No. 741,478. PATENTED OCT. 13, 1903.

L. FRIEDMANN.

LUBRICATING APPARATUS.

APPLICATION FILED DEC. 30, 1901.

NO MODEL. 2 SHEETS—SHEET 1.

Fig. 1.

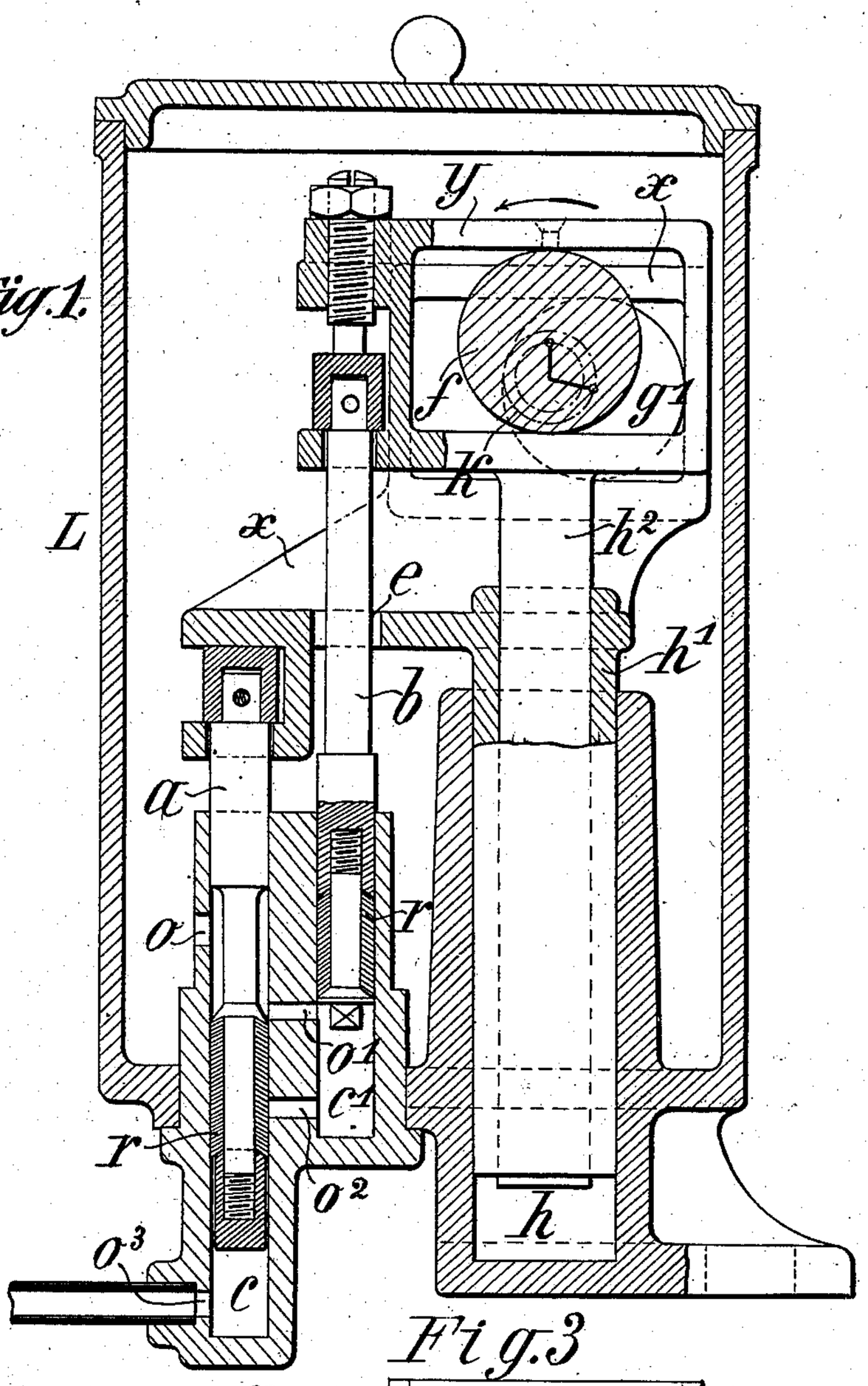
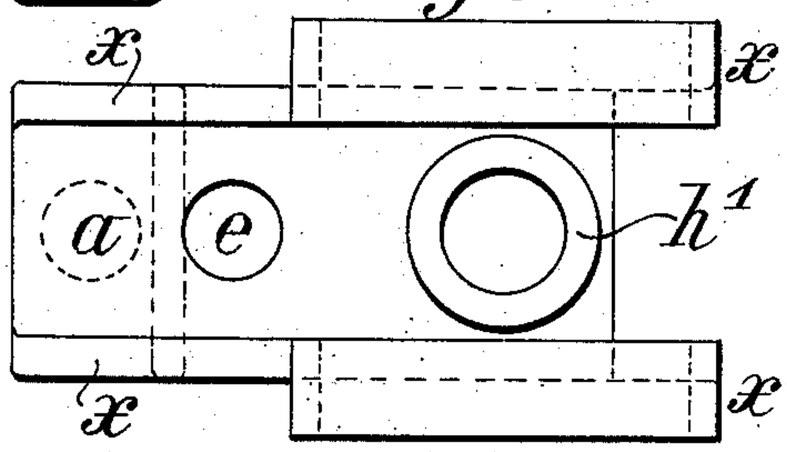


