(No Model.) 3 Sheets—Sheet 1.

E. T. WINKLER.

OILING AND COOLING APPLIANCE FOR THE PISTON RODS OF PUMPS FOR ICE MAKING APPARATUS.

No. 452,534. Patented May 19, 1891.

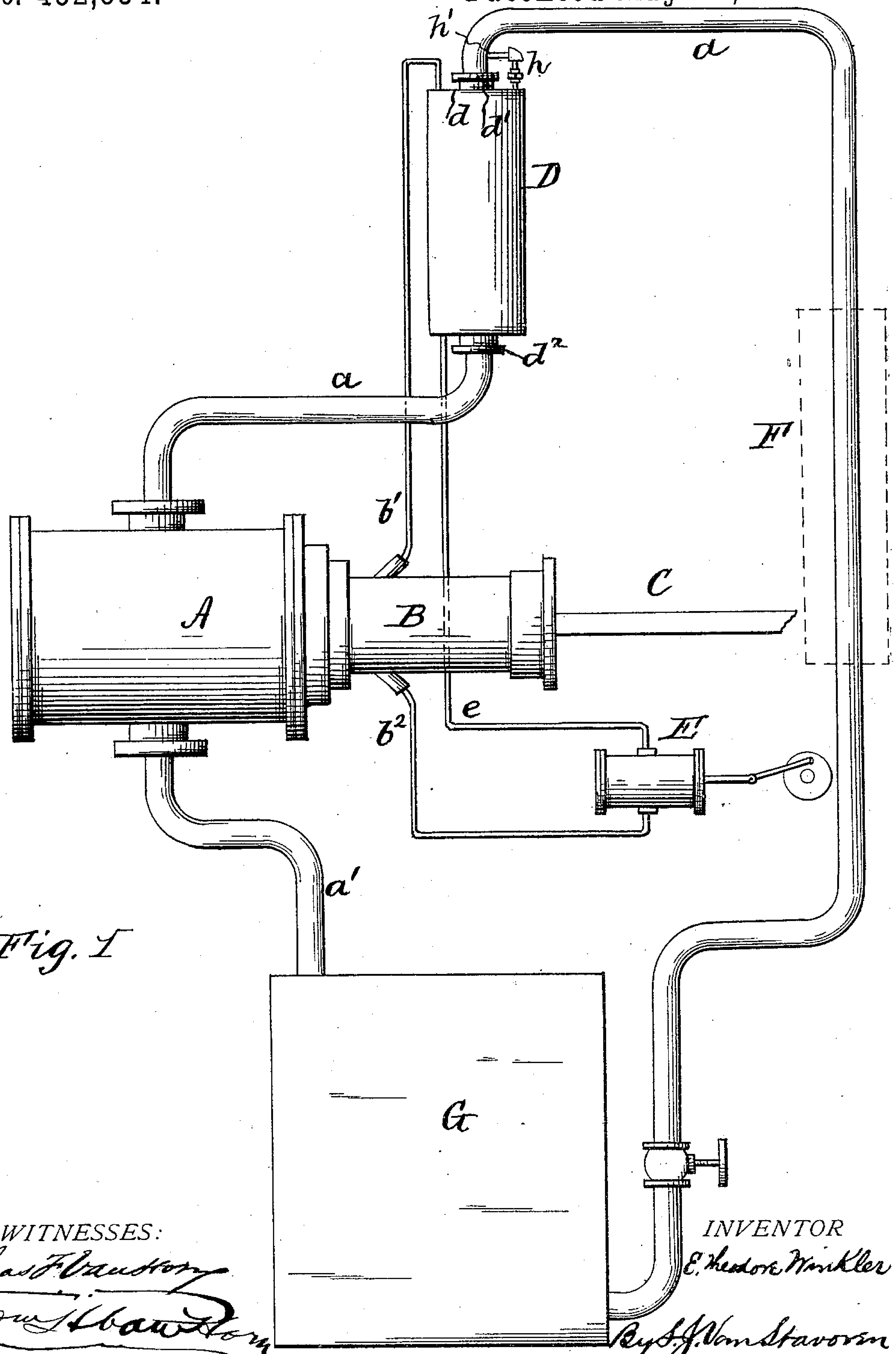

Fig. I

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(No Model.)

