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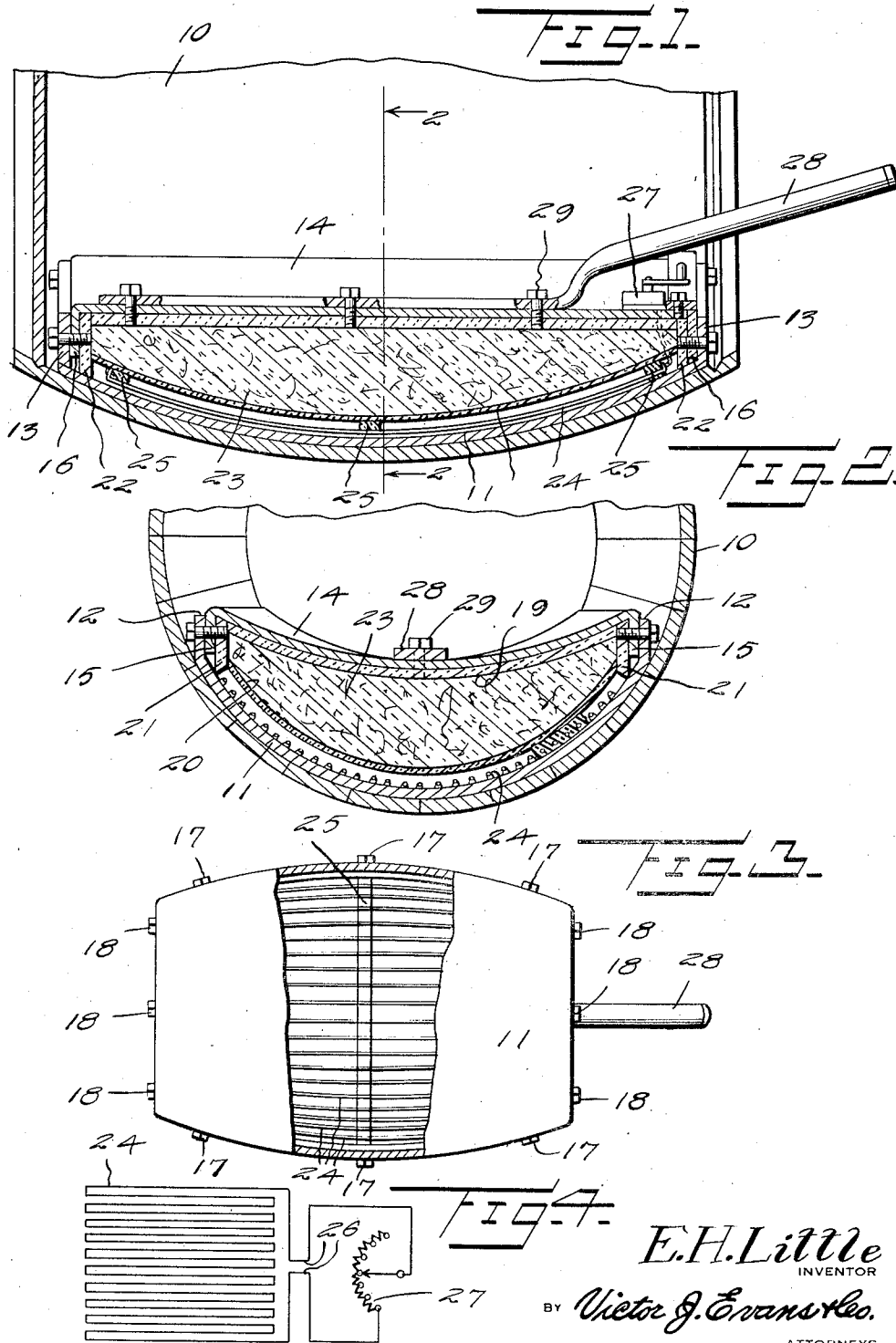
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2,185,206

