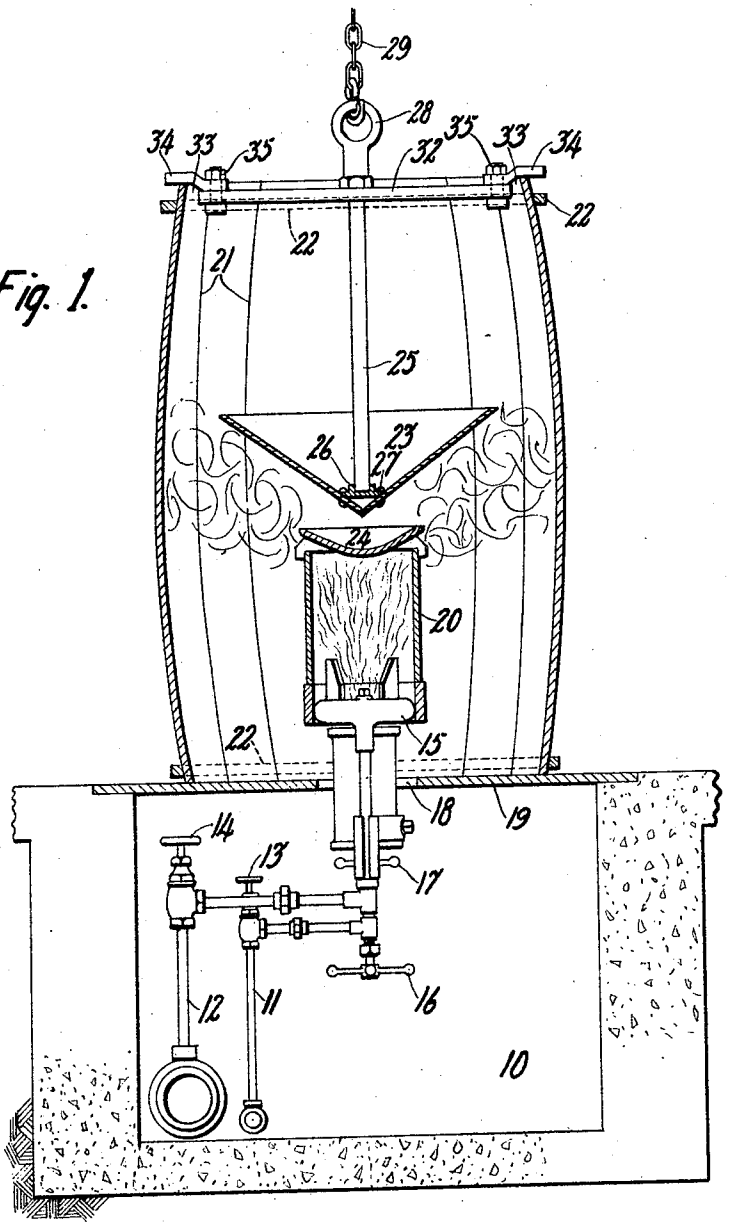
June 30, 1925 1,544,015

E. J. LAMY

COOPER STOVE

Filed March 27, 1923 2 Sheets-Sheet 1

Fig. 1.



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Fig. 2.

