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O. T. MURPHY.

APPARATUS FOR HEATING LIQUIDS IN CASKS.

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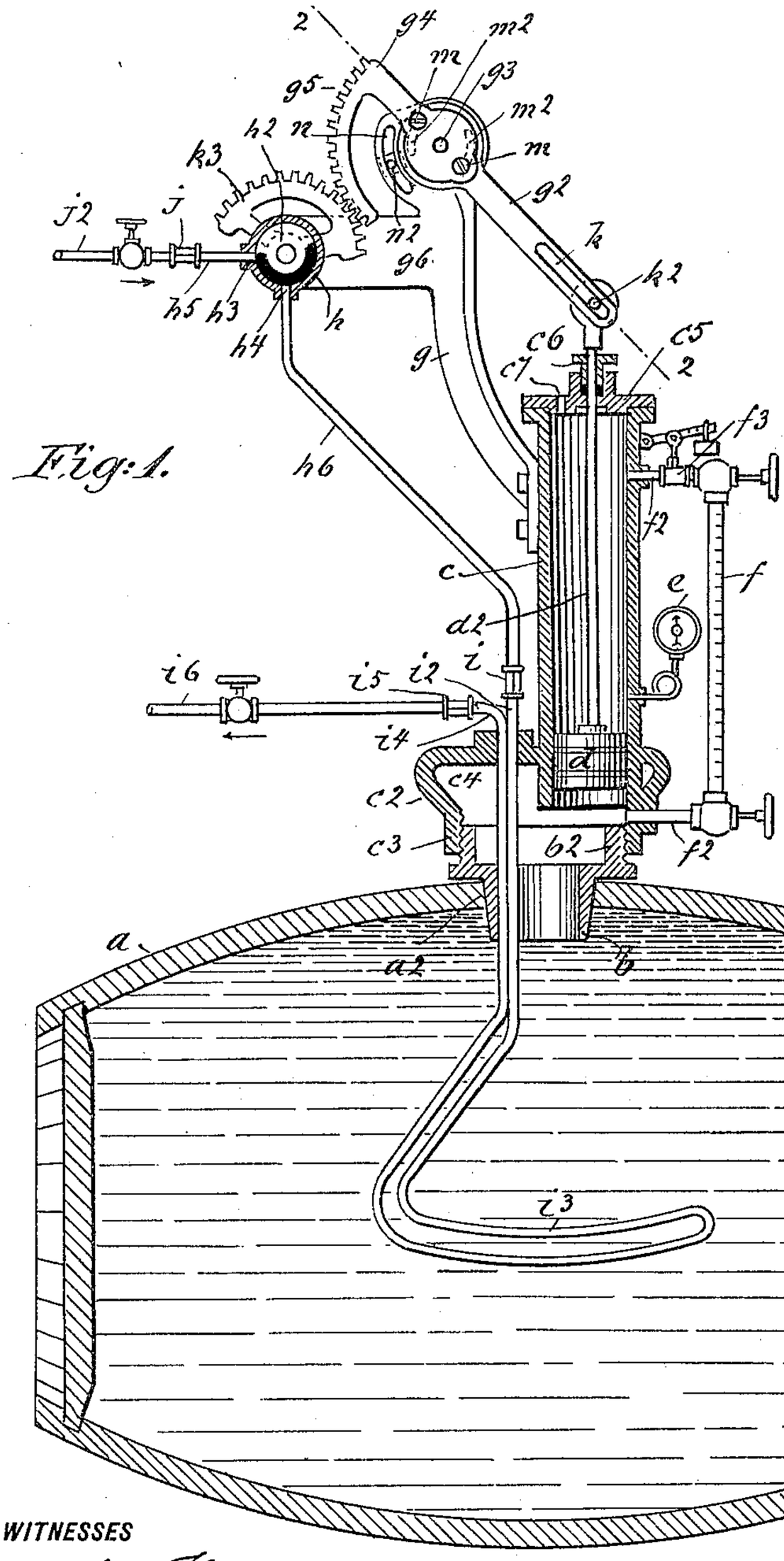

Fig. 1.

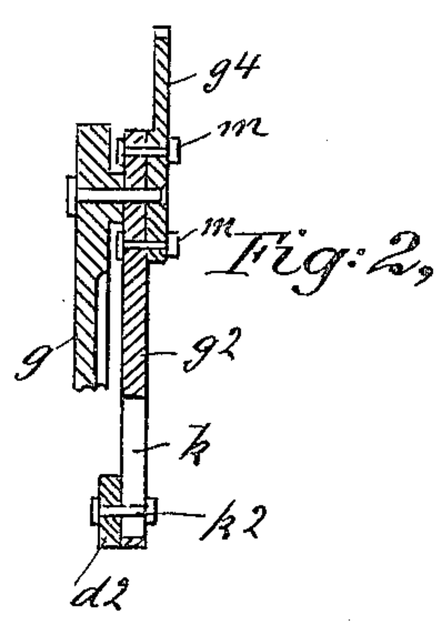

Fig. 2.

