

No. 748,531.

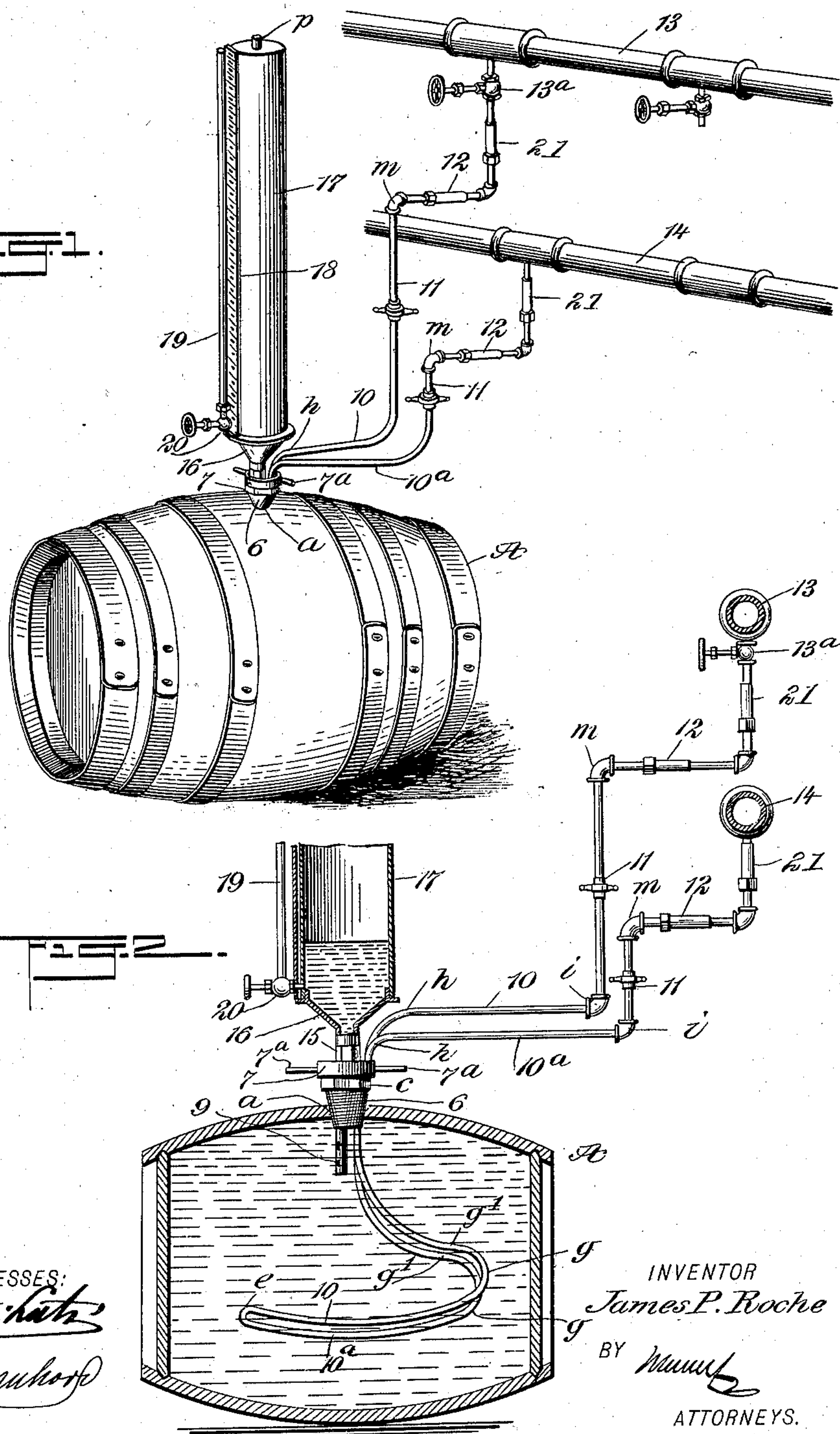
PATENTED DEC. 29, 1903.

J. P. ROCHE.  
APPARATUS FOR HEATING LIQUOR.

APPLICATION FILED JUNE 28, 1902.

NO MODEL.

