

No. 774,270.

PATENTED NOV. 8, 1904.

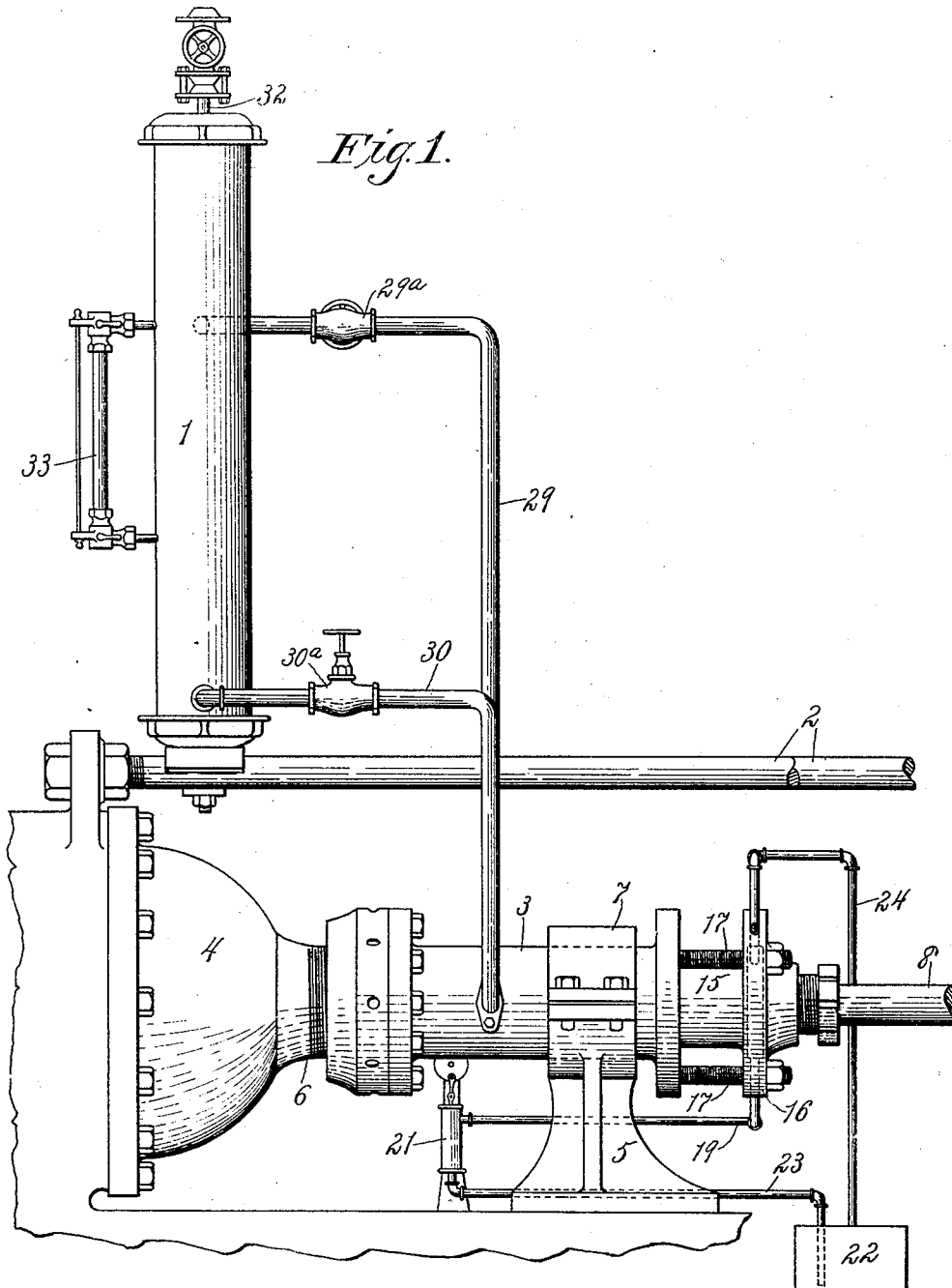
S. A. PALMER.

OILING DEVICE FOR REFRIGERATING MACHINES.

APPLICATION FILED JUNE 2, 1904.

NO MODEL.