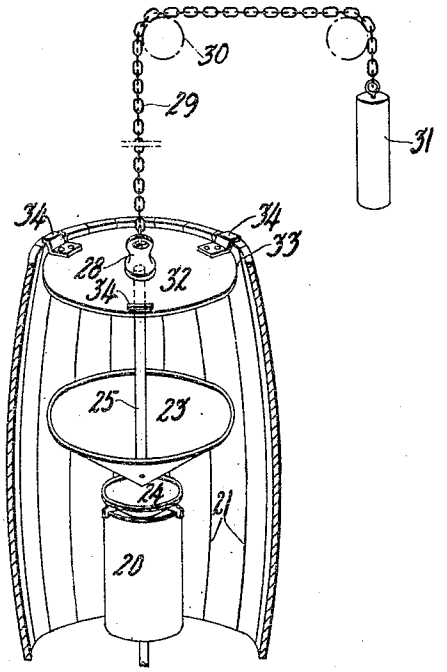
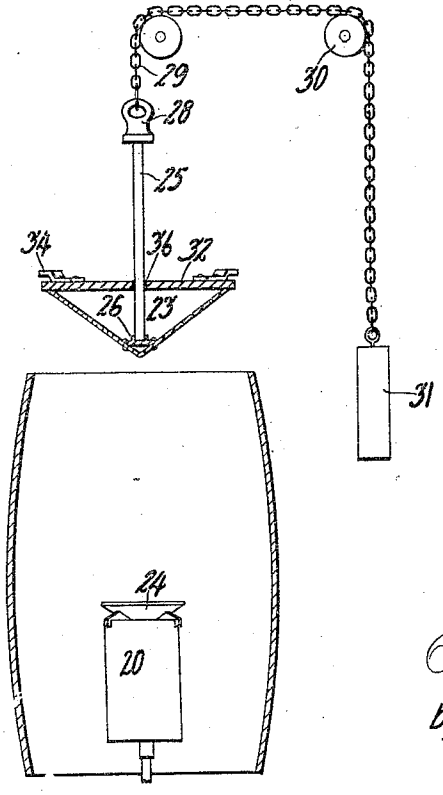


Fig. 3.



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UNITED STATES PATENT OFFICE.

EDWARD J. LAMY, OF ELIZABETH, NEW JERSEY, ASSIGNOR TO A. LAMY & SON, INC., OF ELIZABETH, NEW JERSEY, A CORPORATION OF NEW JERSEY.

COOPER STOVE.

Application filed March 27, 1923. Serial No. 628,011.

To all whom it may concern:

Be it known that I, EDWARD J. LAMY, a citizen of the United States, residing in Elizabeth, in the county of Union and State of New Jersey, have invented certain new and useful Improvements in Cooper Stoves, of which the following is a specification.

This invention relates to the stage in the manufacture of barrels in which, after steaming, shaping and assembling the staves to form a barrel body, it must be heated in order to dry out the staves, particularly where the barrel is to be made tight. This heating is effected usually by means of an oil burner within the barrel; and sometimes it is desired that the interior of the barrel be singed or even charred.

Usually the barrel body, whose staves are held together by top and bottom hoops, is placed upon a covered pit, the latter containing oil and air supply pipes, and also containing a burner or cresset which extends up through the cover of the pit; the barrel standing upon said cover and surrounding the cresset. From the burner there usually rises a cylinder which forms the body of the cooper stove, to confine the flames rising from the burner, said body usually extending up to a point a little above the middle of the bilge of the barrel; and the barrel is dried by heat radiating from the stove body, and by hot gases which rise from the stove to vent freely out of the top of the barrel.

It is an object of the invention to reduce the fuel consumed and the time required for the drying, singeing or charring operation, thus enabling an increase in the output without increased expense for labor or overhead, or to enable a larger number of heating outfits to be arranged within given limits, or to enable a given output to be reached with a lower initial cost for plant and room.

In many cases the finished barrels eventually develop defects in the nature of warping, splitting, leaking, unevenness or irregularity of form, local weaknesses, etc., and an object of the invention is to reduce or eliminate these difficulties, and insure a more perfect product.

Usually the bilge of the barrel is the slowest part to dry, as the ordinary stove or cresset does not force the heat out, but dries first the barrel portions of small diameter, viz, the top and bottom portions, these portions, however, being least important, as it is the portions which have the greater curvature that need drying the most, viz, the bilge portions. It is an object of the invention to overcome this difficulty.

To attain these and other objects, one of the features of the invention is the securing of more direct and ample action of the heated gases upon the bilge portion of the barrel, as compared with previous methods, whereby the top portion of the barrel, which is of relatively small diameter, was exposed to more heat than the bilge portion, which is of relatively great diameter; whereby the heating of the end and bilge portions was rendered very unequal, thus developing in course of time defects in the finished barrel, besides requiring the drying-out operation to be prolonged, in the effort to dry out the bilge portion adequately, this of course necessarily heating the end portion excessively.

According to this invention, there is suspended or placed above the stove body a bilge-heater, which is in the form of a broad inverted cone, constituting a heat-spreader or baffle, which conducts the rising heated gases outwardly to the bilge portion of the barrel. It also serves to reflect heat radiated from the stove body outwardly to the bilge. The body of the stove may be cut down sufficiently so that the upper edge of the gas-spreading cone may stand within the bilge portion of the barrel, preferably a trifle above the middle of the barrel, to cause the hot gases to diffuse themselves throughout the bilge, that is, upwardly from a point about level with the top of the truncated stove body.

