

July 2, 1929.

W. W. KEMP

1,719,331

BARREL HEATING, DRYING, AND CHARRING APPARATUS

Filed Dec. 27, 1924

Fig. 1.

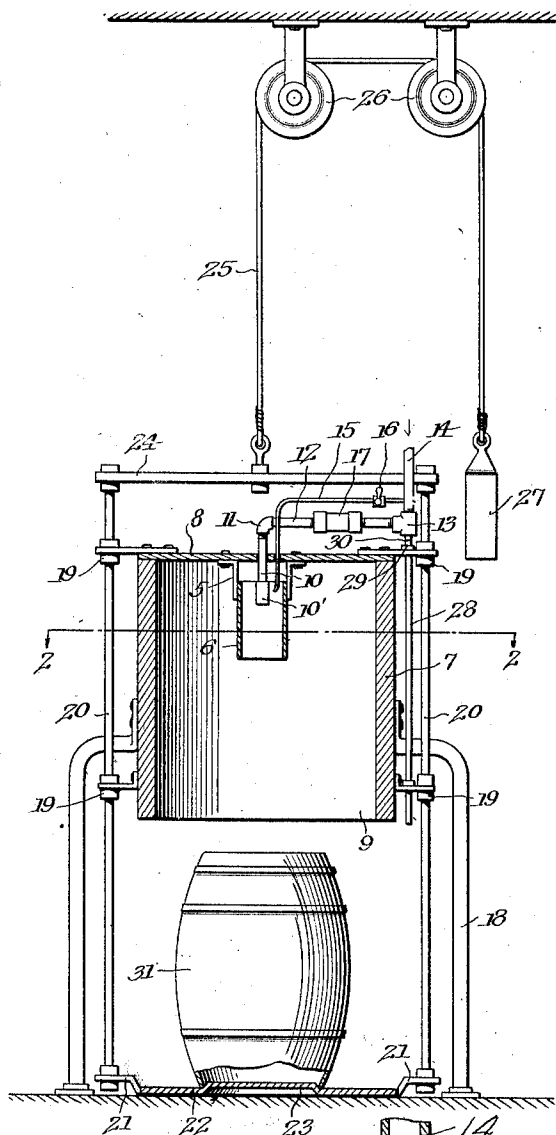


Fig. 2.

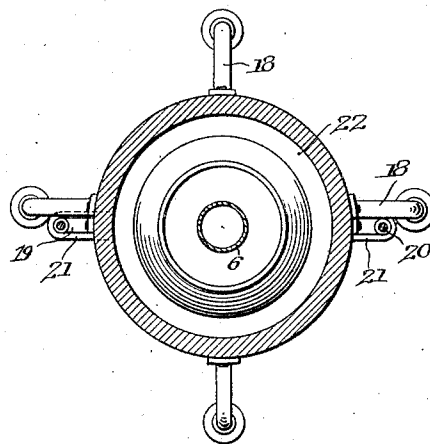
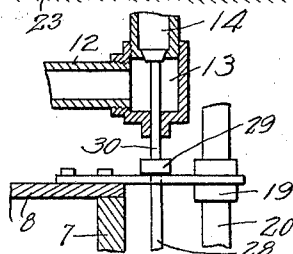


Fig. 3.



William W. Kemp Inventor
 by Leonard Bryant-Warby

Attorneys

UNITED STATES PATENT OFFICE.

WILLIAM WALLACE KEMP, OF BALTIMORE, MARYLAND, ASSIGNOR TO THE C. M. KEMP MFG. CO., OF BALTIMORE, MARYLAND, A CORPORATION OF MARYLAND.

BARREL HEATING, DRYING, AND CHARRING APPARATUS.

Application filed December 27, 1924. Serial No. 753,481.

This invention relates to new and useful improvements in heating, drying and charring apparatus, and it is to be understood that this invention is not limited to any particular art; but for the purpose of illustration, and by way of example only, is disclosed herein for heating, drying or charring barrels.

