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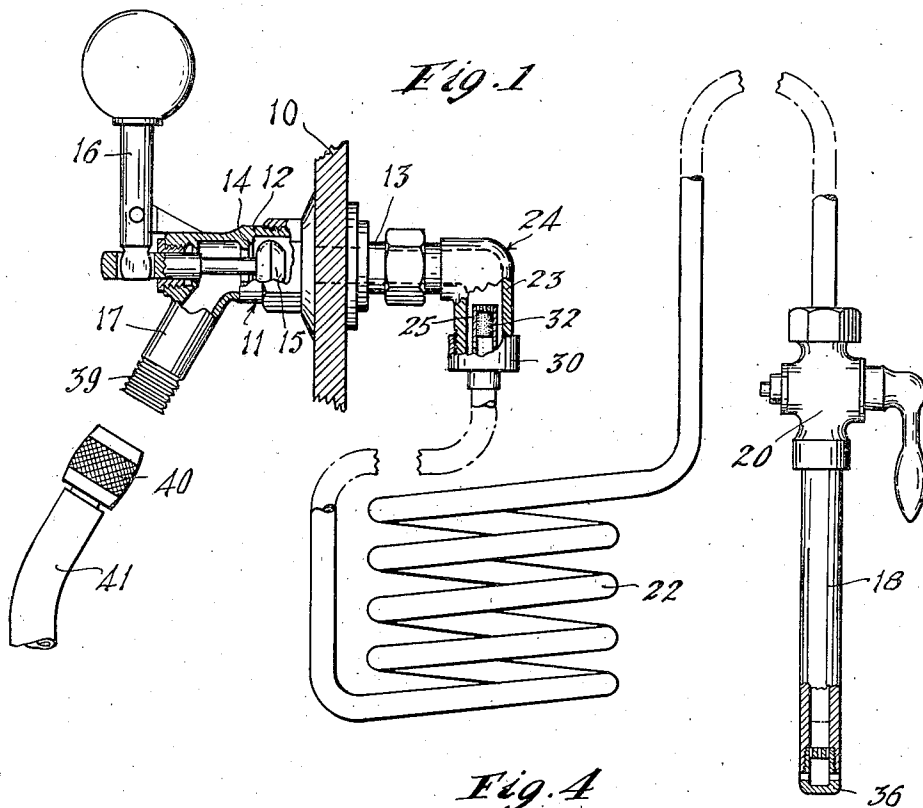
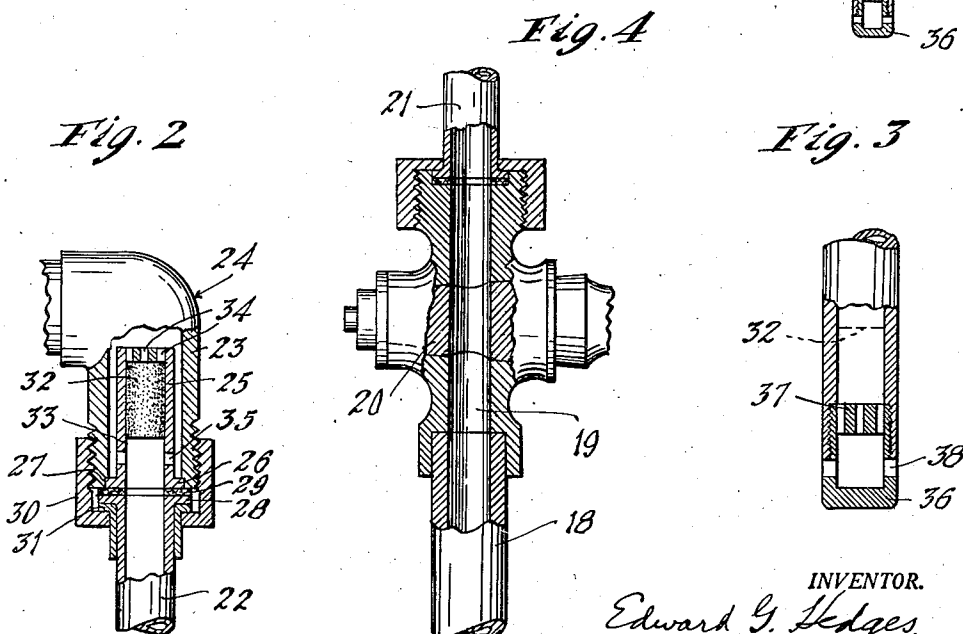
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CLEANER FOR BEER DISPENSING SYSTEMS