2 SHEETS—SHEET 1.



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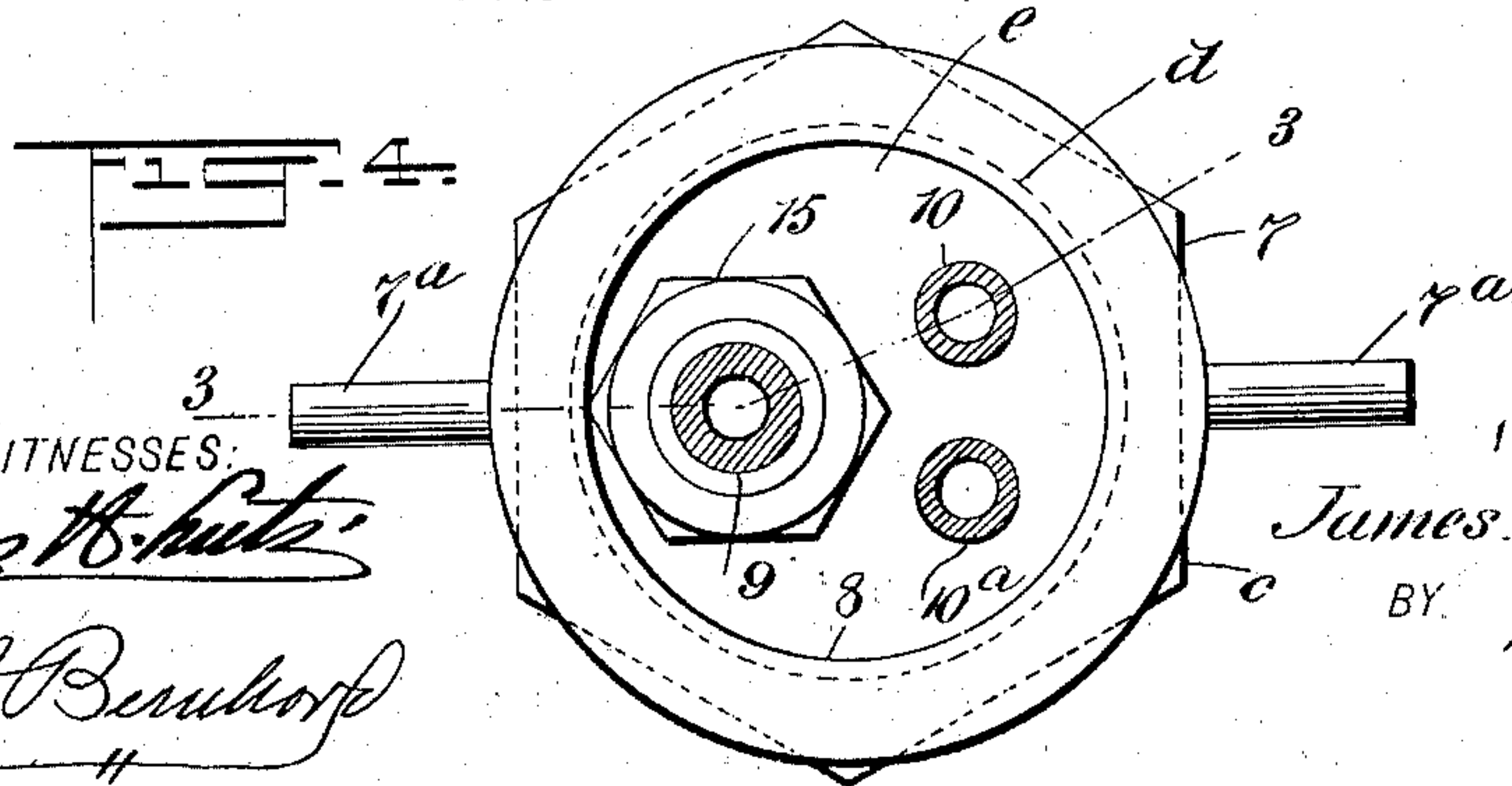
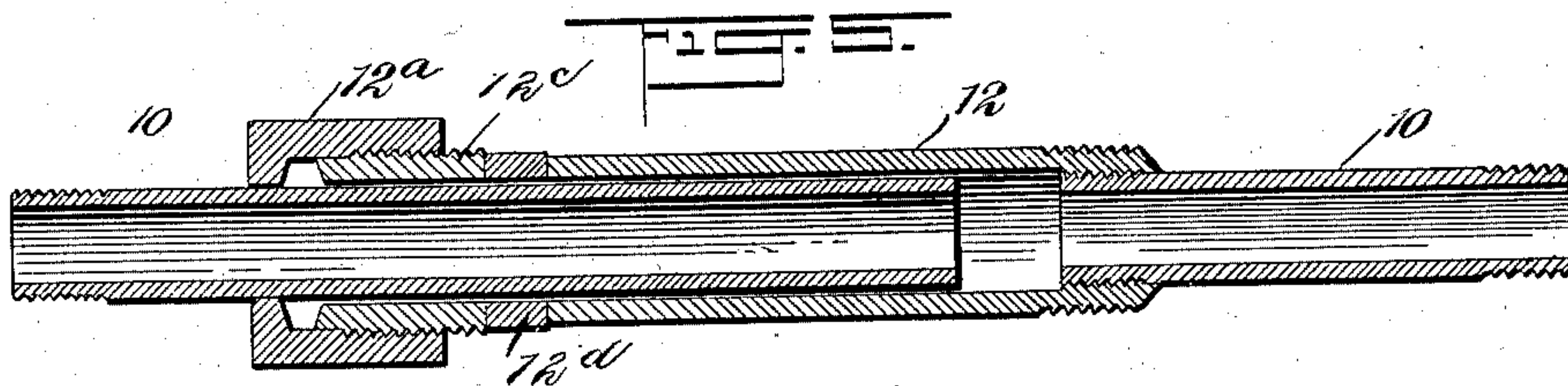