An important object of my invention is to provide a device of the class described embodying means for burning a flame within a sealed barrel in which the presence of air is negligible. For this purpose, what is known as a self sustaining fuel is used and which contains a sufficient quantity of oxygen to be burned within a vacuum.

Another important object of the invention resides in the provision of a heater which will cause heat to flow in a continuous or circuitous path within a closed receptacle.

A further essential feature of the invention is to provide a device of the character specified including a heater which is automatically rendered operative upon proper positioning of an article in relation thereto, and which is rendered inoperative upon removal of the object from proximity to the heater.

With these and other objects not specifically mentioned in view, the invention consists in certain constructions, combinations and parts which will be hereinafter fully described and then specifically set forth in the claims hereunto appended.

In the accompanying drawings forming a part of the application, and wherein like numerals are employed to designate like parts throughout the several views:

Figure 1 is a vertical longitudinal section of one form of my heating apparatus.

Figure 2 is a transverse section of the same taken on line 2—2 of Figure 1.

Figure 3 is an enlarged fragmentary section of the upper right hand corner of the chamber illustrated in Figure 1.

Referring now more particularly to the drawings, it will be observed that I have disclosed an apparatus especially designed for the treatment of barrels. However, wherever the word "barrel" appears, it is to be understood that I do not restrict the invention to such class of articles; and that my invention comprehends the treatment of any article in the manner hereinafter claimed.

Referring more particularly to Figures 1 and 2, the numeral 7 designates a cylindrical oven having a closed top 8, which, as will hereinafter appear, serves as a closure for a barrel when the latter is properly positioned for treatment. The bottom 9 of the oven is open, as illustrated, for the passage into the oven of barrels to be treated.

A treating device or heater 10 of any desired type extends into the oven through the closed top or closure 8, and in the present instance consists of a pipe depending into the oven and terminating in a burner tip 10' of any suitable construction.

This heater includes an open ended cylindrical shield 6 suspended in spaced relation to the top or closure 8 by means of a pair of brackets 5 as illustrated, it being observed that the burner tip is disposed centrally within the upper end of the shield and spaced from the side walls thereof. When the burner is in operation, the flame therefrom is projected axially through the shield and creates a continuous or circuitous flow of heat within the oven.

The burner is provided with an elbow 11, from which extends a horizontal pipe or conduit 12, which is arranged in proximity to the top of the oven as illustrated, and terminates in a valve casing 13, in which is disposed a normally closed valve, not shown, of any suitable type. Extending vertically from the valve casing 13 is a supply pipe 14, which furnishes self sustaining fuel to the burner, and tapped into this supply pipe is a pilot pipe 15 having a regulating valve 16 for controlling the amount of fuel passing therefrom. The pilot pipe projects through the top of the oven whereby its discharge end is arranged in proximity to the heater 10 to provide a pilot light. A fire check 17 is interposed in conduit 12 to prevent combustion of the fuel within the supply pipe.

The oven 7 is supported a substantial distance above the floor by means of legs 18 having their upper ends offset as illustrated, to be secured to the oven at spaced points circumferentially thereof.

Projecting from the top of the oven and from the lower end thereof, at diametrically opposite points, are pairs of vertical guides 19. It will be observed that the upper pair of guides are arranged in vertical alignment to those extending from the lower end of the

oven whereby a pair of vertical rods 20 may be slidably associated therewith. The lower ends of these rods 20 are attached in any suitable way to a pair of diametrically disposed upwardly offset extensions 21 of a vertically movable barrel support or closure 22 for the oven. As shown in Figure 1, this support is equipped with a boss or raised portion 23 which is adapted to enter and close the open bottom of the barrel as well as to center the barrel upon the support. The upper ends of the rods 20 are connected by a bridging bar 24 disposed above the top of the oven. Any suitable means may be provided for raising or lowering the barrel support 22, but in the present instance I have illustrated such means as consisting of a cable 25 connected by one end to the bar 24 and trained over a pair of pulleys 26 suitably mounted with its other end attached to a weight 27.