The lower end of the barrel receives heat radiated directly from the stove, and the heat from the gases is absorbed largely by the bilge portion of the barrel, thereby insuring the prompt drying out thereof, whereas heretofore the gases have risen right to the top of the barrel while fully heated, thus tending to overheat the end of the barrel and underheat the bilge.

Other features and advantages will hereinafter appear.

In the accompanying drawings,

Figure 1 is a sectional central elevation to illustrate the heating of a barrel body by means of the present improvements, which are shown in connection with the well known Parson type of cooper stove and quipment.

Figure 2 is a sectional perspective view of the upper portion of Figure 1, showing also the means for counterweighting the heavy bilge-heater, and also a heat-confining temporary cover for the barrel.

Figure 3 shows the bilge-heater removed from the barrel, together with the temporary barrel cover, for convenience when removing the dried-out barrel and replacing it by a moist barrel.

The Parson apparatus usually comprises a pit 10, in which are arranged an oil feed pipe 11 and an air feed pipe 12, provided with valves 13 and 14 and leading to a burner 15, the latter having an oil valve wheel 16 and an oil valve wheel 17; the burner extending up through an opening 18 in the cover 19 of the pit. In carrying out the present invention, the body 20 of the stove, which rises from the burner, may be considerably truncated or reduced in height from the usual practice, so that the top of it stands substantially below the middle of the barrel, or in the neighborhood of the point where the lower end section of the barrel merges into the bilge section thereof. This stove is central with respect to the barrel, which consists of staves 21 held together by top and bottom hoops 22 and rests upon the pit cover 19.

Above the stove is a novel bilge-drier in the form of an inverted conical shield or spreader 23, the diameter of which may be considerably more than half as great as the greatest diameter of the barrel bilge, so as to conduct the hot gases outwardly from the stove to impinge upon the staves at the bilge, and also as to choke the passage for the rising gas and hence check its speed of ascent, so that it lingers in the bilge and therefore surrenders more of its heat to the bilge sections of the staves. Thus the bilge is well heated, and although the gas rising to the upper end of the barrel is somewhat reduced in temperature, still it is sufficient for heating this end of the barrel, since said end is of less diameter as compared with the bilge portion and therefore requires less heat, and since the upflow of the heated gases is restricted by the choking action of the bilge-heater or gas-spreader 23, and hence the gases ascend slowly, as compared with the former custom to vent the unobstructed gases freely at the open top of the barrel. The spreader or bilge-heater 23 may be separated from the stove, as shown, to permit escape of gases from the latter; and if desired, in some cases, the stove 20 may also have a small individual cover or baffle 24 of the construction heretofore employed on cooper stoves; this stove-cover 24 being of about the same diameter as the stove body 20, and resting upon the top thereof, but somewhat separated therefrom, the gases emerging from the stove body at its top side edges. This baffle 24, if used, may be of very small diameter as compared with the bilge-heater 23 above.

The bilge-heater 23 may be conveniently supported by means of a central pendent rod or support 25, fixed at its lower end in a cap 26, which is riveted at 27 to the inner apex of the spreader; said rod having at its upper end an eye 28, into which is hooked a chain 29, the latter running over one or more pulleys 30, and carrying at its other end a weight 31, to counterbalance the heavy bilge-heater 23, so that the latter may be easily raised, and may also be retained in its elevated position.

In some cases there may be provided the novel feature of an additional choke for the hot gases, in the form of a cover 32 for the top of the barrel, this cover being undersized, however, so as to leave a constricted vent 33 at the top of the barrel for the spent gases, sufficient to insure good operation of the burner, while prolonging the confinement of the hot gases. The cover is also effective in minimizing radiation of heat out of the top of the barrel, thus still further reducing the time required and the fuel consumed in the operation. Both cover 32 and bilge-heater 23 may be made of iron, and the cover may have at intervals hooks 34 or the like to support it upon the top edge of the barrel; these hooks being bolted at 35 upon the cover. The spreader stem or rod 25 plays loosely in a hole 36 in the cover. The eyepiece 28, which is secured to the top of the rod 25, supports the bilge-heater 23 upon the cover 32 as the latter rests upon the top edge of the barrel, as at Figures 1 and 2. When the weight 31 is pulled down, the bilge-heater is carried up against the cover, and upon further ascent carries the cover up with it to the Figure 3 position, clear of the barrel, to permit its removal and replacement by a fresh barrel.