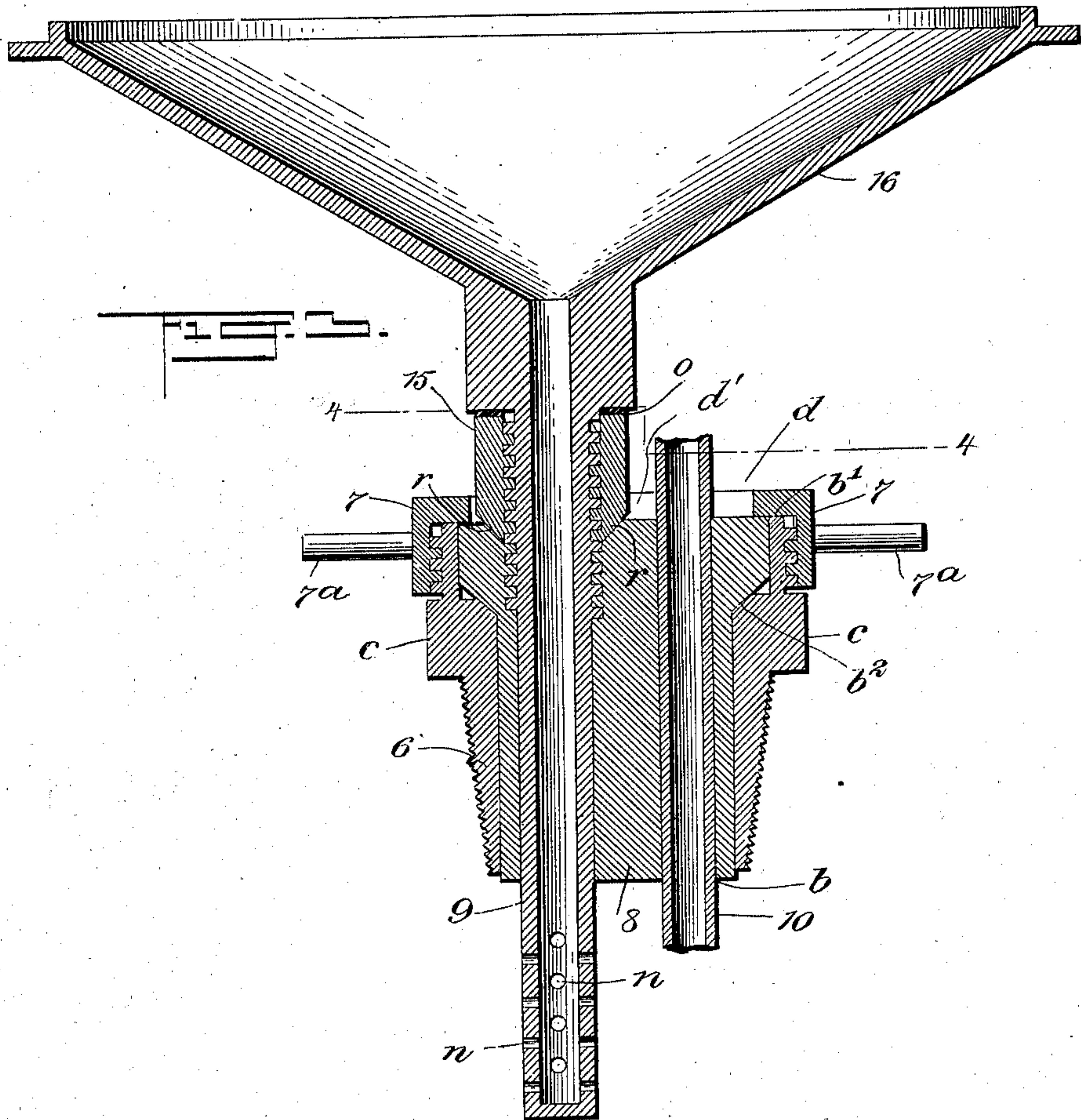
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2 SHEETS—SHEET 2.