3 Sheets—Sheet 2.

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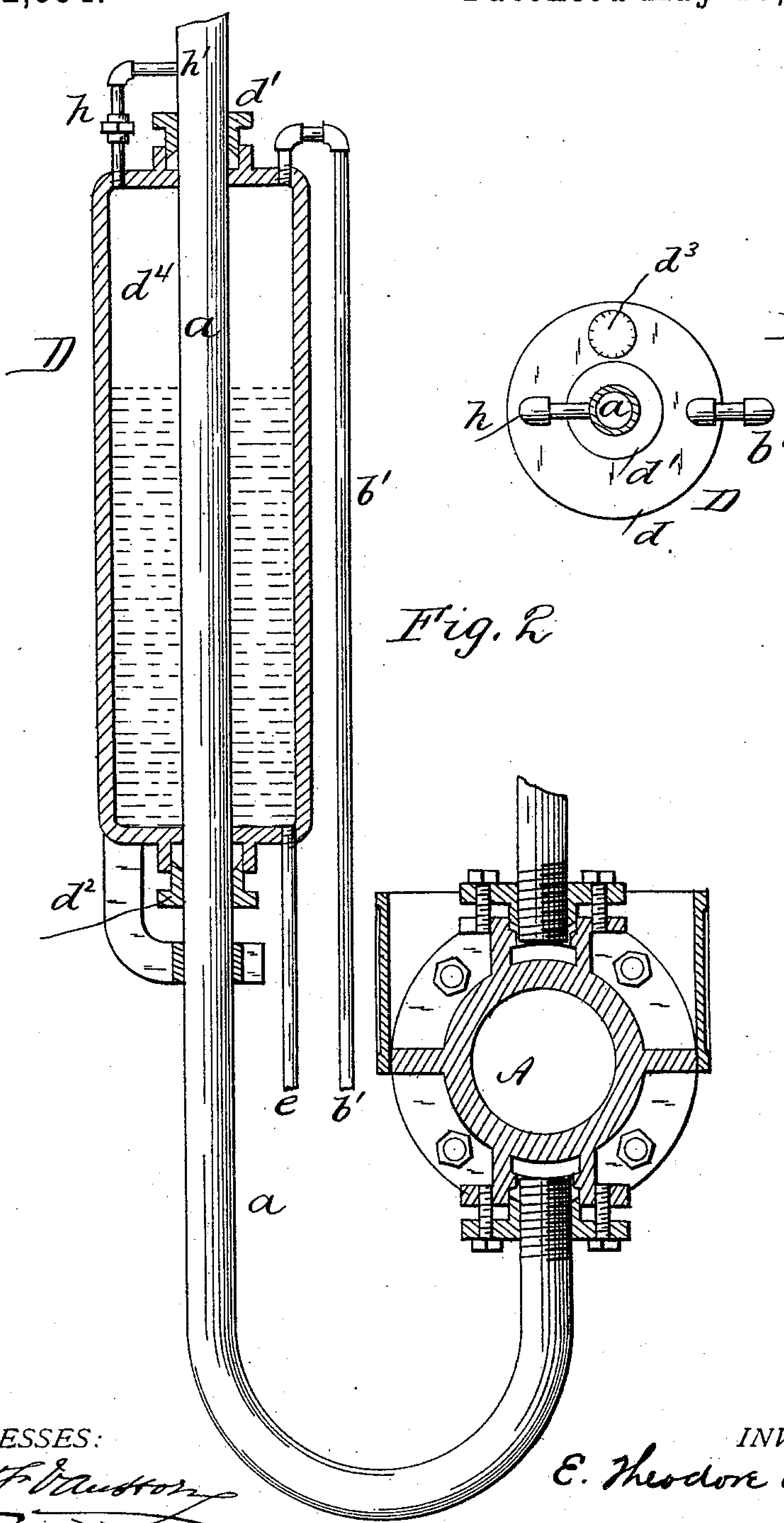

Fig. 2

Fig. 3

WITNESSES:

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Wm. H. Van Horn

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(No Model.) 3 Sheets—Sheet 3.

E. T. WINKLER.

OILING AND COOLING APPLIANCE FOR THE PISTON RODS OF PUMPS FOR ICE MAKING APPARATUS.