2 SHEETS—SHEET 1.



Witnesses:

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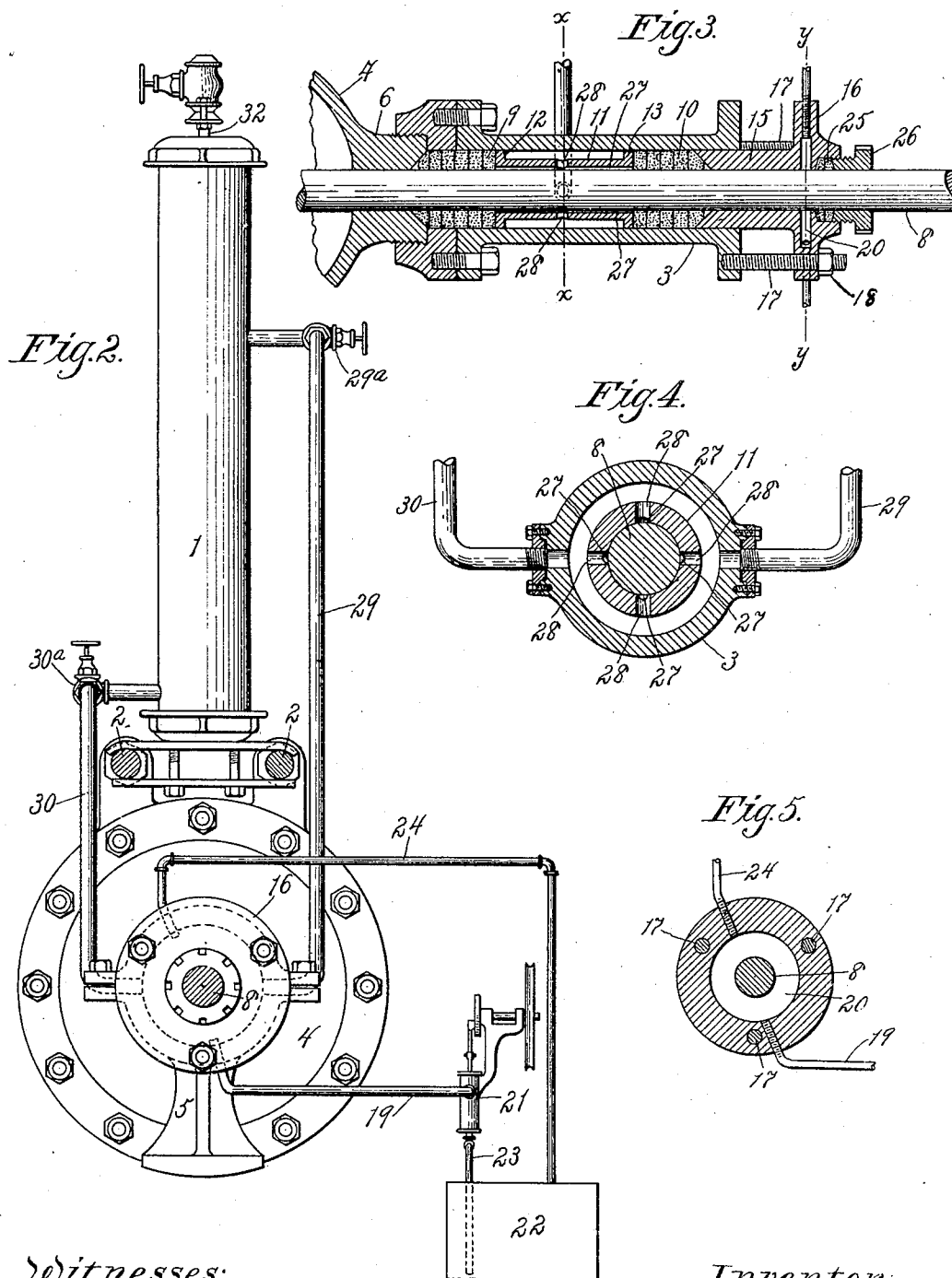
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UNITED STATES PATENT OFFICE.

STEPHEN A. PALMER, OF KANSAS CITY, MISSOURI.

OILING DEVICE FOR REFRIGERATING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 774,270, dated November 8, 1904.

Application filed June 2, 1904. Serial No. 210,776. (No model.)

