Feb. 15, 1949. W. E. BAKEWELL 2,461,624

SANITARY PUMP

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Fig. 1.

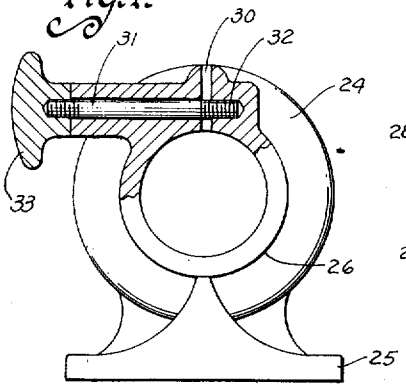


Fig. 2.

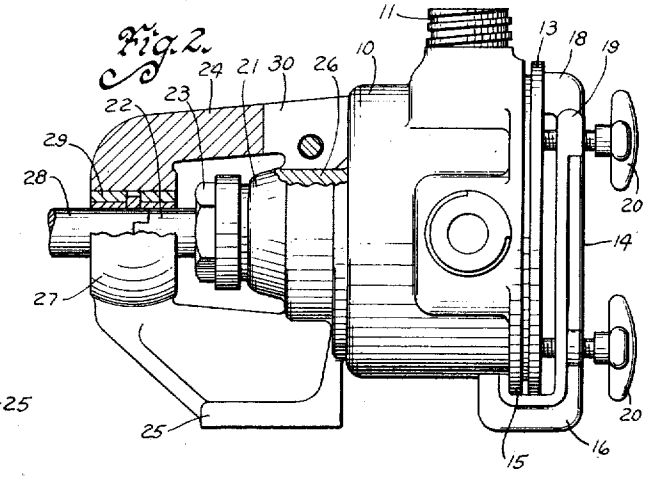


Fig. 3.

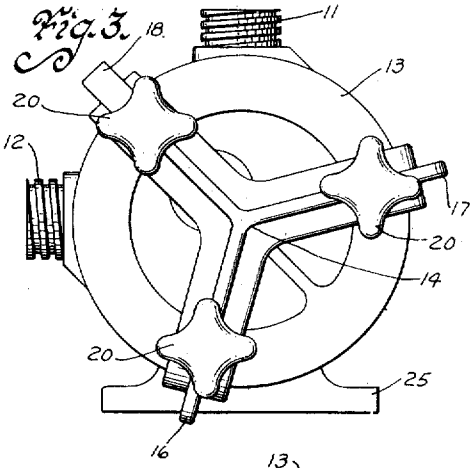


Fig. 4.

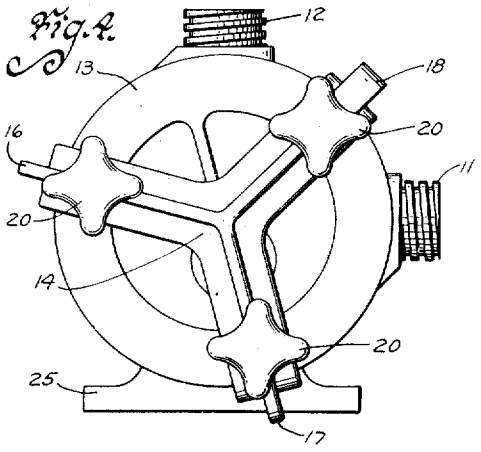
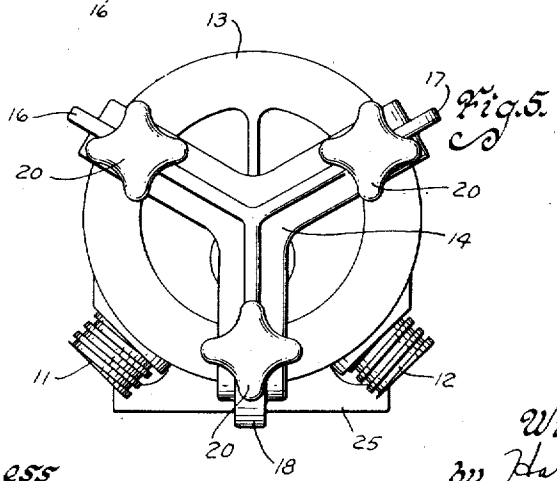


Fig. 5.