WITNESSES:

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# UNITED STATES PATENT OFFICE.

JAMES P. ROCHE, OF LOUISVILLE, KENTUCKY.

## APPARATUS FOR HEATING LIQUOR.

SPECIFICATION forming part of Letters Patent No. 748,531, dated December 29, 1903.

Application filed June 28, 1902. Serial No. 113,609. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES P. ROCHE, a citizen of the United States, and a resident of Louisville, in the county of Jefferson and State of Kentucky, have invented a new and Improved Apparatus for Heating Liquor, of which the following is a full, clear, and exact description.

This invention relates to a means for coloring and improving the flavor of whisky due to the treatment it receives by heating it in a cask or barrel, the latter being charred on the inside surface in the usual manner, the heat being communicated to the liquor by steam which circulates in a pipe that is introduced within the liquor-holding receptacle.

One object of my invention is to provide novel simple means for the convenient introduction of a doubled or looped steam-pipe within the bung-hole of a barrel in an airtight manner, and a further object is to provide novel simple means of attaching such steam-pipe to stationary steam supply and exhaust pipes at certain fixed points without requiring the barrel to occupy a certain exact position in relation to said fixed points of connection whereby steam circulation is effected through the looped steam-pipe in a safe manner for uniformly raising the temperature of the liquor confined in the sealed receptacle.

A further object is to provide a novel attachment for the steam-heating appliance, which visually exhibits the degrees of heat communicated to the liquor in the barrel by denoting accurately the expansion of volume produced in the liquor by the application of heat thereto.

The invention consists in the novel construction and combination of parts, as will be hereinafter described, and the actual scope of the invention will be defined in the appended claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a perspective view of the improved apparatus applied in operative position to a barrel or cask. Fig. 2 is a partly-sectional side view of the apparatus and a sectional side view of the barrel upon which

the device is mounted. Fig. 3 is an enlarged sectional side view of the details, showing a novel connection of parts with an improved bung for the barrel, the plane of the section being indicated by the line 3 3 in Fig. 4. Fig. 4 is a partly-sectional plan view, substantially on the line 4 4 in Fig. 3, and Fig. 5 is an enlarged sectional side view of an extension or slip-joint box which is employed to connect the branches of the doubled or looped insertible pipe to the steam supply and exhaust pipes.

In the drawings that illustrate the construction and application of the invention A represents a liquor-holding cask or barrel of the usual construction, the same being charred on the inside surface in the usual manner. Into the bung-hole of this barrel or cask is inserted the novel bung that is a part of the present invention. As best shown in Figs. 3 and 4, the bung contemplates the employment of a shell 6, which constitutes the exterior wall of said bung, said shell having a tapered form and being threaded externally to adapt it for screwed insertion into the bung-hole *a*.

