July 13, 1943. E. S. STODDARD 2,324,332

SEALING MEANS

Filed July 23, 1942

Fig. 1.

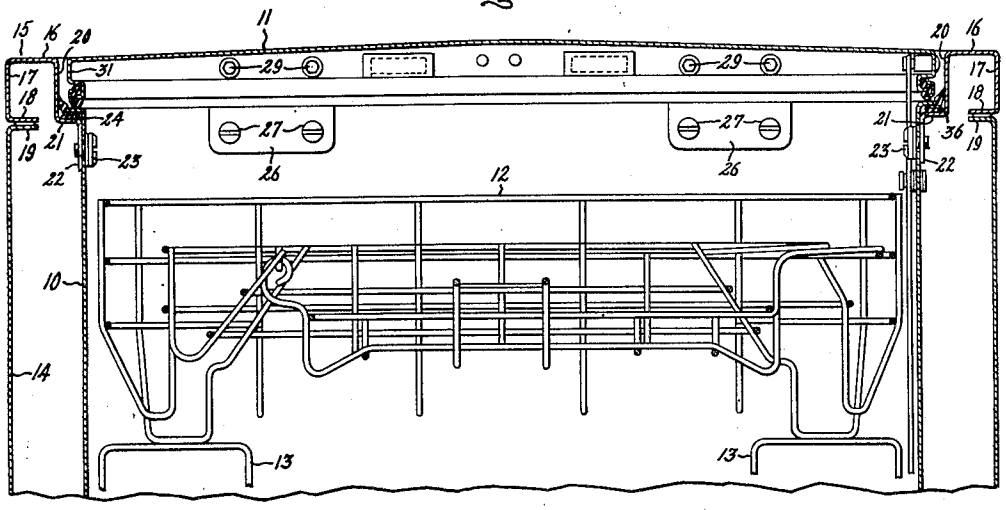


Fig. 2.

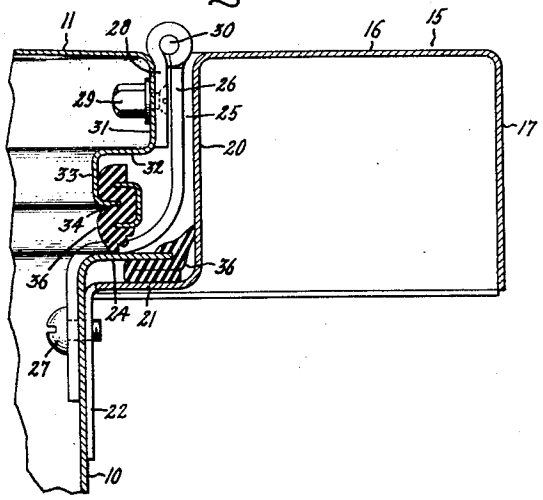
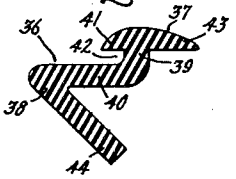


Fig. 3.



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SEALING MEANS

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Application July 23, 1942, Serial No. 452,008

3 Claims. (Cl. 220—81)

This invention relates to sealing means, more particularly to means for effecting a fluid-tight joint between two members, and has for its object the provision of an improved sealing means of this character.

More specifically, this invention relates to means for effecting a fluid-tight joint between a vat, such as used in dishwashing apparatus, and a supporting member for the vat.

In certain washing apparatus, such as a mechanical dishwasher, there is provided a relatively deep washing vat in which the dishes and utensils are cleansed. A supporting structure is provided which functions to suspend the vat in an upright operative position. This invention contemplates the provision of improved means for effecting a fluid-tight joint between the vat and its supporting structure.

