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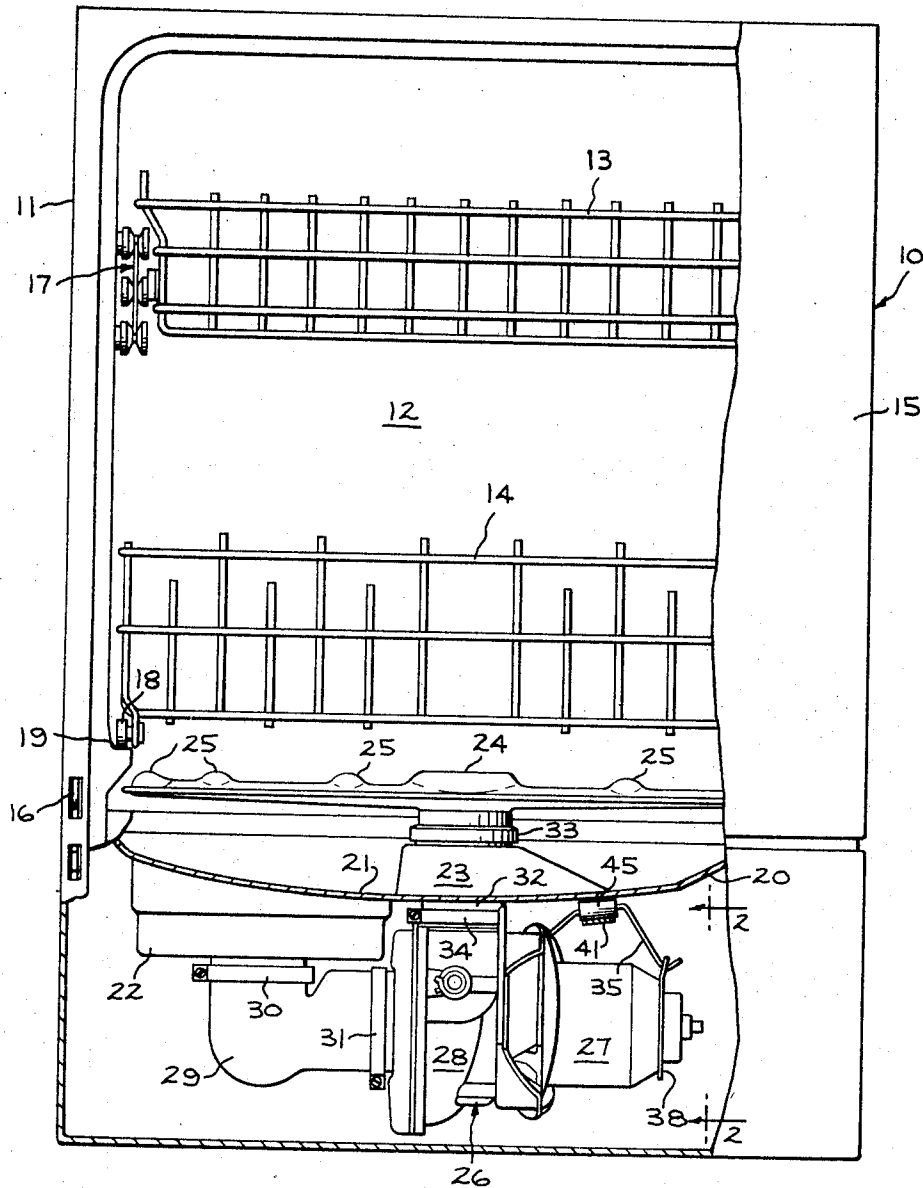
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3,425,651