Fig. 3



Witnesses:
A. Shea
B. L. Sommers

Inventor:
Louis Friedmann.
by Munn & Co
Attys

No. 741,478. PATENTED OCT. 13, 1903.

L. FRIEDMANN.

LUBRICATING APPARATUS.

APPLICATION FILED DEC. 30, 1901.

NO MODEL. 2 SHEETS—SHEET 2.

Fig. 2

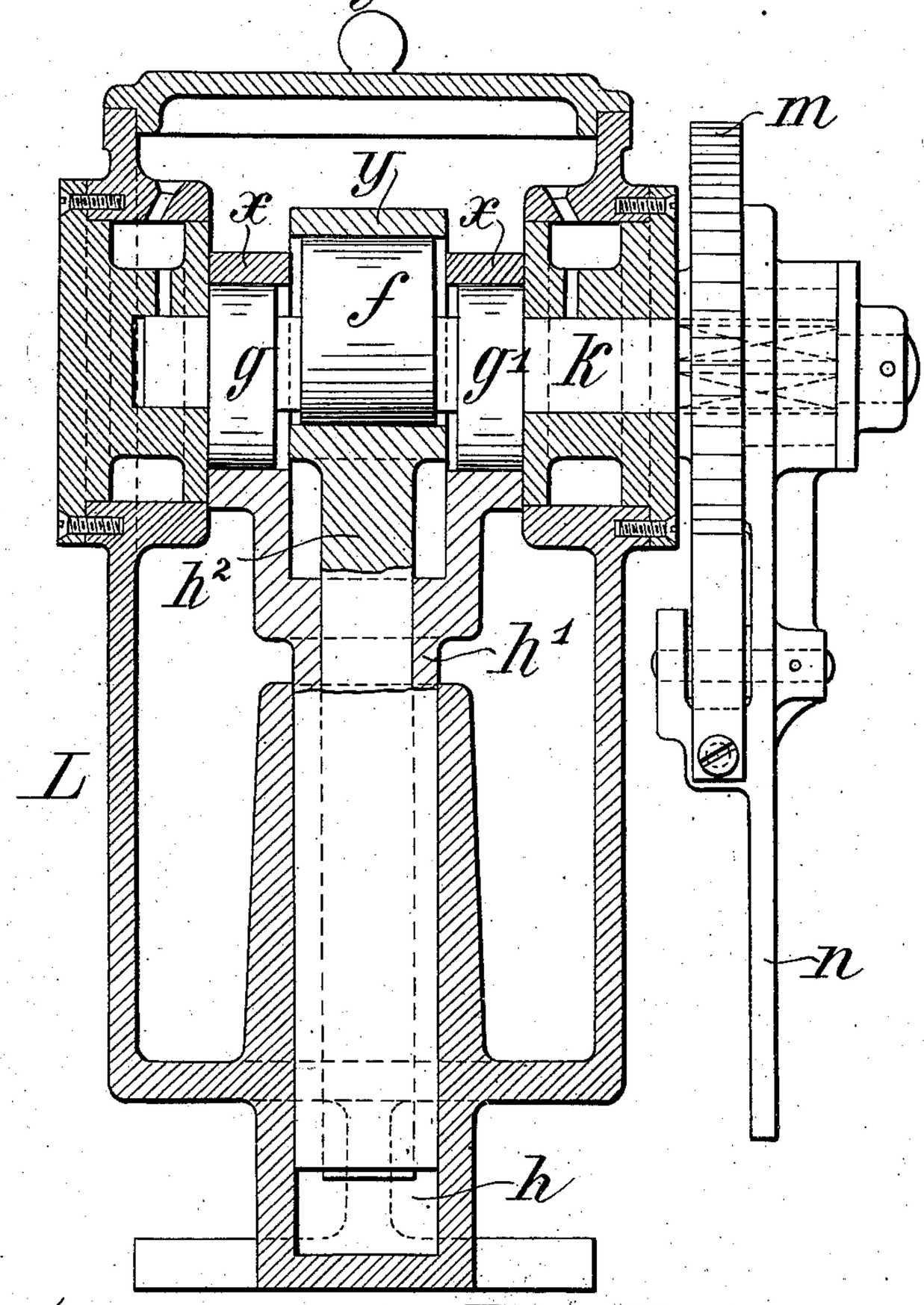


Fig. 4

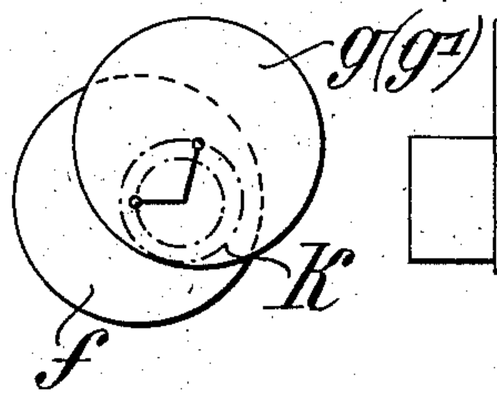
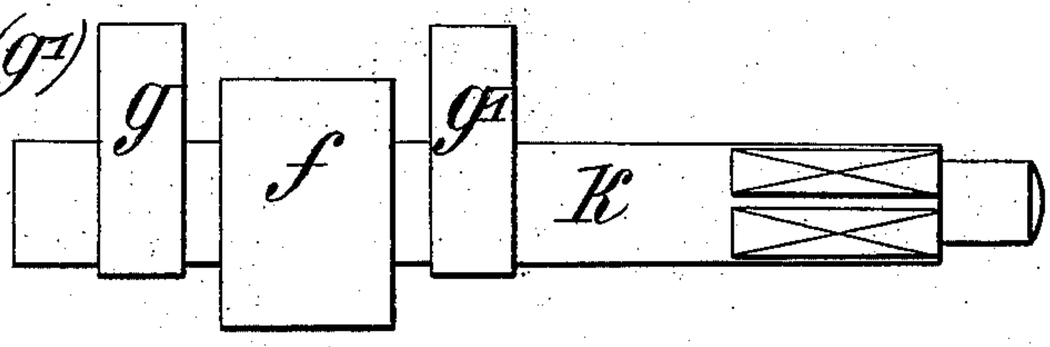


Fig. 5



Witnesses:
B. F. Hess
B. F. Sommers

Inventor:
Louis Friedmann
by Kenyon & Kenyon
Attys.

No. 741,478. Patented October 13, 1903.

UNITED STATES PATENT OFFICE.

LOUIS FRIEDMANN, OF VIENNA, AUSTRIA-HUNGARY.

LUBRICATING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 741,478, dated October 13, 1903.

Application filed December 30, 1901. Serial No. 87,817. (No model.)

To all whom it may concern:

Be it known that I, LOUIS FRIEDMANN, a subject of the Emperor of Austria-Hungary, residing at Vienna, in the Province of Lower Austria, in the Empire of Austria-Hungary, have invented certain new and useful Improvements in Lubricating Apparatus; and I do hereby 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 of reference marked thereon, which form a part of this specification.

This invention relates to a lubricating-pump intended for lubricating spaces or chambers containing steam under pressure, (in particular the cylinder and valve-chambers of steam-engines,) the said lubricating-pump being arranged without relief-valves or any other automatically-working closing organs.

