May 16, 1950 W. R. WILDE 2,507,685

CLEANING, SCOURING, AND CHARRING BARRELS AND THE LIKE

Filed Sept. 30, 1946 5 Sheets-Sheet 1

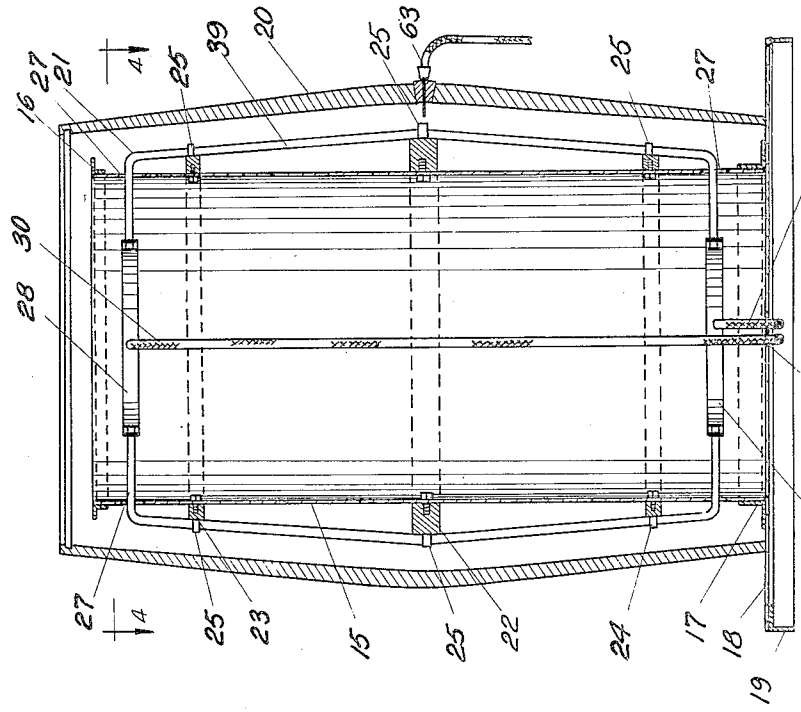



FIG-2

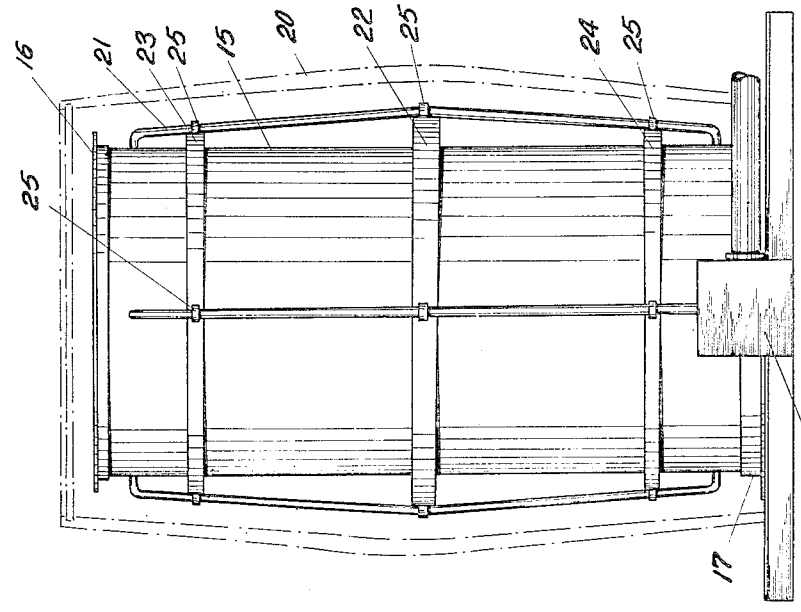



FIG-1

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CLEANING, SCOURING, AND CHARRING BARRELS AND THE LIKE

