June 19, 1962 E. SANDMANN 3,039,611

STRAINING VAT

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Fig. 1.

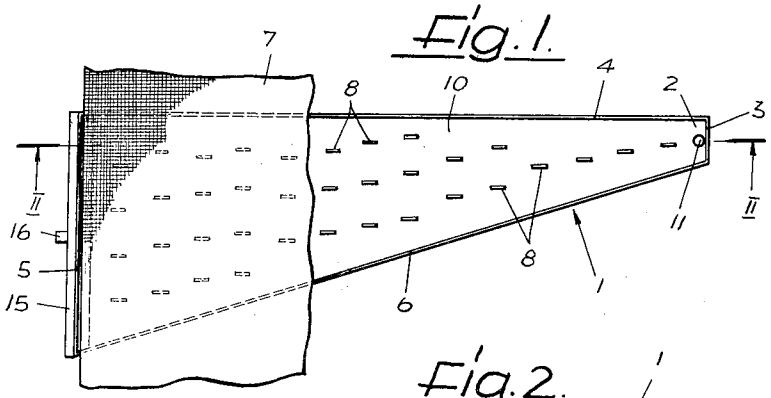


Fig. 2.

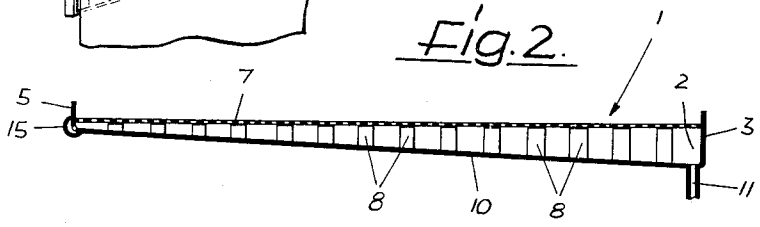
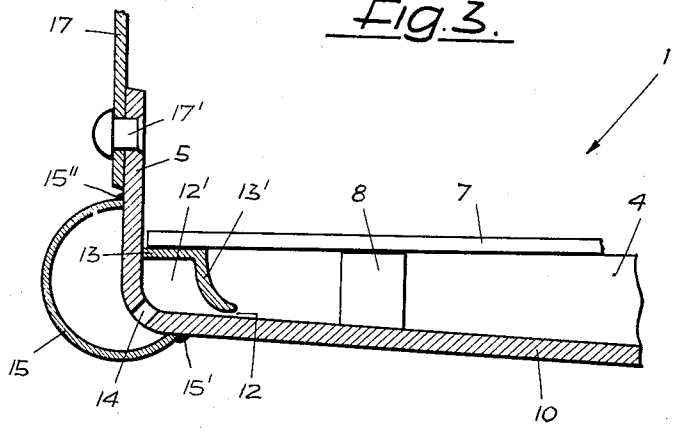


Fig. 3.



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Fig. 4.

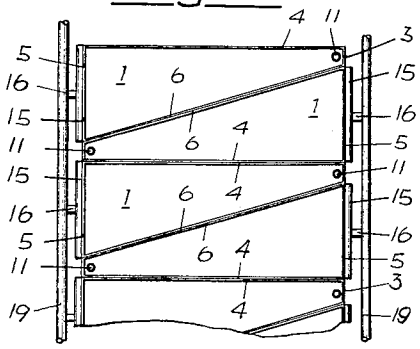


Fig. 7.

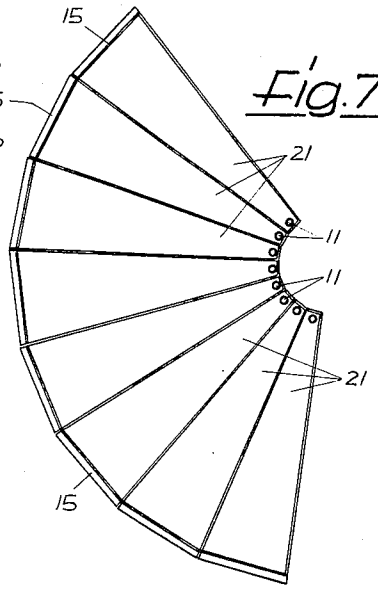


Fig. 5.

