ABSTRACT: Cleaning apparatus for a tapping system fitting secured in a keg that is held in predetermined position includes a nozzle that is mounted on a base to move longitudinally and horizontally into and out of liquid transmitting engagement with said fitting, and said base is mounted on a support on which is means to move said base vertically and means to move the base horizontally in angularly related directions, one parallel to and the other transversely of, said direction of longitudinal movement of the nozzle, to accommodate kegs of different diameters and kegs of different lengths and kegs having the tapping fittings located either concentrically or eccentrically of the end walls of the keg.
ADJUSTABLE SUPPORT FOR APPARATUS FOR CLEANING KEG FITTINGS OF TAPPING SYSTEMS

The subject matter of this application is related to the subject matter of my application Ser. No. 706,581 now U.S. Pat. No. 3,348,583 in which is described and claimed a cleaning apparatus to coat with a fitting of a keg tapping system.

BACKGROUND OF THE INVENTION

1. Field of the Invention

The invention is related to washing apparatus and particularly to the cleaning of keg fittings of tapping systems. The apparatus comprises in general means for holding a keg in predetermined position, for example on the frame of a keg washing machine, and a cleaning apparatus mounted on a support and including a nozzle for liquid transmitting engagement with the keg fitting.

2. Description of the Prior Art

The most pertinent prior art known to me is my own U.S. Pat. No. 3,482,583 which discloses a cleaning apparatus for tapping system fittings that includes a support for the nozzle actuating mechanism, which support includes means whereby the actuating mechanism may be adjusted vertically and also adjusted horizontally in the direction parallel to the direction of movement of the nozzle into engagement with the keg tapping fitting; to accommodate kegs of different diameters and kegs of different lengths.

Two supports are shown, one including a support frame on which the cleaning apparatus base can be mounted by manual handling, selectively at three different elevations and three positions in differently horizontally spaced relation to the keg tapping fitting.

Another support includes side plates on the apparatus base carrying rollers movable in inclined slots and actuated by a manually operated screw.

Neither of these apparatus provides for horizontal movement of the cleaning apparatus nozzle in a direction perpendicular to the direction of longitudinal movement of the nozzle into and out of the engagement of the tapping fitting; and both of the apparatus require too much manual exertion and operator’s skill in effecting the required adjustments.

SUMMARY

According to present practice, kegs vary not only in diameter and length with the tapping fittings coaxially disposed in one end of the keg, but some kegs have the tapping fittings eccentrically disposed in the end of the keg. Therefore one object of the present invention is to provide support for cleaning apparatus of the type herein described, which support shall be capable of automatic adjustment of the cleaning apparatus in a horizontal direction perpendicular to the horizontal direction of longitudinal movement of the nozzle to accommodate kegs having the fittings eccentrically mounted therein, and shall also be capable of adjustment of the nozzle vertically and horizontally in a direction parallel to the direction of longitudinal movement of the nozzle to accommodate kegs of different diameters and kegs of different lengths.

The invention also contemplates novel and improved mechanism for mounting the cleaning apparatus, includes a fixed main support frame on which is mounted a secondary frame for horizontal movement in the direction perpendicular to the direction of longitudinal movement of the nozzle, a sub-frame on which said secondary frame, and an auxiliary frame on said subframe, which has the base of the cleaning apparatus secured thereto is movable horizontally on the subframe in a direction parallel to the direction of the nozzle movement.

Another object of the invention is to provide such apparatus which is pneumatically or hydraulically operated under the control of a simple pushbutton or valve manipulated by the operator, thereby to reduce to the minimum the necessity for manual exertion and skill of the operator.

BRIEF DESCRIPTION OF THE DRAWINGS

For a more complete understanding of the invention, reference should be had to the accompanying drawings in which:

FIG. 1 is a side elevational view of a cleaning apparatus for a keg tapping fitting, and mounting means therefor adjustably mounting the nozzle of the cleaning apparatus relative to the keg fittings in kegs of different diameters and different lengths and having fittings mounted either centrically or eccentrically one of which is shown by solid lines on a portion of a keg washing machine which is shown in vertical section;

FIG. 2 is an enlarged top plan view of the mounting means taken approximately from the plane of the line 2—2 of FIG. 1 with the cleaning apparatus omitted and with the figure turned 180° on the sheet;

FIG. 3 is a side elevational view of the mounting means shown in FIG. 2.

