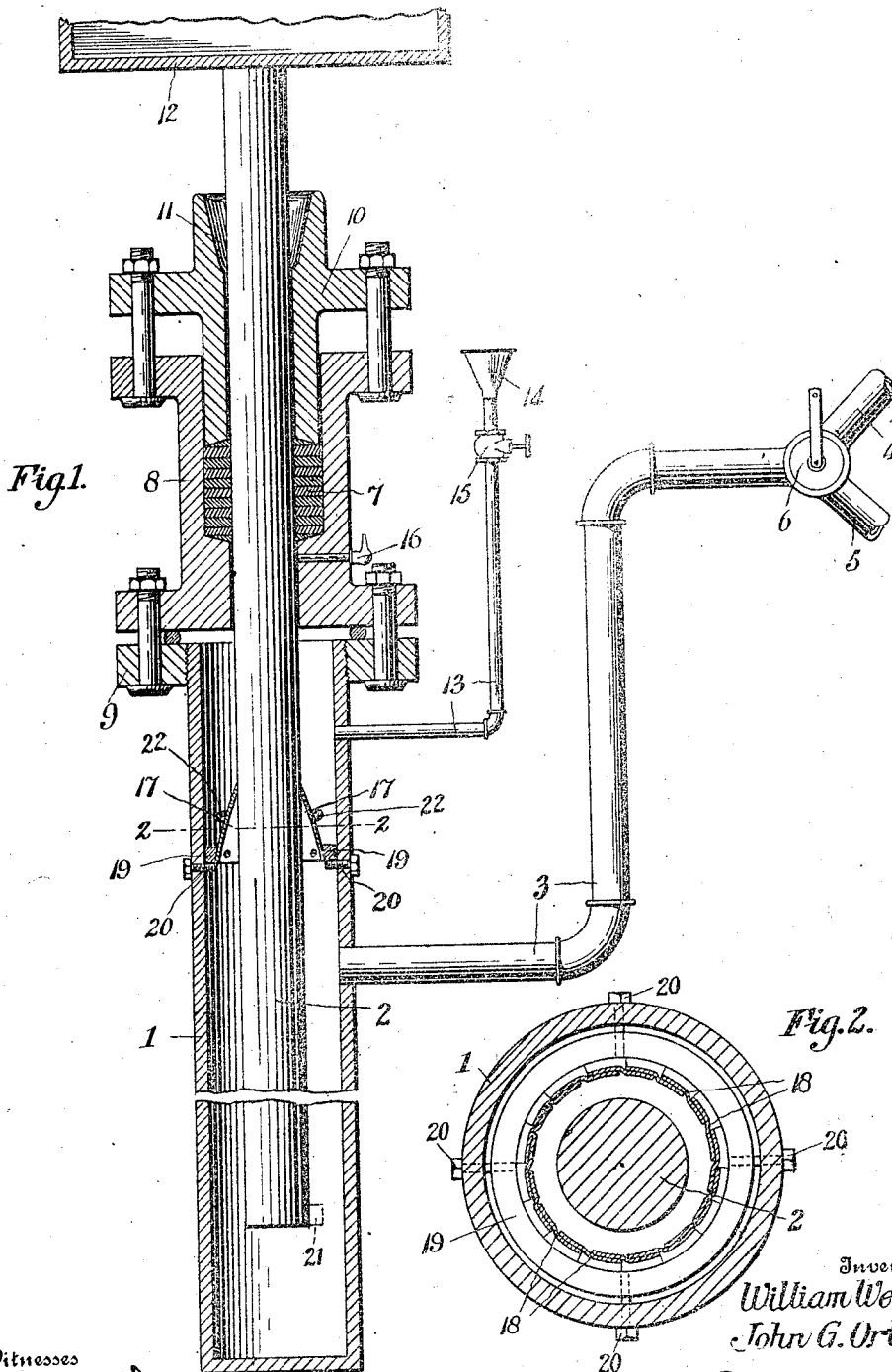


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 APPARATUS FOR LUBRICATING HYDRAULIC ELEVATOR RAMS.
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APPARATUS FOR LUBRICATING HYDRAULIC-ELEVATOR RAMS.

