

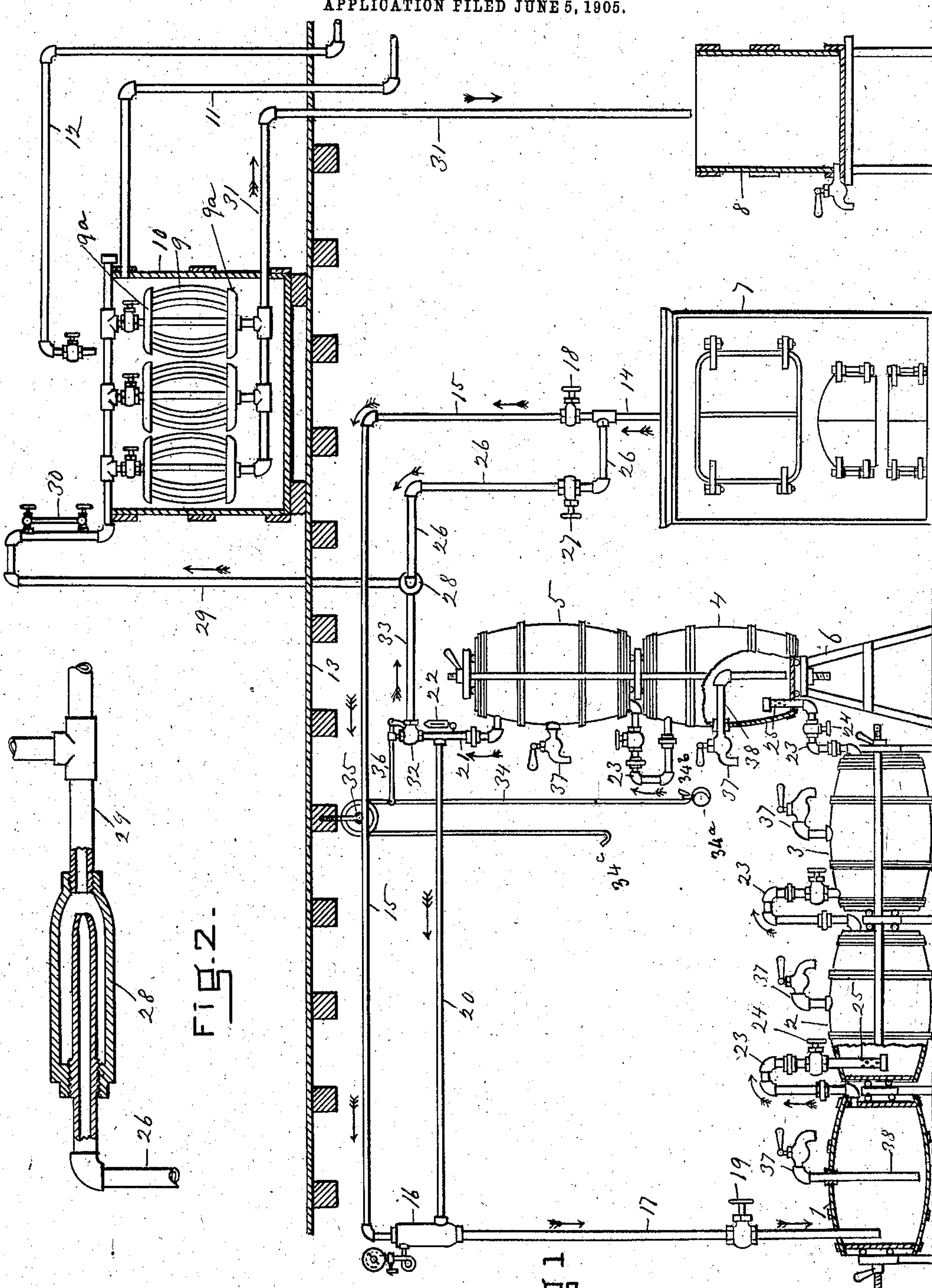
No. 815,464.

T. H. NAUGHTON.

PATENTED MAR. 20, 1906.

PROCESS FOR RECOVERING WASTE ALCOHOL FROM LIQUOR CASKS
AND BARRELS.