MOTOR-PUMP SUPPORT MEANS AND METHOD OF ASSEMBLY

Filed March 1, 1967

Sheet 1 of 2



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FIG. 2

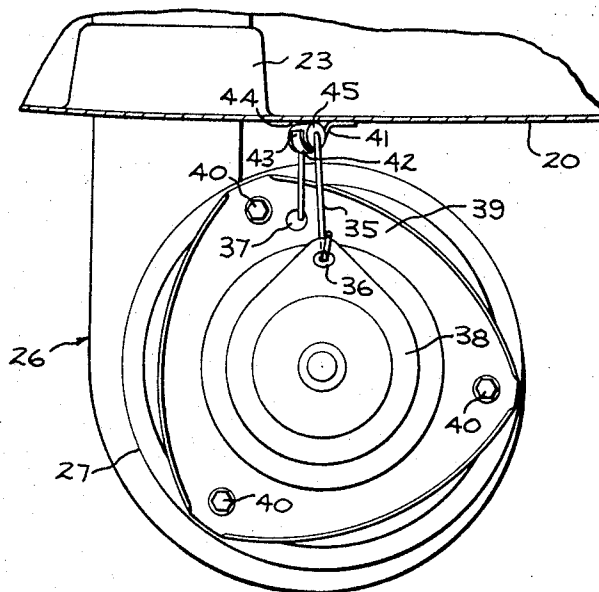
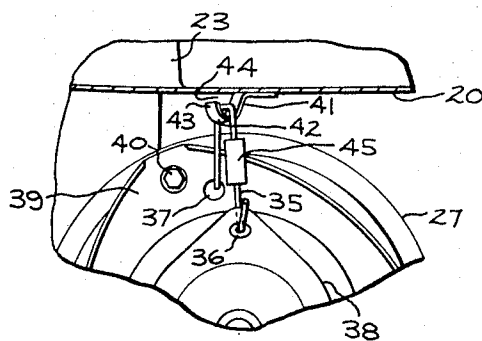


FIG. 3



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3,425,651 MOTOR-PUMP SUPPORT MEANS AND METHOD OF ASSEMBLY

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6 Claims

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ABSTRACT OF THE DISCLOSURE

Means to support a motor and pump from the cabinet of an automatic dishwasher including a generally U-shaped bracket and a rod-like hanger. The bracket is secured at one end to the cabinet and has its other end spaced from the cabinet with the intermediate portion of the bracket spaced farther from the cabinet. The rod-like hanger is adapted to pass between the distal end of the bracket and the cabinet. An elastomeric bushing of greater diameter than the space between the cabinet and the other end of the bracket is adapted to fit into the space between the cabinet and the intermediate portion of the bracket. The two ends of the hanger are received within holes in the motor housing to support the housing.

BACKGROUND OF THE INVENTION

This invention relates generally to automatic dishwashers and, more specifically, to means for supporting a motor-pump assembly from the cabinet of an automatic dishwasher and the method of assembling such a support system.

An automatic dishwasher is provided with a pump to circulate wash fluid within the wash chamber and an electric motor to drive the pump. Common practice is to assemble the pump and motor into a unit and then secure the unit to the dishwasher cabinet. Ideally, the supporting means will minimize vibration and noise transmission from the motor-pump assembly to the cabinet during operation of the machine. This is particularly desired in an automatic dishwasher since the dishwasher is installed in the owner's kitchen, where excessive noise is especially annoying, and, moreover, the dishwasher cabinet serves as a sounding board to amplify any noise transmitted thereto. Thus, it would be desirable to provide a support means which will minimize noise and vibration transmission.

Automatic dishwashers are mass produced and, therefore, even the smallest labor or cost savings per unit will result in significant cost savings to the manufacturer during the course of the year. Thus, a support means and a method of assembly therefor which will reduce the labor involved is desirable not only from the standpoint of the manufacturer but also from that of a consumer since cost savings will eventually pass to the consumer.

SUMMARY OF THE INVENTION

This invention provides an improved means to support a motor-pump assembly from the cabinet of an automatic dishwasher and an improved method of securing such assembly to such cabinet. The means includes a bracket secured to the cabinet and having a first portion defining a generally circular large space between the

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bracket and the cabinet and a second portion defining a small space between the bracket and the cabinet. A hanger is formed from rod-like material and has an outside diameter no greater than the dimension of the small space. An elastomeric bushing is provided and has an inside diameter of approximately the same dimension as the outside diameter of the hanger and an outside diameter of approximately the same dimension as the large space but substantially greater than the dimension of the small space. The bushing is adapted to fit over the hanger and between the bracket and the cabinet within the large space. The hanger has first and second ends each adapted to engage and support the motor-pump assembly whereby the motor-pump assembly is supported from the bracket through the bushing and the hanger.

The method includes the steps of securing one end of a generally U-shaped bracket to the cabinet with the other end of the bracket spaced from the cabinet and the intermediate portion of the bracket spaced farther from the cabinet than the other end, placing on one leg of a generally U-shaped hanger an elastomeric bushing of greater diameter than the dimension that the other end of the bracket is spaced from the cabinet, passing the hanger through the space, and then moving the bushing along the hanger into the area between the intermediate portion of the bracket and the cabinet.

