NEW LUBRICATOR FOR STEAM ENGINES.

We give, on this page, two views of a novel engine lubricator, recently patented by Mr. A. L. Harrison, chief engineer of U. S. revenue cutter Samuel Dexter, Newport, R. I., one view showing the exterior in perspective, the other being a vertical central section.

This lubricator is designed to effect a regular and continuous lubrication of the cylinders and valves of the engine to which it is applied. The lubricant is supplied in regulated quantities, forced in against the steam pressure by atmospheric pressure obtained by the use of a vacuum chamber or by the use of a water column.

The oil and pressure chamber, A, is formed of two concave disks bolted together on a flanged ring, B, clamping the flexible diaphragms, C, leaving a small space between them. A single diaphragm might be used, but two are preferred, with the space between them filled with glycerine or other non-freezing liquid, forming a flexible partition between the diaphragms, which prevents unequal stretching and equalizes the pressure. This space is filled through openings in the ring, B, which are closed by screw plugs.

At the under side of the chamber, A, there is a tube, D, through which passes a rod, E, whose inner end is rigidly connected to the center of the diaphragms, C, by means of clamping washers. To the lower end of this rod is secured a handle by which the rod may be moved to draw the diaphragms to the bottom of the chamber, A. This rod also carries a piston fitted to the cylinder, F, on the lower end of the tube, D.

At the upper side of the chamber, A, there is an oil cup, G, used in filling the lubricator and tube, H, for the discharge of oil from the chamber, A The cup, G, and tube, H, communicate with the chamber, A, by separate passages fitted with cocks, J and I, respectively.

On the upper end of the tube, H, there is a chamber, K, the sides of which are made of glass. In the bottom of this chamber there is a small opening communicating with the tube, H, and on the top there is an opening provided with a tube leading to the parts to be lubricated. The chamber, K, is to be filled with glycerine.

To the under side of the chamber, A, two pipes are connected, having communication separately with the space beneath the diaphragms, and are each fitted with a cock.

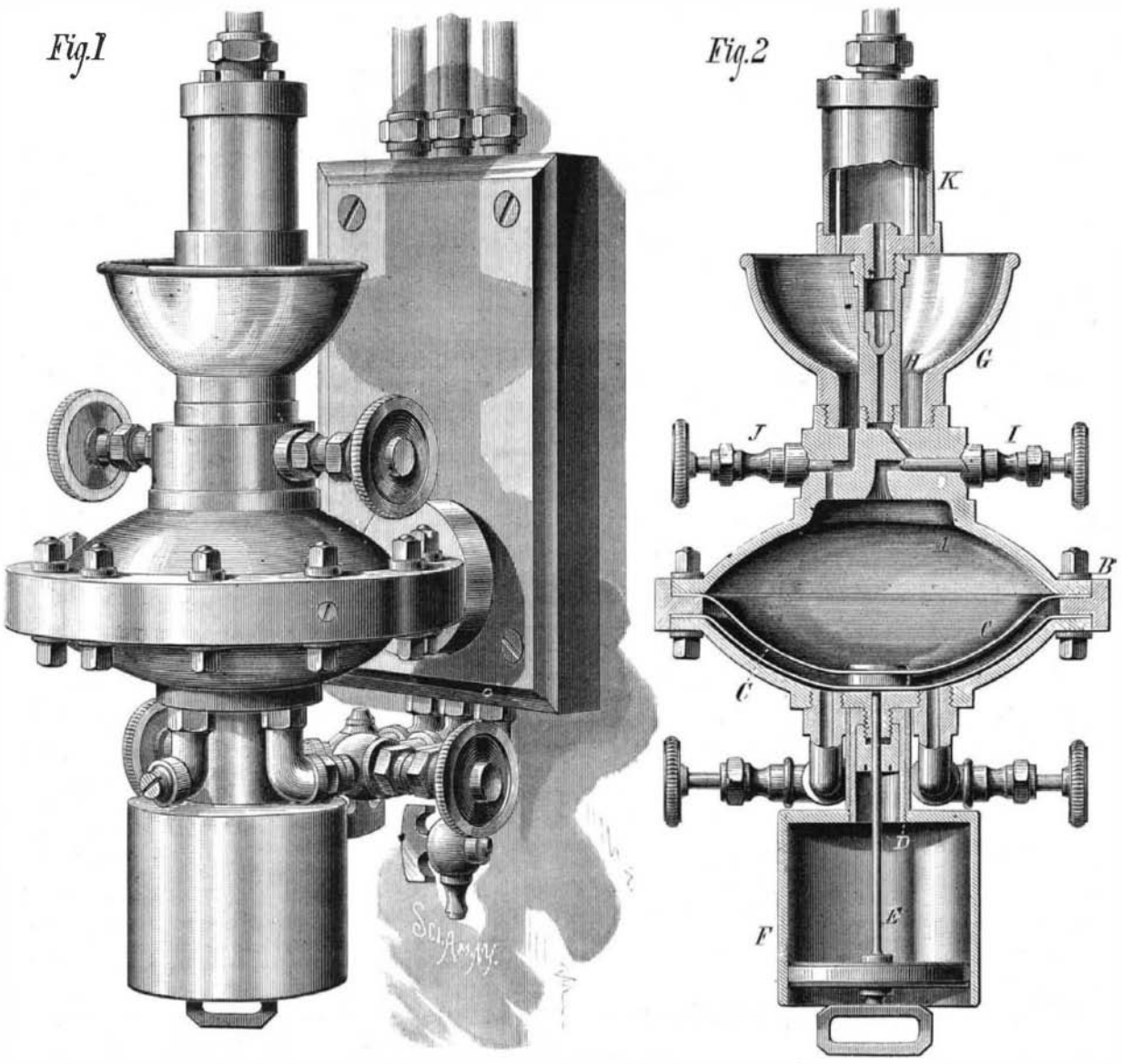
One pipe is to be connected with the exhaust of the engine when the lubricator is used in connection with condensing engines, and the other pipe is to be connected with the steam pipe from the boiler. This connection permits of the attachment of the lubricator to the engine or to a wall, as may be desired.