The means I provide for rendering the heater operative upon positioning of the barrel within the oven by means of the vertically movable support 22, consists of a vertically movable push rod 28 slidably mounted in the arms supporting the guides 19 at one side of the oven. The upper end of this push rod 28 is equipped with an enlarged head 29 which normally rests upon the upper guide 19 and supports the rod, so that the lower end of the push rod 28 is normally disposed slightly below the bottom of the oven for engagement with the barrel support 22 upon elevation of the same. The valve within the valve casing 13 is equipped with a stem 30 which depends from the casing and is disposed in the path of movement of the push rod head 29 so that when the barrel support 22 engages the lower end of the push rod and moves it vertically, the head 29 will raise the valve stem and valve to open the same and permit the fuel to flow through the pipe 12 into the burner or heater 10.

In operation, it will be understood that the heater is inoperative, and the pilot light adjacent the heater is continuously burning. The barrel support 22, being disposed below the oven and in the position illustrated in Figure 1, is in position to receive the barrel to be treated within the oven.

A headless barrel 31 is shown in the drawings, but it is to be understood that the apparatus described herein is not limited to the treatment of headless barrels alone, since obviously the barrels to be treated may be equipped with bottom heads; but it is necessary that the top heads be removed. When a headless barrel is to be subjected to treatment by the apparatus, it is placed upon the boss 23 of the barrel support 22 so that the boss enters and forms a closure for the bottom of the barrel which is retained in an

upright position as illustrated. By pulling downwardly upon the weight 27 or cable to which it is attached, the rods 20 are moved vertically together with the barrel support and barrel, until the latter is disposed wholly within the oven 7. As the barrel support approaches the lower open end of the oven, it engages the push rod 28, thereby elevating the same and opening the valve within casing 13 to permit fuel to flow to the burner or heater 10 where it becomes ignited by the pilot to create a flame or hot blast. The push rod 28 and valve have sufficient movement upwardly to permit the barrel support 22 to close tightly against the open bottom of the oven while the open top of the barrel engages the top or closure 8.

When the parts assume this position, the oven and interior of the barrel are substantially air-tight, and consequently, heat from the burner will be confined and conserved. The flame from the burner 10, as stated previously, is projected longitudinally of the shield 6 and creates a circuitous flow of heat moving through the shield, out of the lower end of the same and thence upwardly thereof to again enter the open top of the shield. This flow constantly travels around and around in the same path, while the burner is in operation. This heat may be employed for cleaning barrels, i. e., removing rosin from the interior walls thereof, or for shrinking the staves, or for charring the interior walls of barrels for purposes well understood by those conversant with the art.

After the barrel has been subjected to the desired treatment the weight 27 is lifted, thereby permitting the barrel support 22 to descend by its own weight, and upon its initial downward movement, causes the head 29 of the push rod 28 to move downwardly and permit the valve within the casing 13 to close in order to cut off the supply of fuel to the burner. The barrel support will find rest upon the floor, at which time the treated barrel may be replaced by one to undergo treatment in the oven.

It is to be understood that I do not restrict the invention to the use of the particular type of heater 10 disclosed herein, since obviously this heater may be an electric type or in fact any suitable type, although in the present illustration I have preferred to show a type of burner which is capable of burning self-sustaining fuel, as I have found this type to be advantageous, in view of the fact that with self-sustaining fuel I am able to cause a flame to burn within the oven wherein there is a lack of presence of oxygen, after the burner has been in operation for a short interval of time. The invention also comprehends the support of a heater within the oven in any suitable manner, although it is

to be particularly understood that it is preferable to make provision in such a burner, whereby heat therefrom will be caused to travel in a circular path by means of a shield 6 such as disclosed, or any other arrangement which will perform this function.

The self-sustaining gas which I have referred to throughout the application is a gas which contains in itself, only a sufficient amount of oxygen to cause combustion of the gas without the aid of oxygen from any other source.

Although I have described this invention for heating, drying or charring barrels, it is to be understood that I have called the heater 10 a treating device, since it will be obvious that instead of employing a heater 10, any other form of treating device may be substituted therefor, for subjecting the articles or barrels to treatments other than the heat treatment and accordingly it is to be understood that the appended claims are to be construed with such scope.