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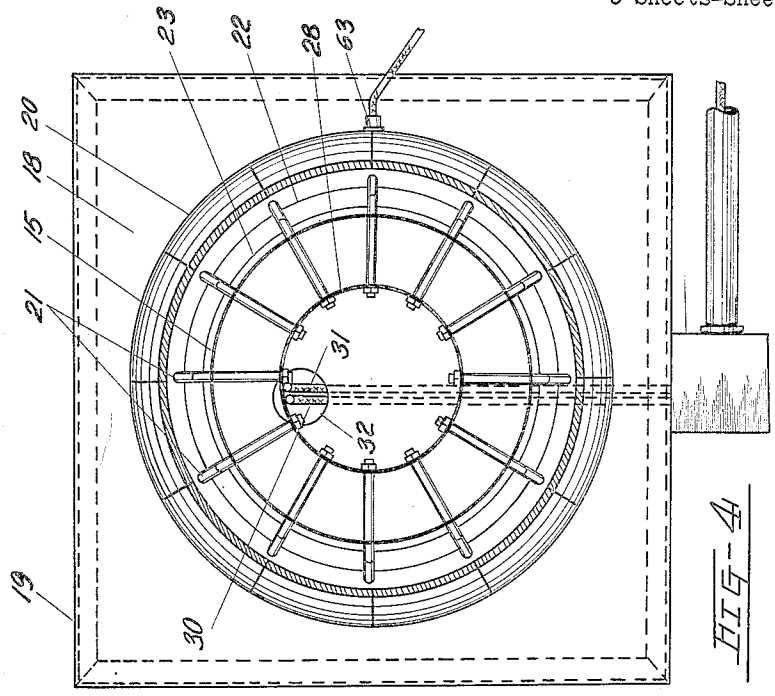



FIG-4

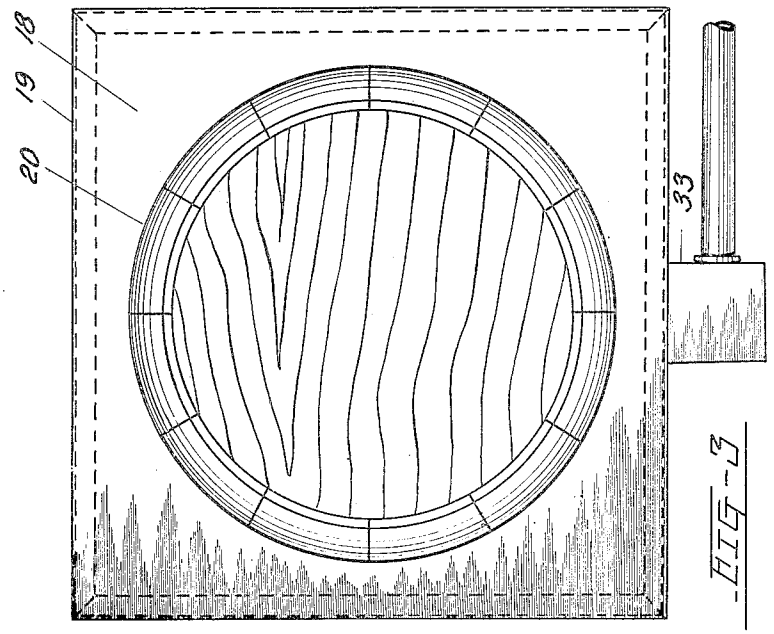



FIG-3

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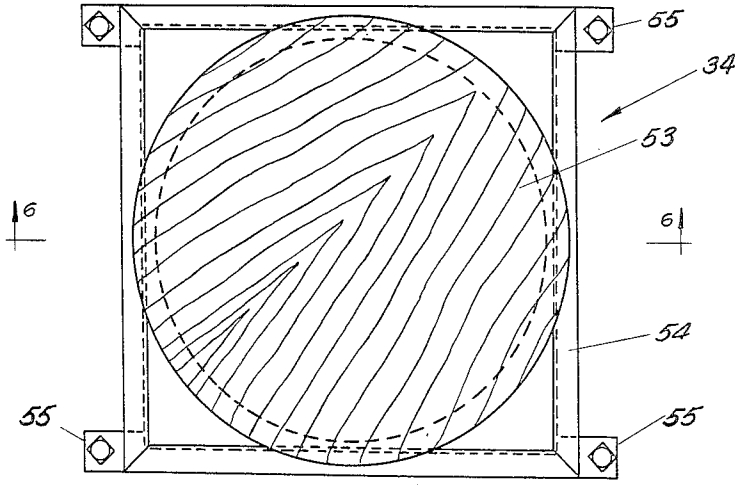