The bung-shell 6 is centrally bored to form a cylindrical perforation or passage therein of considerable diameter, and at the normal upper end of said bore *b* a counterbore *b'* is formed of a suitable depth, said counterbore terminating in a beveled shoulder *b<sup>2</sup>*, the latter being countersunk at the inside angle, as shown in Fig. 3. Upon the outer surface of the bung-shell 6 a preferably hexagonal flanged projection *c* is formed at a suitable distance from the upper end of said bung-shell, and above said angular flange the upper portion of the bung-shell is rendered cylindrical, having an exterior thread for the reception of a cap-nut 7, which is internally flanged, as at *d*, which flange defines the diameter of a central opening *d'*, formed in the top of the nut. Preferably the cap-nut 7 is provided with two arms *7<sup>a</sup>*, that project oppositely from its circular side wall and afford convenient means for the manipulation of the nut, as occasion may require.

Within the bore *b* and the counterbore *b'* is fixed a mainly cylindrical plug or filling-block 8, the same forming a removable member of the bung, and said plug, block, or



member having an annular tapered shoulder thereon which seats upon the countersunk surface of the shoulder  $b^2$ , and these contacting surfaces of the bung-shell and the filling block or plug are rendered air and liquid tight by grinding them together or by other available means.

As shown in Fig. 3, the flange  $d$ , that projects inwardly at the upper end of the cap-nut 7, bears upon the upper end of the plug or filling-block 8 when the nut is screwed down far enough on the bung-shell 6, thus effecting a clamping adjustment which makes a liquid-tight joint between the tapered shoulder of the plug or filling-block and the correspondingly countersunk surface of the shoulder  $b^2$  of the bung-shell. As represented in Fig. 4, there are three vertical perforations formed in the plug or filling-block 8 for the reception of the tubular stem 9 and the body portions of a doubled or looped steam-pipe 10 10<sup>a</sup>.

As represented, the steam-pipe is bent at  $e$ , so as to provide two members 10 10<sup>a</sup>, which extend side by side, of a suitable length, and are then bent or curved, as at  $g g'$ . The members 10 10<sup>a</sup> are arranged parallel and close together, and said members are so disposed that the lower parts thereof lie in substantially horizontal positions within a barrel, while the lower portions of the members occupy vertical positions, so as to extend through the bung  $a''$ .

The upright portions or shanks of the steam-pipe that pass through two of the perforations in the plug or filling-block 8 are permanently secured therein and in a liquid-tight manner, and above the upper end of said block the shanks of the steam-pipe are bent, as at  $h$ , so as to extend laterally, and thereby form branches on the exposed part of the steam-pipe. At a suitable distance from the bends  $h$  the normally exposed branches or members 10 10<sup>a</sup> of the steam-pipe are bent upward, or these branches may be thus extended by provision of the L-fittings  $i$ . (Shown in Fig. 2.)

As shown in Fig. 1, the upright branches or continuations of the pipes are severed, and at each severed portion a screw union-joint 11 is introduced, said union-joint being of ordinary construction, but preferably having arms for convenient manipulation.

Above the union-joints 11 the branches or members 10 10<sup>a</sup> of the looped pipe are bent, as at  $m$ , and thence extend to the slip-joint boxes 12, and from said joint-boxes the steam-pipe branches or members 10 10<sup>a</sup> extend to an engagement, respectively, with the live-steam pipe 13 and the exhaust-steam pipe 14. A valve 13<sup>a</sup> is introduced into the pipe extension 10 for controlling of steam fed from the live-steam pipe.

Referring to the slip-joint boxes 12, (represented in Fig. 5,) each comprises a cylindrical body having a packing-box 12<sup>a</sup>, which is screwed to one end portion of said body,

each packing-box being centrally perforated to permit the insertion therethrough and into the box-body of an end portion of the steam-pipe member 10 or 10<sup>a</sup>, that the joint-box is a portion of, the steam-pipe member mentioned being extended from the opposite end of the joint-box into which the extension is screwed, as represented in said Fig. 5. The slip-joint box 12 and the cap 12<sup>a</sup> may be of any suitable size to provide a chamber adapted to receive an ordinary packing material. In Fig. 5 the slip-joint box is shown as being divided to produce a number of sections, one of which, 12<sup>c</sup>, is threaded to receive the cap 12<sup>a</sup>, while another section, 12<sup>d</sup>, is similar to a ring or sleeve that is disposed between the parts 12 and 12<sup>c</sup>. Preferably the stuffing-box cap 12<sup>a</sup> is not tapped through its entire depth; but a plain true bore is provided at the inner end, so that a similarly-finished part 12<sup>c</sup> of the head may closely fit within it, thus providing a smooth true wall for the packing-chamber. The opposing ends of the cap and head, respectively, are oppositely countersunk, so that when the cap is screwed down on the head the packing material within the chamber is wedged around the pipe 10, thus forming a steam-tight joint around the pipe, but allowing the pipe to slip freely lengthwise within the joint-box.