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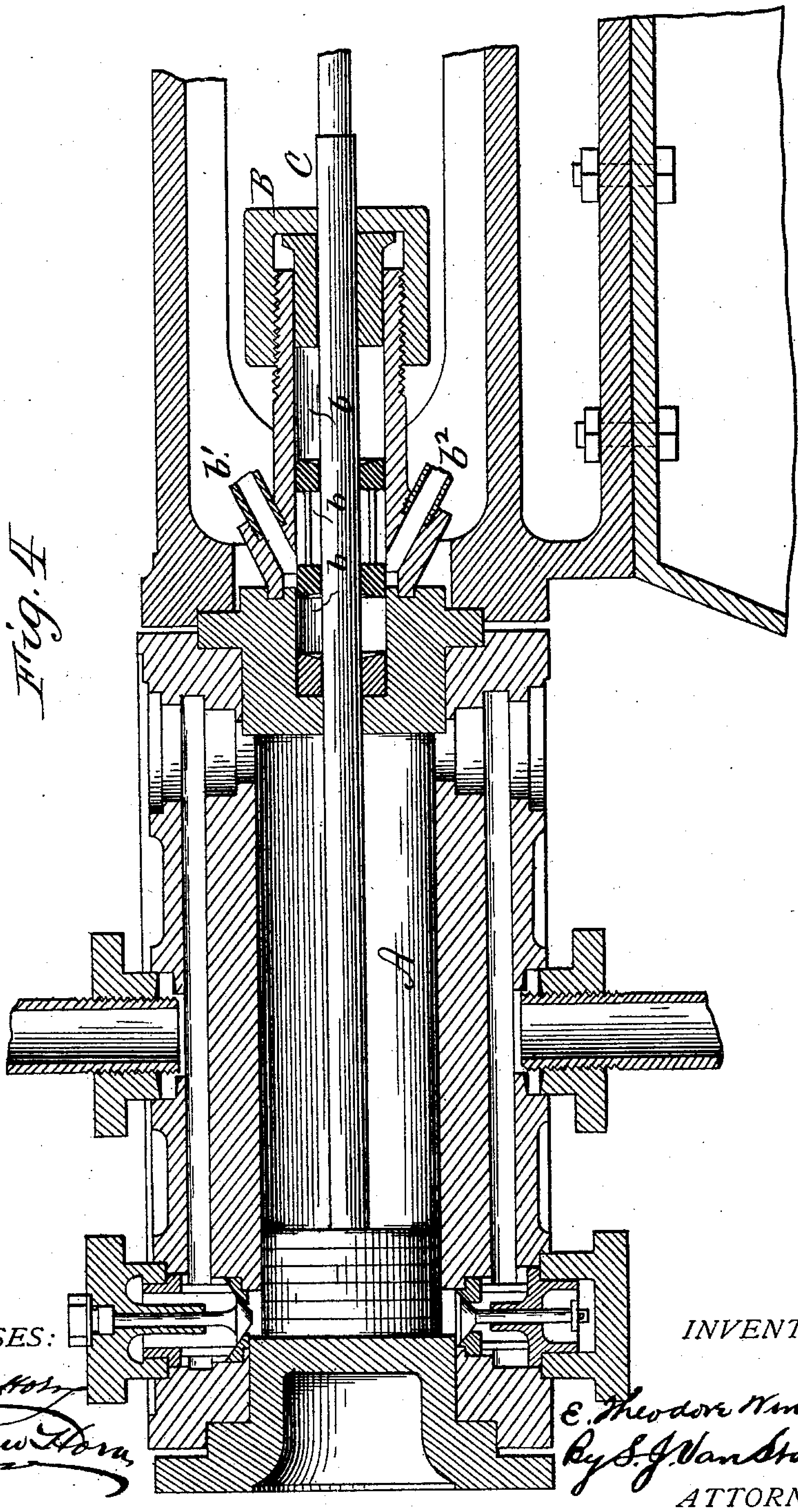
Fig. 4



WITNESSES:

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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

EHREGOTT THEODORE WINKLER, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR, BY MESNE ASSIGNMENTS, TO THE AMERICAN ICE MACHINE COMPANY.

OILING AND COOLING APPLIANCE FOR THE PISTON-RODS OF PUMPS FOR ICE-MAKING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 452,534, dated May 19, 1891.

Application filed September 20, 1887. Serial No. 250,218. (No model.)

To all whom it may concern:

Be it known that I, EHREGOTT THEODORE WINKLER, a subject of the Emperor of Germany, having declared my intention of becoming a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Oiling and Cooling Appliances for the Piston-Rods of Pumps for Ice-Making Appliances, of which the following is a specification.

My invention has relation to compression and suction pumps for ice-making or refrigerant machines of the form wherein the compression and liquefaction of the vapors of a volatile liquid and the subsequent vaporization of such liquid are utilized for producing the refrigerant results; and it has for its object the thorough oiling and cooling of the pump piston-rod and the stuffing-box therefor and the return to the suction end of the pump of the volatile liquid vapors escaping from the pump-cylinder to said stuffing-box.

My invention accordingly consists of constructions and combinations, all as will hereinafter be described in the specification and pointed out in the claims.

Reference is had to the accompanying drawings, wherein—

Figure 1 represents a diagrammatic view showing the pipe-connections between the pump, condenser, expansion or freezing tank, and oiling device for the piston-rod and its stuffing-box on the pump-cylinder in accordance with my improvements; Fig. 2, a sectional view, partly in elevation, of the cylinder and oiling-reservoir and pipe-connections, part of the latter being broken away; Fig. 3, a top view, partly sectional, of the oiling-reservoir; and Fig. 4, a longitudinal section of the pump-cylinder and its stuffing-box.