APPLICATION FILED JUNE 5, 1905.



WITNESSES.

A. K. Hood

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FIG. 1

INVENTOR.

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UNITED STATES PATENT OFFICE.

THOMAS HENRY NAUGHTON, OF BOSTON, MASSACHUSETTS, ASSIGNOR,
BY MESNE ASSIGNMENTS, OF ONE-HALF TO MARY A. NAUGHTON, OF
BOSTON, MASSACHUSETTS, AND ONE-HALF TO MICHAEL DUNN, OF
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PROCESS FOR RECOVERING WASTE ALCOHOL FROM LIQUOR CASKS AND BARRELS.

No. 815,464.

Specification of Letters Patent.

Patented March 20, 1906.

Application filed June 5, 1905. Serial No. 263,730.

To all whom it may concern:

Be it known that I, THOMAS HENRY NAUGHTON, a citizen of the United States, residing in Boston, in the county of Suffolk and State of Massachusetts, have invented a new and Improved Process of Recovering Waste Alcohol from Liquor Casks and Barrels, of which the following is a specification.

After barrels and casks containing liquors or wines have been emptied as far as possible or practicable of their contents there almost always remains some liquor in the barrels or casks which has not been drawn off and which is wasted. Moreover, there is quite a percentage of the contained alcohol which has been absorbed by the wood of which the barrels are constructed.

My invention has for its object to extract the liquor thus remaining in the receptacles and the alcohol remaining in the wood, and to reclaim its product, and to obtain by means of a suitable condenser alcohol of a high proof.

In the accompanying drawings, Figure 1 is a sectional elevation illustrating an apparatus adapted to carry out my process and accomplish the above result. Fig. 2 is a detail, in plan and section, of a steam-injector, whose position is indicated in Fig. 1.

Similar numerals of reference indicate corresponding parts.

This apparatus is fully illustrated and described in an application for Letters Patent of the United States filed by me on the 11th day of January, 1905, and numbered 240,555.

I will first describe sufficiently for the purpose the different parts in this apparatus and afterward describe the process which is carried out by means of the apparatus.

1, 2, 3, 4, and 5 represent liquor or wine barrels which have been emptied as far as practicable of their contents, some of which are in a horizontal row and others in a vertical row supported by a suitable bench 6. All the barrels are connected together, and as many may be placed in a row as desired, a large number in practice being usually treated at the same time.

7 represents a steam-boiler, and 8 a receiving-tank, usually located on the same floor with the barrels, and 9 represents curved pipes connecting upper and lower chambers

9^a, constituting condensers of ordinary construction located in the tank 10, provided with the overflow and supply pipes 11 and 12, respectively, the condensers being usually on a floor 13 above the barrels. A supply-pipe 14 leads from the boiler 7 to the steam-pipe 15, which leads to an injector 16, provided with a suitable pressure-gage. From the opposite end of the injector 16 a pipe 17 leads to the interior of the first barrel 1. The pipes 15 and 17 are provided with suitable valves 18 and 19, which when opened allow the passage of steam through said pipes 15 and 17, respectively. A pipe 20 connects the injector 16 with a pipe 21, which connects with the interior of the last barrel 5, said pipe being provided with a suitable thermometer 22. The pipes 17, 21, and 20 constitute the circulation-pipes through which steam enters the first barrel and leaves the last barrel. The adjacent barrels are connected by tubular connections 23, connecting the interiors of the barrels in the entire series, each of said connections being provided with a suitable stop-cock 24 and the perforated injecting-pipe 25, extending into the interior of the barrel. These connections provide the completed circulation through the barrels.