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APPARATUS FOR HEATING LIQUIDS IN CASKS.

No. 822,382. Specification of Letters Patent. Patented June 5, 1906.

Application filed February 8, 1906. Serial No. 300,076.

To all whom it may concern:

Be it known that I, OTTIE T. MURPHY, a citizen of the United States, residing at Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Apparatus for Heating Liquids in Casks, of which the following is a specification, such as will enable those skilled in the art to which it appertains to make and use the same.

This invention relates to apparatus for heating liquids in a cask or other receptacle, and particularly to apparatus of this class designed for aging liquors; and the object of the invention is to provide an improved apparatus of this class which may be easily connected with a cask or barrel and by means of which steam is used for heating the liquids in the cask, said apparatus being so formed as to indicate at all times the temperature of the liquids in the cask and also the pressure therein.

The invention is fully disclosed in the following specification, of which the accompanying drawings form a part, in which the separate parts of my improvement are designated by suitable reference characters in each of the views, and in which—

Figure 1 is a sectional side elevation of a cask provided with my improved apparatus, the apparatus being also in section; and Fig. 2, a section on the line 2 2 of Fig. 1.

In the drawings forming part of this specification I have shown at a an ordinary cask, barrel, or similar vessel provided in one side with a bung-hole a^2, and in the practice of my invention I provide an apparatus of the class herein specified, which is of the following construction: My improved apparatus comprises a tubular plug b, adapted to be secured in the bung-hole a^2 and provided with a screw-threaded rim b^2, and with which is connected a vertically-arranged cylinder c. The cylinder c is provided at the lower end thereof, and preferably integrally therewith, with an enlarged hollow head portion c^2, having a threaded bottom rim c^3, by which connection with the rim b^2 of the tubular plug b is made.

The head c^2 of the cylinder c and the rim b^2 of the tubular plug b form a chamber c^4, with which the lower end of the cylinder c communicates, and mounted in said cylinder and fitting loosely therein is a vertically-movable plunger d, having a rod d^2, which passes upwardly through the upper end c^5 of said cylinder and through a packing-box c^6, connected therewith, and said upper end c^5 of the cylinder c is provided with a port or passage c^7.

Connected with one side of the cylinder c is a pressure-gage e, and said cylinder is also provided with a temperature-gage f, which is connected therewith at the upper and lower ends thereof by means of pipes f^2, and in the pipe f^2, at the upper end of the gage f, is a pressure-regulating valve f^3.

Connected with the cylinder c, preferably opposite the gage f, is a support g, with the upper end portion of which is connected an arm g^2, this connection being a pivotal connection, as shown at g^3, and said arm is composed of two parts or provided with a supplemental part g^4, having a segmental gear g^5, and the support g is provided below the pivotal support of the arm g^2 with a laterally-directed member g^6, with which is connected a valve-casing h, provided with a segmental valve h^2 and two ports or passages h^3 and h^4, with which are respectively connected a main steam-supply pipe h^5 and a supplemental steam-supply pipe h^6.

Connected with the supplemental steam-supply pipe h^6 by means of a suitable coupling i is a pipe i^2, which is passed inwardly through the head c^2 of the cylinder c and is formed into a steam worm or coil i^3 and one end of which is passed outwardly through the head c^2 of the cylinder c, as shown at i^4, and connected, by means of a suitable coupling i^5, with a steam-exhaust pipe i^6.

The main steam-supply pipe h^5, which is connected with the valve-casing h, is also provided with a coupling j, by means of which a steam-supply pipe j^2, connected with any suitable steam-generator, is connected with said pipe h^5.

The couplings i, i^5, and j, by which the different steam-pipes are connected, are detachable couplings, and the said pipes may be disconnected whenever desired.

