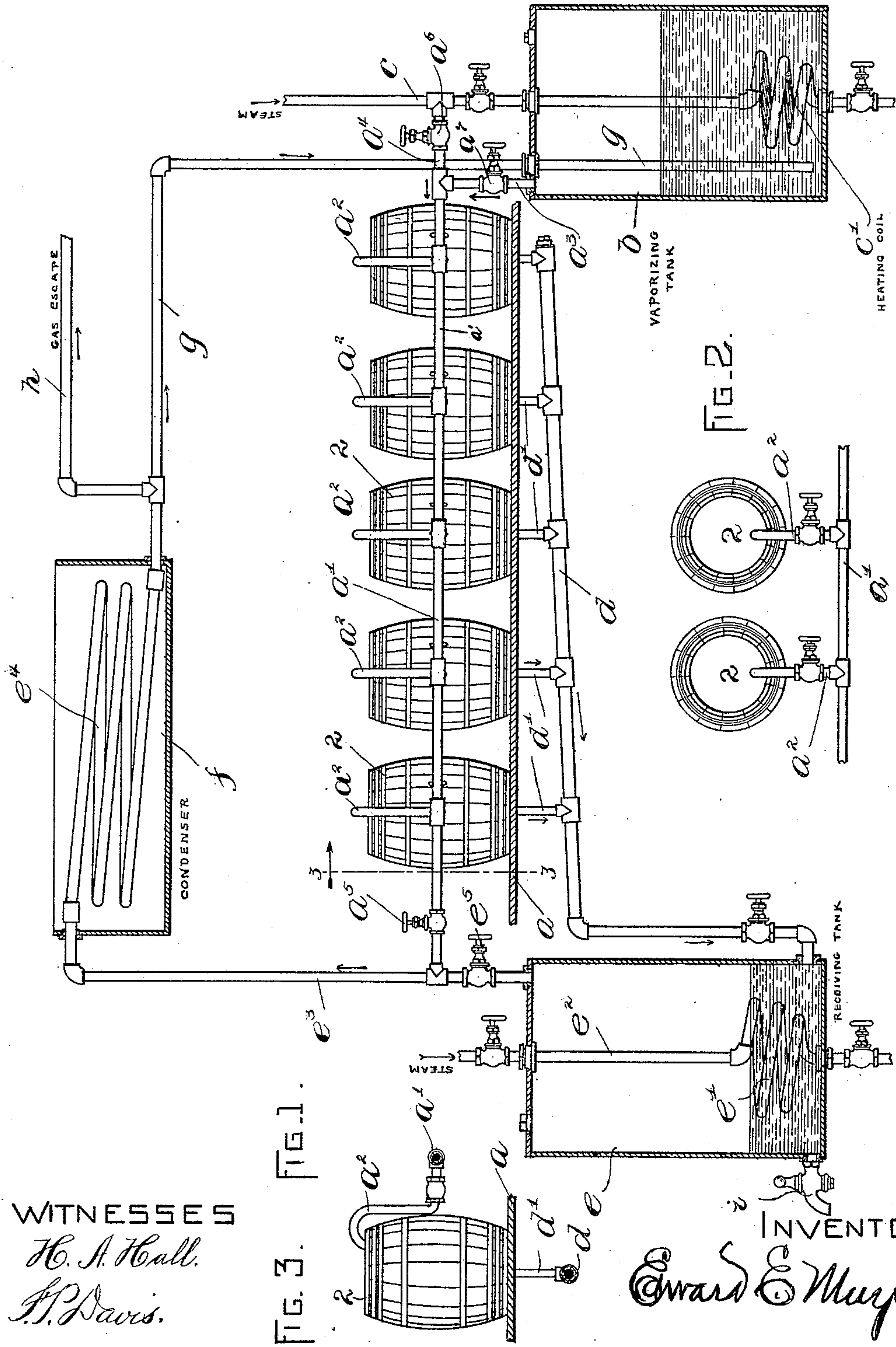


(No Model.)