By this method the time required for drying out the barrel is substantially reduced, and the product substantially improved. In some cases from two to four minutes per barrel can be saved, with corresponding economy of fuel, as compared with from seven to ten minutes required in previous operations. It is also observed that no appreciable time is lost in withdrawing the disks 23 and 32 from the dried-out barrel and placing them in the succeeding barrel.

Variations may be resorted to within the scope of the invention, and portions of the improvements may be used without others.

Having thus described my invention, I claim:

1. In a barrel drier, the combination with a cresset, of a spreader removably supported above said cresset and mounted to conduct the heated gases to the bilge portion of the barrel; said spreader in the form of an in-

verted cone nearly closing the barrel, and means for lifting said spreader out of the barrel.

2. In a barrel drier, the combination with a cresset, of a gas spreader, and means for supporting said gas spreader above said cresset in position to divert the gas to the bilge of the barrel, said supporting means being movable to withdraw the spreader from the barrel, and comprising a counterpoise to detain the spreader in either its operating or ineffective position.

3. A bilge drier, a spreader in the form of an inverted cone, means for removably suspending the cone within the barrel over said drier, and means supporting the barrel.

4. A bilge drier, a spreader in the form of an inverted cone, means rising upwardly from said spreader for supporting the same in working position, and movable to lift the same out of the barrel independently of the drier, and means supporting the barrel to be dried.

5. As a new article of manufacture, a bilge drier, an inverted cone over said drier, means for removably suspending the cone within the barrel to be dried, including a counterbalance for the cone, and means supporting the barrel.

6. As a new article of manufacture, a bilge drier, an inverted cone over said drier, means for removably suspending the same within the barrel to be dried, said cone of a diameter to choke the upward passage for the heated gases, and means supporting the barrel.

7. The herein-described bilge drier, an inverted cone over said drier, a central pendent supporter for said cone, means upon which said supporter rests, and means supporting the barrel.

8. A bilge drier, a spreader in the form of an inverted cone, a central pendent supporter for said cone comprising a device which rests upon the top of the barrel to be dried, and means supporting the barrel.

9. In a barrel drier, the combination with a cresset, of a gas spreader arranged above the cresset and extending into the bilge of the barrel, said spreader flaring outwardly and upwardly from the cresset, and a cover nearly closing the top of said barrel to confine the heated gases.

10. In a barrel drier, the combination with a cresset, of a gas spreader arranged above the cresset and extending into the bilge of the barrel, said spreader flaring outwardly and upwardly from the cresset, and a cover nearly closing the top of said barrel to confine the heated gases, said spreader having means whereby it is supported upon said cover.

11. In a barrel drier, the combination with a cresset, of a gas spreader arranged above the cresset and extending into the bilge of the barrel, said spreader flaring outwardly and upwardly from the cresset, and a cover nearly closing the top of said barrel to confine the heated gases, said spreader having means whereby it is supported upon said cover, and said cover having means whereby it is supported upon the top of said barrel.

12. In a barrel drier, the combination with a cresset, of a gas spreader arranged above the cresset and extending into the bilge of the barrel, said spreader flaring outwardly and upwardly from the cresset, a cover nearly closing the top of said barrel to confine the heated gases, said spreader having means whereby it is supported upon said cover, and said cover having means whereby it is supported upon the top of said barrel, and means for lifting the spreader and cover together off from the barrel.

13. In a barrel drier, the combination with a cresset, of a gas spreader arranged above the cresset and extending into the bilge of the barrel, said spreader flaring outwardly and upwardly from the cresset, a cover nearly closing the top of said barrel to confine the heated gases, said spreader having means whereby it is supported upon said cover, and a lifting cable connected to said spreader, the spreader being movable relatively to said cover, and said cable running over a pulley and having a counterweight.