The arm g^2 of the support g is provided with a longitudinal slot k, and the upper end of the plunger-rod d is provided with a pin k^2, movable in said slot, and the operation of the apparatus will be readily understood from the foregoing description, when taken in connection with the accompanying drawings, and the following statement thereof: The various parts of the apparatus may be assembled in any desired manner and are connected with the cask a, as shown in the drawings, and hot steam is turned on through the

pipe j^2 and passes through the valve-casing h and pipe h^6 into the worm or coil i^3 and is exhausted from said worm or coil through the pipe i^6. In this operation the contents of the cask are heated and expanded and rise into the chamber c^4 and continue to rise into the cylinder c, and in this operation the plunger d is lifted or raised, as will be understood. As the liquid contents of the cask rise in the cylinder c they also rise in the gage f, and the temperature thereof may be determined at any time by means of said gage. The gage f is also in practice made to show the height of the liquid therein, and said height of the liquid may also be determined in the same manner as the temperature. It will be understood, of course, that the temperature is indicated by the degree of expansion, which latter is indicated by the gage f, and the gage e will also tell at any time the pressure in the cylinder c.

As the plunger d rises in the cylinder c the rod d^2 will operate the arm g^2 and swing said arm on its pivotal support at g^3, and the segmental gear g^5 on the supplemental part g^4 of the arm g^2 will operate the gear k^3 on the valve h^2 and turn said valve, and when the pressure in the cylinder c becomes too great or rises beyond a predetermined point the flow of steam through the valve-casing h and pipe h^6 will be cut off and the supply of hot steam to the cask a will be discontinued, and it will be understood that this operation is automatic or may be made so, and in this way the contents of the cask may be kept at a predetermined temperature or heated to the required degree at all times.

In the operation of this apparatus it is essential to know the volume of the cask or the capacity thereof, also the amount of liquids therein and the amount of the expansion of said liquids under a predetermined degree of heat or under any degree of heat, and the object of my improved apparatus is to determine the degree of heat within the cask and to control this heat and regulate the same at all times in accordance with the requirements of the liquids which are to be treated.

The object of forming the arm g^2 of two separate parts is to provide means whereby the part g^4 may be adjusted on the part g^2. The part g^4 is connected with the part g^2 by screws m, which pass through segmental slots m^2 in the part g^2, and by means of this construction the part g^4 may be adjusted on the part g^2 so as to regulate the extent to which the gears g^5 and k^3 will turn the valve f^2, and the support g is provided with a segmental slot n, in which is an adjustable pin n^2, which is also adapted to be used to limit the movement of the part g^4 of the arm g^2, and in this way the time at which the flow of steam will be cut off may be regulated or said time may be fixed, as may be desired.

My invention is not limited to the exact construction of the various parts of the apparatus herein shown and described, and it will be apparent that various changes therein and modifications thereof may be made without departing from the spirit of my invention or sacrificing its advantages.

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

1. An apparatus of the class described, comprising a cylinder adapted at one end to be connected with a receptacle, a plunger mounted therein and provided with a rod which passes out through the other end of said cylinder, a steam-pipe adapted to be passed into said receptacle, a gage connected with said cylinder, and means whereby an increase of pressure in the receptacle will operate a valve in the steam-supply pipe, substantially as shown and described.

2. An apparatus for heating liquids in a receptacle, comprising a cylinder adapted to be connected with said receptacle, a gage connected with said cylinder, a steam-coil adapted to be inserted into said receptacle, a steam-supply pipe connected with said coil, and means whereby an increase of pressure in the receptacle will operate a valve in the steam-supply pipe, substantially as shown and described.

3. An apparatus for heating liquids in a receptacle, comprising a cylinder adapted to be connected with said receptacle, a gage connected with said cylinder, a steam-coil adapted to be inserted into said receptacle, a steam-supply pipe connected with said coil, and means whereby an increase of pressure in the receptacle will operate a valve in the steam-supply pipe, comprising a plunger mounted in said cylinder, an arm connected with said plunger, and a segmental gear connected with said arm, and in operative connection with a gear connected with said valve, substantially as shown and described.

4. An apparatus for heating liquids in a cask, comprising a cylinder provided at one end with an enlarged head, a tubular plug adapted to be secured in the bung-hole of the cask and with which said head is connected, a gage connected with said cylinder, a steam-coil passing through the head of the cylinder into the cask, a steam-supply pipe connected with said coil, a steam-exhaust pipe connected with said coil, and a plunger mounted in said cylinder and in operative connection with a valve in the steam-supply pipe, substantially as shown and described.

5. In an apparatus for heating liquids in a cask, comprising a cylinder adapted to be connected with and in communication with said cask, a plunger loosely mounted in said cylinder and provided with a rod which passes through the end thereof, a steam-coil also connected with said cylinder and adapted to be passed into said cask, a steam-supply pipe

connected with said coil, a steam-exhaust pipe connected with said coil, and means whereby an increase in pressure in said cask will operate a valve in the steam-supply pipe at a predetermined time, substantially as shown and described.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of the subscribing witnesses, this 6th day of February, 1906.

OTTIE T. MURPHY.

Witnesses:
F. A. STEWART,
C. E. MULREANY.