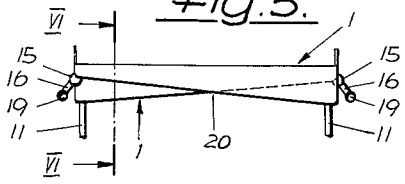
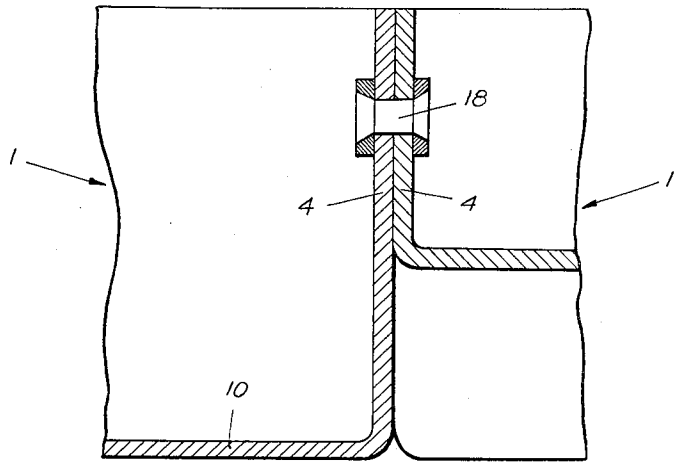


Fig. 6.



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Fig. 8.

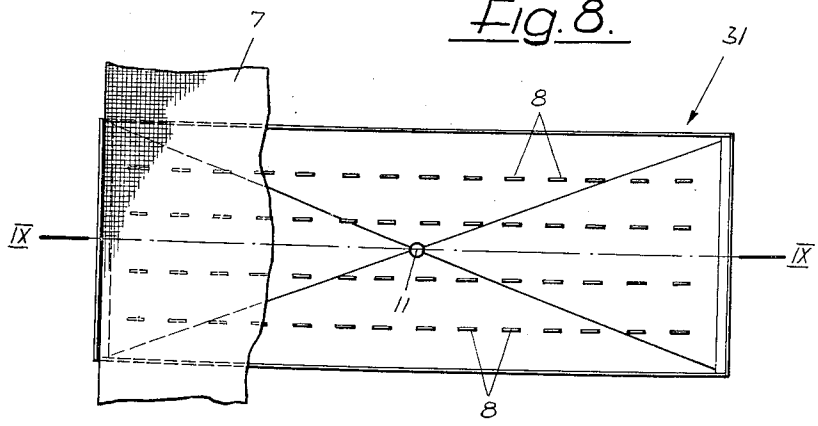


Fig. 9.

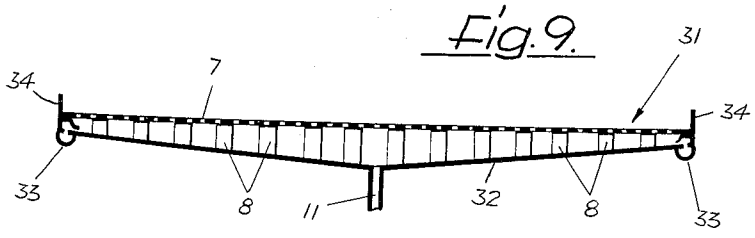
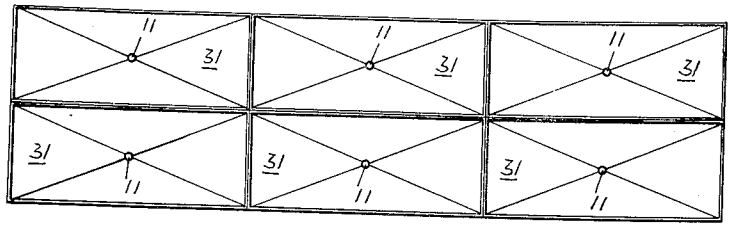


Fig. 10.