To all whom it may concern:

Be it known that I, STEPHEN A. PALMER, a citizen of the United States, residing at Kansas City, in the county of Jackson and State of Missouri, have invented a certain new and useful Oiling Device for Refrigerating-Machines; 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 the figures of reference marked thereon, which form a part of this specification.

My present invention relates to an oiling device for refrigerating-machines, and has for its object to provide a device which can be used in connection with various refrigerating-machines, such use obviating the necessity for the frequent packing of the piston-rod incident to the operation of the majority of the machines now in use and providing a means for returning the gas escaping from the compressor into the stuffing-box to the machine with as small a per cent. of loss as possible. These and further objects are accomplished by means of my device, which is simple and economical in construction, the structure of which will be hereinafter described, and pointed out in the claims, reference being had to the accompanying drawings, forming part of this specification, in which like reference-numerals refer to like parts throughout the several views, and in which—

Figure 1 is a side elevation of my device and a portion of a refrigerating-machine to which it is attached. Fig. 2 is an end elevation of same. Fig. 3 is a longitudinal sectional view of the stuffing-box and parts and a portion of the compressor. Fig. 4 is a transverse sectional view on the line *x x*, Fig. 3. Fig. 5 is a like view on the line *y y*, Fig. 3.

Referring more in detail to the parts, 1 is an oil-tank. (Shown in Figs. 1 and 2 as supported on the strengthening-rods 2 above the refrigerating-machine.) While this is the most convenient method of supporting the tank, it may be positioned in any suitable place adjacent to the machine, provided its

bottom is on a level with or above the stuffing-box 3. One end of stuffing-box 3 is secured in a suitable manner to the neck 6 of the compressor 4, its opposite end being supported on a standard 5 and rigidly secured thereto by means of a keeper 7. Extending through stuffing-box 3, neck 6, and the gland 15 of box 3 is the piston-rod 8. Within the stuffing-box and surrounding rod 8 are several pairs of packing-rings 9 and 10, which are separated by a sleeve 11. Sleeve 11 is provided at its ends with annular flanges 12 and 13, which fit snugly against the inner surface of the stuffing-box, while the central portion of the sleeve is of a less diameter, thereby forming an oil-chamber within the stuffing-box, for a purpose hereinafter described. The inner surface of the sleeve 11 is provided with a series of grooves 27, which extend longitudinally throughout its length, and with a series of perforations 28, which provide passages for the oil from the interior of the sleeve to the oil-chamber, as will be described.

29 is a pipe extending through a perforation in stuffing-box 3 and opening into the oil-chamber, said pipe extending upwardly and opening into tank 1, near the top thereof. 30 is a pipe extending through a similar perforation in the opposite side of stuffing-box 3, the lower end of which opens into said oil-chamber and its upper end into tank 1, near the bottom thereof. The connections between said pipes and the tank and stuffing-box are made sufficiently tight to prevent the leakage of gas, and said pipes are provided with valves 29^a and 30^a. Bearing against the outer packing-ring in the stuffing-box is the gland 15 of said stuffing-box, said gland being provided with an annular collar 16, through which bolts 17, which are rigidly secured to stuffing-box 3, project.

18 represents nuts carried by bolts 17, the tightening of which against collar 16 forces gland 15 inwardly for the purpose of compressing the packing in the stuffing-box.

19 is a pipe extending through a perforation in collar 16 and opening into a cut-out portion 20 within said gland and surrounding said rod 8. Pipe 19 is connected with a suitable pump 21, which is adapted to pump oil

from an oil-tank 22, through pipe 23, whence it is forced through pipe 19 into cut-out portion 20. Should too great a quantity of oil be pumped into cut-out portion 20, the oil will rise in pipe 24, which is secured in a perforation in the upper part of collar 16, and be carried back to tank 22.

25 is a packing-ring in the outer end of gland 15 and surrounding rod 8.

26 is a tightening-nut having a threaded connection with the interior of said gland and having its inner face bearing against said packing-ring 25.

32 is a pipe-opening from the top of tank 1, through which the gas admitted through pipe 29 escapes and is carried back to the machine, and 33 is a gage for showing the depth of the oil in tank 1.