A pipe 26, provided with a suitable valve 27, extends from the steam-supply pipe 14 to one end of the steam-injector 28, Figs. 1 and 2, and from the opposite end of the injector a pipe 29 extends horizontally, Fig. 2, and thence bends upward, as shown in Fig. 1, and makes connection with the condensers 9, said pipe being provided with an ordinary gage or water-glass 30, which operates to indicate the condition of the condensers—that is to say, whether they are clear or partially clogged, as by the filling in of charcoal. A pipe 31 leads from the condensers to the receiving-tank 8. The upper end of the pipe 21 leads to a blow-off cock 32, which is connected by the discharge-pipe 33 with the pipe 29. (See Fig. 2.) A suitable ball and chain 34 are sustained by a pulley 35, secured to the ceiling 13 and are connected with a lever 36, which extends to the blow-off cock. In practice when the steam is started (as below described) the ball 34^a hangs on the hook 34^b and allows accumulation of sufficient pressure to "sweat" the barrels. The steam

is applied slowly, and the ball remains on the hook 34^b until the barrels are brought to a suitable degree of heat. The ball is then removed and placed on the hook 34^c, thereby allowing the full opening of the valve 32, thus providing an adequate amount of steam to produce a complete circulation through the barrels. On each barrel is a water-cock 37, from which a tube 38 extends down into the barrel toward that portion thereof which in the position in which the barrel is set is its lower end.

The condensers 9 being made ready for use and provided with a sufficient quantity of cold water the ball 34^a is applied to the hook 34^b. The water-cocks 37 should be closed. The valve 18 is then opened, letting the steam pass through the pipe 15 into the injector 16 and the valve 27 in the pipe 26, the valve 19 in the pipe 17, and any valve which there may be in the pipes 20 and 21 are opened and circulation begins immediately, the pipe 20 drawing the air and fumes from the barrels by means of the pipe 21 to the injector 16 and vaporizing the contents of the barrels. The vapor and steam are then carried through the pipes 15 and 17 to the barrel 1, vaporizing its contents and the contents of the pores of the wood, and thence through the connections 23 to all the barrels in turn, heating and vaporizing the contents of every barrel until a satisfactory degree of heat—say 130° Fahrenheit—is reached, as indicated by the thermometer 22, to allow by the transfer of the ball 34^a to the hook 34^c the full opening of the blow-off stop-cock 32, thereby allowing the vapor to pass through the branch vapor-pipe 33 to the main vapor-pipe 29 and thence to the condensers. The recovered alcohol is then conducted through the outlet-pipe 31 to the receiving-tank. During this operation the injector 28 is receiving steam from the pipe 26, (the valve 27 having been opened, as above mentioned,) with the effect of materially assisting in drawing the vaporized contents of the barrels from the last barrel and through the pipes 21 and 33 to the pipe 29, thus assisting the circulation. The circulation is assisted, therefore, by both steam-injectors 28 and 16, the former being located in the path of the vapor which has been withdrawn from the barrels and is on the way to the condensers and assisting in drawing the air and fumes

from the barrels and the latter in the path of the steam which is on the way to the barrels, assisting in forcing the steam to the barrels, carrying along with it the air and fumes which left the barrels at the beginning of the circulation. In other words, there is a short-circuited circulation of steam which continues through the pipes 20 and 17, the barrels, and the pipe 21, while circulation is going on through the pipe 15, the injector 16, the pipe 17, the barrels, and the pipe 21, the short-circuited circulation being caused by the said injector, and both circulations continuing at the same time.

In order to remove the water (or the greater part of it) remaining in the barrels after the completion of the process below described, the blow-off cock 32 is closed and the valves 18 and 19 are opened, thus driving the steam into the barrels and forcing the greater portion of the water therein out through the tubes 38 and water-cocks 37.

It will be seen that in this process circulation through all the barrels begins as soon as the steam is turned on and the barrels become quickly heated. Hence the vaporization is rapid and thorough, and the alcohol contained in the barrels and in the wood is quickly and thoroughly removed, even though there may be a large number of connected barrels in line.

Having thus fully described my invention, what I claim, and desire to secure by Letters Patent, is—

The herein-described method of recovering waste alcohol from a series of practically empty liquor casks or barrels, which consists in introducing a heated medium into a series of connected casks or barrels, drawing by means of a short-circuited circulation the contents of the barrels through the last barrel and vaporizing them and at the same time forcing the heating medium through the series of barrels beginning with the first barrel, and condensing the products thus removed from the series of barrels through the last barrel, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

THOMAS HENRY NAUGHTON.

Witnesses:

HENRY W. WILLIAMS,
A. K. HOOD.