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2 Sheets-Sheet 1



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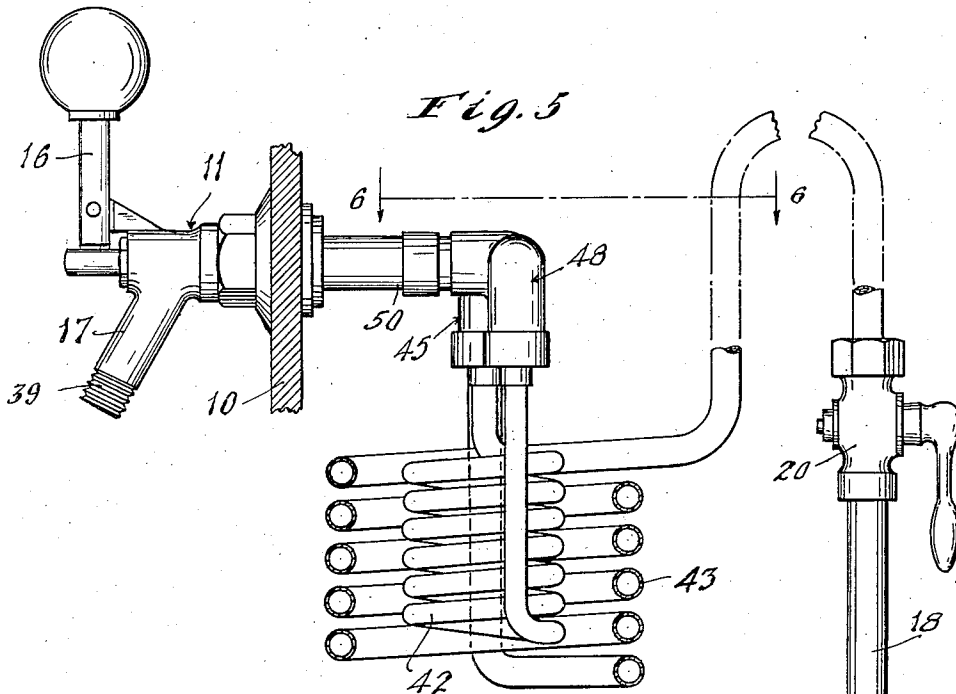
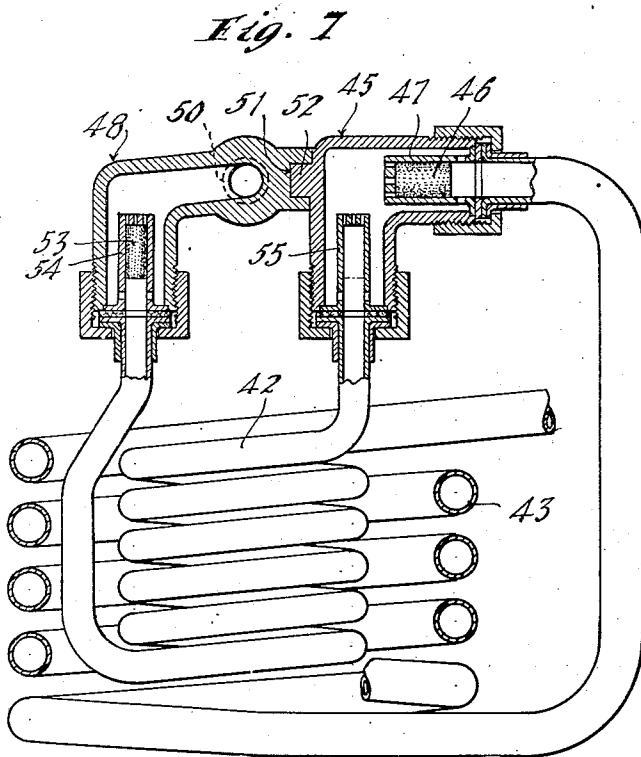
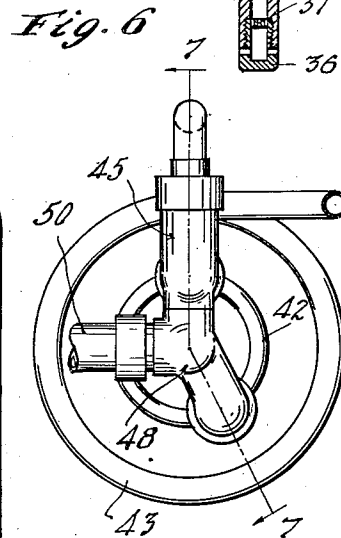
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CLEANER FOR BEER DISPENSING SYSTEMS