BRIEF DESCRIPTION OF THE DRAWINGS

While the specification concludes with claims particularly pointing out and distinctly claiming the subject matter which is regarded as the invention, it is believed that the invention will be better understood from the following description of the preferred embodiments taken in connection with the accompanying drawings, in which:

FIGURE 1 is an elevational view, partially cut away to show details, of an automatic dishwasher employing the present invention;

FIGURE 2 is a fragmentary view taken along line 2-2 of FIGURE 1; and

FIGURE 3 is a fragmentary view similar to FIGURE 2 but showing the present invention partially assembled.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring now to the drawings, and particularly to FIGURE 1 thereof, there is illustrated an automatic dishwasher 10 having an outer cabinet 11 defining therein a wash chamber 12. Disposed within wash chamber 12 are dish-supporting racks 13 and 14 which are adapted to receive and support dishes or other articles to be washed within wash chamber 12. A closure member or door 15 is provided in one wall of cabinet 11, pivotal about a hinge means 16, to provide access to the wash chamber 12. When door 15 is pivoted downwardly, rack 13 can be at least partially withdrawn from wash chamber 12. Rack 13 is mounted by means of a slide and roller system 17 provided at each side of rack 13 and slidably supporting rack 13 from the inner wall of cabinet 11. Similarly, rack 14 can be at least partially withdrawn from wash chamber 12 by means of a roller 18, which rides upon a surface 19, provided at each side of cabinet 11.

The lower extremity of wash chamber 12 is defined by a bottom wall 20 which gradually slopes to a low

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point 21 near the center of the dishwasher. Disposed below low point 21 is a sump 22 which may be formed integrally with bottom wall 20 or which may be a separate element secured to bottom wall 20. Projecting upwardly from bottom wall 20 near the center of wash chamber 12 is a pedestal 23 which rotatably supports a reaction type spray device 24. Spray device 24 has a plurality of orifices 25 through which wash fluid is ejected to effectuate a wash action upon articles supported by racks 13 and 14. At least one of the orifices 25 is directed such that the reaction force created by wash fluid passing therethrough causes rotation of spray device 24.

Wash fluid is propelled into the spray device 24 by a motor-pump assembly 26 which includes an electric motor 27 and a pump 28. A flexible boot or conduit 29 interconnects the sump 22 with the inlet of pump 28. Boot 29 is secured to sump 22 by means of a clamp 30 and is secured to pump 28 similarly by means of a clamp 31. A second flexible boot or conduit 32 interconnects the outlet of pump 28 with a fitting 33 which extends through pedestal 23. Clamp 34 serves to secure boot 32 to pump 28. A similar clamp secures boot 32 to fitting 33 but is not seen in FIGURE 1 since it lies within pedestal 23. Spray device 24 is rotatably supported by pedestal 23 through fitting 33 which is rigidly secured to pedestal 23.

Means are provided to support motor-pump assembly 26 from bottom wall 20 and include a hanger 35 formed from a rod-like material into a generally U-shaped configuration. The distal ends of hanger 35 are bent upwardly and are adapted to be received by openings 36 and 37 in end plates 38 and 39 respectively of motor 27 with the upward bend serving to prevent the hanger from slipping out of the openings. End plate 39 of motor 27 has a plurality of bolts 40 passing therethrough to secure motor 27 to pump 28 to thus provide the unitary motor-pump assembly 26.

A bracket 41 is suitably secured to bottom wall 20 by such means as welding. Bracket 41 has a first portion 42 defining a generally circular large space between the bracket and bottom wall 20 and a second portion 43 defining a small space 44 between the bracket and bottom wall 20. A bushing 45 of elastomeric material is adapted to slip over hanger 35 and into the large circular space between bracket 41 and bottom wall 20. This relationship, in the assembled position, is illustrated in FIGURES 1 and 2. When assembled, motor-pump assembly 26 is supported from bottom wall 20 by means of hanger 35 and bracket 41 with elastomeric bushing 45 serving to minimize vibration and noise transmission from motor-pump assembly 26 to cabinet 11 during operation of dishwasher 10. The outer diameter of bushing 45 is approximately the same size as the diameter of the generally circular large space between bracket 41 and bottom wall 20 but in any event substantially greater than the dimension of the small space 44. The diameter of the material from which hanger 35 is made, is no greater than the dimension of space 44 for reasons to become obvious as this description proceeds.