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Fig. 6.

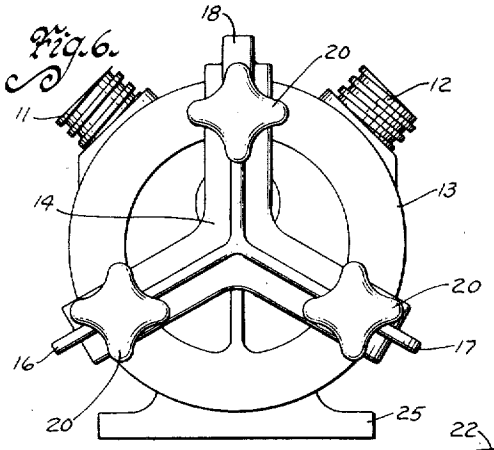


Fig. 7.

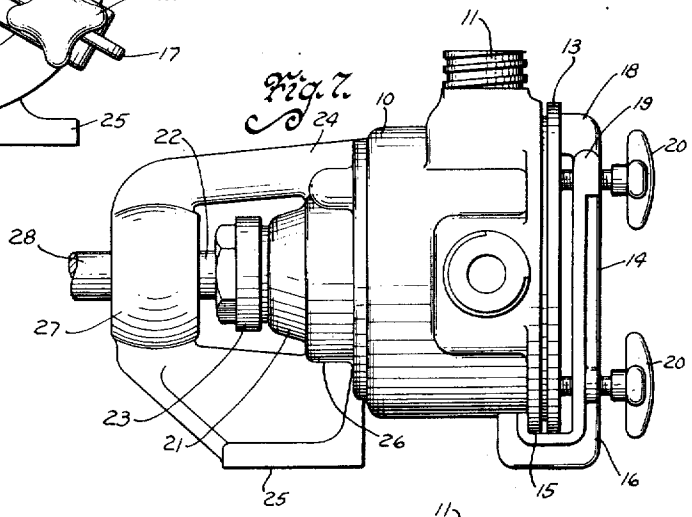
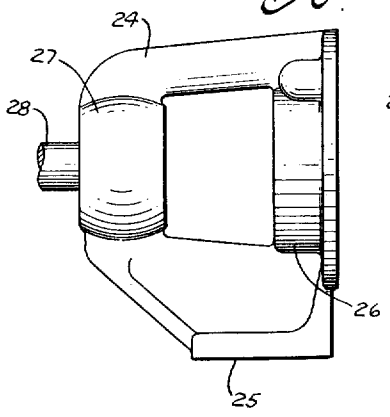
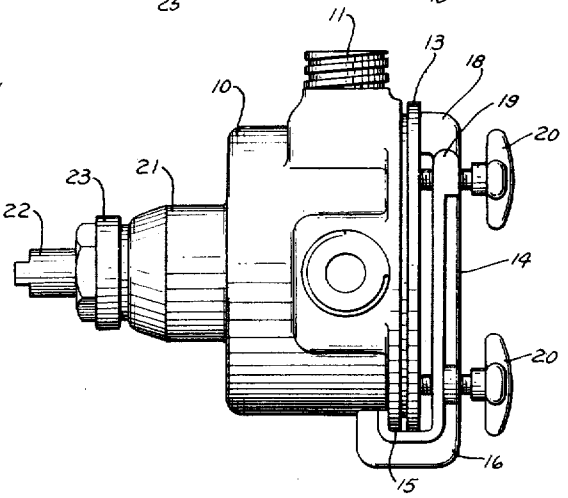


Fig. 8.





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SANITARY PUMP

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Application September 27, 1945, Serial No. 618,907

1 Claim. (Cl. 103—218)

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The present invention relates to a pump and more particularly to a sanitary pump for use in creameries, ice cream plants, food products, factories and refrigeration plants, which pump can be easily assembled and disassembled to keep it clean and sanitary.