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2 Sheets-Sheet 2



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CLEANER FOR BEER DISPENSING SYSTEMS

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2 Claims. (Cl. 225—12)

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This invention relates in general to fluid dispensing apparatus and more particularly to apparatus which includes a pipe line, refrigerating pipe coils, faucets and other appliances for conveying the beverage from a storage point, for example, a keg in a cellar, to a remote dispensing point, for example to a faucet on the bar of a tavern.

In systems of this character, particularly where beer or ale is being dispensed, it is necessary frequently to cleanse the apparatus. To simplify the cleaning operation and to ensure a minimum of disturbance to normal operation of the apparatus, it has been proposed to place a mechanical cleaning unit, such as a sponge, permanently within the piping system so that it will move in one direction through the piping system under the pressure of the beverage flowing through the system and to utilize means such as water under pressure to move said cleaning unit through the system in the opposite direction after the contents of the keg or storage container has been dispensed, whereby said cleaning unit during its movement through the piping will remove any deposits upon the interior thereof, after which, if desired, said cleaning unit can be temporarily removed from the piping system to be cleaned or to be replaced by another unit.

During normal beverage-dispensing operations, the cleaning unit, i. e. the sponge, remains in the stream of beverage, in a so-called trap, as the beverage passes through the system, and the sponge may "bob" or move rapidly back and forth a limited distance under influence of the flowing beverage, which may impede the flow of and unduly agitate the beverage. Moreover, in such known systems certain parts of the piping system cannot be cleaned by the cleaning unit or sponge, for example, the tap rod which extends into the keg or other storage container.

One object of my invention is to provide in apparatus of the general character described, a novel and improved trap for the cleaning unit or sponge wherein the latter can be housed and located out of the path of flow of the stream of beverage during operation of the apparatus, whereby to overcome the objections to and disadvantages of the known systems.

Further objects are to provide such beverage dispensing apparatus wherein all parts of the piping system leading from and including the tap rod up to the faucet can be thoroughly and quickly cleansed by said cleaning unit; and to provide such a system so constructed and arranged that practically none of the flushing water

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used with said cleaning units shall be allowed to enter the keg or other beverage storage container.

A further object is to provide a beverage dispensing apparatus which shall include a novel and improved construction, combination and arrangement of a refrigerating coil and a resistance coil and a plurality of cleaning units and traps of the specific character described whereby said coils are connected in series for flow of beverage therethrough and each of said coils can be cleansed by movement of one of said cleaning units therethrough.

Other objects, advantages and results of the invention will be brought out by the following description in conjunction with the accompanying drawings in which

Figure 1 is a schematic side elevational view of a beverage dispensing system embodying my invention, portions being broken away and shown in section.

Figure 2 is an enlarged fragmentary vertical sectional view through the trap for the cleaning unit and the connection thereof to the piping.

Figure 3 is an enlarged fragmentary vertical sectional view through the inlet end of the tap rod.

Figure 4 is an enlarged fragmentary sectional view through the valve which controls communication between the tap rod and the piping system.

Figure 5 is a view similar to Figure 1 showing a modification of the invention.