APPARATUS FOR CHARRING WHISKY BARRELS AND STAVES

Filed May 10, 1938

2 Sheets-Sheet 1



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FIG. 5

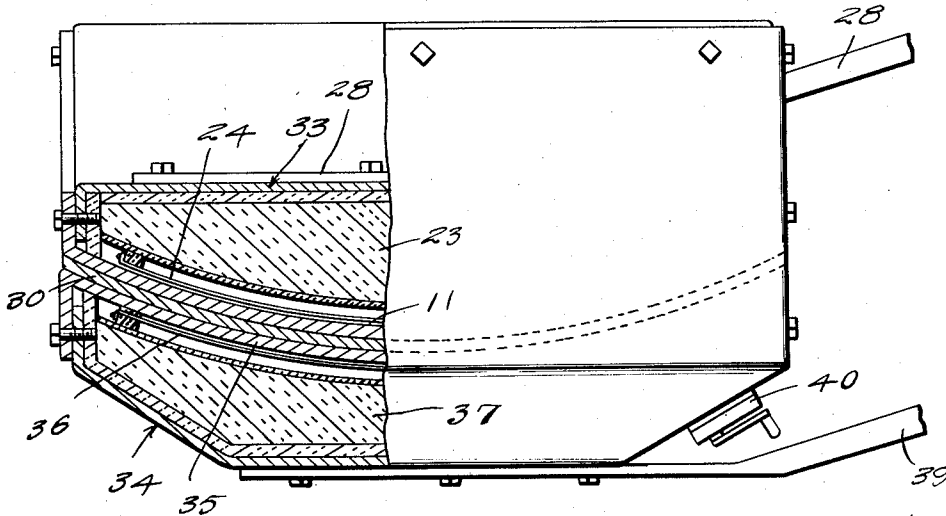


FIG. 6

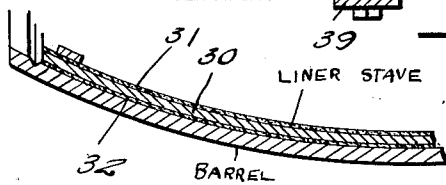
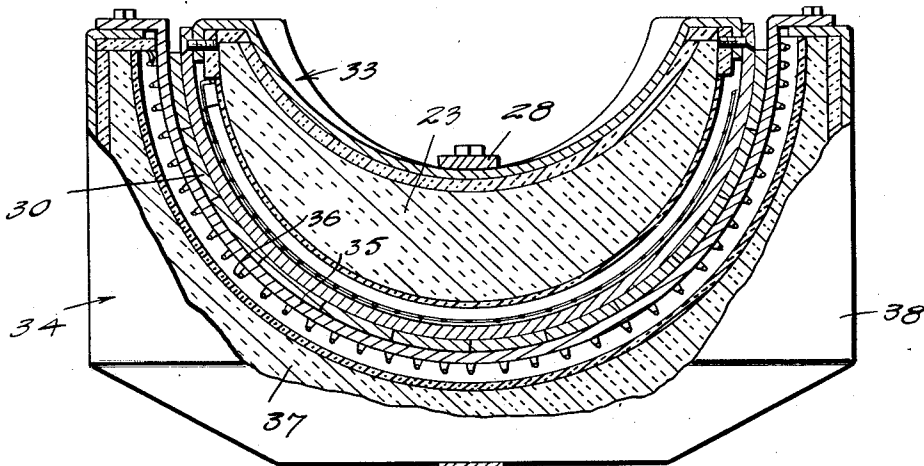


FIG. 7

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APPARATUS FOR CHARRING WHISKY BARRELS AND STAVES

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5 Claims. (Cl. 219—19)

This invention relates to apparatus for charring whisky barrels.

Hitherto whisky barrels have been charred with a direct flame and the disadvantage of this is that it is not possible to produce a uniform, even charred surface. Furthermore, the flame is extinguished with water and the disadvantage of this is that the soaked char is detrimental in that char is most effective only when it is dry as it has more absorbing qualities in the aging of whisky. Also water soaked char is prone to become loosened and fall off into the whisky thereby increasing filtering costs.

With the above disadvantages in mind, the present invention provides electrically heated apparatus which will conform to the inner surface of the barrel through an angular distance of about 90 degrees and will produce a uniformly charred inner surface on the barrel without danger of the wood taking flame, the heat being regulated so that the apparatus will heat the surface to be charred, quickly to a temperature just under the flashing point of wood, and then the heat may be maintained at this point long enough to perform the charring operation and char the surface to any depth desired.