The stem 9 is fitted to slide in the remaining vertical perforation of the plug or filling-block 8, and it consists of a cylindrical tube having length sufficient to permit its extension a proper distance above and below the filling-block, as shown in Figs. 2 and 3, the relative position of the stem disposing it at a point triangularly removed from the two spaced members 10 10<sup>a</sup> of the doubled steam-pipe, as represented in Fig. 4. The stem 9 may be open at the lower end or be closed, as in Fig. 3. If closed, perforations  $n$  are formed in the wall of the stem near the lower end for the free entrance of the liquid therein. The perforations are of a diameter small enough to prevent the entrance of particles of floating charcoal into the stem, which might have a tendency to clog the passage-way of the liquid.

An internal thread is formed in the upper portion of the perforation occupied by the stem 9, and a corresponding male thread is chased on said stem, said male thread being of sufficient length to receive the collar 15, which is detachably screwed against a shoulder at the upper part of the stem, a portion of the thread on the stem being exposed below the collar for engagement with the internal thread of the perforation in the plug or block 8. A gasket  $o$  may be used in the joint between the upper surface of the collar and the opposing shoulder of the stem.

Upon the upper extremity of the tubular stem 9 is formed or secured a coniform wall 16, the latter being united or joined to the stem in a liquid-tight manner. The circular upper portion of said wall 16 is rigidly affixed



in a like manner upon or to the lower end of the liquid-receiver 17, that is cylindrical, said receiver being of proper dimensions for efficient service and closed at the upper end with exception of an air-vent that is controlled by the sealing-cap *p*. (Shown in Fig. 1.)

Upon the side of the upright liquid-receiver 17 a scale-plate 18 is secured, the same having its exposed surface marked with degree graduations that increase in value upwardly, said graduations being adapted to denote an increase in the volume of liquid within the receiver.

To render the scale practical for the purpose indicated, a gage-tube 19 is provided, the same being of proper length and diameter in its bore. Said gage-tube is joined at its lower end to a valve 20, that is in open communication with the side wall of the receiver 17, tapping it near the coniform bottom 16 of said receiver, as indicated in Figs. 1 and 2, the gage-tube 19 also extending upwardly from the valve and in front of the scale-plate and near thereto. The collar 15 is preferably hexagonal in form as to its outside wall, and it is of convex shape on the lower end thereof at *r* and seats in a liquid-tight manner upon a corresponding concavity formed around the upper end of the tapped perforation, wherein the stem 9 is screwed. In case the joint between the collar 15 and the upper end of the plug or filling-block 8 should become imperfect the collar may be taken off the stem 9 and the joint be repaired by grinding the opposed surfaces together. In order to preserve the proper relative positions of the opposing surfaces during this grinding process, a guide-rod of proper diameter may be used extending through the collar into the perforation of the filling-block. After thus preparing these surfaces to secure a liquid-tight joint the collar may be screwed back into its proper position against the gasket-surfaced shoulder of the stem of the receiver, and if it then be found on connecting the receiver with the filling-block that when proper contact is made at the top of the filling-block the scale-plate and gage-tube have a position unfavorable for convenient inspection it will be necessary to substitute a thicker or thinner gasket, as the case may require, said gasket being disposed in the joint between the shoulder of the stem and the upper end of the collar.

It will be evident that the lower portion of the stem 9 may have sufficient length to extend well down into the cask or barrel A when fully inserted within the plug or filling-block 8, and thus the stem will be immersed in the liquor contained in the barrel, as indicated in Fig. 2.

In assembling the several parts of the apparatus for use the doubled or looped end *e* of the pipe members 10 10<sup>a</sup> is slipped through the bore of the bung-shell 6 and the bung-shell is then drawn upward and placed in proper position to encircle the plug or filling-block 8, which is permanently attached to

the members 10 10<sup>a</sup>. The cap-nut 7 is then put in position, the same loosely encircling the members 10 10<sup>a</sup> above the filling-block and said cap-nut being introduced at the severed points 11 of the pipe members.

