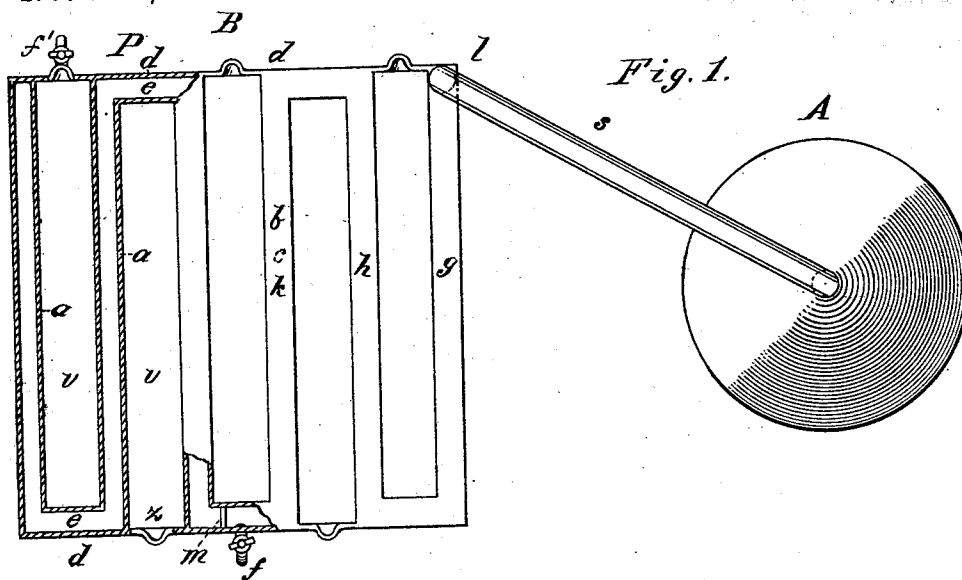
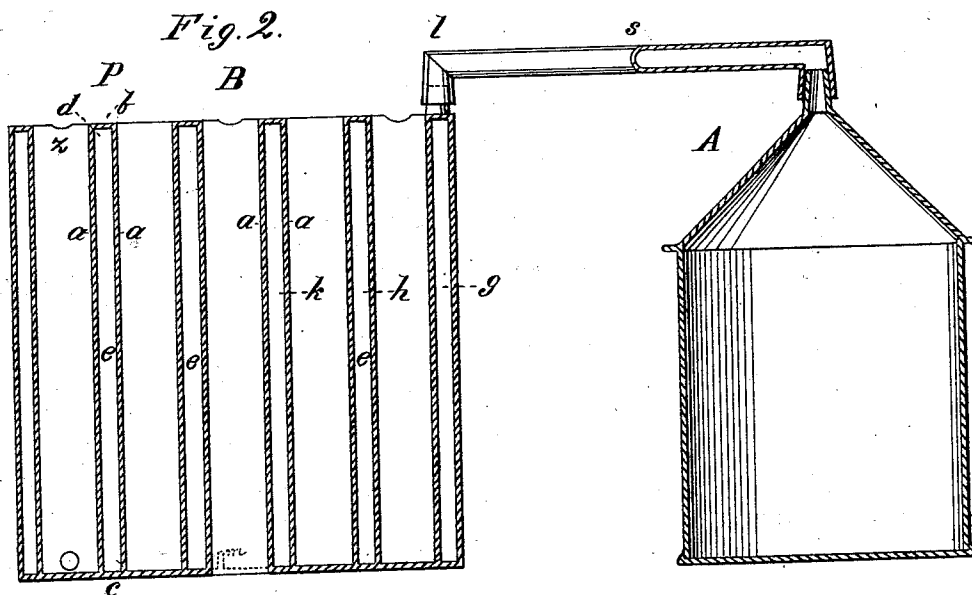


(No Model.)

F. A. WILMANS
CONDENSER.

No. 282,020.

Patented July 24, 1883.



WITNESSES

John L. Morrow
C. B. Bates

INVENTOR

F. A. Wilmans
by Anderson & Smith
his ATTORNEYS

UNITED STATES PATENT OFFICE.

FREDERICK A. WILMANS, OF DALLAS, TEXAS.

CONDENSER.

SPECIFICATION forming part of Letters Patent No. 282,020, dated July 24, 1883.

Application filed June 4, 1883. (No model.)