It can be foreseen that the time will come when white oak timber for bourbon barrel staves will become so scarce that distilleries will be forced to use their barrels over and over again. The disadvantage of this is that barrels will stand re-charring only once because the staves become so thin as to make it unsafe to handle a full barrel.

To eliminate the above condition the present invention contemplates producing a reliner formed of thin white oak charred on both sides, as an article of manufacture, and also to provide apparatus to produce the charring operation on the reliner so that old barrels can be supplied with these reliners more quickly than re-charring the old barrels and at the same time the reliner will reinforce the barrel to resist rupture.

With the above and other objects in view the invention consists of certain novel details of construction and combinations of parts hereinafter fully described and claimed, it being understood that various modifications may be resorted to within the scope of the appended claims without departing from the spirit or sacrificing any of the advantages of the invention.

In the accompanying drawings forming part of this specification:

Figure 1 is a longitudinal sectional view of apparatus for charring whisky barrels, constructed

in accordance with the invention, and applied to a barrel, one head of which has been removed.

Figure 2 is a cross sectional view taken on the line 2—2 of Figure 1 and showing the concave cross sectional contour of the charring apparatus.

Figure 3 is a bottom plan view of the apparatus with a portion of the bottom plate broken away to expose the electric heating wires.

Figure 4 is a diagrammatic view of the electrical connections of the heater and rheostat.

Figure 5 is a side elevation, with portions broken away, showing an outside charring member for a reliner used in connection with the barrel charring device shown in Figure 1 which chars the inside of the reliner.

Figure 6 is a cross sectional view of the apparatus shown in Figure 5, with portions in end elevation.

Figure 7 is a fragmentary longitudinal section of a barrel relined with a reliner charred on both sides according to the invention.

Referring now to the drawings in which like characters of reference designate similar parts in the various views, 10 designates a conventional whisky barrel one head of which has been removed to permit the charring apparatus of this invention to be applied to the inner surface of the barrel.

The charring apparatus comprises a casing of substantially concave cross sectional contour and of approximately the same length as the length of the inner surface of the barrel to be charred, as shown in Figures 1 and 2. The casing comprises a bottom plate 11 convex both longitudinally and transversely to fit the contour of the inner surface of a barrel from head to head and of sufficient width to extend through an angular distance of about 90 degrees on the inner surface of the barrel. The plate is of relatively thin good heat conducting metal and is provided at the sides and ends respectively with flanges 12 and 13.

The casing is provided with a top plate 14 substantially the same in length and in width as the bottom plate and being concave to fit within the bottom plate, and having at the sides and ends respectively, flanges 15 and 16 which overlap and are bolted to the side and end flanges 12 and 13 of the bottom plate by stud bolts 17 and 18.

An insulating compartment, of relatively great depth is formed within the enclosure of the heating casing through the medium of an upper lining member 19 formed of insulating material and extending upon the lower face of the top plate 14, a lower lining member 20 spaced slightly from

the inner face of the bottom plate 11, longitudinal lining members 21 engaged upon the inner faces of the side flanges 12 of the top plate 14, as shown in Figure 2, and end lining members 22 engaged against the inner faces of the end flanges 16 of the top plate 14, these lining members all being formed of insulating material and bounding a compartment which is filled with steel wool 23 or other insulating material. The electric heating elements consist of a wire 24 trained back and forth upon preferably three arcuate transversely extending bars 25, of insulating material, best shown in Figures 1 and 3, secured to the lower lining member 20. As best shown in Figure 4, the ends 26 of the wire are connected to a conventional rheostat 27 which is mounted upon the top plate 14 and which may be connected to any desired source of current supply in the conventional manner.

A handle 28 is bolted to the top plate 14 as shown at 29 and is of sufficient length to project through the open end of the barrel and permit of the heating casing being manually moved in a circumferential direction on the inner surface of the barrel.