After thus arranging the aforesaid parts the heater-pipe is introduced into the bung-hole of the barrel containing the liquor that is to be heated, said pipe entering at its looped end and extending downward until the bung-shell, which encircles the filling-block, fills the bung-hole. The bung-shell is now screwed in a liquid-tight manner into the bung-hole and the cap-nut 7 is loosely screwed on the upper part of the bung-shell above the plug or filling-block, after which the receiver 17 is then put in proper position by slipping the stem 9 into the perforation provided for it in the plug or filling-block, said stem 9 being screwed downward until liquid-tight contact is made between the beveled surface of the collar 15 and the countersunk surface at the top of the plug or filling-block, the exposed thread of said stem 9 engaging with the thread tapped in the perforation of the plug or filling-block. After properly adjusting the plug or filling-block within the bung-shell and also adjusting the slip-joints 12 of the members 10 10<sup>a</sup> so as to bring the corresponding parts of the union-joints 11 in proper relative position the members 10 10<sup>a</sup> are connected at said union-joints, and communication is thus established with the steam supply and exhaust line, the cap-nut 7 being then screwed down on the bung-shell sufficiently to make a secure joint at the contacting shoulders of the bung-shell and the filling-block.

Assuming that the apparatus has been arranged as described, the liquor in the barrel A may now be subjected to the heat radiated from the doubled or looped steam-pipe members 10 10<sup>a</sup> within the barrel by opening the live-steam valve 13<sup>a</sup>, which will cause a flow of steam through the looped pipe and out into the exhaust-pipe 14.

It will be seen that the construction and combination of parts of the apparatus as described adapts the device to serve as a sensitive spirit-thermometer, the barrel A forming the bulb, so that heat communicated to the liquor in the barrel will by expansion of the volume of the liquor cause a corresponding rise of the same in the receiver 17 and the gage-tube 19, which expansion will be accurately denoted on the scale-plate 18.

Obviously the heating process for aging and coloring whisky may be exactly controlled by the improved apparatus, so that a uniformity in flavor and color may be given to quantities of liquor of the same make by employment of the improvement.

It will be seen that the members of the heating apparatus are so devised and disposed that provision can be made for heating a large number of barrels of liquor at one time by the installation of steam supply and ex-



haust pipes in horizontal parallel lines, the same having fittings similar to those herein described located at certain points or at equal distances apart for connection with separate heating apparatus. To prepare for the heating operation on this plan, the barrels of liquor are placed in rows, each barrel being so positioned that its bung-hole is approximately in line with a supply and exhaust fitting in the fixed lines of pipe 13 14. The proper relative position for connection of the respective component parts of each union-joint is attained by adjusting the members of the heating apparatus to suit the requirements of each case. The plug or filling-block may be so fixed within the bung-shell before tightening the clamping cap-nut that the lower or exteriorly-threaded part of the union-joint on the pipe member, which looks upward in normal position, may be directly in line with the bung-stave of the barrel or may be placed in a position to the right or left of this line to suit the position of the upper or interiorly-threaded part of the union-joint. The position of the upper part of the union may be adjusted longitudinally backward or forward by means of the horizontal slip-joint to place it directly over the corresponding lower part of the union-joint. That portion of the heater-pipe to which the lower part of the union-joint is attached being preferably made of copper is of a sufficiently pliable character to supply any additional adjustment that would be required in ordinary practice to bring the corresponding parts of the union-joints in proper relation for screwed connection; but if conditions should be such that the means described above would not supply sufficient adjustability for convenient operation facility for more extensive adjustment may be supplied by employment of a slip-joint in vertical position, as indicated at 21 in Figs. 1 and 2, in addition to the horizontal slip-joint referred to, such arrangement affording a swinging adjustment to the right and to the left and also providing a vertical lengthening and shortening adjustment.