Figure 6 is a top plan view of the apparatus shown in Figure 5, viewing the same from the line 6—6 of Figure 5, and

Figure 7 is a vertical sectional view on the line 7—7 of Figure 6.

For the purpose of illustrating the principles of my invention I have shown it embodied in a generally known type of system for dispensing beer or ale, and in Figures 1 to 4 inclusive the reference character 10 designates the wall of a bar fixture, cabinet or the like upon which is mounted a dispensing faucet 11 which includes a body portion 12 to which is connected a pipe fitting 13 for mounting the faucet on the wall 10. The body portion has a valve seat 14 with which co-operates a reciprocating valve 15 to close the faucet and prevent discharge of fluid therefrom. The valve is operated in known manner to and from its closed position by means of a pivoted handle 16 so that discharge of the beverage from the nozzle 17 of the faucet may be controlled at will.

The beverage dispensing system also includes

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a tap rod 18 which extends into a keg or other container not shown in which the beverage to be dispensed is stored under pressure. One end of the tap rod is connected to one port 19 of a plug valve 28, the other port of which is connected to one end of a pipe or tube 21 which is connected to one end of a refrigerating pipe coil 22, the other end of which is connected to a trap 24 constructed in accordance with the invention. This trap 24 includes a casing 23 in the form of an elbow one arm of which is connected to the coil 22 while the other arm is connected to the pipe fitting 13.

Within the casing 23 is a trap housing 25 that has a flange 26 at one end fitted into a rabbeted seat 27 in the end of one arm of the casing 23. The trap housing may be secured in the casing in any suitable manner, but as shown the end of the pipe coil 22 is formed with an out-turned flange 28, a packing washer 29 is interposed between said flange and the end of housing 25 and the casing 23, and a coupling sleeve 30 is screw threaded on the casing and has an inturned flange 31 between which and the end of the casing 23 are clamped the flange 28 on the end of the pipe coil and the packing ring 29.

Before the parts are assembled as above described, a mechanical cleaning element 32 is inserted into the piping system between the trap housing and the inlet end of the tap rod, said cleaning element preferably being in the form of a relatively short section of sponge rubber or similar highly compressible porous material. The normal exterior diameter of the cleaning element is somewhat greater than the interior diameter of the piping so that the cleaning element normally tends to expand into snug contact with the inner walls of the piping. The trap housing 25 has an interior chamber 33 to receive the cleaning element 32 and as shown, this chamber opens through one end of the housing and is in alinement with and of substantially the same diameter as the interior of the piping as more clearly shown in Figure 2. With this construction, the cleaning element may move through said open end of the housing from the piping into the trap chamber or out of the trap chamber into the pipe. The other end of the trap housing has one or more openings 34 to permit flow of fluid therethrough into and out of the chamber in both directions, but said openings 34 are so small that the cleaning element 32 can not pass therethrough. Accordingly the only way in which the cleaning element may enter or leave the trap chamber is through the open end of the housing that is directly connected to the pipe coil 22. Between the portion of the chamber of the trap housing and said open end thereof the walls of the housing have lateral passages 35 and the diameter of the exterior of the trap housing inwardly of the flange 26 is less than the diameter of the interior of the casing 23, so that fluid may flow in both directions through said passages 35 between the casing 23 and the pipe coil 22 around the portion of the trap housing which receives the cleaning element.

The inlet end of the tap rod 18 has a hollow plug 36 the interior of which is in alinement with the passage through the tap rod and the inner end of which has a perforated wall 37 extending transversely of the passage through the tap rod to prevent movement of the cleaning element 32 out of the tap rod. Flow of bev-

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erage from the storage container into the tap rod is permitted by lateral passages 38 in the walls of the plug and the perforations in the partition 37.