In accordance with this invention, the sealing means comprises a flange extending from the upper end of the vat; and also a flange on the supporting structure arranged in substantially parallel relation with it, the latter flange also functioning to support the vat. The flange on the supporting structure is supported by means of a wall that is arranged at an angle to the flange. A resilient sealing member is fitted to the flange on the vat. The sealing member is provided with a highly flexible elastic section which when the vat is suspended from its supporting flange engages the supporting wall thereof; and it also is provided with a highly flexible elastic section which is arranged to be fitted between the flange on the vat and the vat supporting flange so as to forcibly and resiliently engage these members. The two elastic sections—one engaging the supporting wall and the other interposed between the two flanges—effectively prevent the leakage of fluid through the joint between the vat and its supporting structure.

For a more complete understanding of this invention, reference should be had to the accompanying drawing in which Fig. 1 is a fragmentary vertical sectional view taken through dishwashing apparatus embodying this invention; Fig. 2 is a fragmentary sectional view taken through a portion of the dishwashing apparatus shown in Fig. 1 and drawn to a larger scale than is the apparatus shown in Fig. 1; and Fig. 3 is a sectional view taken through a sealing member used in the washing apparatus of Figs. 1 and 2, and drawn to a larger scale than the apparatus shown in these figures.

Referring to the drawing, this invention has been shown in one form as applied to dishwashing apparatus comprising a vat 10 and a cover 11. While these members may have any suitable shape, the vat 10 preferably will have a rectangular cross-section and the cover will have a corresponding shape in plan. Positioned within the vat are suitable open-work trays for receiving the dishes and utensils. Only the upper tray 12 is shown in detail. This tray is supported upon parts 13 of a lower open-work tray which is not shown in detail. Also positioned within the vat under the trays is a suitable water-circulating impeller (not shown) which functions to circulate water placed in the vat upwardly through the racks to cleanse the dishes and utensils supported in them.

The vat 10 is mounted within a suitable outer casing 14 which is provided with an upper supporting section 15 from which the vat 10 is suspended. As shown, the supporting section 15 is provided with a top flat wall 16 at the outer edge of which is a depending flange 17 which terminates in an inwardly-extending, horizontal flange 18. This inwardly-extending flange 18 rests upon an inwardly-extending horizontal flange 19 formed on the upper edge of the casing 14, as shown. The supporting member 15 is further provided with a vertical flange 20 extending downwardly from the inner edge of the flat surface 16 around the cover 11, as shown. Extending inwardly from the lower end of this flange 20 is an inwardly-extending, horizontal flange 21.

Depending from the inner edge of the flange 21 are a series of downwardly-extending tabs 22, one tab 22 being provided for each side of the flange 21. These tabs function to support the vat 10; the vat, as shown, is secured directly to the tabs by means of screws 23.

The vat 10 at its upper edge is provided with an outwardly-extending, substantially horizontal flange 24 which is parallel to the flange 21 and which is spaced somewhat above it, as shown.

The cover 11 is arranged to seat upon the outwardly-extending flange 24 when it is in its closed position. It is hinged for movement between this closed position and an upright, open position by means of hinges 25. The hinges 25 comprise fixed hinge arms 26 secured to the vat by means of screws 27; and also movable hinge arms 28 secured to a peripheral, downwardly-extending flange 31 provided on the cover by means of screws 29. The movable arms are pivoted to the fixed arms by means of pins 30.

The downwardly-extending flange 31 on the cover terminates on an inwardly-extending, horizontal flange 32 which in turn terminates in a

vertically-extending flange 33. This flange 33, in turn, has at its lower edge an outwardly-extending, horizontal flange 34. Secured to this flange 34 is a suitable sealing member 36 which functions to seal the cover when it is closed. The sealing means between the cover and vat forms no part of this invention, but is the subject matter of my separate application, Serial No. 453,538, filed August 4, 1942, and assigned to the same assignee as this invention.

Interposed between the flange 24 on the vat, and the flange 21 on the supporting member 15 is a suitable sealing member 36 formed of an elastic material, such as rubber. This sealing member extends around the complete periphery of the flange 24, and functions to effect a fluid-tight seal between the vat 10 and the supporting member 15 to prevent leakage down past the flange 24 and into the supporting casing 14.