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United States Patent Office 3,039,611 Patented June 19, 1962

3,039,611

STRAINING VAT

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Claims priority, application Germany June 27, 1958
2 Claims. (Cl. 210—200)

The present invention relates to improvements in straining or clarifying vats, also called mash or lauter tuns.

Since prior to this invention the strainer forming a false bottom in any straining vat was mounted therein in such a manner that it was very difficult to clean the area between this strainer and the actual bottom of the vat, it is an object of the present invention to provide a straining vat which is designed so as to permit this bottom area to be easily cleaned without requiring the strainer to be removed from the vat.

The essential features of the invention for attaining this object consist in designing the vat so that its bottom is composed of a plurality of bottom sections, each having vertical side walls so as to form a shallow pan, that each bottom section is provided with its own drain outlet, and that the surface of the bottom of each section is downwardly inclined toward the drain outlet. It has been found that, with a vat construction of this type, the individual pan-shaped bottom sections may be cleaned very easily and completely underneath the strainer by means of jets of water sprayed into these sections. A further advantage attained by making the vat bottom of a plurality of sections with interconnected vertical side walls consists in the fact that the stability of the entire bottom will thereby be considerably increased so that such bottom will be self-supporting and solidify the entire vat structure.

A further object of the invention is to provide a straining vat in which the bottom thereof may be cleaned automatically. For this purpose, the invention further provides at least one nozzle at the end of each bottom section opposite to and at a higher level than the drain opening of such section for injecting a stream of water into each section. These nozzles are preferably made in the form of one or more elongated slots extending along at least one side of each bottom section and closely adjacent to the bottom surface thereof. These nozzles are preferably so directed that if a jet of water is injected into each of these bottom sections, it runs directly along the bottom of each section and thereby flushes all impurities toward and into the drain opening. The most advantageous cleaning results will be attained if each bottom section, as seen in a plan view, is made of a substantially acute triangular shape and the drain opening is provided closely adjacent to the apex of the smallest angle of the triangle.

These triangular pan-shaped bottom sections may be easily assembled to form the bottoms of rectangular or cylindrical vats. For forming a vat bottom of a rectangular shape, the bottom sections may be arranged in pairs so that the two sections of each pair extend in opposite directions and the bottom surfaces thereof also incline in opposite directions toward their respective drain openings, each of which is then located adjacent to the nozzle of the adjacent bottom section. The water pipes for supplying the cleaning water to the nozzles may then extend along the side walls of the vat. Centrally of such

a vat along the longitudinal axis thereof, all of the bottom sections may be disposed at the same level and rest upon a common supporting member which extends along such longitudinal axis. Since the individual bottom sections themselves as well as the entire vat bottom composed thereof are reinforced by the interconnected side walls of the various sections, and the entire vat bottom is self-supporting and also supports the upper walls of the vat, this supporting member may be designed to carry the weight of the entire vat.

If the vat is made of a circular cross section, the individual pan-shaped bottom sections may be of an isosceles triangular shape and arranged adjacent to each other so as to point toward the vertical axis of the vat, and the bottom surfaces of all the sections may be equally inclined toward such axis so that the drain opening of each bottom section may then be disposed adjacent to the center of the entire vat bottom.

These and other objects, features, and advantages of the present invention will become further apparent from the following detailed description thereof, particularly when read with reference to the accompanying drawings, in which—

FIGURE 1 shows a plan view of one of the bottom sections of a straining vat according to the invention with a strainer, only shown in part, resting on such bottom section;

FIGURE 2 shows a cross section taken along line II—II of FIGURE 1, but with the entire strainer resting on the bottom section;

FIGURE 3 shows an enlarged view of the left end portion of FIGURE 2 and it also illustrates the manner of securing the bottom section to the side wall of the vat;

FIGURE 4 shows a plan view of a part of a bottom of a rectangular straining vat, composed of a plurality of bottom sections according to FIGURES 1 to 3;

FIGURE 5 shows a diagrammatically simplified cross-section taken between two adjacent bottom sections according to FIGURE 4;

FIGURE 6 shows a cross section taken along line VI—VI of FIGURE 5 and illustrates the connection between two adjacent bottom sections;

FIGURE 7 shows a plan view of a part of a substantially circular vat bottom according to the invention;

FIGURE 8 shows a plan view similar to FIGURE 1 of a modification of a bottom section of a rectangular vat;

FIGURE 9 shows a cross section taken along line IX—IX of FIGURE 8; while

FIGURE 10 shows a plan view of a vat bottom which is composed of a plurality of bottom sections according to FIGURES 8 and 9.