The method of assembling the support means of the present invention includes the steps of securing one end of the generally U-shaped bracket 41 to the cabinet, specifically bottom wall 20 of cabinet 11, with the other end of the bracket defining a small space with the cabinet and the intermediate portion of the bracket defining a large space with the cabinet. The hanger 35 is formed of rod-like material into a generally U-shaped configuration as shown in the drawings with the rod-like material having a diameter no greater than the dimension of the small space 44 defined by the distal end of bracket 41 and the lower surface of bottom wall 20. The elastomeric bushing 45 is placed on hanger 35 by slipping it over one end thereof. The bight of hanger 35 is then slipped through space 44 and into the large generally circular space defined by first portion 42 of bracket 41 and bottom

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wall 20. Then, the bushing is moved along the hanger onto the bight and into the large circular area to thus complete assembly. FIGURE 3 illustrates the system of the present invention at the stage of assembly immediately preceding movement of bushing 45 along hanger 35 into the large circular space.

Thus it can be seen that the present invention provides an improved means to support a motor-pump assembly from the cabinet of an automatic dishwasher which minimizes vibration and noise transmission from the motor-pump assembly to the cabinet during operation of the machine. Also, the present invention provides a method of assembly which will reduce the labor involved.

As will be evident from the foregoing description, certain aspects of the invention are not limited to the particular details of construction of the examples illustrated, and it is contemplated that various other modifications or applications will occur to those skilled in the art. It is therefore intended that the appended claims shall cover such modifications and applications as do not depart from the true spirit and scope of the invention.

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

1. In an automatic dishwasher having a cabinet and a motor-pump assembly positioned beneath said cabinet, means to support said assembly from said cabinet comprising:

- (a) a bracket secured to said cabinet and having a first portion defining a large space between said bracket and said cabinet and a second portion defining a small space between said bracket and said cabinet,
- (b) a hanger formed from a rod-like material having an outside diameter no greater than the dimension of said small space, and
- (c) an elastomeric bushing having an inside diameter of approximately the same dimension as said outside diameter of said hanger and an outside dimension of approximately the same dimension as said large space but substantially greater than the dimension of said small space,
- (d) said bushing being fitted over said hanger and between said bracket and said cabinet within said large space,
- (e) said hanger having first and second ends each adapted to engage and support said motor-pump assembly, whereby said motor-pump assembly is supported from said bracket through said bushing and said hanger.

2. The invention of claim 1 wherein said hanger is generally U-shaped with the bight of the U received within said bushing and said large space.

3. The invention of claim 1 wherein said motor-pump assembly is provided with first and second holes and said first end and said second end respectively of said hanger extend through said holes.

4. The invention of claim 3 wherein said hanger has a first bend adjacent said first end and a second bend adjacent said second end with said first bend positioned within said first hole and said second bend positioned within said second hole.

5. The method of securing a motor-pump assembly to the cabinet of an automatic dishwasher comprising the following steps:

- (a) securing one end of a generally U-shaped bracket to said cabinet with the intermediate portion of said bracket defining a large space with said cabinet,
- (b) placing on one leg of a generally U-shaped hanger an elastomeric bushing,
- (c) passing said hanger into said large space and moving said bushing into said large space, and
- (d) attaching said motor-pump assembly to said hanger.

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6. The method of securing a motor-pump assembly to the cabinet of an automatic dishwasher comprising the following steps:

- (a) securing one end of a generally U-shaped bracket to said cabinet with the other end of said bracket defining a small space with said cabinet and the intermediate portion of said bracket defining a large space with said cabinet, 5
- (b) placing on one leg of a generally U-shaped hanger an elastomeric bushing of greater outside diameter than said small space, 10
- (c) passing said hanger through said small space into said large space,
- (d) moving said bushing along said hanger into said large space, and 15

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(e) attaching said motor-pump assembly to said hanger.

References Cited

UNITED STATES PATENTS

1,714,092	5/1929	Johnson	248—18 X
1,817,482	8/1931	Geyer	248—9
2,977,043	3/1961	Scheldorf	310—51 X

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