May 17, 1932. W. J. BRADDOCK ET AL 1,858,431

PICKLING APPARATUS

Filed Oct. 24, 1931 2 Sheets-Sheet 1

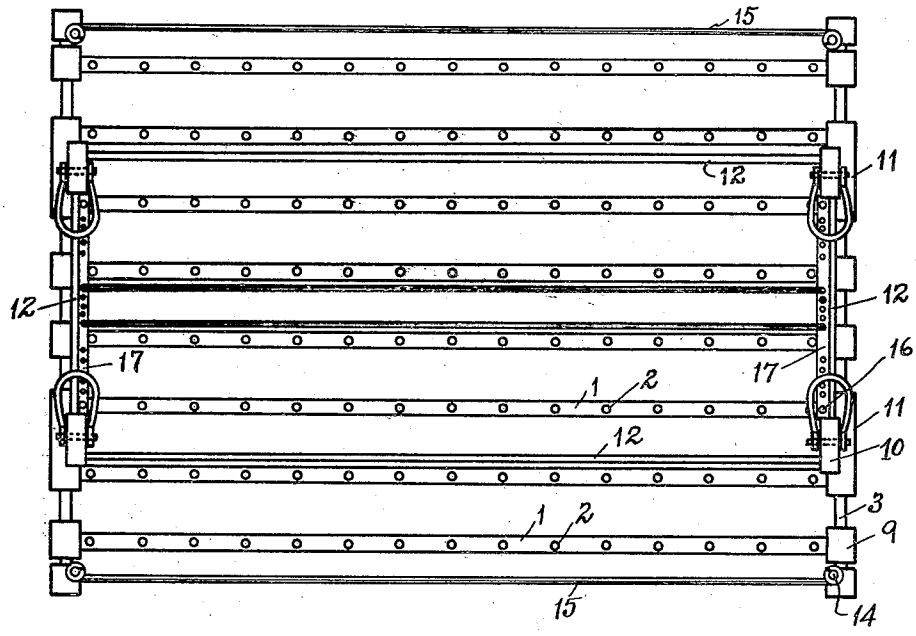


Fig. I

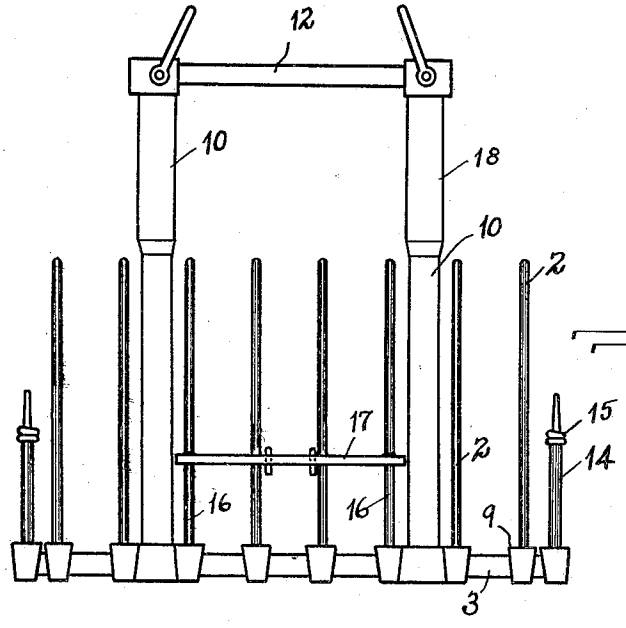


Fig. II

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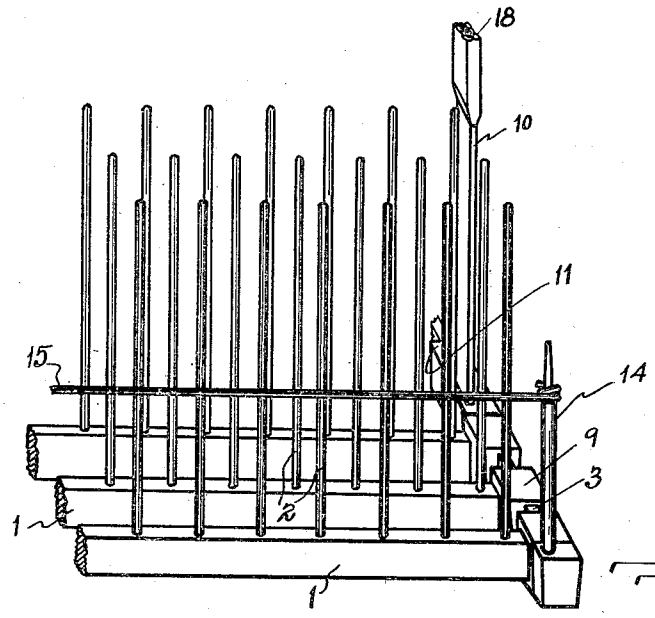