E. E. MURPHY.
 APPARATUS FOR EXTRACTING RESIDUAL SUBSTANCES FROM CASKS.
 No. 529,338. Patented Nov. 13, 1894.



WITNESSES
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APPARATUS FOR EXTRACTING RESIDUAL SUBSTANCES FROM CASKS.

SPECIFICATION forming part of Letters Patent No. 529,338, dated November 13, 1894.

Application filed February 8, 1894. Serial No. 499,500. (No model.)

To all whom it may concern:

Be it known that I, EDWARD E. MURPHY, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Apparatus for Recovering Valuable Substances from Casks, Barrels, and other Receptacles, of which the following is a specification.

This invention has relation to means for recovering residual substances from casks, barrels, cans, and other receptacles, which substances have been absorbed by the wood or deposited upon the sides of the receptacles, so that they are not drawn off with the bulk of the contents of the said receptacles.

It is the object of the invention to provide such improvements as will enable the substances aforesaid to be readily, speedily, and economically recovered, and to this end the invention consists in the novel apparatus hereinafter described and claimed.

Reference is to be had to the annexed drawings, and to the letters and figures marked thereon, forming a part of this specification, the same letters designating the same parts or features, as the case may be, wherever they occur.

Of the drawings—Figure 1 shows a part side elevation and part sectional view of an apparatus embodying the invention. Fig. 2 shows a top plan view of part of the apparatus. Fig. 3 shows a section on line 3—3 Fig. 1, looking toward the right.

In the the drawings—the letter *a* designates a horizontal platform on which a row of casks 2 may be supported while under treatment by the improved process. A pipe, *a'*, extends adjacent to all the said casks, and is adapted to communicate therewith by valved branches, *a²*, which may be wholly or partly of flexible material, and may connect with any suitable part of the casks, preferably the top or highest part they being here shown as entering the heads of the casks. The flexibility of the connections, *a²*, facilitates their connection with the casks. These connections will have suitable provisions at the end for tightly yet removably fitting holes in the casks. Said pipe, *a'*, communicates by a valved branch, *a³*, with a vaporizing tank *b* and by a valved connection, *a⁴*, with a steam-

pipe, *c*, which extends down through the tank *b*, and connects with a heating coil, *c'*, therein. A pipe, *d*, extends on a slight inclination below the platform, *a*, and communicates with the casks by branches, *d'*, which may enter the spigot-holes in the heads of the casks. The said branches will have suitable provisions at the upper end for tightly yet removably engaging the spigot-holes or other orifices in the casks.

The pipe, *d*, communicates with a receiving tank, *e*, which when used to contain a volatile liquid has a heating coil, *e'*, connected with a steam-pipe, *e²*, for the purpose of vaporizing said liquid, as hereinafter described.

A pipe, *e³*, extends out of the top of the tank, *e*, and connects with a condensing coil, *e⁴*, contained in an elevated tank *f*. A pipe, *g*, extends from the opposite end of said condensing coil down into the vaporizing tank *b*. The pipe, *a'*, connects with the pipe, *e³*, and is provided with a valve, *a⁵*, to control communication therewith. The pipe, *e³*, has a valve, *e⁵*, between the tank *e* and the pipe *a'*.

The method employed with the above described apparatus, for recovering gummy or oily substances from the casks is as follows: The tank, *b*, is partly filled with naphtha or other volatile liquid which is a solvent of the gummy matter to be recovered. Said liquid is vaporized by the heat emanating from the coil, *c'*, and the vapor passes off through the pipe, *a³*, into the pipe, *a'*, and from thence through the branches, *a²*, into the casks. Said vapor is condensed on the inner surfaces of the casks and is thus caused to dissolve the gummy substances on said surfaces, the liquid resulting from the condensation of the vapor carrying the dissolved gum downwardly, and passing through the branches, *d'*, into the pipe, *d*, and down the latter to the tank *e*, in which it is allowed to collect. Steam is then passed through the coil, *e'*, heating the contents of the tank *e*, thus vaporizing the volatile part of said contents, the vapor passing through the pipe, *e³*, into the coil, *e⁴*, where it is again condensed and from which it returns to the tank *b* through the pipe, *g*, to be used again in the manner already described. The residuum in the tank, *e*, may be drawn off from time to time by

means of a faucet *i*. In the passage of the distilled naphtha through the pipe, *g*, carburated air may escape through a branch-pipe, *h*, by which it may be conducted to a gas-
5 ometer.