In the processing of liquid food products, including milk and cream, movement of the liquids is generally done by positive displacement pumps and the "Viking" type pump has been found particularly adaptable for this purpose. A pump for handling food products must be constructed so that local and state health laws can be observed and the requirements of the Pure Food, Drug and Cosmetic Act met. These health measures require frequent cleaning of the pump parts to prevent spoilage and deterioration of the liquids hence the pump must be so constructed that it can be easily disassembled and reassembled and the parts must be so arranged and constructed that they can be reached for cleaning.

It is an object of the invention, among others, to provide a pump that is easily assembled and disassembled to allow speedy cleaning of the pump parts and insure the pump being out of operation a minimum length of time; a pump simple of assembly and disassembly which does not require a skilled mechanic for this operation; a pump so constructed and arranged that the inlet and outlet of the pump are adjustable to any desired position; and wherein the assembled parts of the pump are held in such a manner as to provide a more positive seal between the pump parts. Other objects will become apparent from a detailed description to follow in conjunction with the drawing.

In carrying out the objects of the invention there is provided a pump comprising an inlet and outlet to and from the pump.

The pump mechanism may be included within a casing with the inlet and outlet in the casing member and a detachable head portion attached to one end of the casing by a clamp member to hold the pump mechanism in assembled relation. A support member is provided for supporting the pump by receiving a portion of the pump therein which pump portion is an extension of the casing member. The pump is rotatable within the support member to be adjustable within the support member to vary the location of the inlet and outlet of the pump if desired and means are provided to rigidly secure the pump within the support member after being adjusted comprising a clamp means which when loosened, allows movement of the pump within the support

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member for locating the inlet and outlet in any desired position and when tightened, holding the pump rigidly in the adjusted position. The detachable head portion is attached to one end of the casing by a clamp member to hold the pump mechanism in assembled relation which clamp member contacts the head portion at a series of points around the periphery thereof to force the head portion tightly against the casing member to provide a seal.

With the foregoing and other objects in view, the invention will be more fully described hereinafter and will be particularly pointed out in the claims appended hereto.

In the drawings, wherein like symbols refer to like or corresponding parts throughout the several views:

Figure 1 is an end elevational view of the supporting member shown partly in section.

Figure 2 is a side elevational view the same as Figure 7 except a portion of the support and pump are shown in section.

Figures 3 to 6 inclusive are end elevational views showing the clamp member holding the head assembled with the respective figures showing different positioning of the inlet and outlet.

Figure 7 is a side elevational view showing the pump in assembled relation and mounted within the supporting member.

Figure 8 is a side elevational view showing the pump in assembled relation but removed from the supporting member.

The structure shown comprises a pump mechanism which pump mechanism is included within a casing member 10. The casing member 10 has located therein an inlet portion 11 leading to the pump mechanism within the casing and an outlet 12 leading away from the pump mechanism through casing 10. The pump mechanism within the casing may be a pump of the "Viking" type, wherein a rotor and idler mesh, forming a barrier between the inlet and outlet parts 11 and 12. As the idler draws away, it creates a suction and the openings between the idler and rotor are filled with liquid from the inlet. As the idler and rotor mesh again the entrapped liquid is forced out through the outlet. No claim is made to a new pump mechanism, hence it has not been disclosed.

In the operation of a sanitary pump, where it is necessary to clean the pump parts frequently, the pump must be disassembled and the parts scrubbed or cleaned with steam. The present pump structure shows a head portion 13 which is detachable from the casing 10 and is held in

assembled position by a clamp member 14. The head portion 13 holds the pump mechanism assembled within the casing 10 and it is also necessary to have a seal between the casing 10 and head portion 13 so the pump mechanism may operate efficiently. In view of the use to which the sanitary pump is placed, the seal between the head portion 13 and casing 10 must be a metal to metal seal as no gasket members are allowed in view of the sanitary requirements. The present invention shows a new and improved clamping means 14 for this purpose. Casing 10 has an outstanding flange 15 with the head portion 13 abutting against said flange 15 in a metal to metal contact for sealing purposes. Clamp member 14 has two arms 16 and 17 which hook over and under the flange rigidly attached to the clamp 14 and another arm 18, pivoted at 19 to the clamp 14, that also hooks over flange 15.