The lubricator is provided with a second exhaust pipe that opens into the tube, D. and cylinder, F. and is fitted with a pipe for connection with the exhaust of the engine. This pipe has a two-way cock for closing connection between the cylinder, F, and engine exhaust, and opening connection between the cylinder and the outer air or the reverse, as may be required.

To charge the reservoir, A, with oil, the oil is first poured into the cup, G, and the cock, J, is opened to allow the oil to enter the reservoir, and one of the cocks below the reservoir is also opened so that the space below the diaphragm may be exhausted by the pipe connected with the exhaust of the engine. The diaphragm is thus drawn down and the oil drawn into the reservoir. The cylinder, F, will at the same time be opened to the outer air.

The reservoir, A, being thus filled, the cocks, J and I, are closed, and the exhaust pipe is put into communication with the cylinder, F, and steam is admitted below the diaphragms. The diaphragms are thus balanced by steam pressure, and the cylinder, F, being exhausted, its piston is forced inward by atmospheric pressure, carrying the rod, E, and diaphragm, C, upward, forcing oil through the pipe, H, into the glycerine chamber, K, in drops at more or less frequent intervals or in a continuous stream as circumstances may require, the flow being regulated by the valve, I. From the glycerine chamber, K, the oil flows through the tube to the engine cylinder. This lubricator, when applied to high pressure engines, is operated by the gravity of a water column instead of atmospheric pressure. This device, although apparently complicated, is really very simple and well calculated to fulfill the requirements of a first class lubricator.

For further particulars, address the inventor, as above.



HARRISON'S LUBRICATOR FOR STEAM ENGINES.

The Great Glaciers of Alaska.

The Stickine is perhaps better known than any other river in Alaska, because of its being the way back to the Cassiar gold mines. It is about 350 or 400 miles long, and navigable for small steamers to Glenora, 150 miles, flowing first in a general westerly direction through grassy, undulating plains, darkened here and there with patches of evergreens, then curving southward, and receiving numerous tributaries from the north, it enters the Coast Range and sweeps across it to the sea through a Yosemite Valley more than 100 miles long, and 1 to 3 miles wide at the bottom, and from 5,000 to 8,000 feet deep, marvelously beautiful and inspiring from end to end. To the appreciative tourist sailing up the river through the midst of it all. the cañon for a distance of about 110 miles is a gallery of sublime pictures, an unbroken series of majestic mountains, glaciers, falls, cascades, forests, groves, flowery garden spots, grassy meadows in endless variety of form and composition—furniture enough for a dozen Yosemites—while back of the walls, and thousands of feet above them, innumerable peaks and spires and domes of ice and snow tower grandly into the sky.