It is to be understood that various changes in the arrangement of the elements constituting the invention may be varied without departing from the scope of the appended claims.

Having thus described the invention, what is claimed is:—

1. A receptacle heater comprising a closed chamber, a burner arranged therein, and a member surrounding the burner in spaced relation and spaced from the walls of the receptacle to induce the flow of heat in a substantially continuous circuitous path within the receptacle.

2. An article heating apparatus comprising a closed chamber, a burner positioned therein, and an open ended tubular shield surrounding the burner in spaced relation thereto, and spaced from the walls of said chamber to create a substantially continuous circular flow of heat within the chamber.

3. A heating apparatus comprising a closed chamber, a burner disposed within the same, and an open ended tubular shield suspended within the chamber from the top thereof, and disposed in spaced relation to the burner and to the walls of the chamber to cause a substantially continuous circular flow of heat in the latter.

4. An article treating apparatus comprising a chamber, treating means arranged to operate within the same, a closure for the chamber, and means for controlling the operation of the treatment means upon movement of said closure to and from closed position.

5. An article treating apparatus comprising a chamber, treatment means disposed within the same, a supply conduit for the treatment means, valve means in said conduit, a member movably associated with the chamber, and a closure for the chamber adapted when being moved to and from

closed position to actuate said member to operate said valve means.

6. An article treating apparatus comprising in combination a chamber having an open bottom, a treating device disposed within the chamber, means for controlling the operation thereof, and a closure for said open bottom movably associated with the chamber and adapted to operate said control means upon movement of the closure to and from closed position.

7. An article treating apparatus comprising a chamber, a treating device arranged to operate therein, a closure for said chamber, and means for rendering the treating device operative upon positioning of the closure upon said chamber.

8. An article treating apparatus comprising a chamber, a treating device disposed therein, a conduit for the treating device, valve means in said conduit controlling the flow therethrough, a closure for said chamber, and means for opening said valve means upon positioning of the closure upon said chamber.

9. An article heater comprising a chamber, a burner disposed therein, a fuel conduit for said burner, valve means in said conduit for controlling the flow of fuel, a closure for said chamber, and said closure being adapted to cooperate with said valve means for opening the same upon positioning of said closure upon said chamber.

10. In a device of the class described, a treatment chamber, a treating device therein, means for controlling the operation of said treatment device including a slidable member, and closure means slidably associated with said chamber and adapted to actuate said control means through said slidably mounted member.

11. A device of the class described comprising a treatment chamber having an opening through which articles to be treated are inserted, treatment means in said chamber, a movable article support forming means for moving an article relative to said chamber and also closure means for said opening, and means controlling the operation of the treatment means by movement of said article support.

12. A device of the class described comprising a treatment chamber having an opening through which an open ended article is inserted, treatment means in said chamber, a movable article support forming means for closing the open end of said article and the opening in said chamber as well as forming means for moving said article through said opening in said chamber, and means controlling the operation of said treatment means by movement of said article support.

13. A device of the class described comprising a treatment chamber having an open bottom through which articles are inserted,

- guides extending from opposite sides of said chamber, vertically movable rods slidably associated with said guides, an article support secured to said rods and adapted to form closure means for said chamber, a treatment device in said chamber, and means for controlling the operation of said treatment device slidably associated with said chamber and adapted to be operated by said article support.
14. A device of the class described comprising a treatment chamber having an open bottom through which articles are inserted, a treatment device disposed in said chamber, an article support adapted to form closure means for the open bottom of said chamber, said article support having an offset portion, and means for controlling the operation of said treatment device associated with said chamber and arranged in the path of movement of said offset portion.
15. A device of the class described comprising a treatment chamber having an open bottom through which articles are inserted, guides extending from opposite sides of said chamber, vertically movable rods slidably associated with said guides, an article support secured to said rods and forming closure means for said chamber, a treatment device in said chamber, a supply conduit for said treatment device including valve means for controlling the supply there through, and a rod for actuating said valve means slidably associated with said guides in the path of movement of said article support.
- In testimony whereof I have hereunto set my hand.
- WILLIAM WALLACE KEMP.