In assembling the parts and in the operation of my device the inner packing-ring is positioned in the stuffing-box around the piston-rod and the sleeve 11 inserted and forced back thereagainst, the inner flange of the sleeve forming a wall to retain said ring in place. The outer packing-ring is positioned against the outer flange of the sleeve and the gland 15 inserted in the stuffing-box and forced against the packing by tightening the nuts on bolts 17 against the collar of the gland, as has been described. Packing-ring 25 is placed around the rod and nut 26 tightened thereagainst and the other parts arranged in their respective positions, as has been set forth. When the machine is started in operation, oil is pumped from tank 22 into the cut-out portion of gland 15, where it comes in contact with the piston-rod and is carried by said rod to the inner packing-rings and to the longitudinal grooves in sleeve 11, from whence it passes through perforations 27 into the oil-chamber between said sleeve and the inner surface of the stuffing-box. The pressure in the compressor forces a portion of the gas therein through the inner packing-rings into the grooves along the inner surface of the sleeve 11, and from thence into the oil-chamber, where it is absorbed by the oil therein, the mass rising through pipe 29 to tank 1, where expansion takes place and the oil and gas separate, the former falling in the tank, the latter passing out through pipe 32 and returning to the machine. As there is a constant supply of oil and gas to the oil-chamber, this operation is continuous. When gage 33 shows that a sufficient quantity of oil has been conveyed to the tank, pump 21 is stopped and valve 30^a opened, thereby permitting the oil in the tank to flow back into the oil-chamber in the stuffing-box and forming, with pipe 29, a complete circulation of oil from the oil-chamber to the tank, and thence back to the oil-chamber. With such a device the life of the packing in the stuffing-box is prolonged and the gas escaping through the first packing-ring is

saved—results which, it can readily be seen, accomplish a saving of both labor and expense.

I do not wish to be understood as limiting myself to the exact details of structure herein shown and described, inasmuch as the same may be varied without departing from the spirit of my invention.

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

1. In a device of the class described, the combination with the stuffing-box and packing-rings of a sleeve intermediate of said packing-rings having an annular flange on each end thereof of greater diameter than the body of the sleeve, said flanges forming a chamber therebetween and between the body of the sleeve and the inner surface of the stuffing-box, the inner portion of said sleeve being provided with a series of longitudinal grooves and with perforations connecting said grooves with said chamber, a connection between said chamber and a suitable tank, and a piston-rod passing through said stuffing-box, packing-rings and sleeve, substantially as set forth.

2. In a device of the class described, the combination with the stuffing-box, the packing-rings, and the rod, of a sleeve surrounding said rod intermediate of said rings, flanges on the ends of said sleeve adapted to fit snugly against the inner surface of said stuffing-box to form an oil-chamber therein, said sleeve having longitudinal grooves along its inner surface and perforations connecting said grooves with said oil-chamber, a tank adjacent to said stuffing-box, pipes connecting said oil-chamber with said tank, and means for carrying off gas from said tank, substantially as set forth.

3. In a device of the class described, the combination of the stuffing-box, the packing-rings, the sleeve 11 having grooves 27, perforations 28, and flanges 12 and 13 forming the intermediate oil-chamber, the rod passing through the stuffing-box, packing-rings and sleeve, and an oil-reservoir adjacent to one set of the packing-rings and surrounding said rod.

4. In a device of the class described, a stuffing-box, packing-rings within said box, a sleeve 11 having grooves 27, perforations 28 and flanges 12 and 13 forming an intermediate oil-chamber, a rod passing through said parts and a gland in one end of said stuffing-box having a cut-out portion therein surrounding said rod and forming a continuous oil-chamber around same, and means for supplying oil to said chamber.

5. In a device of the class described, the combination of the stuffing-box, the packing-rings, the sleeve forming the intermediate oil-chamber, a tank adjacent to said stuffing-box, pipes connecting said tank with said oil-chamber, means for carrying off gas from said tank,

an adjustable gland mounted in one end of
said stuffing-box, an oil-reservoir in said gland,
a supply-pipe opening into said reservoir, an
escape-pipe opening from said reservoir, and
5 a rod passing through said reservoir, gland,
stuffing-box, packing-rings, and sleeve, sub-
stantially as set forth.

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

STEPHEN A. PALMER.

Witnesses:

JOHN H. LYMDS, Jr.,
RICHARD D. BURKE.