FIG. 4 is an end elevational view of the mounting means approximately from the plane of the line 4—4 of FIG. 3;

FIG. 5 is a transverse vertical sectional view on the plane of the line 5—5 of FIG. 2;

FIG. 6 is an end elevational view of a keg having a tapping fitting eccentrically mounted in the end thereof; and

FIG. 7 is a similar view of a keg of smaller diameter.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

The present embodiment of the invention contemplates the use of the cleaning apparatus A for cleaning the fitting B of a known type of beer keg tapping system disclosed in U.S. Pat. No. 3,228,413, which in some cases is mounted concentrically and in other cases eccentrically with the end wall of the keg C as shown respectively by dot and dash lines and by solid lines in FIGS. 6 and 7 which also illustrate kegs of different diameters and different lengths mounted on the frame D of a keg washing machine with the end of the keg opposite the fitting abutting an adjustable backstop E that is mounted on a fixed support F.

The cleaning apparatus A includes a nozzle G movable into and out of fluid transmitting engagement with the fitting B, and the apparatus A is mounted on a support H so that the nozzle can be moved horizontally longitudinally into and out of engagement with the fitting to accommodate kegs of different lengths and can be moved horizontally in a direction perpendicular to the direction or path of said movement of said nozzle to accommodate both fittings disposed coaxially or concentrically with the end wall of the keg and fittings disposed eccentrically to the end of the keg, and also be moved vertically to accommodate kegs of different diameters, as shown in FIG. 1 of the drawings where a keg of largest diameter is shown in solid lines and kegs of smaller diameters and lengths are shown in dot and dash lines.

As shown in my Pat. No. 3,482,583, the nozzle G is disposed at one end of a cylinder C carried by a carriage I which is linearly slidably movable on a base J. The carriage is actuated by a reciprocating fluid pressure motor (not shown here but illustrated in FIG. 2 of my aforesaid patent) secured on the base and having its piston rod pivotally connected to the bottom of the carriage so that upon energization of the motor the carriage I is moved horizontally to actuate the nozzle into and out of liquid transmitting engagement with the fitting B. While the cleaning apparatus includes other parts such as probes through which water is forced into the beer outlet A and the air inlet C of the fitting B, and the cylinder carrying the nozzle is mounted for swinging motion to align the probes with said openings even when the fitting has become dislocated from its normal relation to the keg, these structural details form no part of the present invention and need not be further described.

The support H which embodies the present invention is shown as comprising a main support frame K fixedly set for example on a floor, in predetermined relation to the end wall of
a keg mounted on the washer frame D as shown in FIG. 1. This main frame may be of different constructions depending upon the location in which it is to be used, but is shown as including a top bearing plate L on which is mounted a secondary frame M which in turn carries a subframe O on which is mounted an auxiliary frame O to which the base J of the cleaning apparatus is fixedly secured.

The secondary frame M is mounted for horizontal movement in a direction perpendicular to the direction or path of longitudinal movement of the nozzle. As shown, the top plate L has two pairs of spaced apart bearing lugs 1, and in the bearing lugs of each pair is fixedly secured a shaft 2 so that the shafts have their axes disposed perpendicular to the direction of movement of the nozzle and spaced apart in said direction of movement of the nozzle. The secondary frame M has depending bearing blocks 3 slidable mounted on said shafts, each block being disposed between one of the lugs 1 and a collar 44 adjustable mounted on the corresponding shaft whereby movement of the secondary frame in both directions is limited by the lugs and collars. The secondary frame is shown as actuated by a reciprocating fluid pressure motor P the cylinder of which is secured to the bottom of the secondary frame by a clamp block 5 and which has its piston rod 6 connected to a lug 7 as shown in FIG. 5, so that when the motor is energized by fluid pressure supplied through a pipe 8 at one end of the cylinder suitable control valves the secondary frame will be moved to the left in FIG. 5, while when the fluid pressure is supplied through pipe 9 at the other end of the cylinder the secondary frame will be moved to the right in FIG. 5.

The secondary frame is shown as including two side bars 10 connected by tie plates 11, and to the bars 10 are connected upstanding brackets 12 which has clamps 13 at their upper ends to support reciprocable fluid pressure motors 14. The piston rods 15 of the motors 14 have adjustable nuts 16 at their lower ends on which are supported the subframe N which is shown as comprising said side bars 17 connected by a tie plate 18. The subframe is shown in its normal lower most position in FIG. 4 and can be selectively elevated into various positions two of which are illustrated in solid lines and dot and dash lines respectively in FIG. 5. The subframe bars 17 may simply rest on the nuts 16 which permit adjustment of the subframe on the piston rods, and the motors 14 are simultaneously energized, when fluid pressure is admitted through pipes 19 to the lower ends of the cylinders, the subframe is elevated. It being understood, of course, that the upper ends of the cylinders are vented to the atmosphere. Upon release of the fluid pressure, the subframe will descend by action of gravity. The valve mechanism, not shown, will preferably be such as to control the extent of elevation of the subframe, but if desired spacer stop blocks 20 of the proper length may be interposed between the upper sides of the bars 17 and the clamp blocks 13. It will of course be understood that the extent of elevation will be determined by the position of the keg fitting, that is, a keg fitting on a large keg or a keg fitting on a smaller keg, the extent of elevation being such that the nozzle G will properly align with the particular keg fitting to be cleaned.