FIG-5

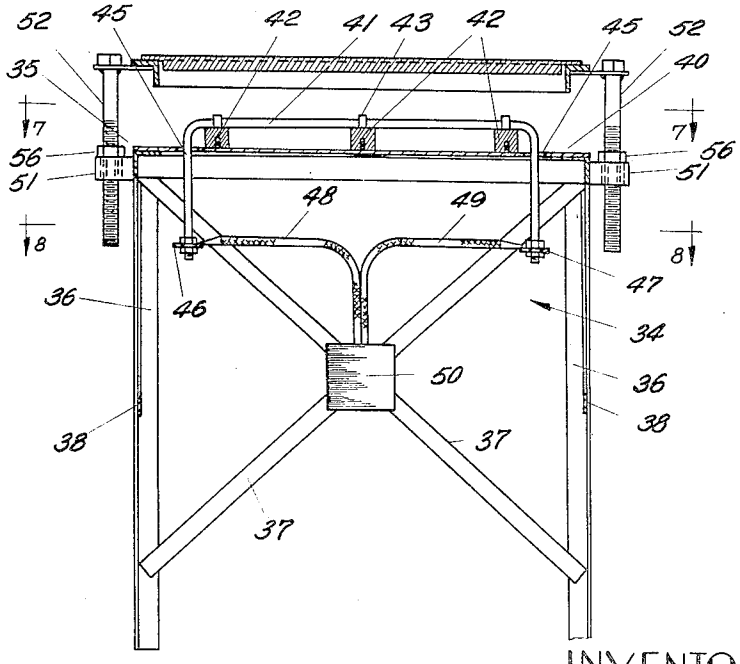



FIG-6

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Filed Sept. 30, 1946

5 Sheets-Sheet 4

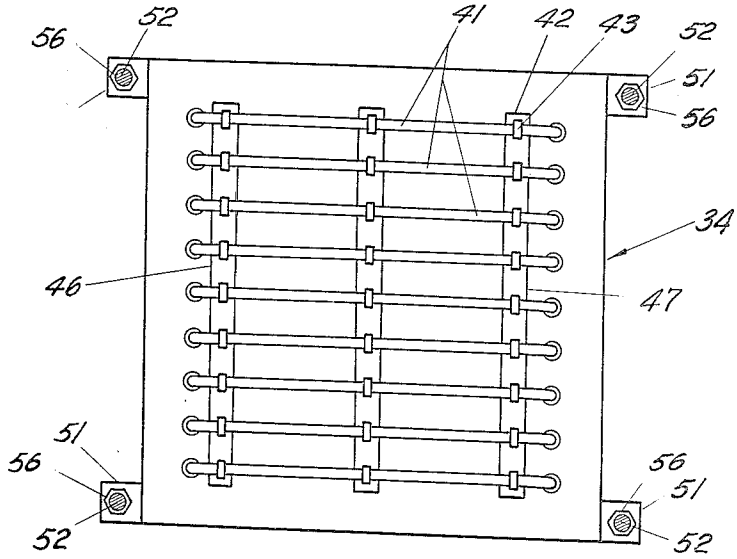



FIG-7

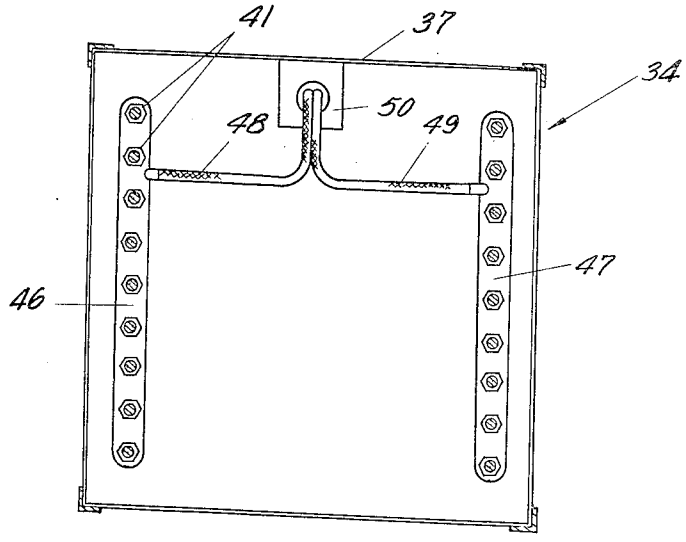



FIG-8

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CLEANING, SCOURING, AND CHARRING BARRELS AND THE LIKE

Filed Sept. 30, 1946 5 Sheets-Sheet 5

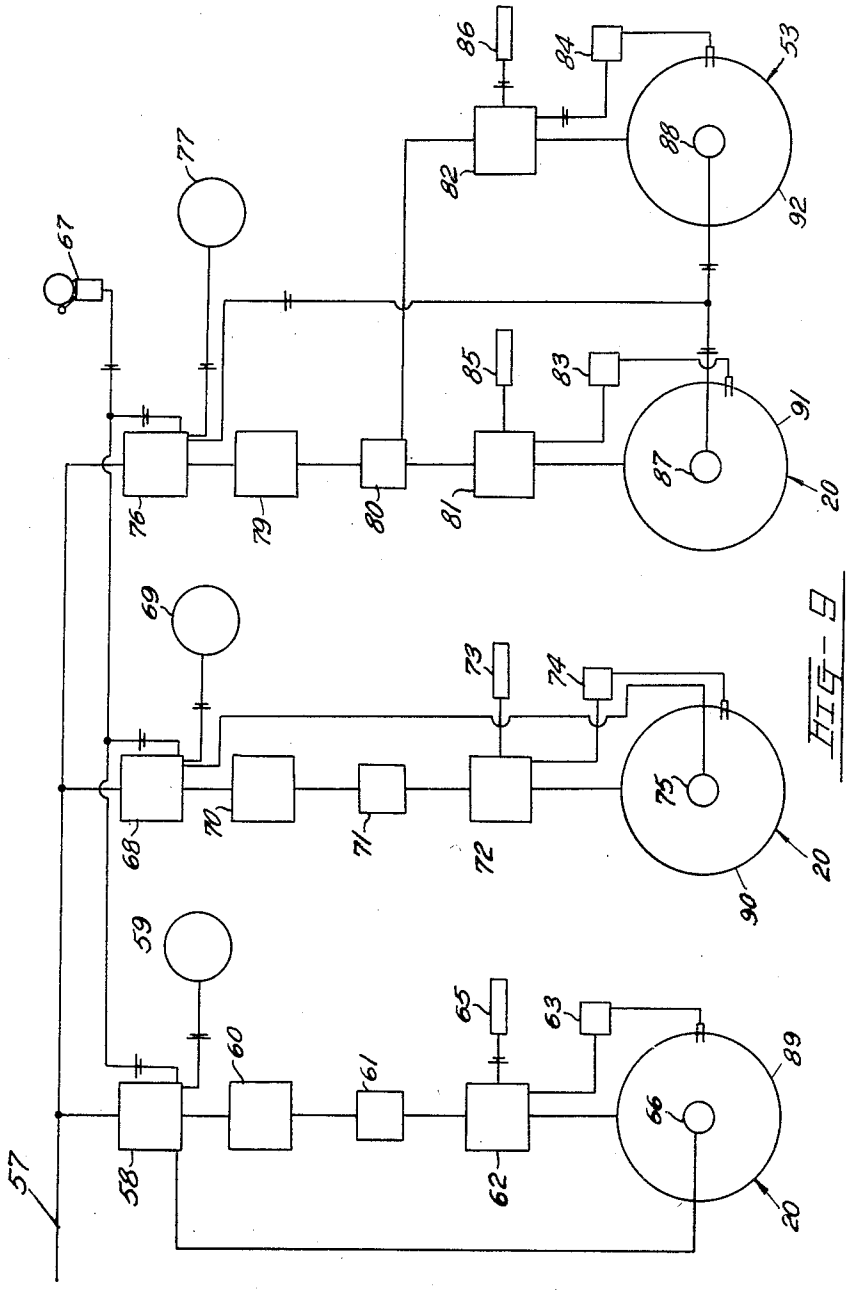



FIG. 9

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Patented May 16, 1950

2,507,685

# UNITED STATES PATENT OFFICE

2,507,685

## CLEANING, SCOURING, AND CHARRING BARRELS AND THE LIKE

William Roderick Wilde, Montreal, Quebec, Canada

Application September 30, 1946, Serial No. 700,235

3 Claims. (Cl. 219—34)

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The invention relates to means for cleaning, scouring, and charring barrels and the like, as described in the present specification and illustrated in the accompanying drawings that form a part of the same.