The collar 15 is adapted to make a tight joint with the plug, and the opposing or engaging faces of the plug and the collar may be reground at any time in order to make a perfectly tight joint between these parts, so as to prevent the escape of liquor. The collar may, if desired, be adjusted on the stem; but normally the collar remains tightly jammed against the shoulder of the stem or an interposed gasket.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. A liquor-heating apparatus having a bung, a filling-plug removably seated therein, means for tightly securing the filling-plug in the bung, a circulating-pipe secured to the filling-plug, and a gage also secured to the filling-plug, said circulating-pipe and the

gage being insertible or removable with the filling-plug into or from the bung.

2. A liquor-heating apparatus comprising a bung, a plug adjustably confined in said bung, a looped steam-pipe extended through said plug and having means for connecting the same with a source of heat-supply, and a gage connected to the bung-hole closure and adapted to denote the degree of heat applied to the liquor by indicating its degree of expansion.

3. A liquor-heating apparatus comprising a hollow bung, a plug or block attached to said bung, a looped steam-pipe insertible at its looped end into a cask or barrel, said steam-pipe having members extended through the plug or block and provided with means to respectively engage a supply-pipe and an exhaust located outside of the barrel, and a gage connected to the bung-hole closure and adapted to denote the degree of heat applied to the liquor in the barrel by indicating its degree of expansion.

4. In a liquor-heating apparatus, the combination of a bung, a filling-plug removably seated in said bung, means for clamping said plug in the bung, a circulating device attached to the plug and insertible or removable therewith, a gage-stem inserted in the plug, and means for clamping the gage-stem to the plug independently of the attachment of said plug to the bung.

5. In a liquor-heating apparatus, the combination of a bung, a filling-plug tightly fitting the bung and removable therefrom, a circulating-pipe attached to the plug, a gage having a stem fitted in the plug, and means for tightly clamping the gage-stem in the plug independently of the fitting of said plug to the bung.

6. In a liquor-heating apparatus, the combination of a bung, a filling-plug having a ground joint in seated engagement with said bung, means for clamping the plug tightly in the bung, a circulating-pipe attached to the plug, and a gage-stem also secured to the plug, said pipe and the stem being insertible and removable with the plug.

7. In a liquor-heating apparatus, the combination of a bung-shell, a filling-plug therein, a heater-pipe attached to said plug, an indicator-receiver having a stem attached to said plug, and means for tightly clamping the plug to the bung-shell.

8. In a liquor-heating apparatus, the combination with a bung-shell, of a plug having means for clamping the same to said shell, a doubled heater-pipe provided with branches which are extended through said plug, an indicator-stem also extended through the plug, and means for detachably connecting the plug and shell in an air-tight manner.

9. In a liquor-heating apparatus, the combination of a bung, a filling-plug removable therefrom, a circulating-pipe attached to said plug, a gage having a stem which is fitted in



said plug, and means for removably clamping the gage-stem to the plug.

10 10. In a liquor-heating apparatus, the combination of a bung, a filling-plug removable  
5 therefrom, a circulating-pipe attached to said plug, a gage having a threaded stem screwed into the plug, and a collar screwed on the gage-stem and having a firm bearing against the plug.

15 11. In a liquor-heating apparatus, the combination of a fixed supply and return pipes, a bung, a circulating-pipe fixed to said bung, and sectional pipes extending from said circulating-pipe to the supply and return pipes, said  
20 sectional connecting-pipes being equipped with slip-joint boxes arranged to secure a limited lateral and endwise adjustment of the pipes and of the bung relative to the lines of the supply and return pipes.

25 12. In a liquor-heating apparatus, the combination of supply and return pipes, a bung having a removable member, a circulating-pipe attached to said removable member and insertible or removable therewith, and separable adjustable pipes connecting the circulating-pipe with the supply and return pipes.

13. In a liquor-heating apparatus, the combination of supply and return pipes, a bung, a circulating-pipe fixed to said bung, and sectional pipes having horizontal and vertical  
30 branches and slip-joint boxes in said branches of the pipes; the sectional pipes being connected to the circulating-pipe and to the supply and return pipes.

14. In a liquor-heating apparatus, the combination of supply and return pipes, a bung  
35 having a removable member, a circulating-pipe attached to the removable member and adapted for insertion and removable therewith, and sectional connecting-pipes uniting  
40 the circulating-pipe with the supply and return pipes, each connecting-pipe having separable sections uniting adjustably by slip-joint boxes.

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

JAMES P. ROCHE.

Witnesses:

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JAS. L. CORCORAN.