As shown, in Fig. 3, this sealing member 36 is provided with a T-shaped head 37, and a V-shaped section 38 connected to the lower end of the post 39 of the T-head. The V-shaped section is so positioned that its one arm 40 is substantially parallel to one of the arms 41 of the cross-bar of the T-head. The portions 40 and 41 define a recess 42 between them. The sealing member is applied to the outer edge of the vat flange 24 so that this edge is received in the recess 42. Preferably, the elastic member before its assembly with the flange will have a length somewhat less than the peripheral length of the flange so that it must be stretched in order to assemble it on the flange. When it is thus assembled on the flange, the other arm 43 of the cross-bar of the T-head is distorted from its free position of Fig. 3 to its position of Fig. 2; in other words, it is flexed upwardly and by reason of this flexure it is biased firmly against the supporting wall 20 for the flange 21. More specifically, when the vat, with the sealing member 36 applied to it, is dropped into the opening in the flange 21, the arm 43 of the sealing member is forced upwardly, as shown, which action tends to seal the edge of this arm against the side wall 20, and at the same time it drives the arm 41 more tightly against the flange 24 of the vat. Also, it will be observed that the arms 40 and 44 of the V-section 38 are squeezed or compressed between the flanges 21 and 24. In other words, the upper surface of the arm 40 is caused to firmly bear against the under surface of the flange 24, while the lower surface of the arm 44 is caused to bear against the upper surface of the flange 24. In this way, fluid-tight seals are provided between the sealing member 36 and the vertical wall 20 and also between the sealing member and each of the flanges 21 and 24. These sealing joints are such as to prevent the leakage of fluid past the flange 24 and the flange 21 down into the casing 14 outside of the vat.

It will be observed that the section of the sealing member defining the recess 42, that is, the section defined by the head arm 41, post 39 and adjacent end of the arm 40, in effect constitute a U-shaped supporting body for the flexible sealing extensions formed by the head arm 43 and the arms 40 and 44 of the section 38.

While I have shown a particular embodiment of my invention, it will be understood, of course, that I do not wish to be limited thereto since many modifications may be made, and I, therefore, contemplate by the appended claims to cover any such modifications as fall within the true spirit and scope of my invention.

What I claim as new and desire to secure by Letters Patent of the United States is:

1. In apparatus comprising a vat having an upright wall and a flange extending therefrom, a support for said vat having a supporting wall and a flange extending at an angle thereto and also positioned opposite said first flange, and means for sealing said flanges comprising a sealing member provided with a body portion fitted to the outer edge of said flange on said vat, a resilient portion attached to said body portion having flexible arms defining a normally open V-shaped section, the arms of said section however being interposed between and compressed together by the two flanges, and said sealing member further being provided with a resilient arm joined to said body portion and having its outer edge yieldingly compressed against said supporting wall.

2. In washing apparatus and the like provided with an upright washing vat and a supporting member for suspending said vat, said supporting member and vat having substantially horizontal flanges, the flange on said vat being positioned above that on said supporting member, and said supporting member also having an upright supporting wall for its flange located at one edge thereof, means for sealing the connection-joint between said vat and said supporting member comprising a resilient member fitted to said flange on said vat having a recess receiving the edge of said flange, a resilient section formed by two arms joined together at one end and being normally flexed apart, said section being located between said flanges so that said arms are forced together thereby, and said resilient member further having a resilient arm extending outwardly so that its outer edge engages said upright supporting wall.

3. In washing apparatus and the like provided with an upright washing vat and a supporting member for suspending said vat, said supporting member and vat having substantially horizontal flanges, the flange on said vat being positioned above that on said supporting member, and said supporting member also having an upright supporting wall for its flange located at one edge thereof, means for sealing the connection-joint between said vat and said supporting member comprising a resilient member having in cross-section a T-shaped head and a V-shaped section joined to the extremity of the post of said head so that one leg of said section is substantially parallel to one arm of the cross-bar of said head so as to define a recess between them, said sealing member being stretched on said vat flange so that the edge thereof is received in said recess, the other arm of said T-shaped head resiliently engaging said vertical supporting wall and the two arms of said V-shaped section being compressed between said flanges.

EDGAR S. STODDARD.