To all whom it may concern:

Be it known that I, F. A. WILMANS, a citizen of the United States, residing at Dallas, in the county of Dallas and State of Texas, have invented certain new and useful Improvements in Condensers; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

Figure 1 of the drawings is a representation of this invention, and is a top view, with a part in section. Fig. 2 is a vertical section.

This invention has relation to condensers; and it consists in the construction and novel arrangement of a series of condensing-compartments, forming a continuous convoluted condensing-vessel having vertical walls, to be employed in the process of extracting alcohol, essential oils, ethers, &c., from their mother-liquor.

The invention also consists in applying air or water, or both, to the exterior surfaces of the vertical walls of said compartments at different temperatures, decreasing toward the end of the series, whereby the vapor of water is first condensed, then mixtures of gradually-increasing strength, and finally almost pure alcohol, essence, or ether, as the case may be, all as hereinafter set forth, and pointed out in the appended claim.

In the accompanying drawings, the letter A designates a tank, kettle, or reservoir in which the mother-liquid is placed to be heated.

B represents the condenser, which is made in horizontally-convoluted form, of broad vertical plates of sheet metal, *a a*, which are separated by an interval of about half an inch, and are connected at the top *b*, at the bottom *c*, and at each end of the vessel, as at *d*, thus forming a continuous convoluted chamber, *e*, having vertical walls horizontally recurved or bent at their ends in such manner that a condensing-vessel of many feet in horizontal length is contracted within a very much smaller space. The condensing-chamber *e*, although continuous, is arranged in compartments *g h k* at gradually-increasing distance from the inlet-opening *l*, which is arranged at

one end of the condenser. A partial separation is made by means of dams *m*, of little height, rising from the bottom, *c*, of the condenser, and designed to prevent the liquid which has been condensed in one compartment from flowing into the compartments adjacent thereto.

Near each dam, at the lower portion of each compartment, is a discharge opening or faucet, *f*, through which the liquid condensed in the compartment and gathered by the dam is drawn off. The faucet *f'* is designed for the purpose of drawing off the contents of the cooling-chambers P.

Between the convolutions of the condensing-chamber are the cooling-chambers P, which may be made with or without bottoms *v*. It is preferred, in order to afford means for effecting condensation of different vapors in different parts of the condenser, to provide the end cooling-chambers with bottoms and closing end walls, *z*, so that they will contain water, which may be kept running constantly into and out of the chamber or vessel P. In this manner the temperature of the water in any cooling-vessel may be maintained, so that its effect upon the vapors in the condenser will be even and uniform for the special compartment of the condenser which it is designed to act upon. The temperature of the water in the coolers should be regulated by means of thermometers, to subserve the purposes of the apparatus.

In distilling alcohol the mixed steam and vapors from the mother-liquor in the boiler is conveyed by the pipe *s* and inlet *l* into the condenser at one end, so that it enters the first compartment, *g*, thereof. The temperature of the water in the cooler connected with this compartment, if water is used, is kept comparatively high, in order that the vapor of water may be condensed without affecting the alcoholic vapor, which will only condense at a lower temperature. The latter vapor, therefore, passes from this compartment with some admixture of the vapor of water to the next, where a stronger mixture is condensed. In the last compartment the alcoholic vapor will be found nearly pure, and is condensed by the cold water in the cooler arranged in connection with this compartment. The various mixtures of different degrees of strength may

be drawn off in the manner hereinbefore referred to, and may be, when desirable, passed again into the boiler, to be vaporized.

I am aware that it is not new to provide a
5 still in connection with a condenser having
two series of conducts, one series of which is
made to connect with the still and the other
to connect with a receiver, and also that a
condenser of helix form having one space in
10 the convolution for the refrigerating-liquid
and another for the vapor or fluid to be condensed,
with induction and eduction passages to admit
and discharge the respective liquids, is not new,
and therefore do not claim either
15 construction, broadly.

Having described this invention, what I

claim, and desire to secure by Letters Patent,
is—

A condenser, consisting of a horizontally-convoluted chamber having vertical walls, 20
bottom dams, and discharge-faucets, in combination
with a bath divided into separate chambers, and means
whereby different temperatures may be maintained in
said chambers, all substantially as and for the purposes
25 specified.

In testimony whereof I affix my signature in
presence of two witnesses.

FREDERICK A. WILMANS.

Witnesses:

L. A. PIRES,

S. E. McILHENNY.