The invention consists essentially of the novel means for cleaning, scouring and charring barrels and the like, as specifically pointed out in the claims for novelty following a description in detail of an acceptable form of the invention.

The objects of the invention are to provide an electrical means for charring barrels and the like; to devise a means which will char the inside surface of barrels uniformly; to furnish a means which will facilitate and speed up the charring of barrels including the ends and covers of same; to provide a means of cleaning and disinfecting the inside of barrels which have been used before; to devise a means for regulating the extent to which barrels may be charred; to furnish a means for charring barrels which will better preserve the contents therein; to provide a means for charring barrels which will be safe and easily operated; to devise means for charring barrels which is automatic and can be set for any thickness of charring desired; and generally to provide an inexpensive means of charring barrels which will be efficient for its purpose.

In the drawings:

Figure 1 is a front elevation of the charring device for barrels.

Figure 2 is a sectional view as taken on the line 2—2 in Figure 3.

Figure 3 is a plan view of the charring device for barrels showing the barrel cover in place on the barrel.

Figure 4 is a plan sectional view as taken on the line 4—4 in Figure 2.

Figure 5 is a plan view of the charring device for the barrel covers or ends.

Figure 6 is a side sectional view as taken on the line 6—6 in Figure 5.

Figure 7 is a plan sectional view as taken on the line 7—7 in Figure 6.

Figure 8 is a plan sectional view as taken on the line 8—8 in Figure 6.

Figure 9 is a wiring diagram of the charring device.

Like numerals of reference indicate corresponding parts in the various figures.

Referring to the drawings the barrel charring device shown in Figures 1, 2, 3, and 4 consists of the hollow or cylindrical body as indicated by the numeral 15. This cylindrical body 15 is

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open at both ends and made of aluminum or any other suitable material. The reinforcing angle 16 is welded or otherwise secured around the upper end of the cylindrical body 15, while the reinforcing angle 17 is secured around the lower end of same. The cylindrical body 15 is suitably secured on the plate or base 18. This plate has the reinforcing angles 19 welded or otherwise secured around the under side thereof. The plate 18 and reinforcing angles 19 form a base for the cylindrical body 15 and the barrel 20.

The heating elements 21 are mounted on the cylindrical body 15 so as to form a plurality of vertical heaters equally spaced around the cylindrical body. The support rings 22, 23 and 24 are made of steel or any other suitable material, and suitably secured on the outer surface of the cylindrical body 15. The heating elements 21 are secured to the support rings 22, 23 and 24 by means of the clips 25.

These heating elements are of a conventional type, having a conducting element which is insulated and contained in metal tubing.

The outer diameter of the support ring 22 is larger than that of the support ring 23 and 24 thus holding the central portion of the heating elements 21 out further from the cylindrical body 15 so as to follow the contour of the barrels which are placed over same. The upper and lower portion of the heating elements 21 enter the cylindrical body 15 through the clearance holes 27 in same.

The upper ring or bus bar 28 has a plurality of holes equally spaced in same which accommodates the upper end of the heating elements 21. The ends of these heating elements are threaded and provided with nuts which secure the same substantially to the upper ring 28. The lower end of the heating elements 21 are secured to the lower ring or bus bar 29 in a similar manner to that in which the upper end of the heating elements are secured to the upper ring 28.

The upper ring 28 and the lower ring 29 are connected to an electrical power source by means of the cables 30 and 31 respectively. These cables are covered with asbestos insulation and extend downward from their respective rings through the hole 32 in the plate 18 and lead into the terminal box 33. From this terminal box to the power source the cables 30 and 31 are covered with ordinary insulation.

The charring device 34 shown in Figures 5, 6, 7 and 8 provides a means of charring the covers or ends for the barrels. This device consists of a frame 35 which has angle iron uprights 36 and

braces 37 and 38 reinforcing same. This frame 35 forms a square base for the plate 40. This plate is made of aluminum or any other suitable material and welded or otherwise secured on the frame 35.