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Specification of Letters Patent. Patented Feb. 22, 1910.

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To all whom it may concern:

Be it known that we, WILLIAM WESTON and JOHN G. ORTH, citizens of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented certain new and useful Improvements in Apparatus for Lubricating Hydraulic-Elevator Rams, of which the following is a specification.

Our invention relates to hydraulic elevators, and more particularly to a lubricating apparatus for the rams thereof, to prevent coating of, and injury to, the ram packing.

In the accompanying drawing, illustrating our invention, and forming a part of this specification, and wherein like numerals are used to designate like parts throughout the figures, Figure 1 is a view partly in central vertical section, and partly elevation, of a hydraulic elevator ram, its fluid casing, and the packing thereof, and illustrating our improved lubricating apparatus in connection therewith, and, Fig. 2 is a cross section taken therethrough on the line 2—2 of Fig. 1.

Broadly our invention resides in the provision of means for lubricating hydraulic elevator rams, which means are located between the operating fluid in the ram casing, and the stuffing box, or more particularly, the packing of the ram, ordinarily located adjacent the upper end of the said casing, whereby to prevent the ram from depositing upon the contacting surface of its packing any scale or rust which it may have collected by standing at length within the said operating fluid. In its more specific aspect, however, our invention, for reasons of simplicity and adaptability to installation within hydraulic elevators in use, contemplates the provision of means whereby to form a lubricant chamber within the upper portion of the ram casing, between the operating fluid therein, and the packing thereabove, and surrounding the ram proper.

In the accompanying drawing, which illustrates in a conventional form, the lower operating part of a hydraulic elevator, the numeral 1 designates a vertical cylindrical well casing, in which a ram 2 is mounted for vertical longitudinal movement, and which is adapted to receive and discharge, operating fluid, through a fluid pipe 3, extending therefrom, and connecting at its end, with branch pipes 4 and 5 leading respectively to the fluid motor, and to the discharge.

The branch pipes 4 and 5 are controlled by a three-way operating valve 6, which is registered with the motor pipe 4, to cause vertical upward movement of the ram, and is registered with the discharge pipe 5, upon the downward movement of said ram. Above the cylinder or well casing 1, the ram 2 passes through a stuffing box 8, provided therein with suitable packing 7, which stuffing box 8 is closed at its lower end by a flanged ring 9, threaded upon the upper end of the casing 1, and closed at its upper end by an adjustable flange 10, provided with an upper circular cup 11, surrounding the ram 2, and adapted to retain the lubricant brought upwardly through the packing 7 upon the surface of said ram. The upper end of the ram 2 supports the car or carriage 12, as well known.

In the specific embodiment of our invention, as shown, we lead a lubricant supply pipe 13, through the well casing 1, which pipe 13 extends upwardly therefrom and may be provided upon its upper end, with an oil receiving funnel 14, or may be connected to a suitable pump to force the supply of lubricant therein. The lubricant supply pipe 13 may also be provided with a valve 15 for controlling the feed of the oil. The lubricant is thus introduced within the upper portion of the well casing 1, upon the surface of the operating fluid therein, and being lighter than, and adapted to float upon the surface of such operating fluid, will be in such position as to thoroughly lubricate the surface of the ram 2, between the operating fluid and the packing 7. In the introduction of the lubricant, the air pressure above the operating fluid within the well casing 1, is relieved through a pet-cock 16, leading to the ram 2, through the wall of its stuffing box 8.

