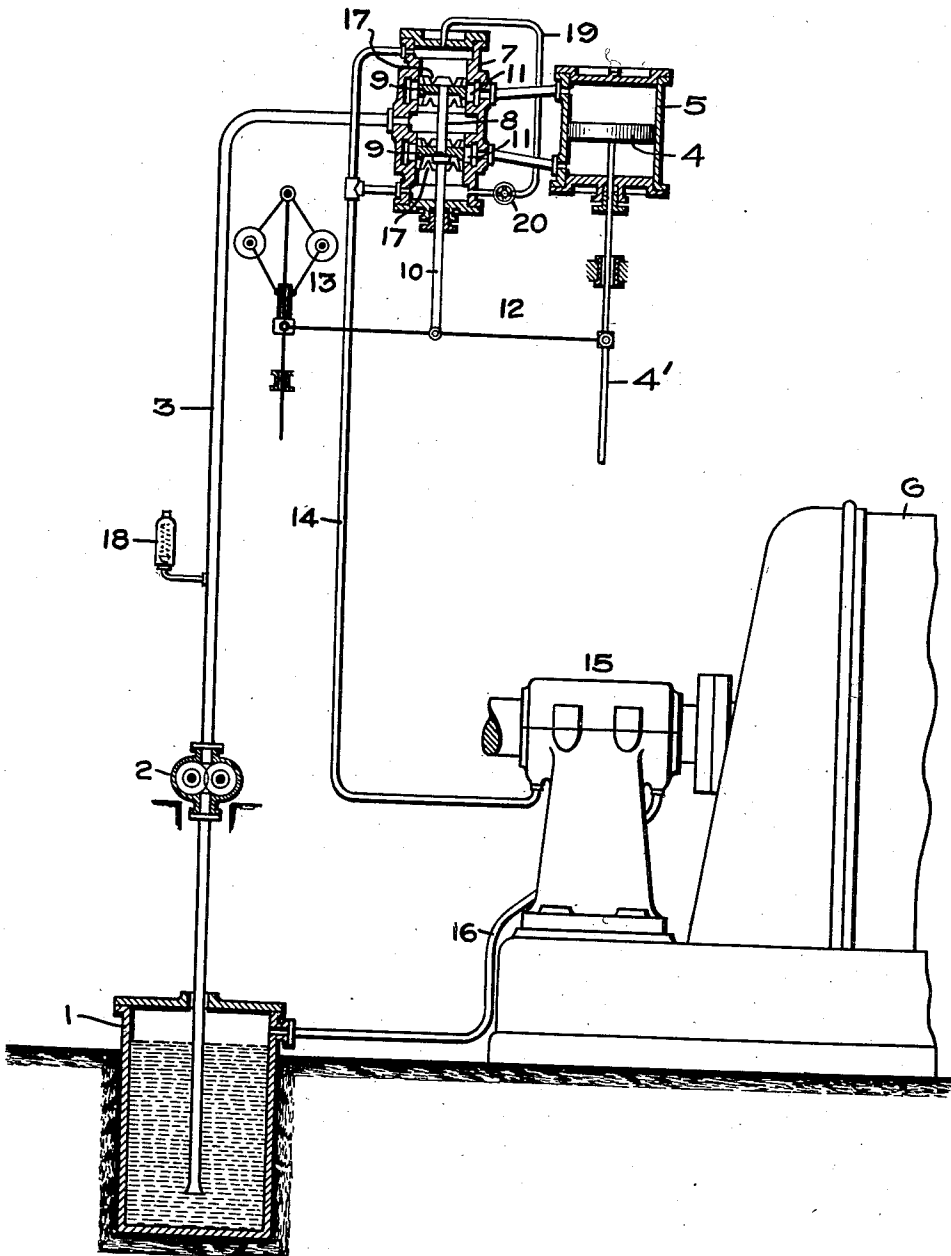


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OIL CIRCULATING SYSTEM FOR LUBRICATING AND REGULATING.
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1,017,557.

Patented Feb. 13, 1912.



Witnesses:
J. Ellis Klem
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Att'y.

UNITED STATES PATENT OFFICE.

WALTER KIESER, OF CHARLOTTENBURG, GERMANY, ASSIGNOR TO GENERAL ELECTRIC COMPANY, A CORPORATION OF NEW YORK.

OIL-CIRCULATING SYSTEM FOR LUBRICATING AND REGULATING.

1,017,557.

Specification of Letters Patent.

Patented Feb. 13, 1912.

Application filed July 28, 1911. Serial No. 641,138.

To all whom it may concern:

Be it known that I, WALTER KIESER, a citizen of Switzerland, residing at Charlottenburg, Germany, have invented certain new and useful Improvements in Oil-Circulating Systems for Lubricating and Regulating, of which the following is a specification.

