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BARREL WASHING APPARATUS

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Fig. 1.

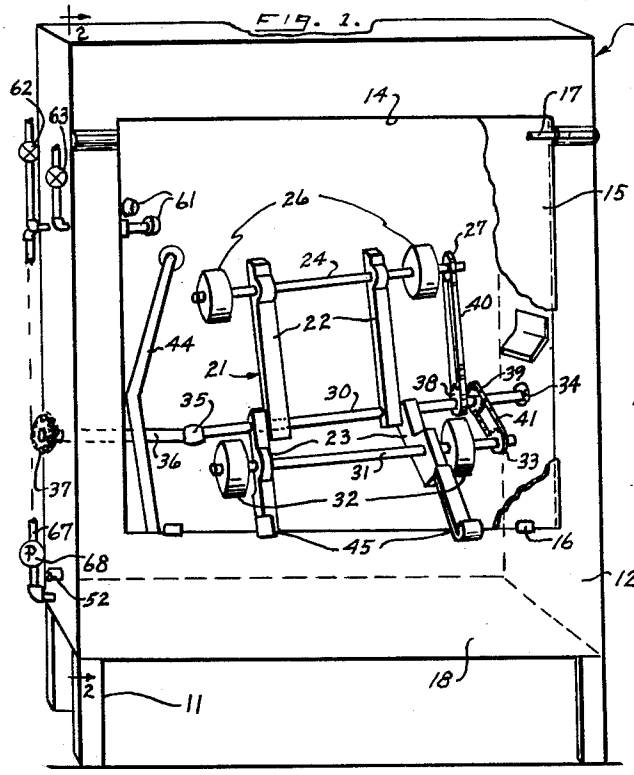


Fig. 3.

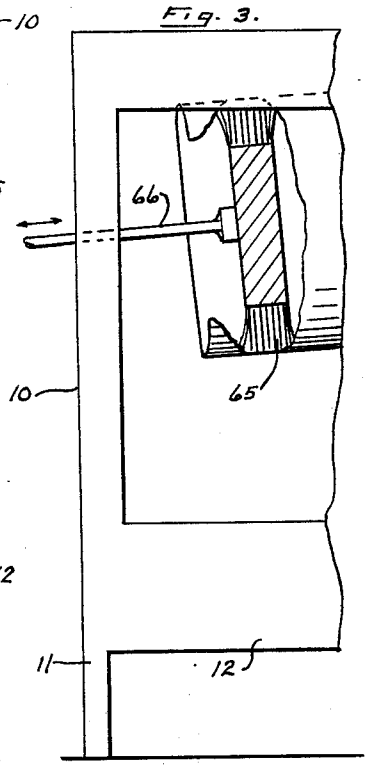
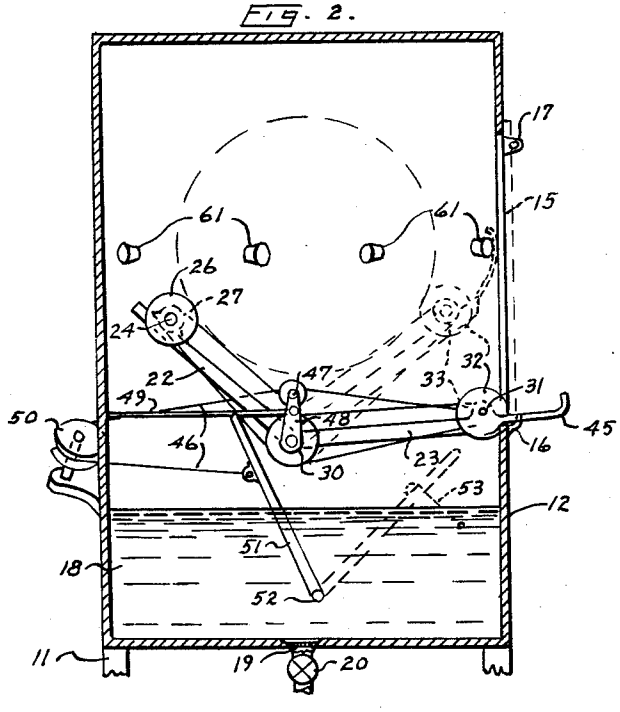


Fig. 2.



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BARREL WASHING APPARATUS

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This invention relates to an apparatus for washing steel drums or barrels and is more particularly directed to apparatus for cleaning and washing of said drums or barrels, in which said barrels are employed by rendering plants and butcher shops, and are required to be both clean and sanitary. It is an object of this invention to provide a barrel cleaner and washer which removes all grease and foreign matter from the entire internal and external surface of a steel drum or barrel, readying it for reuse.

It is a further object of this invention to provide a single machine which will receive a single barrel, clean the outside and inside surfaces and the inset bottom all in a single operation, and deliver the cleaned and sanitized barrel ready for reuse.

A still further object of this invention is to provide a barrel cleaning apparatus, including novel means for rotatably supporting and/or driving said barrel while retained in an inclined relation to said apparatus.