Referring to the drawings, and first particularly to FIGURES 1 to 6, each of the sections **1** of the bottom of a rectangular vat, as seen in a plan view according to FIGURE 1, has a trapezoidal shape in which one side **2** of the trapezoid is so short that the entire bottom section **1** may be regarded as being practically triangular. The four later edges of each trapezoidal section **1** are extended upwardly so as to form side walls **3**, **4**, **5**, and **6**. Thus each bottom section forms a shallow pan. The two non-parallel side walls **4** and **6** also form the main supports of a strainer **7** which forms a false bottom in the vat and is inserted therein from the open upper end. Additional supporting members **8** for strainer **7** may be secured at various points on the upper surface of the bottom wall **10** of each section **1**.

As illustrated in FIGURE 2, this bottom wall 10 is downwardly inclined from the wider outer edge carrying the side wall 5 toward the opposite narrow edge carrying side wall 3, and a drain pipe 11 is provided at the lowest point, that is, immediately adjacent to side wall 3. At the opposite corner formed between the highest part of bottom wall 10 and side wall 5, as shown particularly in FIGURE 3, a nozzle 12 is provided, the upper wall 13 of which also forms a support for the strainer 7. The orifice of nozzle 12 is formed between the lower end of the depending wall 13' extending parallel to side wall 5 and the upper surface of bottom wall 10. Thus, the orifice of nozzle 12 is slot-shaped and extends directly along the bottom wall 10. The inside 12' of nozzle 12 communicates through apertures 14 with a water inlet pipe 15 of a slightly more than semicircular shape, the edge portions 15' and 15'' of which are welded to bottom wall 10 and side wall 5, respectively. Each water pipe 15 is provided with an inlet 16 which may be connected to a water supply line, not shown.

Side walls 3 and 5 have a greater height than side walls 4 and 6 and therefore also extend above the strainer 7. Their upper parts serve as connecting means for securing the respective bottom section to the lower ends of the side walls 17 of the vat, for example, by means of rivets 17'.

For assembling a plurality of bottom sections 1 to form a rectangular vat bottom, as illustrated in FIGURE 4, these sections are arranged in pairs in which the bottom walls of the two sections of each pair slope in opposite directions to each other, as shown in FIGURE 5, and one side wall 4 of one section abuts against one side wall 4 of the adjacent section and one side wall 6 of one section abuts against one side wall 6 of the next section. The abutting walls 4 or 6 are secured to each other, for example, by rivets 18, as illustrated in FIGURE 6, or in any other suitable manner, for example, by spot welding, welding, or the like. The water inlets 16 of nozzles 12 of the complete vat bottom thus assembled are then connected to water pipes 19 extending along the side walls 3 and 5 of the individual bottom sections 1.

In the embodiment of the invention, as illustrated in FIGURES 1 to 6, a single strainer 7 extends across all of the bottom sections 1. Side walls 4 and 6 of each bottom section may, however, also be of the same height as side walls 3 and 5, in which case a separate strainer 7 may be provided for each bottom section and be set into the latter so as to rest only on the supporting members 8 and 13.

As illustrated in FIGURE 5, all of the bottom sections 1 of the vat bottom have a central point 20 within the same horizontal plane. At the straight line thus formed, all of the bottom sections 1 may be supported by a single longitudinal girder or the like, not shown. Since the individual bottom sections 1 are provided with vertical side walls 3, 4, 5, and 6 and are secured to each other by side walls 4 and 6, the vat bottom is self-supporting and also supports the upper walls 17 of the vat, the longitudinal girder supporting the individual bottom sections at the central line 20 may be designed so as to carry the entire weight of the vat.