This invention relates to motive power devices in which the bearings are lubricated by a forced circulation of oil, and in which also the regulating valves are operated by a motor actuated by oil under pressure and controlled by the speed governor of the motive power device. It has been proposed to combine these features by using a single oil pump to feed the bearings and the valve-actuating motor. Heretofore, however, it has been necessary to insert a throttling or pressure-reducing device in the lubricating portion of the system in order to prevent too great an oil pressure on the bearings and yet maintain an operative pressure in the valve-actuating motor.

The object of the present invention is to avoid the waste of power involved in pumping all the time against the resistance of the pressure-reducing device. The mass of oil remains uniform, being conveyed at all times through the motor-controlling valve, and supplied to the bearings at uniform pressure. The only variation in load on the pump is that due to the resistance offered by the valve-motor when it is brought into operation by the governor. The entire amount of oil is available both for lubricating and for operating the valve-motor.

The accompanying drawing is a diagrammatic illustration of a system embodying my invention.

The oil is drawn from a tank 1 by means of a pump 2 which is preferably of the rotary type and puts a positive pressure on the oil in the pipe 3 sufficient to actuate the piston 4 in the cylinder 5 of the valve-motor; the piston 4¹ of said motor being connected to mechanism, not shown, for operating the controlling valve or valves of the steam engine 6. The pipe 3 delivers the oil to the casing 7 of the regulating valve 8 of the motor; said valve being preferably of the piston type, having two pistons 9 attached to a stem 10, and located on each side of the oil inlet. The pistons, in their central position, are in line with the ports 11 leading

to the ends of the cylinder 5 of the valve-motor. The stem 10 is pivoted to a floating lever 12, one end of which is pivoted to the piston rod 4¹ and the other end to the movable collar of the speed governor 13. When the valve 8 is shifted by said governor, it is returned to its normal position by the piston rod and the floating lever, in a well-known manner. The ends of the valve casing 7 above and below the pistons 9 are connected to the pipe 14 which conveys oil to the shaft bearing 15 of the engine. A drain pipe 16 returns the oil to the tank 1.

In order to permit a flow of oil to the bearing, bypasses are provided around the pistons 9 when in their central position. The bypasses I prefer are notches 17 in flanges on the pistons 9. Said notches communicate with the ports 11 when the pistons are in their central position, and permit the oil to have free access to the upper and lower sides of the motor piston 4, and also to flow from the pipe 3 to the pipe 14, and thence to the bearing or bearings. When the valve 8 is moved by the governor to connect only one port 11 with the supply pipe 3 and the other with the pipe 14 only, the unbalanced pressure on the motor piston 4 causes said piston to move, and the oil which it displaces is forced through the pipe 14 to the bearing. The supply of lubricant for said bearing is thus maintained constant. In case there is danger of back pressure in the pipe 3 when the valve 8 is shifted, a safety valve 18 can be easily inserted in said pipe. If desired, permanent bypasses such as 19, containing a valve 20, around the pistons 9 of the valve 8 may be provided in addition to the notches 17 and ports 11, these latter being effective only when the valve is in its central position.

In accordance with the provisions of the patent statutes, I have described the principle of operation of my invention, together with the apparatus which I now consider to represent the best embodiment thereof; but I desire to have it understood that the apparatus shown is only illustrative, and that the invention can be carried out by other means.

What I claim as new and desire to secure by Letters Patent of the United States is:—

1. The combination with a system of forced lubrication, of a valve-actuating motor operated by the lubricant, and a regulat-

ing valve for said motor which permits the lubricant to flow through it in its central position.

2. The combination with a system of forced lubrication, of a valve-actuating motor operated by the lubricant, and a regulating valve for said motor comprising pistons which in their central position have by-passes around them.

10 3. The combination with a system of forced lubrication, of a valve-actuating motor, a valve casing for said motor interposed in the path of the lubricant, and a regulating valve in said casing which permits a free flow of the lubricant except when it is shifted to cause said lubricant to operate said motor.

20 4. The combination with a system of forced lubrication, of a valve-actuating motor, a valve-casing for said motor provided with ports, a regulating valve in said casing

comprising two pistons controlling said ports, a supply pipe for lubricant entering said casing between said pistons, a delivery pipe leading from the ends of said casing, and flanges on said pistons having notches covering said ports when the valve is in its central position. 25

5. The combination with a system of forced lubrication including a pump, of a valve-actuating motor, a regulator for the motor comprising a casing through which fluid from the pump continuously flows, and a valve in the casing which controls the distribution of fluid to the lubricating system and also to the motor. 30 35

In witness whereof, I have hereunto set my hand.

WALTER KIESER.

Witnesses:

BERNHARD KUHNOW,
CARL HASFNER.