A still further object of this invention is to provide a barrel cleaning apparatus including a drive for rotating said barrel and wherein a novel spray means is provided to clean and sanitize both the outside and inside of said barrel.

Further objects and advantages of this invention shall be apparent from the following detailed description and the drawings, in which

FIG. 1 is a front elevational view of the barrel washer;

FIG. 2 is a side elevational view, taken on line 2—2 of FIG. 1; and

FIG. 3 is a front elevational view of a further embodiment of this invention.

Referring to FIG. 1, there is illustrated a barrel washer 10, which includes a complete frame 11. Supported within this frame 11 is a completely enclosed housing 12, housing 12 being provided with a large front opening 14, which is closed by a panel 15 during the operation of the device. Panel 15 may be retained in its closed sealed position by a plurality of brackets 16 at the bottom edge of opening 14 and slidable latches 17 supported adjacent the upper portion of panel 15 so that they may be moved into a locked position to retain panel 15 tightly closed. The lower portion of housing 12 is in fact a tank or fluid retaining area 18. A drain 19 and shut off valve 20 are provided at the bottom of tank 18, thus the tank may be readily drained by opening valve 20. Supported within the housing 12 is the barrel supporting and driving elements, a frame 21 which comprises two parallel supporting members 22 positioned adjacent the rear wall of the housing and two parallel supporting members 23 adjacent the front or the open portion of the housing. At the upper end of members 22 there is a rotatable shaft 24 extending through both members 22, and retained in an inclined position, and supporting a pair of rubber drive wheels 26 affixed to shaft 24 to rotate with shaft 24 and positioned at opposite ends. Shaft 24 at one end is also provided with a sprocket 27. The other pair of supporting members 23 are pivotally mounted on a shaft 30, and at their opposite end support a shaft 31, shaft 31 being retained in an inclined position parallel to shaft 24, shaft 31 also supporting at either end thereof a pair of rubber drive wheels 32 affixed to shaft 31 to rotate with shaft 31. Shaft 31 at one end is also provided with a sprocket 33. Shaft 30 is centrally positioned below the supporting framework and shaft 30 extends in an inclined

position parallel to shafts 24 and 31. Shaft 30 at one end is supported in a bearing 34 and at its opposite end in a universal joint 35. A shaft 36 extends from the universal joint 35 through the housing 12 and is provided with a drive sprocket 37 outside housing 12. Shaft 36 is of course mounted in a bearing and seal in the wall of housing 12. Supported on shaft 30 are a pair of sprockets 38 and 39. The sprockets are positioned in alignment with sprockets 27 and 33 respectively, so that a chain 40 may be mounted about sprockets 27 and 38, while a chain 41 is mounted about sprockets 33 and 39. With this arrangement it is apparent that a chain drive (not shown) may be connected to sprocket 37 and this drive will be transmitted through shaft 36 and shaft 30 to sprockets 38 and 39, and in turn through the chains to sprockets 37 and 33 respectively to thus drive shafts 24 and 31, which in turn drive the rubber drive wheels 26 and 32. It is to be noted that the drive of the rubber drive wheels must be in the same direction, either all clockwise or all counterclockwise, so that the rotation of the drum or barrel will be continued by its contact with the rubber drive wheels. Due to the inclined position of the barrel carrier and drive, it is necessary to provide a guard rail 44 at the lower end of the inclined shafts, so that the barrel when positioned on the carrier and rotated will be retained by the guard rail 44 and prevented from moving toward one side of the housing 12.

Referring to the pair of suporting members 23, which were described as pivotally mounted on shaft 30, members 23 are retained in a fixed parallel relationship to each other, so that shaft 31 may be dropped to a loading position as illustrated in full lines in FIG. 2. To assist members 23 in this loading position, each member 23 is provided with an extended barrel supporting strap 45, the supporting strap 45 abutting with the edge of opening 14 in the fully lowered position of elements 23. It is to be noted that the straps 45 are turned upward at their end to form a stop so that when a barrel is loaded onto elements 45 it cannot fall off. After the barrel is positioned on elements 45 it is then rolled into the machine, rolling over the drive rollers 32 and thus abutting with the drive rollers 26. A cable 46 is connected to shaft 31 and cable 46 passes over a pulley 47, which is supported by an arm 48, arm 48 being supported on shaft 30, and arm 48 is retained in this position by a rod 49 extending from the housing. Cable 46 extends from pulley 47 through the wall of the housing 12 to a pulley 50, around pulley 50 and back outside the housing 12, and connected to a lever 51; the lever 51 is pivotally supported by the frame 11 at a point 52, thus when lever 51 is pulled forward to the dotted position illustrated in FIG. 2, cable 46 will pull shaft 31 upward to the dotted position illustrated, and at the same time lift the drum or barrel to the dotted position illustrated. Lever 51 must be located in the dotted position illustrated by a simple hook latch 53, to thus retain the drum or barrel in its position for cleaning and washing, and the panel 15 must be inserted in its sealed position to enclose the housing 12. It is to be noted that elements 45 are pivotally movable inward, as shown in the dotted position in FIG. 2, but may be located in a parallel relationship with members 23 when in a lowered position, or it is possible to bend members 45 inward as illustrated, whereas it is impossible to bend members 45 in the opposite direction when loading a drum or barrel.