Fig. IV

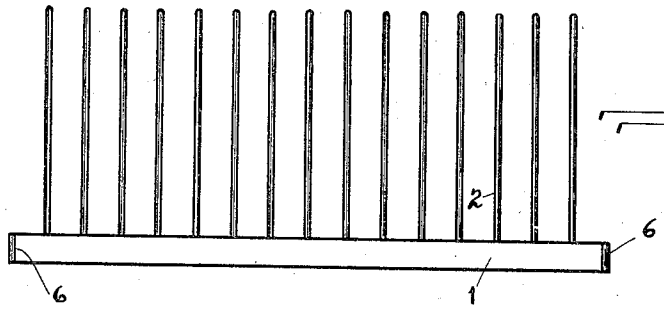


Fig. III

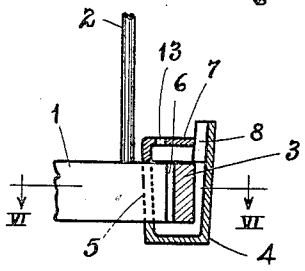


Fig. V

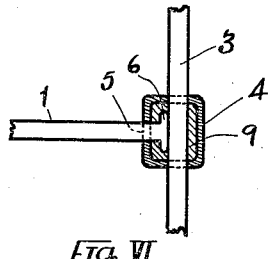


Fig. VI

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UNITED STATES PATENT OFFICE

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PICKLING APPARATUS

Application filed October 24, 1931. Serial No. 570,823.

This invention relates to a pickling crate.

One object of the invention is to so construct the lower frame of a pickling crate that the loosening of frame members and of partition posts, due to the corrosive effect of a pickling bath, is avoided.

Another object of the invention is to avoid the corrosive action of the pickling bath on the lifting bars of the crate in the region of the bath level where such corrosive action is greatest, due to movement of the pickling crate through the bath during the operation of pickling.

In the accompanying drawings Figure I is a plan view of the pickling crate; Figure II is an end elevation thereof; Figure III is an elevation of a sill and post unit constituting an element of the crate; Figure IV is a fragmentary isometric view, to larger scale, through a portion of the lower structure of the pickling crate; Figure V is a cross sectional detailed view, to larger scale, illustrating the method of attachment of the longitudinal sills of the crate to the transverse sills thereof; and Figure VI is a horizontal sectional view taken on the line VI—VI of Figure V.

We have found from experience that the corrosive action of a pickling bath tends to loosen all the parts of a sheet pickling crate by entering into the joints between parts and destroying the close fit therebetween. This is particularly disadvantageous in connection with the upright posts which form partitions for supporting the sheets or plates in edgewise position in the crate. Even if these posts be threaded into their supporting sills, in the course of time acid will inevitably enter to dissolve some metal of the threaded connection and loosen the posts in their sockets. While peened connections between the various parts of a sheet pickling crate are highly desirable, as avoiding dependence on a close fit between parts, even such connections will be gradually loosened by the corrosive action of the bath.

We have therefore invented a complete pickling crate in which the parts are so interconnected as to wholly eliminate contacting surfaces between which the bath liquid may enter to dissolve metal and loosen the connections.

We have also observed that the lifting bars of a pickling crate corrode with particular rapidity in the region at which the upper level of the pickling bath normally lies. This is because the effect of the bath is most marked at its surface and is intensified by movement of the pickling crate in the bath which produces a swishing action of the bath and a marked cutting effect on the lifting bars. We therefore cover the portions of our lifting bars which lie upwardly of the partition posts and the sheets carried by the crate with a sleeve of material substantially unaffected by the bath.

