

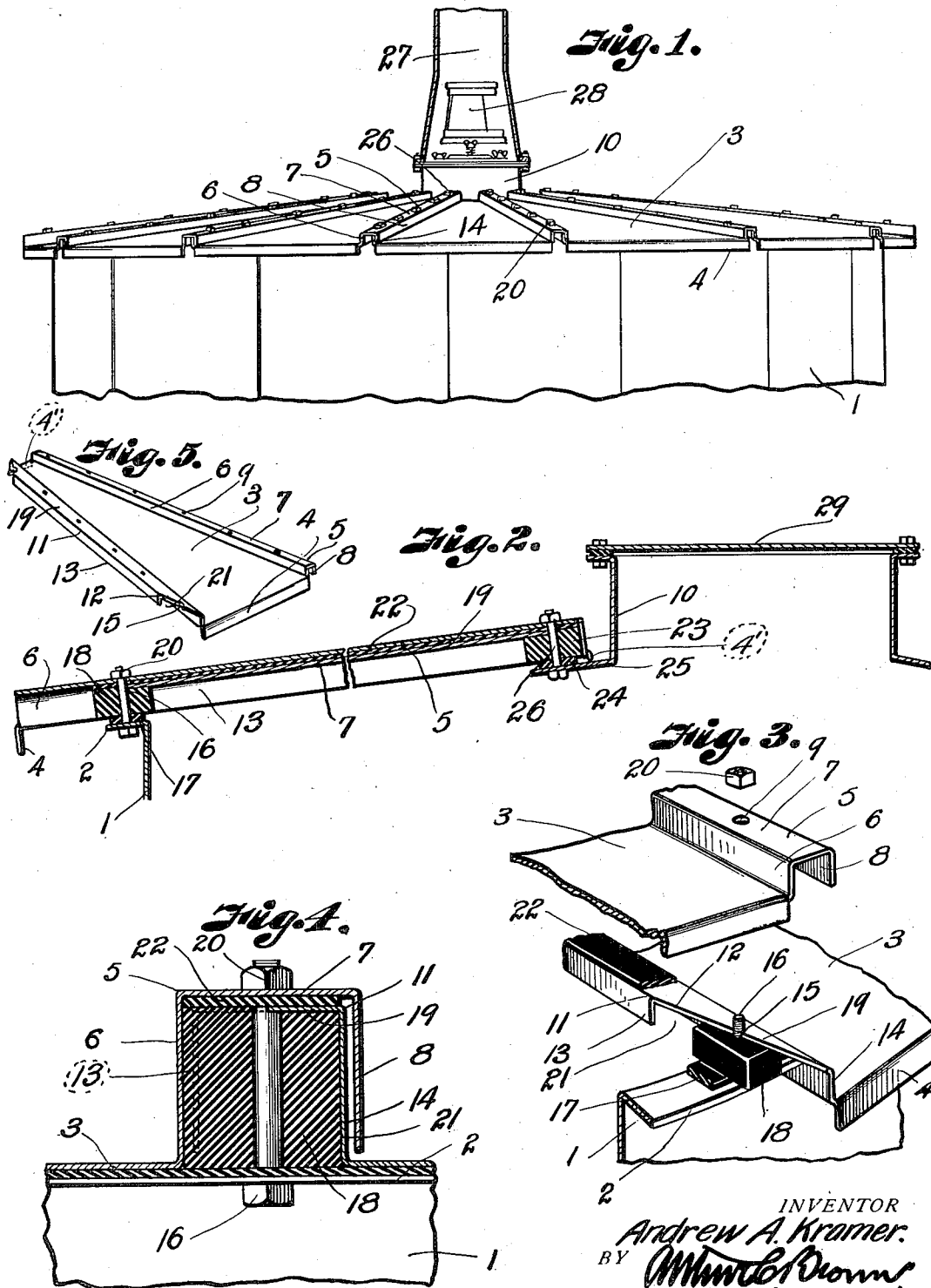
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TANK ROOF

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UNITED STATES PATENT OFFICE.

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TANK ROOF.

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To all whom it may concern:

Be it known that I, ANDREW A. KRAMER, a citizen of the United States, residing at Kansas City, in the county of Jackson and State of Missouri, have invented certain new and useful Improvements in Tank Roofs; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

This invention relates to sheet metal tanks and particularly to the roofing members thereof.

The primary object of the invention is to provide a strong, durable roof which may be fastened to the side wall which is usually composed of metal sheets so as to prevent leakage of the joints as well as to properly sustain the roof when applied. The side wall and roof plates may be constructed of sheet metal so associated with expansible joint packings that liability of leakage will be eliminated.

The novel feature of my invention will be understood by reference to the following description in connection with the accompanying drawings, in which—

Fig. 1 is a fragmentary elevational view of a metal tank constructed in accordance with my invention.

Fig. 2 is a sectional view through a pair of roof sheets, showing part of one of the wall sheets and a form of manhole different from that shown in Fig. 1.

Fig. 3 is a fragmentary disassociated view of two of the roof sheets and a portion of one of the wall sheets and a packing block and strips.

