICE

ROBERT L. LEWIS, OF BATAVIA, ILLINOIS, ASSIGNOR TO CHALLENGE COMPANY, OF BATAVIA, ILLINOIS, A CORPORATION OF ILLINOIS

TIE MEMBER FOR TANKS

Application filed April 15, 1929. Serial No. 355,029.

This invention relates to a tank primarily designed for containing an acid solution for pickling steel and other iron products, and for other purposes.

On account of the action of the acid, such tanks are usually made of wood since the cost of acid resisting metals is usually prohibitive. These tanks are usually constructed from horizontal boards or planks placed upon edge and clamped down by rods or the like, and they nearly always have a tendency to bulge or buckle, creating leaking cracks in the walls. It is an object of this invention to overcome this bulging or buckling tendency in the walls of the tank in the provision of clamping means that exercises a straight downward pull. It is a further object of this invention to eliminate the usual rod holes in the center of planks by placing the tie rods outside of the tank.

The invention comprises the novel structure and combination of parts hereinafter described and more particularly pointed out and defined in the appended claims.

In the accompanying drawings which illustrate a preferred form of this invention and in which similar reference numerals refer to similar features in the different views.

On the drawings:

Figure 1 is a top plan view of a pickling tank involving this invention.

Figure 2 is an end elevational view of such tank.

Figure 3 is an enlarged sectional view taken upon the line III—III of Figure 1.

Figure 4 is an enlarged sectional view taken upon the line IV—IV of Figure 1.

Figure 5 is an enlarged elevational view of a lower clamping member.

Figure 6 is an enlarged top plan view of an upper clamping member.

As shown on the drawings:

In the drawings, the pickling tank or vat is shown as a rectangular wooden box-like structure consisting of sides 1, ends 2 and a bottom 3. The bottom 3 consists of suitable boards or planks arranged side by side. The sides 1 consist of suitable boards or planks 1*a* arranged edge upon edge to form a wall. The planks forming the sides of the vat are clamped together by means of rods 4 which are secured at their upper ends to head clamping members 5 provided with right angled rabbets 6 (Figure 4) to fit over the upper edges of the top planks of the sides. These head clamps extend outwardly a short distance and set screws 7 pass therethrough for engaging the tops of inwardly inclined struts 8. The lower ends of the struts 8 rest upon lower clamping members 9. Each lower clamping member consists of a vertical cylindrical bearing portion 9*a* to receive the rod 4, a horizontal rest 9*b* upon which the lower end of the strut 8 rests and a foot 9*c* extending under the side wall of the tank. Each lower clamp 9 is also provided with a horizontal cylindrical bearing 9*d* to receive a transverse rod 10.

The ends of the tank or vat are also formed of boards or planks 2*a* placed edge upon edge. The floor is preferably grooved transversely adjacent its ends as indicated at 11 (Fig. 3) to receive the lower edges of the end walls. It will be noted that the floor extends beyond the end walls and supports the lower ends of end struts 8 which incline outwardly and are engaged by set screws 7 extending through end clamps 5 which are duplicates of the side clamps. End tie rods 11 connect the end clamps 5 with the floor. The end tie rods preferably extend through the floor and through reinforcing members or beams 12 extending transversely below the floor.

With reference to Fig. 1, it will be noted that the sides of the tank are co-extensive with the bottom and extend beyond the end boards and that the ends of the end boards fit in grooves in the inner surface of the sides. To snugly maintain the sides against the ends, suitable end tie rods 13 connect the said sides. Reinforcing uprights 14 are placed in the plane of the tie rods 13 and the ends of the tie rods 13 extend therethrough. The ends of the tie rods 13 and also the other tie rods 4, 10 and 11 are provided with adjustable nuts so that the parts can be tightly clamped together. The horizontally extending tie rods merely function to hold the walls of the tank or vat together. The vertical tie rods 4 and 11 however serve to hold the

planks or boards tightly together to prevent leakage therebetween. It is therefore necessary that the vertical tie rods be tightly adjusted, which results in putting the same under severe tension.

The tension of the vertical tie rods has a tendency to buckle or bulge the sides or ends of tank if the pull of the tie rods exercises an eccentric or turning movement. According to this invention, any such eccentric or turning movement is largely eliminated through the struts 8 which support the outer ends of the clamping member and as the relation between the struts 8 and clamps 5 may be adjusted by the set screws 7, it is obvious that a straight line pull may always be maintained upon the tie rods 4 and 7.

I am aware that numerous details of the invention may be varied through a wide range without departing from the spirit of the invention, and I do not desire limiting the patent granted other than as necessitated by the prior art.

I claim as my invention:—

1. In a tank of the character described, a wall consisting of longitudinal boards arranged edge upon edge, clamping members upon the top and bottom of the wall, tie rods outside of said wall and connecting said clamping members and struts between said clamping members.

2. In a tank of the character described having a bottom, a wall consisting of boards arranged edge upon edge, clamping members engaging over the top of said wall, adjustable tie rods fastened to said clamping members and anchored with respect to the bottom and struts adjustably engaging the outer parts of said clamping members and fixedly secured with respect to the bottom for the purpose set forth.

3. In a vat having a bottom and a side wall consisting of boards arranged edge upon edge adjacent said bottom, clamps upon the top and bottom of said wall, tied rods outside of said wall and connecting said clamps, said clamps having seats spaced outwardly from said tie rods and an inclined strut between said seats.

4. In a tank of the character described having a bottom, a wall consisting of boards arranged edge upon edge abutting said bottom, clamping members upon the top of said wall and projecting outwardly therefrom, tie rods wholly without the wall anchored at their upper ends to said clamps, means associated with the bottom of said tank for anchoring the lower ends of said tie rods and inclined struts extending between said clamps and said bottom for resisting the tendency of the tie rods to buckle the wall.

In testimony whereof I have hereunto subscribed my name at Batavia, Illinois, county of Kane.

ROBERT L. LEWIS.