In the accompanying drawings reference numeral 1 designates the longitudinal sills of the pickling crate, each of which has cast integrally therewith a plurality of partition posts 2. It will be clear that because of this integral casting of sill 1 and posts 2 there is no possibility for the action of the bath to loosen the posts in the sills. They therefore remain firmly fixed in position in spite of the corrosive effect of the bath.

We have further provided connection between the longitudinal sills carrying the partition posts and the end sills 3 of the crate, such that the connection between the longitudinal and end sills cannot be loosened by the action of the bath. This we effect by forming a cast joint around the region of contact between the longitudinal sills 1 and the end sills 3.

In making the cast joint a longitudinal sill is caused to abut the edge of one of the end sills 3, the abutted region of end sill 3 lying within a mold 4 and the longitudinal sill 1 extending through a notch 5 in a wall of the mold. It will be noted by reference to Figures III, V, and VI that each of the sills 1 is terminally flanged at 6 to provide a seat for mutually bonding the sills. Mold 4 has a lid 7, which in use forms an upward continuation of the mold cavity and is provided with a pouring aperture 8 adjacent the outer wall of the mold.

With the sills and mold positioned as shown in Figures V and VI, a metal identical with

or similar to that of which the sills are composed is poured through aperture 8 to enter the mold and substantially fill the cavity within the body and lid thereof. On cooling, this metal shrinks, freeing it from the mold and leaving a block 9 of metal firmly engaging the end sill 3 to longitudinal sill 1 by its shrinkage.

Each of the lifting bars 10 is similarly engaged by a cast joint 11 to one of the end sills 3. Desirably the mutual engagement of the end sills and the lifting posts is effected prior to the attachment of the longitudinal sills 1. At or adjacent its upper end each of the lifting bars 10 is also similarly connected with a yoke 12.

It will be noted that the upper wall of the mold lid 7 is provided with an aperture 13. In the terminal regions of the end sills 3 short guard posts 14 for carrying guard rails 15 are attached to the end posts. This attachment is generally similar to that by means of which longitudinal sills 1 are attached to the end sills 3. For this casting operation, a guard post 14 is caused to extend through the opening 13 in the lid member 7 of the mold with its lower region abutting the end sill 3. The operation of casting a block 9 of metal around the contact region of the guard post and end sill therefore serves to similarly secure the guard post in position. Similarly short posts 16, carrying horizontal side bars 17, are cast to the end sills 3 by inserting each of them in a hole 13 of one of the mold covers.

Having thus formed a jointless pickling crate we cover the portion of each of the lifting bars 10 which lies upwardly of partition posts 2 with a sleeve of material highly resistant to corrosion. This sleeve 18 may be of lead, cast or burned to this region of the lifting bars. It may, however, be of rubber or a suitable composition, if so desired.

We claim as our invention:

1. A pickling crate comprising a plurality of frame sills comprising upwardly projecting partition posts cast integral with the body of each sill, end sills extending transversely of the frame sills, and connection between the frame sills and the end sills comprising a block of metal cast around and shrunk to the mutually adjacent regions of the frame sills and the end sills.

2. A sill structure for use as a structural element in a pickling crate comprising a metallic sill proper, and a plurality of posts cast integral with the sill proper and disposed substantially perpendicular to the plane thereof.

3. A pickling crate comprising as structural elements a plurality of frame sills having partition posts cast integral with each sill proper and disposed substantially perpendicular to the plane thereof, end sills extending transversely of the frame sills, lifting posts disposed substantially perpendicular to the plane of the frame sills and end sills, and connection between the structural elements comprising blocks of metal cast around and shrunk to mutually adjacent regions of the various structural elements to provide a complete and jointless pickling crate.

4. A pickling crate comprising as primary structural elements a plurality of frame sills, end sills extending transversely of the frame sills, lifting posts disposed substantially perpendicular to the plane of the frame sills and end sills, and connection between the primary structural elements comprising blocks of metal cast around and shrunk to mutually adjacent regions of the various structural elements to provide a connected jointless structure.

5. A pickling crate comprising a plurality of frame sills, end sills extending transversely of the frame sills, the frame sills terminally abutting the end sills at both ends of the frame sills and deformed at the region of abutment, and connection between the frame sills and end sills comprising blocks of metal cast around and shrunk to both at the region of abutment between the sills to provide a connected jointless structure.

In testimony whereof we have hereunto set our hands.

WILLIAM J. BRADDOCK.
CHARLES W. HALLER.