14. In a barrel drier, the combination with a cresset, of a gas spreader arranged above the cresset and extending into the bilge of the barrel, said spreader flaring outwardly and upwardly from the cresset, a cover nearly closing the top of said barrel to confine the heated gases, said spreader having means whereby it is supported upon said cover, said supporting means in the form of a rod or connection having an eye at its upper end, said eye resting upon said cover, and a cable connected to said eye and running over a pulley for lifting both the spreader and the cover from the barrel.

15. A drier for barrels comprising a cresset, a spreader for conducting the heated gases from the cresset outwardly to the bilge of the barrel and to afford a constricted passage to the top of the barrel, and a cover for the top of the barrel, said cover nearly filling the barrel so as to afford a constricted vent for gas from the top of the barrel.

16. A drier for barrels comprising a cresset, a spreader for conducting the heated gases from the cresset outwardly to the bilge of the barrel and to afford a constricted passage to the top of the barrel, a cover for the top of the barrel, said cover nearly filling the barrel so as to afford a constricted vent for gas from the top of the barrel, and means connected with said spreader for lifting it, together with said cover, from the top of the barrel.

17. A barrel-drying apparatus comprising

a cresset, a cover nearly closing the top of the barrel, means being provided upon said cover for enabling it to rest upon the top edge of the barrel, and means for lifting said cover off from the barrel.

18. A barrel-drying apparatus comprising a cresset, a cover nearly closing the top of the barrel, means being provided upon said cover for enabling it to rest upon the top edge of the barrel, means for lifting said cover off from the barrel, and a spreader pendent from said cover for diverting the heated gas from said cresset to the bilge of the barrel.

19. A barrel-drying apparatus comprising a cresset, a cover nearly closing the top of the barrel, means being provided upon said cover for enabling it to rest upon the top edge of the barrel, and a spreader pendent from said cover for diverting the heated gas from said cresset to the bilge of the barrel, said cover and spreader being connected to a cable, whereby they may both be lifted from said barrel, said cable having counterbalancing means.

20. An apparatus for drying and singeing a headless wooden barrel, comprising a floor or support locating the barrel on end, a cresset having the form of a stove comprising a burner and a flame-confining body surrounding the burner, said stove extending upward in the barrel and venting at its top, means directing the flow of heated gases from the top of the stove outwardly against the sides of the wooden barrel, and means for supporting said directing means over said stove and within the bilge portion of the barrel.

21. An apparatus for drying and singeing a headless wooden barrel, comprising a floor or support locating the barrel on end, a cresset having the form of a stove comprising a burner and a flame-confining body surrounding the burner, said stove extending upward in the barrel and venting at its top, means directing the flow of heated gases from the top of the stove outwardly against the sides of the wooden barrel, and means extending out of the top of the barrel for lowering said directing means to effective position just over said stove and within the bilge portion of the barrel and for lifting said directing means out of the top of the barrel independently of said cresset.

22. An apparatus for drying and singeing a headless wooden barrel, comprising a floor or support locating the barrel on end, a cresset having the form of a stove comprising a burner and a flame-confining body surrounding the burner, said stove extending upward in the barrel and venting at its top, means directing the flow of heated gases from the top of the stove outwardly against the sides of the wooden barrel, and means for supporting said directing means over said stove and within the bilge portion of the barrel, said directing means in the form of a spreader flaring outwardly and upwardly from the cresset nearly to the sides of the barrel about midway of its height.

23. An apparatus for drying and singeing a headless wooden barrel, comprising a floor or support locating the barrel on end, a cresset having the form of a stove comprising a burner and a flame-confining body surrounding the burner, said stove extending upward in the barrel and having a top, a vent being left at the sides of the stove below said top, a spreader, and means removably supporting said spreader above said top, said spreader diverting the heated gases to the bilge portion of the barrel and nearly closing the barrel.

24. An apparatus for drying and singeing a headless wooden barrel, comprising a floor or support locating the barrel on end, a cresset having the form of a stove comprising a burner and a flame-confining body surrounding the burner, said stove extending upward in the barrel and venting at its top, means directing the flow of heated gases from the top of the stove outwardly against the sides of the wooden barrel, and means for supporting said directing means over said stove and within the bilge portion of the barrel, said supporting means movable to lift said spreader out of the barrel independently of the stove or cresset.

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Witnesses:
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JENNIE P. THORNE.