With the construction so far described, and assuming the tap rod 18 to be inserted into a keg or other container which contains beverage under pressure and with the valve 20 open, when it is desired to draw a portion of the beverage, the hand lever 16 is rocked so as to open the valve 15 as shown in Figure 1, whereupon the beverage will flow upwardly through the tap rod and the valve 20, the pipe coil 22, the passages 35 in the trap housing, the casing 23, pipe fitting 13 and valve casing 12 through the outlet nozzle 17. The flow of beverage under pressure will force and hold the cleaning element 32 into the trap housing as shown in Figure 2, where the cleaning element will remain stationary and out of the path of flow of the beverage during all normal dispensing operations.

When the supply of beverage has become exhausted and it is desired to cleanse the system before the empty keg or container has been replaced by a full one, the cleaning unit 32 is caused to move through the pipe system from the trap housing to the partition 37 of the plug 36 in the tap rod. As shown, this is effected by connecting a source of water under pressure to the nozzle 17 of the dispensing faucet 11 and causing water under pressure to flow through the faucet in the direction opposite to that of the normal flow of the beverage. The valve is thus opened and the water passes into the trap casing 23 and through the openings 34 in the trap housing so as to force the cleaning element 32 from the housing into the pipe coil. Thereafter the water will continue to flow through said openings 34 as well as around the trap housing and through the passages 35 into the pipe coil so as to force the cleaning unit 32 throughout the length of the pipe coil and the pipe 21 and through the valve 20 and the tap rod to the partition 37 in the plug of the tap rod. During this movement, the cleaning element will have rubbed the walls of the piping system and tap rod and removed therefrom all undesirable accumulations.

During this operation the cleaning element will close the perforations in the partition 37 of the tap rod plug 36 and prevent flow of the water into the keg or other storage container, which is desirable. To facilitate the connection of the faucet to the water supply, the faucet nozzle may be exteriorly screw threaded as indicated at 39 to cooperate with a coupling 40 on one end of a hose 41 the other end of which may be connected to a source of water under pressure.

After the system has been cleaned as described, the tap rod is removed from the keg. Thereupon the tap rod may be inserted into a filled beverage container. Then the valve 15 of the faucet 11 will be opened and the pressure in the beverage container will force the water in the piping system backwardly through the system, carrying with it the mechanical cleaning element 32 to its position within the trap housing as shown in Figure 2. This operation is continued until all of the water has been ejected from the piping system, whereupon the system is in condition for again dispensing the beverage.

Figures 5, 6 and 7 illustrate a modification of the invention wherein a so-called resistance coil 42 is included in the system. The tap rod 18, control valve 20, and dispensing faucet 11 are

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shown as identical in construction and operation with the corresponding parts in the system illustrated in Figures 1 to 4 inclusive.

This modification of the invention includes a refrigerating coil 43 which corresponds to the coil 22 and has one end 44 connected to the control valve 20 and its other end connected to one arm of an L-shaped or elbow fitting 45 in substantially the same manner in which the end of the coil 22 is connected to the trap casing 23 of the system shown in Figures 1 and 2.

A mechanical cleaning unit 46 which may be identical with the unit 32 is permanently retained in and movable through the refrigerating coil 43 and tap rod 18 and a trap housing 47 identical with the trap housing 25 is mounted in the fitting 45 to receive and trap the cleaning unit 46 in the same manner in which the trap housing 25 receives and traps the cleaning unit 32. The other arm of the fitting 45 is connected to one end of the resistance coil 42, the other end of which is connected to one arm of another L-shaped or elbow fitting 48, the other arm 49 of which is connected to a pipe section 50 which is in turn connected to the faucet 11. To facilitate proper relative location of the two fittings 45 and 48, one thereof may have a socket 51 to removably receive a stud 52 on the other, as more clearly shown in Figure 7 of the drawings. Also, with this construction and arrangement, additional coils can be easily included in the system.

Within the resistance coil 42 and movable therethrough is a cleaning unit 53 which is similar to the unit 46 but of a smaller diameter to correspond to the internal diameter of the piping of the resistance coil 42. The end of the resistance coil 42 is connected to the fitting 45 in the same manner in which the end of the refrigerating coil is connected to the trap casing 23, and mounted within the fitting 48 is a trap housing 54 which is identical except as to size with the trap housing 25, to receive and trap the cleaning unit 53.