The operation of cleaning the bottom area between the bottom surface 10 and strainer 7 is extremely simple. It is for this purpose only necessary to pass an adequate supply of water through the water pipes 19, 16, and 15 into the inside 12' of nozzles 12 so that a wide stream of water will then be ejected from nozzles 12 across the entire width and along the entire length of the bottom of each section 1 toward the opening of drain pipe 11. The sediments falling through strainer 7 upon the bottom of each section 1 will thus be flushed off the latter very quickly, leaving the entire vat bottom clean.

Although the pan-shaped bottom sections 1 as shown in FIGURES 1 and 4 are of a trapezoidal shape in which one side 4 of the trapezoid extends at right angles to the sides 3 and 5, such shape need not be adhered to and the individual bottom sections may also be of any other trapezoidal or triangular shape.

In the modification of the invention as illustrated in FIGURE 7, the individual pan-shaped bottom sections 21 form isosceles trapezoids, and when assembled and secured to each other, they form a substantially circular bottom of a cylindrical vat. However, these same bottom sections 21 may also be assembled in a manner similarly as shown in FIGURE 4 to form a rectangular vat bottom. They are also secured to each other in the same manner as the bottom sections according to FIGURES 1 to 6.

FIGURES 8 to 10 illustrate a further modification of the invention in which the individual sections 31 of the vat bottom are of a rectangular shape. The bottom wall 32 of each section 31 is downwardly inclined toward its center where it merges into the opening of a drain pipe 11. These bottom sections may also be secured to each other in the same manner as shown in FIGURE 4. However, in order to permit the respective side walls of the adjacent bottom sections 31 to be secured directly to each other, it is necessary to secure the water inlet pipes 33 only to the bottom wall 32 so as not to project laterally beyond the side walls 34.

Although my invention has been illustrated and described with reference to the preferred embodiments thereof, I wish to have it understood that it is in no way limited to the details of such embodiments, but is capable of numerous modifications within the scope of the appended claims.

Having thus fully disclosed my invention, what I claim is:

1. A straining vat comprising a bottom part, a wall part having a lower end portion, a strainer, a plurality of adjacent bottom sections forming said bottom part, each of said bottom sections having side walls and a bottom wall forming an individual shallow pan, each said bottom wall having a drain opening therein, the upper surface of said bottom wall of each of said sections inclining downwardly toward said drain opening, one of said side walls of each of said adjacent bottom sections being connected to said lower end portion, others of said side walls of said adjacent bottom sections being in abutting relationship, means for securing said others of said side walls to each other, and supporting means disposed in some of said bottom sections for supporting said strainer in spaced relation above said bottom part, at least one nozzle on each bottom section adjacent to at least one side wall thereof and spaced from and disposed at a higher level than said drain opening for direction a stream of water along said inclined upper surface toward said drain opening, and means for supplying a current of water to said nozzle, the orifice of said nozzle being slot-shaped and extending in a direction substantially parallel to at least one said side wall of said bottom section and parallel and immediately adjacent to said inclined upper surface, said nozzle comprising an elongated member having two longitudinal edges, said elongated member being secured at one of said longitudinal edges to the inside of at least one said side wall of said bottom section and projecting downwardly so that the other of said longitudinal edges extends at a level closely above said upper surface of the bottom wall of said section, near substantially the highest level of said upper surface so as to form an elongated slot between said other of said longitudinal edges of said member and said upper surface.

2. A straining vat as defined in claim 1, wherein said elongated nozzle member together with the corner formed between said side wall and said upper surface enclose a chamber, a pipe having a longitudinally disposed opening therein, said pipe being secured along the longitudinal edges of said opening to the outside of said bottom section adjacent to said chamber, said bottom section further having a plurality of apertures in at least one of its said walls

adjacent to said corner for connecting said pipe with said chamber and for distributing the water to all points of said chamber.

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