In the lubricating-pumps having the arrangement used hitherto in case the valve gets stuck or commences to leak the steam easily passes into the oil vessel, settles on the bottom of the vessel in the shape of condensed water, and in this manner frustrates the action of the lubricating apparatus. This drawback is entirely obviated in the improved lubricating-pump, which shall be described in the following, because in this pump pistons are employed which simultaneously act as closing organs.

In the accompanying drawings, Figures 1 and 2 show the lubricating-pump in two vertical sections perpendicular to each other. Figs. 3 to 5 represent separate parts of the pump.

L is the oil-reservoir, within which a shaft k is arranged, provided with the eccentrics g, g', and f, (see Fig. 5,) the said shaft k being rotated in the usual manner by the ratchet-wheel m and lever n. The eccentric f is keyed upon the shaft in a position differing from that of the eccentrics g g', Fig. 4. The sliding strap x of the eccentrics g g' is guided by means of its cylindrical extension h' within the cylindrical recess h of the oil vessel. The sliding strap x is actuated by the eccentrics g g', and makes, therefore, a reciprocating up-and-down motion. The upper part of the sliding strap x has two rectangular recesses, while its lower cylindrical extension h' is provided with a cylindrical perforation within which is guided the bolt-shaped extension h^2 of the second slide y. The latter is actuated by the eccentric f. When the shaft is rotated, the two sliding straps x and y are moved independently of each other. The sliding strap x carries the piston a, while the sliding strap y carries the piston b, which passes through an aperture e of the strap x.