Fig. 4 is a cross sectional view through two roof sheets, showing a packing block in place with one of the roof sheet strips and the side wall strip in place, and

Fig. 5 is a perspective view of one of the roof segments showing the longitudinal edge flanges which provide the box and joint or girders for strengthening the edges of the roof sheet segments.

The tank is preferably made circular, the wall comprising a plurality of plates 1, the upper edges of which are bent outwardly, as at 2, to provide supporting flanges.

The roof is shown as comprising a plural-

ity of segments 3, each of which is shown as consisting of a plate having its outer edge bent downwardly, as at 4, to provide a protecting edge or flange. One side edge of each plate is provided with a box-shaped flange 5, consisting of the vertical web 6, the top web 7 and the edge web 8; the top web 7 having bolt openings 9 therein, by means of which the flange may be fastened to the flange 2 and to the manhole frame 10.

The other end of each segment is provided with a box-shaped flange 11, the outer end of which is scarfed, as at 12; that is, the edge 12 is cut on a diagonal from a depending web 13 to the upstanding web 14 of the flange 11, there being a notch 15 for the reception of a bolt 16, which extends through the flange 2, through the circumferential packing strip 17 and through the packing block 18, through the top web 19 and through the opening 9 so as to receive the nut 20. The packing strip 17 may consist of expansible material, such as rubber or the like, which will lay upon the flange 2 and extend entirely around the circumference of the tank.

Transversely of the packing strip 17 is the block 18, which fills the trough or groove 21 in the box-shaped flange 11 and which is adapted when the flange 5 is forced down upon the web 19 to expand so that it will fill the space between the depending web 13 and the upstanding web 6, and on top of the web 19 is a radial strip 22, which also may consist of expansible material so as to pack the space between the web 19 and the web 7.

At the inner edges of the segments are packing blocks which fill trough-shaped members in the same way, the inner packing blocks being designated 23 and these are adapted to bear against the circular strips 24, resting on the outturned flanges 25 of the manhole frame 10, the whole being secured by the bolts 26.

The manhole frame may have a stack 27 bolted to it with a manhole opening 28, as shown in Fig. 1, or it may be provided with a cover plate 29, as shown in Fig. 2.

When the parts are properly assembled and the nuts are screwed on the bolts, pressure will be applied to the blocks and to the packing strips so that they will expand, the blocks expanding out to fill up the surrounding spaces in the box-ribs or joints and the strips 17, 22 and 26 also tightly binding against the parts which they are to pack

so that liability of leakage through the joints will be prevented.

The frame 10 connects all of the inner ends of the segments and acts as a central tying frame therefor, as well as a manhole. The box-shaped ribs or joints are, in effect, girders which span the spaces between the wall 1 and the frame 10 so that a strong, efficient roof may be provided.

What I claim and desire to secure by Letters-Patent is:

1. A tank roof comprising, in combination with a supporting shelf, expansible packing strips on the upper face of the shelf, packing blocks spaced apart and extending transversely across but supported by the packing strips, segmental roof sheets having box-shaped girders at their ends overlapping the packing blocks, the intermediate portions of the segments resting upon the packing strips, the box-shaped girders being nested one over the other, packing strips between the nested girders, and means for fastening the wall flange, the packing strips, the blocks and the girders together.

2. A tank roof comprising, in combination with a supporting shelf, expansible packing strips on the upper face of the shelf, packing blocks spaced apart and extending transversely across but supported by the packing strips, segmental roof sheets having box-shaped girders at their ends, overlapping the packing blocks, the intermediate portions of the segments resting upon the packing strips, the box-shaped girders being nested one over the other, packing strips between the nested girders, and means for fastening the wall flange, the packing strips, the blocks and the girders together, the last named means being adapted to exert pressure on the blocks whereby they will expand within the girders to snugly hug the walls to prevent leakage at the joints.

3. A tank roof comprising, in combination with a supporting shelf, a packing strip

resting upon the shelf, a plurality of roof sheet segments resting upon the strips and having box-shaped girders at their side edges, the box-shaped girders of one segment being nested over the other, expansible packing blocks resting upon the strips and within the inner girder, and means for clamping the girders one upon the other and to exert pressure on the blocks whereby the blocks will be expanded to pack the joints between the girders.

4. A tank roof comprising, in combination with a supporting shelf, a packing strip resting upon the shelf, a plurality of roof sheet segments resting upon the strips and having box-shaped girders at their side edges, the box-shaped girders of one segment being nested over the other, expansible packing blocks resting upon the strips and within the inner girder, means for clamping the girders one upon the other to exert pressure on the blocks whereby the blocks will be expanded to pack the joints between the girders, and radial packing strips arranged between the inner and outer girders.

5. A tank roof comprising, in combination with a supporting shelf, and a center member having a lateral flange at its lower edge, packing strips on the shelf and flange, radial roof sheets resting on the packing strips and having upstanding, box-shaped girders along their side edges, the girder of one sheet being nested within the girder of an adjacent sheet, the inner girder having scarfed ends, packing blocks between the scarfed ends of the inner girder and the packing strips, and means for clamping the girders, the packing blocks and the shelf together, at one end of the roof sheet, and the girders, the packing blocks and the flange at the other end of the roof sheet.

In testimony whereof I affix my signature.

ANDREW A. KRAMER.