The heating elements 41 are mounted on the plate 40 so as to form a plurality of heaters equally spaced apart and parallel to one another. The support bars 42 are made of steel or other suitable material, and suitably secured on the upper surface of the plate 40. The heating elements 41 are secured to the support bars 42 by means of the clips 43. These heating elements 41 are U-shaped permitting the free ends of same to extend downward through the clearance holes 45 in the plate 40.

The connecting bars 46 and 47 have a plurality of holes in each which accommodate the free ends of the heating elements 41. These free ends of the heating elements 41 are threaded and each are provided with a pair of nuts which secure same substantially to the bus bars 46 and 47. These connecting bars 46 and 47 are connected to an electrical power source by means of the cables 48 and 49 respectively. These cables are covered with asbestos insulation and extend downward from their respective connecting bars, and lead into the terminal box 50 which is mounted on the braces 37. From this terminal box to the power source the cables 48 and 49 are covered with ordinary insulation. The lugs 51 are welded or otherwise secured on the frame 35 and have clearance holes in same to accommodate the adjusting studs 52. The barrel cover or end 53 rests on the holder or support 54. This support 54 has the lugs 55 welded or otherwise secured thereto. The adjusting studs 52 are fixedly secured to the lugs 55. The nuts 56 are threaded on these adjusting studs and provide a means of raising and lowering the support 54 and barrel cover 53. When these nuts 56 are tightened against the lugs 51 the barrel cover is raised, and when the nuts are loosened away from these lugs the barrel cover falls by means of gravity.

The charring devise is wired so as to guard against over-charring of the barrels and covers as well as to control the extent to which same will be charred.

In the wiring diagram shown in Figure 9 the incoming power line is indicated by the numeral 57. This power line is connected to a power source, and in turn, is connected to the magnetic switch 58. The timer control 59 is connected to the magnetic switch 58 and provides a means of operating same. This timer control is adapted to be set so that it will operate within a definite period of time, thus breaking contact with the power source. The magnetic switch 58 is connected to the transformer 60, which is adapted to step down the current to the proper voltage for operating the charring device. The transformer 60 is connected to the single throw switch 61 which provides a means of disconnecting the apparatus. The single throw switch 61 is connected to the reversing magnetic switch 62 which, in turn, is connected to the thermostat 63. This thermostat 63 is inserted in the bung in the barrel 20 and operates the relay 65 which in turn operates the reversing magnetic switch 62 thus controlling the charring of the barrel. The reversing magnetic switch 62 in co-operation with the relay 65 and the thermostat 63 thus reduces the current to a suitable voltage when



the charring of the barrel 20 has reached a certain stage.

The thermostat 66 is suitably located a predetermined distance above the barrel 89. This thermostat 66 is set to operate in case the barrel should become ignited during the charring of same. In this case the temperature in the vicinity of the thermostat 66 would rise sufficiently to operate the latter. This thermostat 66 is connected to the magnetic switch 58 and controls the latter in case of emergency. The fire alarm bell 67 is connected to the magnetic switch 58 and is indirectly controlled by the thermostat 66.

The magnetic switch 68 is connected to the power line 57, and in turn, is connected to the timer control 69, the transformer 70, the single throw switch 71, the reversing magnetic switch 72, the relay 73 and the thermostat 74 in the barrel 90. These electrical devices which control the charring of the barrel 90 operate in a similar manner to that of the devices controlling the charring of the barrel 89.

The thermostat 75 is suitably located a predetermined distance above the barrel 90, and operates in case of emergency in a similar manner to that of the thermostat 66.

The power line 57 is connected to the magnetic switch 76. The timer control 77 is connected to the magnetic switch 76 and provides a means of operating same. This timer control is adapted to be set so that it will operate within a definite period of time, thus breaking contact with the power source. The magnetic switch 76 is connected to the transformer 79 which is adapted to step-down the current to the proper voltage for operating the charring device. The transformer 79 is connected to the double throw switch 80 which provides a means of either directing the current to the device for charring the barrel 91 or to the device for charring the barrel cover 92. This double throw switch 80 is connected to the reversing magnetic switches 81 and 82 which, in turn, are connected to the thermostats 83 and 84 respectively. The thermostat 83 is inserted in the barrel 91 and operates in a similar manner to that of the thermostat 63. The thermostat 84 is inserted between the cover 92 and the heating elements for same, and operates in a similar manner to that of the thermostat 83. The relays 85 and 86 are connected to the reversing magnetic switches 81 and 82 respectively and are actually master of the latter. These reversing magnetic switches in co-operation with the relays 85 and 86 and the thermostats 83 and 84 respectively, reduce the current to a suitable voltage when the charring of the barrel 91 or cover 92 has reached a certain stage.