In order to prevent the ram 2 from collecting lubricant upon its surface and carrying the same downwardly within the operating fluid, upon its down-stroke, we provide a retarder 17, which comprises a frusto-conical member supported within the well casing 1, with its upper circular edge in close contacting engagement with the surface of the ram 2, which member is located above the mouth of the operating fluid pipe 3, whereby to scrape the lubricant from the surface of the ram 2, upon its down stroke. The member 17 may be composed of a plurality of circular overlapping sections 18,

as particularly shown in Fig. 2, whereby it may be readily and quickly made up for use in connection with different diameters of rams, and may be supported in position by the connection of the lower edges of such sections to an encircling ring 19, loosely associated within the well casing 1, and supported above the mouth of the operating fluid pipe 3, by bolts threadedly engaging through the said casing 1, and radially thereof at equidistant points, which bolts are shown in Figs. 1 and 2 and numbered 20. The loose connections of the member 17 within the well casing 1, for vertical movement therein, is such as to enable its employment in connection with hydraulic elevators whose rams are of such length as to cause the movement of the retarder 17 to the extreme upper end of the well casing 1, when the ram thereof is at the limit of its upward stroke. In such cases, the rams are provided with peripheral projections 21 upon their lower ends whereby to engage and carry the retarder 17 upwardly as stated.

From the foregoing description of our invention, it will be readily seen that we retain the lubricant in the simplest manner between the operating fluid in the well casing, and the packing in the ram stuffing box whereby to lubricate the surface of the ram between said fluid and said packing, thus preventing the ram from depositing upon the contacting surface of its packing, any scale or rust which it may have collected by standing at length within the said operating fluid, thereby greatly lessening the friction of the movement of said ram, and greatly lengthening the life, and enhancing the operation, of the said packing. Thus also, in the provision of the retarder 17, it will be readily seen that we effect a great saving of the lubricant, the retarder being located at or just beneath the level at which the water ends and the oil begins and preventing the oil from being carried downwardly upon the surface of the ram, within the operating fluid, or, more particularly, the water where it would in all probability, be washed off and carried outwardly through the fluid pipe 3 upon the discharge stroke. In some cases, it may be found expedient to ploy a ring 22, of suitable material, to surround the made up retarder 17, in order to hold the upper edges of the sections 18 in close contact with the periphery of the ram 2.

In concluding this specification, it should be stated that lubricant is supplied to the

lubricating space or chamber, through pipe 13, once in three or four days, or in some elevators, weeks, and that when so doing the valve 15 of said pipe 13, is opened and the three-way valve 6 of the operating fluid pipe 3, is registered with the branch pipe 5 thereof.

Obviously, from the foregoing, the oil or lubricant, when inserted within the upper portion of the cylinder or well casing 1, will, by virtue of its being lighter than water, float upon the surface of the operating fluid within said casing. Thus it will be understood that the retarder 17, performs no function of the separating of the water and oil, and in maintaining such separation, but merely scrapes the superfluous oil from the surface of the ram when the same is upon its down stroke. It should be recognized that other means for retaining a lubricant may be employed between the operating fluid and the ram packing, than the upper portion of the well casing, as shown. This is, however, the simplest construction in which the idea may be embodied.

Having fully described our invention, we claim:

1. In a hydraulic elevator, the combination with the plunger thereof, and the packing and fluid casing for said plunger, of means for applying a lubricant to said plunger, at a point between the fluid in said casing, and the said plunger packing, and means adapted to prevent the plunger from carrying the lubricant downwardly upon its surface and into the fluid, upon the down stroke thereof, substantially as described.

2. In a hydraulic elevator, the combination with the plunger thereof, and the packing fluid casing for said plunger, of means for introducing a lubricant upon the surface of the operating fluid within said casing, and surrounding the ram to lubricate the surface thereof between the fluid and the said packing, and means movably supported within said casing, adapted to prevent the plunger from carrying the lubricant or a portion thereof, downwardly into the fluid, upon the down stroke thereof, substantially as described.

In testimony whereof we affix our signatures in presence of two witnesses.

WILLIAM WESTON.
JOHN G. ORTH.

Witnesses:

JAMES L. CRAWFORD,
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