In assembling the head portion 13 on casing 10, arms 16 and 17 on clamp 14 are placed back of flange 15 while arm 18 is swung upwardly about pivot 19. After the arms 16 and 17 are properly in place, arm 18 is swung downwardly, back of flange 15. Clamp 14 carries a series of screw members 20, which are then screwed down to exert their pressure against the outer periphery of the head portion 13. This in turn forces the head portion 13 against the casing flange 15 in a metal to metal seal. Three screw members 20 are shown but it is to be understood more may be used if desired. This type of clamp has the advantage of applying pressure right at the sealing surfaces and tends to force the sealing surfaces tightly together hence there can be no component of force tending to pull the sealing surfaces apart.

The casing member 10 has an extension 21 which receives a shaft 22 leading from the pump mechanism and a packing assembly (not shown) for sealing the space between the shaft 22 and extension 10. A gland member 23 is shown for applying a pressure to the packing within the extension 21.

A support member 24 is provided to receive the pump mechanism. The support member has a base 25, a receiving portion 26 at one end to receive extension 21 of the casing and a bearing portion 27 at the other end to receive shaft end 22 therein. Shaft 22 has a splined coupling with a second shaft member 28 within the bearing portion 27 as shown clearly in Figure 2 with the coupled shaft ends being supported within bearing 29. Shaft 28 connects with a source of motive power which may be an electric motor or any other suitable means for rotating the pump mechanism.

The receiving portion 26 for the extension 21 on the casing is split at 30 as clearly shown in Figures 1 and 2 and a bolt member 31 is provided, which bolt member is secured to one side of receiving portion 26 as at 32 and the other end of screw member 31 has a nut member 33. Nut member 33 can be actuated to restrict or increase the width of the split 30.

With the support 24 and pump casing 10 as shown in Figure 8, the pump casing 10 is ready to be assembled in the support 24. Screw 33 on bolt 31 has been backed on its thread so as to make split 30 as large as possible to receive extension 21 of casing 10 within receiving portion 26 on the support 24. The shaft 22 is guided through receiving portion 26 into bearing portion 27 where the spline coupling between shafts 22 and 28 is affected within bearing 29. When this occurs, extension 21 is rotatably received within the receiving portion 26. The whole pump casing and assembly is then rotated within receiving portion 26 until the inlet 11 and the outlet 12 have assumed the desired position with regard to a piping system carrying the liquid products to be pumped and suitable connections made to this piping system. Screw 33 is then rotated to constrict space 30 which in turn makes receiving portion 26 exert a clamping action on extension 21 to provide a rigid connection between these members. Figures 3 to 6 inclusive suggest the many different positions that can be taken by the inlet 11 and outlet 12 with the particular supporting and clamping means between the support 24 and casing 10. This has the advantage that the pump can be adjusted for an existing piping system instead of adjusting the piping system for the pump.

It can be seen that the clamp 14 provides a speedy means of disassembly and assembly for the pump and the structure is simple of design so an expert mechanic is not needed for this operation.

While the invention has been described in connection with one embodiment, it is to be understood that the words which have been used are words of description rather than of limitation, and that practice of the invention within the scope of the appended claims may be resorted to without departing from the true scope of the invention in all its aspects.

I claim:

A pump comprising a casing having a main body portion containing a pump, a cylindrical extension on the main body portion of the casing through which a pump shaft passes, an inlet and outlet in the main body portion of the casing to and from the pump, a support member for supporting the pump having a cylindrical receiving portion on one end of the support member to receive the cylindrical extension on the main body portion of the casing therein, said cylindrical receiving portion for the extension on the main body portion of the casing being split and having a clamp member to draw the split sections together, said cylindrical extension for the extension on the main body portion of the casing being rotatable in the receiving portion to vary the location of the inlet and outlet on the pump when the clamp member is released, said clamp member when tightened clamping the receiving portion around the cylindrical extension on the main body portion of the casing to render the cylindrical extension and main body portion immovable within the support member, a second receiving portion on the support member spaced from the first mentioned receiving portion having a bearing therein and the pump shaft extending into the bearing and coupled to a shaft extended from a motive source within the bearing in the second receiving portion.

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