During the removal of the volatile liquid from the tank *e* as above described, the valves, *a*⁵ and *a*⁶, are closed.

The method employed for recovering alcohol is somewhat different and is as follows:
10 The tank, *b*, is not utilized, and its communication with the pipe, *a*¹, is cut off by closing the valves *a*⁷ in the branch, *a*³. The valve, *a*⁶, is opened, and the valves *a*⁵ and *e*⁵ are
15 closed. Steam from the pipe *c* is now slowly admitted to the casks preferably at the top through the pipe, *a*¹, and its branches *a*². The steam vaporizes the alcohol held by the cells and pores of the wood, the vaporized alcohol
20 mingling with the steam. The steam and the alcohol vapor are slowly condensed in the casks by contact with the walls thereof, the liquid of condensation (comprising water and alcohol) flowing down through the branches
25 *d*¹ and pipe, *d*, to the tank, *e*. The mixture may be subsequently treated in any suitable manner to separate the alcohol from the water. For example, said mixture may be heated by the coil, *e*¹, to vaporize the alcohol, and
30 the vapor may be condensed in the coil, *e*⁴, the resulting liquid being conducted to a suitable receptacle.

It will be observed that in both cases the casks are utilized as condensers of the vapor-
35 ized agent used to liberate the residual material from the casks, the liquid of condensation being used in both cases as a vehicle to carry the liberated material to the storage receptacle. The apparatus involved is there-
40 fore extremely simple, and the process is capable of being carried on at a small expense.

The cask acting as a condenser may be cooled by a spray of cold water around the outside, if necessary, but in practice a good
45 circulation of cool air is all that is needed.

When all the valuable residue has been recovered from the casks they may be removed, and replaced by a second set of casks,—the
50 apparatus being adapted for the convenient interchanging of casks.

Having thus explained the nature of the invention and described a way of constructing and using the same, though without attempting to set forth all of the forms in which it

may be made or all of the modes of its use, it 55 is declared that what is claimed is—

1. An apparatus for recovering residual substances from casks and other receptacles, comprising in its construction a vaporizer, a
60 vapor pipe leading therefrom and having branches adapted to communicate with a series of casks, a liquid discharge-pipe, having branches adapted to communicate with said
65 casks, provisions being made for interchanging of casks a receiving-tank into which said discharge-pipe leads, means for heating the contents of said tank, and a condenser in communication with the said receiving-tank, and with the vaporizer.

2. An apparatus for recovering residual 70 substances from casks and other receptacles, comprising in its construction a vaporizing tank, a steam-pipe extending therethrough a pipe adapted to communicate with the casks, a valved connection between said pipe and
75 the vaporizing tank, a valved connection between said pipe and the steam-pipe, a discharge-pipe adapted to communicate with said casks, a receiving tank into which said
80 discharge-pipe leads, a heater for said tank, and a condenser in communication with the said receiving tank and with the vaporizing tank.

3. An apparatus for recovering residual substances from casks and other receptacles 85 comprising in its construction a vaporizing tank, a steam-pipe extending therethrough, a vapor conducting pipe adapted to communicate with the casks, a valved connection between said pipe and the vaporizing tank, a
90 valved connection between said pipe and the steam pipe, a discharge-pipe adapted to communicate with said casks, a receiving tank into which said discharge-pipe leads, a heater for said tank, a condenser and valved pipe
95 connecting the receiving tank and said condenser, a valved connection between said pipe and the vapor pipe which communicates with the casks, and a pipe connecting the condenser with the vaporizing tank. 100

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 31st day of January, A. D. 1894.

EDWARD E. MURPHY.

Witnesses:

A. D. HARRISON,
C. F. BROWN.