The thermostats 87 and 88 are suitably located a predetermined distance above the barrel 91 and barrel cover 92 respectively, and operate in case of emergency in a similar manner to that of the thermostat 66.

In the operation of the barrel charring device 39 shown in Figure 2 the barrel is placed over the heating elements of same and rests on the base 18. The thermostat 63 is inserted in the barrel 20 ready for use. Referring to the wiring diagram shown in Figure 9 the barrels 89, 90, and 91 are prepared for charring in a similar manner. The electric current is switched on and reduced to the desired voltage for charring the barrels. When these barrels begin to char the respective thermostats in each barrel, in co-operation with the reversing magnetic switches reduce the voltage permitting the completion of the

charring to take place slowly. The timer controls connected to the electrical circuit for each of the barrels are set so as to break the circuit when same are charred to the desired degree. Should the barrels become ignited during the charring of same, the thermostats above each barrel are adapted to control the switches so as to break the electrical circuit and at the same time ring the firm alarm bell which is provided in case of such an emergency.

In the operation of the charring device for the barrel cover or barrel end 53 shown in Figure 6 the cover is placed over the heating elements of same and rests on the support 54. This support is adapted to be raised or lowered by means of the adjusting studs 52 so as to provide a suitable clearance between the cover 53 and the heating elements 41 of the device. Referring to the wiring diagram shown in Figure 9 the barrel cover 60 is placed in position in a similar manner for charring. The electric current is switched on and the various controls operate in a similar manner to that of the controls for the barrels 89, 90 and 91.

While three charring devices for barrels and one device for barrel covers are indicated in this instance, any number of devices may be employed at one time and suitably wired without generally affecting the advantages of the invention.

It will be seen from the foregoing that a means for charring barrels and the like has been devised that will assure the proper degree of charring, and at the same time, increase the extent to which barrels may be used in industry.

What I claim is:

1. In means for cleaning, scouring and charring barrels and the like, a charring device comprising a base, a cylindrical body mounted on said base, a plurality of electrical heating elements supported on the outer surface of said cylindrical body, the free ends of said heating elements extending through clearance holes in the wall of said cylindrical body, an upper ring and a lower ring within the said cylindrical body and adapted to be connected to the free ends of the said heating elements, cables connected to the said upper ring and said lower ring, a refractory insulation covering each of said cables, a terminal box suitably located with respect to the said charring device, said terminal box having a connection with a controlled electrical supply source, said cables leading into said terminal box, said charring device being adapted to be placed within a barrel and to char the inner walls of same.

2. In means for cleaning, scouring and charring barrels and the like, a charring device comprising a base, a cylindrical body mounted on



said base and fixedly secured thereto, the outer surface of said cylindrical body being polished, a plurality of electrical heating elements supported on the outer surface of said cylindrical body, the upper end of said heating elements being formed inward and passed through clearance holes in the wall of the said cylindrical body, an upper ring having a plurality of holes in same, and the said upper end of said heating elements being securely supported in the said holes in said upper ring, the lower end of said heating elements being formed inward and passing through clearance holes in the wall of said cylindrical body, and a lower ring having a plurality of holes in same, the said lower end of said heating elements being securely supported in the said holes in said lower ring, said upper ring and said lower ring being connected to a controlled electrical supply source.

3. In means for cleaning, scouring and charring barrels and the like, a charring device comprising a base, a cylindrical body mounted on said base, a plurality of electrical heating elements supported on the outer surface of said cylindrical body, the free ends of said heating elements extending through clearance holes in the wall of said cylindrical body, an upper ring, and a lower ring within said cylindrical body and adapted to be connected to the free ends of the said heating elements, cables connected to the said upper ring and said lower ring, a refractory insulation covering each of the said cables, and a terminal box suitably located with respect to the said charring device, said terminal box having a connection with an electrical supply source, said cables leading into said terminal box, said charring device being adapted to be placed within a barrel and to char the inner walls of same.

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