The housing 12 is also provided with hot water spray nozzles 61. The inlet line for these nozzles is provided with a shut off valve 63. Thus the hot water line may be opened to spray the barrel inside and outside with hot water. A steam line may be opened to maintain

the water that is being sprayed at a high temperature to thus thoroughly clean the barrel or drum inside and outside, the steam line being provided with a shut off valve **62**. Both shut off valves may be opened and thus maintain the water sprayed at a high temperature to clean the barrel or drum. It is to be noted further that the spray nozzles are positioned, for example, one directed toward the inside surface of the barrel while the other nozzle is directed toward the outside surface of the barrel, so that the barrel will be sprayed with hot water outside and inside. The nozzles are also directing hot water toward the inset bottom of the barrel or drum. It is to be noted that in the event one valve is opened, such as the water line, although the spray nozzles are directed to only a limited portion of the inside surface and outside surface of the barrel, due to the continuous rotation of the barrel on the drive rollers **26** and **32**, the complete internal and external surface of the barrel will be treated by this spray. It is also to be noted that the barrel is supported in an inclined position during this washing operation with its open end toward the lower end of the incline, facing the spray nozzles, so that as the water is sprayed into the barrel, the fluid will run down to the lowest point of the incline, which will be the open lip of the barrel, and thus spill out into the tank portion **18**. The hot water utilized for cleaning is first mixed in a tank (not shown) with a detergent, so that the hot water and detergent will provide the proper cutting and dissolving action on the grease that is found in the particular type of barrels that are being cleaned in this apparatus. Also the steam line is connected to mix with the fluid to increase its temperature and the effectiveness or pressure of the fluid cutting and removing of the grease from within and on the outside surface of the barrel.

The average time required for a particular washing operation is thirty seconds; however, this may vary in the event the foreign matter is of a different nature.

Although the steam and water are both utilized in a cleaning and washing operation, that is the steam raises the temperature of the detergent, thus providing the means to melt and cut through hard grease found in this type of operation, and of course the hot water provides the necessary washing or carrier to carry away the grease and foreign matter that is removed from the surfaces of the barrel, it is also apparent that the extremely hot water may be utilized, after the barrel has been cleaned, to insure the killing of all germs that may have remained within or on the barrel, and thus finish the cleaning and treatment of the barrel to provide a clean and perfectly sanitary drum or barrel for reuse.

Referring to FIG. 3, there is illustreated a further embodiment of this invention, in which the washer **10**, shown in FIG. 1, is also provided with a rotatable brush **65** that is supported on a shaft **66**, the shaft **66** extending through the wall of housing **12**. Shaft **66** is positioned in an inclined relation, so that the brush **65** may be moved within the barrel being cleaned, while rotated in its inclined position. Thus shaft **66** is movable in and out of housing **12**, to move brush **65** within the barrel being cleaned. Shaft **66** is not rotated but is held in a

stationary position with relation to rotation, as the barrel itself is being rotated.

The barrel or drum washer disclosed herein is provided to wash one barrel at a time, and although the washer discloses water lines for spraying the drum or barrel, these sprays may be used for any cleaning fluid without departing from the spirit of this invention, and although the spray lines are connected to a supply not shown, the water line may also be connected to an auxiliary line **67**, in which a pump **68** is provided so that the cleaning fluid or water and detergent from tank **18** may be recirculated by the pump **68** through line **67** to the nozzles **61** to be reused for cleaning the barrel, without departing from the spirit of this invention, and although the barrel supporting and driving apparatus has been shown as positioned in an inclined position, the angular degree of the incline may be increased or decreased, depending upon the shape of the barrel or drum. For example, a straight side drum requires very little incline, whereas a barrel having rounded sides may require a greater incline to insure the complete dumping of the fluid from the barrel during the cleaning operation, and although the apparatus discloses a plurality of rubber drive wheels to produce a rotation of the barrel, other means such as a single contact with the barrel to produce rotation may be utilized without departing from the spirit of this invention, and this invention shall be limited only by the appended claims.

What is claimed is:

1. A washer for barrels which includes an enclosure for the washing operation, supporting elements to retain the barrel being cleaned, said supporting element retaining said barrel on a fixed inclined central longitudinal axis, with the closed end of the barrel up, said supporting elements providing the means to rotate said barrel while being retained on said inclined axis during a washing operation, a plurality of water jets within said washer enclosure that are directed at both the inside and outside surfaces of said barrel, said water within said barrel draining out by gravity.

2. In a device according to claim 1, in which the barrel washer is also provided with a guard rail to prevent the inclined barrel from shifting downward on its fixed axis toward the lowest end of its support.

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