The stuffing parts of the pistons a and b are composed of a number of superposed elastic metallic washers r, whereby a most perfect hermetical stuffing of the entire peripherical surface of the piston is obtained. The cylinder c of the piston a is communicating, by means of the uppermost aperture o, with the oil-reservoir and by means of the lowermost aperture o^3 with the conduit leading to the part of the machine to be lubricated, while by means of the aperture o' and o^2 it communicates with the interior space c' of the cylinder in which the piston b is working. If now the shaft k be rotated in the direction of the arrow, (see Fig. 1,) the piston b, actuated by the eccentric f, will make a downward stroke, while the piston a, actuated by the eccentrics g and g', will make its upward stroke. Shortly after the piston b has passed the aperture o' the piston a has cleared the aperture o^2, and the oil in the cylinder c' will be brought during the further motion of the piston beneath the piston a into the cylinder-space c. A further rotation of the eccentrics produces the downward stroke of piston a and the upward stroke of piston b, and after the piston a has passed the aperture o^2 the oil in the space c beneath the piston a will be forced through the aperture o^3 to the machine, while fresh oil from the reservoir will flow into the space e' through the apertures o and o' and around the reduced portion.

It is clear from the above description that the space c is never in direct communication with the oil-reservoir, because when the space c' is in communication with the oil-reservoir the spaces c and c' are separated from each other, owing to the relative position of the pistons shown in Fig. 1. On the other hand, when the piston a is in its highest position and the spaces c and c' are communicating

with each other c' will again be shut off from the oil-reservoir, the aperture o' being closed by the piston a.

I claim—

1. In a lubricating-pump, an oil-receptacle, a pair of parallel cylinders therein, a piston movable in each cylinder, the one in the second cylinder set in advance of the other, one of the cylinders provided with an inlet-port beyond the range of motion of its piston at one end, and the delivery-pipe at the other end; and two ports connecting the cylinders opened and closed by both pistons, whereby oil will be admitted to the second cylinder through the first and again delivered to the first cylinder to be forced into the delivery-pipe, substantially as and for the purpose set forth.

2. In a lubricating-pump, a cylinder having an inlet-port near one end and an outlet-port at the other end, a piston in said cylinder having a reduced portion, a second cylinder having two ports connecting it to the first cylinder, said ports alternately opened and closed by the piston in the first cylinder, and a piston in the second cylinder to close one of said two ports and force oil through the second port into the first cylinder under the piston therein preparatory to being forced through the outlet-port by said first piston, substantially as described.

3. In a lubricating-pump, a cylinder having an inlet-port for lubricant near one end and a delivery-pipe near the other, a piston therein, a second cylinder having two ports communicating with the first cylinder, one of them positioned to be uncovered on the down and the other on the up stroke of the piston, a piston in the second cylinder controlling one of the ports and adapted to force lubricant into the end of the first cylinder and delivery-pipe, substantially as set forth.

4. In a lubricating-pump, a lubricant-chamber, two parallel cylinders therein, an inlet-port in one cylinder near one end below the lubricant-level in the chamber, and a delivery-pipe connected to the other end thereof, a piston having a reduced portion in said cylinder, two ports connecting the cylinders controlled by said piston whereby oil will be admitted through one cylinder at one end around the reduced portion of one piston into the second cylinder and be admitted from said second cylinder under the piston at the other end of said first cylinder and a piston in said second cylinder, substantially as and for the purpose set forth.

5. In a lubricating-pump, a lubricant-chamber, two cylinders therein, one having an inlet-port o and an outlet-port o^3, a piston therein having a reduced portion always lying opposite the inlet-port, two ports, o', o^2, connecting the cylinders, a piston in the second cylinder, two eccentric-straps having concentric cylindrical extensions slidable in a portion of the chamber, rods connecting each piston with an eccentric-strap, eccentrics to reciprocate the straps and pistons, one of said eccentrics set in advance of the other, substantially as and for the purpose set forth.

6. In a lubricating-pump, a lubricant-chamber, a pair of cylinders therein, a piston in each cylinder, one of the cylinders provided with an inlet-port below the lubricant-level in the chamber and with an outlet-port, and two ports connecting the cylinders, all of the ports being controlled by the pistons, an eccentric-strap connected to each piston and interfitting guided cylindrical extensions on the straps, substantially as and for the purpose set forth.

In testimony that I claim the foregoing as my invention I have signed my name in presence of two subscribing witnesses.

LOUIS FRIEDMANN.

Witnesses:

JOSEF RUBRASCH,

ALVESTO S. HOGUE.