The arm of the fitting 45 to which the resistance coil 42 is connected also has a trap housing 55 identical with the housing 54 to receive and trap the cleaning unit 53.

With this construction, it will be observed that the refrigerating coil and the resistance coil are connected in series with each other so that fluid may flow into the system through the tap rod 18 thence through the refrigerating coil 43, through the fitting 45 into the resistance coil 42, thence through the fitting 48 and pipe section 50 to the dispensing faucet 11.

During normal dispensing operations when the beverage flows through the system and from the dispensing faucet, the cleaning unit 46 is forced into its trap housing 47, while the cleaning unit 53 is forced into the trap housing 54, and the beverage flows through the spaces between the walls of the trap housings and the walls of the respective fittings in the same manner in which the beverage flows through the spaces between the trap housing 25 and the trap casing 23.

When it is desired to clean the system, a source of water supply is connected to the nozzle 17 of the dispensing faucet as described in conjunction with the system illustrated in Figures 1 and 2, and when the water is turned on, it will flow through the fitting 43, resistance coil 42, fitting 45, the refrigerating coil 43 and thence into the tap rod 18; and during this flow the cleaning element 53 will be forced through the resistance

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coil from the trap 54 to the trap 55, and the cleaning unit 46 will be forced from the trap 47 through the refrigerating coil 43 and into contact with the partition 37 of the plug 36 in the end of the tap rod.

It will be noted that the trap housings 54 and 55 are in effect reversely arranged so that one may trap the cleaning element 53 when beverage is flowing through the system during normal dispensing operations while the other may trap the cleaning unit 53 when the water is flowing through the system in the direction opposite to that of the normal flow of the beverage.

It will thus be seen that my invention permits a thorough cleansing of the piping system, even including the resistance coil and the tap rod, after the contents of each keg or other storage container has been dispensed, and that an accumulation of an excessive amount of water in the keg is prevented. During normal beverage dispensing operations the cleaning unit is held out of the path of flow of beverage and prevented from bobbing or moving back and forth in the stream of beverage. The trap for the cleaning unit is simple and inexpensive in construction and operation and may be easily and quickly inserted in and removed from the piping system.

While I have shown and described the invention as embodied in certain details of construction it should be understood that this is primarily for the purpose of illustrating the principles of the invention and that many modifications and changes may be made in the construction and use of the invention within the spirit and scope thereof.

What I claim is:

1. For use with a piping system having a mechanical cleaning unit movable therethrough under the influence of fluid under pressure, a trap for said cleaning unit including a casing having inlet and outlet openings for connection to pipes, a trap housing mounted within said casing and having a chamber formed with openings for passage of fluid through said chamber between said inlet and said outlet of said casing, one of said openings being formed for passage of a mechanical cleaning unit from said inlet end of said casing into said chamber, said housing having means to prevent passage of said cleaning unit in any other way into or out of said chamber, a portion of said trap chamber inwardly of the first-mentioned opening being adapted to receive said cleaning unit and a portion of the walls of said housing being spaced from the walls of said casing, said portion of the housing walls having passages between said portion of said chamber and said inlet end of said casing for flow of fluid in both directions through said casing around the portion of said housing in which said cleaning unit is trapped.

2. For use with a piping system having a mechanical cleaning unit movable therethrough under the influence of fluid under pressure, a trap for said cleaning unit including a casing having inlet and outlet openings for connection to pipes, a trap housing connected at one end to said casing adjacent the inlet thereof and having a chamber formed with openings at its opposite ends for passage of fluid through said chamber, the opening of said chamber at the inlet end of said casing being formed to permit passage therethrough of a mechanical cleaning unit into and out of said chamber, the other end of said housing prevent-

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ing passage of said cleaning unit into or out of said chamber, a portion of said chamber inwardly of the first-mentioned opening being adapted to receive said cleaning unit and portions of the walls of said housing inwardly of said end that is connected to said casing being spaced from the walls of the casing, and there being passages in

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said housing walls between said end of the casing and said portion of said chamber for flow of fluid in both directions through said casing through said inlet, between the walls of said housing and said casing and through said outlet.

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