The horizontal movement of the secondary frame M permits the adjustment of the nozzle to accommodate eccentrically disposed fittings. In FIG. 4 the position of a fitting on one keg is illustrated as X, it being noted that said position is offset or eccentric to the center line Y of the keg or barrel. The offset fitting in FIG. 5 is designated Z and it will be noted that the offset of the centerline of the barrel, as well as the elevation of the fitting, is different from that shown in FIG. 4, where the fitting X is mounted in a barrel or keg of smaller diameter than the keg in which the fitting Z is mounted.

The auxiliary frame O is shown as comprising spaced parallel side bars 21 on which the base A of the cleaning apparatus is mounted. The bars 21 are connected at one end by a bearing plate 22 slidable on guide rods 23 mounted on an end plate 24 and brackets 26 which are fastened to the bars 10 at their respective ends of the secondary frame M. The other ends of the bars 21 have bearing wings 25 also slidable on the rods 23. The bearing plate 22 has a swivel connecting 27 of generally known construction with one end of a screw 28 which is threaded in and extends through the end plate 24 and has a crank 29 at its outer end for rotating the screw. Obviously upon rotation of the screw alternately in opposite directions the auxiliary frame O and consequently the nozzle G will be reciprocated alternately in opposite directions so as to move the nozzle respectively toward and away from the tapping system fitting on the keg to accommodate kegs of different lengths.

It is desirable to prevent swinging of the subframe and for this purpose are shown vertical guide rods 30 secured in sockets 32 on the side bars 10 of the secondary frame on which are slidable guide sleeves 31 fastened on the top sides of the bars 17 of the subframe N.

I claim:

1. A support for a cleaning apparatus which includes a nozzle mounted on a base for fluid transmitting engagement with a fitting on a keg held in predetermined position on a frame, said support comprising a main frame to be set on a fixed support adjacent said fitting, mounting and actuating means carried by said main frame to support said base and move it selectively vertically and transversely horizontally with respect to said fitting to align said nozzle with said fitting and to move said nozzle longitudinally horizontally toward and away from said fitting.

2. A support as defined in claim 1 wherein said base is carried by said mounting and actuating means to provide movement of said base and nozzle selectively horizontally in directions toward and away from said fitting and in directions perpendicular to the path of movement of said nozzle toward and away from said fitting.

3. A support as defined in claim 2 wherein said mounting and actuating means comprises a secondary frame which carries said base, means mounting said secondary frame on said main frame for movement in directions perpendicular to said path of movement of the nozzle, and means connected between main frame and said secondary frame for moving said secondary frame.

4. A support as defined in claim 3 wherein the means for mounting the secondary frame on the main frame includes a pair of spaced apart parallel guide shafts mounted on said main frame, and guide blocks secured on said secondary frame and mounted on said guide shafts.

5. A support as defined in claim 1 wherein said mounting and actuating means comprises an auxiliary frame comprising said base and there is means for moving said auxiliary frame horizontally relatively to said main frame; to move said nozzle toward and away from said fitting.

6. A support as defined in claim 5 wherein said mounting and actuating means includes a subframe carrying said auxiliary frame and means for moving said auxiliary frame vertically.

7. A support as defined in claim 6 wherein said mounting and actuating means includes a secondary frame carrying said subframe and there is means for moving said secondary frame horizontally in a direction perpendicular to said path of movement of the nozzle toward and away from said fitting.

8. A support as defined in claim 6 wherein the last-named means includes a secondary frame and means mounting said subframe on said secondary frame and for actuating said subframe vertically.

9. A support as defined in claim 8 wherein said means for mounting and actuating said subframe vertically comprises at least two motors each including two relatively movable parts which are connected respectively to said secondary frame and to said subframe, and means for guiding said subframe during its vertical movements.

10. A support as defined in claim 5 wherein said means for moving said auxiliary frame horizontally comprises a subframe on which said base is mounted and an adjusting screw threaded in said subframe and swivel connected to said auxiliary frame.