A represents the cylinder, and B its stuffing-box for the piston-rod C, all of which may be constructed and arranged for operation as shown, or in the usual or other desired way, as the construction of the same forms no specific part of my present invention.

The stuffing-box B is preferably of an elongated form, having any suitable kind of packing-rings, loose or fixed, and of metal or other material, as desired. These packing-rings may be in sections, having expansion devices of any of the well-known forms, or they may be otherwise constructed, as deemed suitable. In any case, no matter what kind of packing-rings are employed, an annular space b around the piston is provided in the stuffing-box between its inner and outer ends, as shown, from which lead two separate pipes b' and b^2. These pipes are connected or coupled to the stuffing-box in any suitable manner, or as shown.

The pipe b' leads to and terminates in the top d of an oiling-reservoir D, of glass or other material, preferably of a cylindrical form, as shown, and suitably located, as desired.

The pipe b^2 leads to a pumping device E, which may be operated by the driving-shaft for the compression-pump A; or it may be otherwise operated, as desired, and from pump E leads a pipe e, which terminates in the bottom of oiling-reservoir D, as shown more plainly in Figs. 1 and 2.

The top and bottom of the oiling-reservoir D are preferably provided with stuffing-boxes d' and d^2, respectively, through which and through said reservoir passes the suction-pipe a for pump A, said suction-pipe coming preferably from the expansion-coils or freezing-tank F before entering oiling-reservoir D. The compression-pipe a' for pump A leads to the condenser G. Connection from the latter to expansion-coils or freezing-tank F is made in the usual or other desired manner. From the top of reservoir D leads a pipe h, which connects at some suitable point h' with the suction-pipe a.

The operation is as follows: Oil is first filled into the reservoir D through a filling-opening d^3 in its top, preferably, (see Fig. 3,) until it, pipe e, pump E, pipe b^2, and space b in stuffing-box B are more or less filled with oil. I prefer to use only such a quantity of oil that a space d^4 is provided between the level of the oil in reservoir D and its top, as shown in Fig. 2. The pumps A and E are then ready for operation, and as the piston-rod C

of pump A moves to and fro in stuffing-box B through the oil in space *b* the rod is thoroughly lubricated. The pump E operates to continuously circulate such oil from the stuffing-box to the reservoir D and back again to said box. The vapors of ammonia or other liquid used or compressed in pump A escaping into the stuffing-box are also pumped to or carried by the oil circulating to reservoir D, and after being conducted thereto they rise to the top of the reservoir or to the space d^4 above the oil, and are returned by pipe *h* to the suction-pipe *a*, so that said vapors do not escape from the stuffing-box B to the room wherein the pump A is located. Consequently there is no waste or escape of vapor from the pump, and all annoyance and danger due thereto are avoided. As the suction-pipe *a* passes through the reservoir D before going to the pump A, the reduced temperature of the vapor in said pipe maintains the oil in reservoir D at a low temperature, and as such cold oil is continuously circulated from reservoir D to the stuffing-box B, the piston-rod C is both lubricated and cooled thereby.

It will be noted therefore that by the foregoing described improvements the escape of vapor from the pumping-cylinder is prevented and its piston is lubricated and cooled by a circulation of oil at a low temperature, and the results both as to economy of operation and avoidance of danger are apparent.

It is evident that the detail construction and arrangement of the parts above described may be greatly varied without departing from the spirit of my invention, and I therefore do not limit myself to that shown and set forth. Thus, for instance, as the circulation of oil through the stuffing-box serves as a circulating fluid packing for the same, any suitable liquid may be substituted for the oil, and the oiling of the piston be provided for by cups or otherwise in the usual way.

From the foregoing it will be noted that the suction or low-pressure pipe *a* forms a part of the refrigerating-circuit, that the separate oil-reservoir inclosing part of or through which part of the suction-pipe *a* passes is independent of the refrigerating-circuit, and has a vent or pipe connected between it and the suction-pipe *a*, thereby avoiding the enlargement of the suction-pipe *a* to form an oil-reservoir wherein the oil is subject to the direct action of the refrigerating-vapor.

What I claim is—

In a refrigerant apparatus, the combination of an oil-reservoir separate from and independent of the refrigerant circuit, the suction or low-pressure pipe *a*, partly inclosed by said reservoir, a vent between the top of the oil-reservoir and said suction-pipe, a pump having around its piston-rod an oil-chamber connected by pipes with said oil-reservoir to form an oil-circuit between said reservoir and chamber, and means, substantially as described, for circulating the oil through said chamber-pipes and reservoir.

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

E. THEODORE WINKLER.

Witnesses:
JOHN RODGERS,
S. J. VAN STAVOERN.