About 15 miles above the mouth of the river you come to the first of the great glaciers, pouring down through the forests in a shattered ice cascade nearly to the level of the river. Here the cañon is about two miles wide, planted with cottonwoods along the banks of the river, and spruce and fir and patches of wild rose and raspberry extend back to the grand Yosemite walls. Twelve miles above this point a noble view is opened along the Skoot river cañon—a group of glacier-laden Alps from 10,000 to 12,000 feet high, the source of the largest tributary of the Stickine.

Thirty-five miles above the mouth of the river, the most striking object of all comes in sight. This is the lower expanded portion of the great glacier, measuring about six miles around the snout, pushed boldly forward into the middle of the valley among the trees, while its sources are mostly hidden. It takes its rise in the heart of the range, some thirty or forty miles away. Compared with this the Swiss *mer de glace* is a small thing. It is called the "Ice Mountain," and seems to have been regarded as a motionless mass, created on the spot, like the rocks and trees about, without venturing a guess as to how or when. The front of the snout is about 300 feet high, but rises rapidly back for a few miles to a height of about 1,000 feet. Seen through gaps in the trees growing on one of its terminal moraines, as one sails slowly along against the current, the marvelous beauty of the chasms and clustered pinnacles shows to fine advantage in the sunshine; but tame indeed must be the observer who is satisfied with so cheap a view.—*San Francisco Bulletin.*

MISCELLANEOUS INVENTIONS.

Mr. James T. Cochran, of Brooklyn, N. Y., has patented a horseshoe designed to prevent the horse from interfering, slipping, or injuring the hoofs in any way. It will allow the hoofs to expand properly, and is so arranged as to avoid contact with the sensitive part of the sole. The shoe is provided with a toe calk having a smooth unbroken beveled surface on the inside, a straight surface on the outside, and separated from the side calks by V-shaped notches.

Mr. James H. Hayes, of Cerro Gordo, Ill., has patented an improved nut lock, which is simple, convenient, and effective. It consists in a nut lock formed of U-shaped springs, which is provided with small lugs at the forward ends, and is designed to prevent two or more nuts from turning.

An improved recording ballot box has been patented by Mr. James G. H. Buck, of Dallas, Texas. The object of this invention is to indicate accurately and instantly the result of an election; to prevent the possibility of rifling the box of its ballots, or of stuffing it with fraudulent ones.

An improved sled, which is so arranged that it can be propelled and regulated in speed and direction by the person seated on it, has been patented by Messrs. Alfred Hitchiner and John W. Heaton, of Lawrence, Mass. The invention consists in a sled provided with a standard to which two slotted bars having hooks at the lower ends are pivoted, these bars being grasped by the person on the sled, and used to propel it and to press against the brakes, which are pivoted to the end of each side of the sled.

Mr. John A. Musselman, of Steinsburg, Pa., has patented an improved cooking stove. The object of this invention is to combine with a cooking stove an auxiliary heating stove, so arranged that it can be used either separately from the cooking stove or in connection therewith, as may be desired.

An improvement in lamps has been patented by Mr. Frank R. Kimball, of Boston, Mass. The object of this invention is to prevent any flow of oil to the burner except in the form of vapor, and to supply the oil automatically to the vaporizer in quantities as required; also, to construct the oil reservoir in a form adapted for ready application to or removal from an ordinary street lamp.

Mr. John Wampach, of Shakopee, Minn., has patented an improved fifth wheel. The object of this invention is to improve vehicles so that their wheels may pass over uneven surfaces without wrenching or twisting the gearing.

An improvement in water heaters, patented by Mr. William R. Hinsdale, of Garden City, N. Y., relates to apparatus for heating water by steam while circulating through pipes, as in dwelling houses, directly to the wash basins, bath tubs, laundry tubs, or other places of use, or to hot water heating apparatus in dwelling houses, stores, or buildings, such apparatus being particularly adapted for use where cities or towns are supplied with steam for heating and other purposes through street mains and a water supply under pressure.

Fatal Effects of Fog.

A single week of raw and densely foggy weather more than doubled the death rate of London, compared with the average for the corresponding week for the preceding years. The weekly reports of the Registrar-General show that the annual death rate had risen steadily during the three weeks preceding the foggy period from 24·6 per thousand to 27·1 and 31·3; then it bounded to 48·1, a rate higher than had been recorded since the cholera epidemics of 1849, 1854, and 1866. While the increase in deaths in the West End districts of the metropolis did not exceed 32 per cent, in the crowded quarters at the East End it was equal to 83 per cent. The largest number occurred among people past sixty years.

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