In operation the rheostat is manipulated to permit the resistance wire 24 to be heated to such an extent as to quickly heat the bottom plate 11 of the heating chamber to a temperature just under the flashing point of wood. The rheostat may be then set to maintain the temperature at this point to perform the charring operation and char the surface to any desired depth. Thereupon the device may be moved forward to a new position upon the uncharred inner surface of the barrel and the operation repeated.

The apparatus above described may be used in connection with a companion apparatus of somewhat similar nature to char both sides of a thin reliner formed of white oak staves 30, best shown in Figure 7, and simultaneously char the inner surface and the outer surface of each stave as shown respectively at 31 and 32.

As best shown in Figures 5 and 6 the liner staves are confined between an upper charring apparatus designated by the numeral 33, and constructed as above described in connection with charring the inner surface of a barrel and a lower charring apparatus designated by the numeral 34 and constructed in somewhat the same manner as the barrel charring apparatus except that the top plate 35 which is heated by the resistance wire 36 forms a support upon which the liner staves are arranged. In this embodiment of the invention the steel wool insulating material 37 is supported within a substantially rectangular casing 38, the bottom wall of which is equipped with a handle 39 which may be moved to invert the lower charring member and dump out charred staves after removing the upper charring member by its handle 28.

The lower charring member is provided with a respective rheostat 40 to which the current supply to the resistance wire 36 is regulated, as previously described.

In operation the liner staves 30 are placed in position edge to edge upon the top face of the top plate of the lower charring member 34 and then the upper charring member 33 is disposed upon the staves to clamp the same to the lower charring member. Thereupon the rheostats are operated to control the heating wires for heating the opposed heating plates of the upper and lower charring members to quickly heat the upper

and lower surfaces of the staves to a temperature just under the flashing point of wood, and then the heat may be maintained at this point long enough to perform the charring operation and char the surface to any desired depth.

From the above description it is thought that the construction and operation of the invention will be fully understood without further explanation.

What is claimed is:

1. Apparatus for charring whisky barrels comprising a casing, a bottom plate for the casing convex longitudinally and transversely to fit the contour of the inner surface of a barrel from head to head through a predetermined angular distance circumferentially of the barrel, said plate being formed of heat conducting material, electric heater elements in the casing for heating the plate to sufficient temperature to char the inner surface of the barrel, circuit wires for the elements, and a rheostat connected to the circuit wires for controlling the current supply to the heater elements.

2. Apparatus for charring whisky barrels comprising a casing, a bottom plate for the casing formed of heat conducting material and convex longitudinally and transversely to conform to the contour of a portion of the inner surface of a barrel from head to head, a handle connected to the casing for moving the casing in a direction circumferentially of the barrel, electric heating elements in the casing for heating the bottom plate to char the inner surface of the barrel, an insulating member in the casing on the opposite sides of the elements from the bottom plate, and means for supplying electric current to the heating elements.

3. Apparatus for charring whisky barrels comprising a casing, a bottom plate for the casing of convex contour longitudinally and transversely to fit the contours of the inner surface of a barrel through a predetermined angular distance circumferentially of the barrel, means for heating the bottom plate to a temperature sufficient to char the inner surface of the barrel, and means for moving the casing upon the inner surface of the barrel in a direction circumferentially of the barrel.

4. Apparatus for forming whisky barrel relining staves comprising oppositely disposed interfitting casings, opposed heating plates carried by the casings, one of the plates being of convex contour longitudinally and transversely and the other plate being of concave contour longitudinally and transversely, both plates being adapted to conform to a respective surface of a barrel relining stave from end to end of a stave, said plates being formed of heat conducting material, electric heater elements in the casings for heating the plates to supply sufficient temperature to char the surfaces of the barrel relining stave, and circuit wires for the heater elements.

5. Apparatus for forming whisky barrel relining staves comprising oppositely disposed insulating casings, opposed heating plates carried by the casings, one of the heating plates being of convex contour longitudinally and transversely and the other being of concave contour longitudinally and transversely to conform to the contour of respective surfaces of a barrel relining stave, electric heaters in the casings adapted to heat the plates to char the surfaces of barrel relining staves, and rheostat means for regulating electric current supply to the heaters.

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