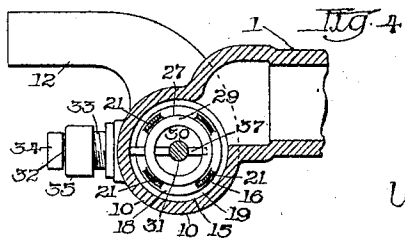
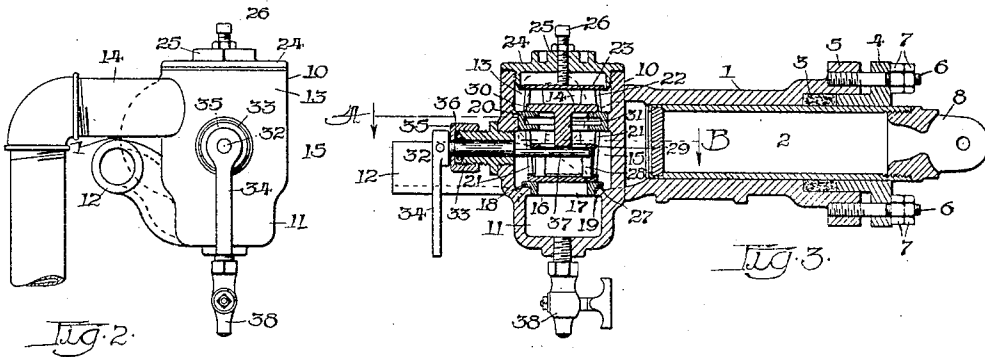
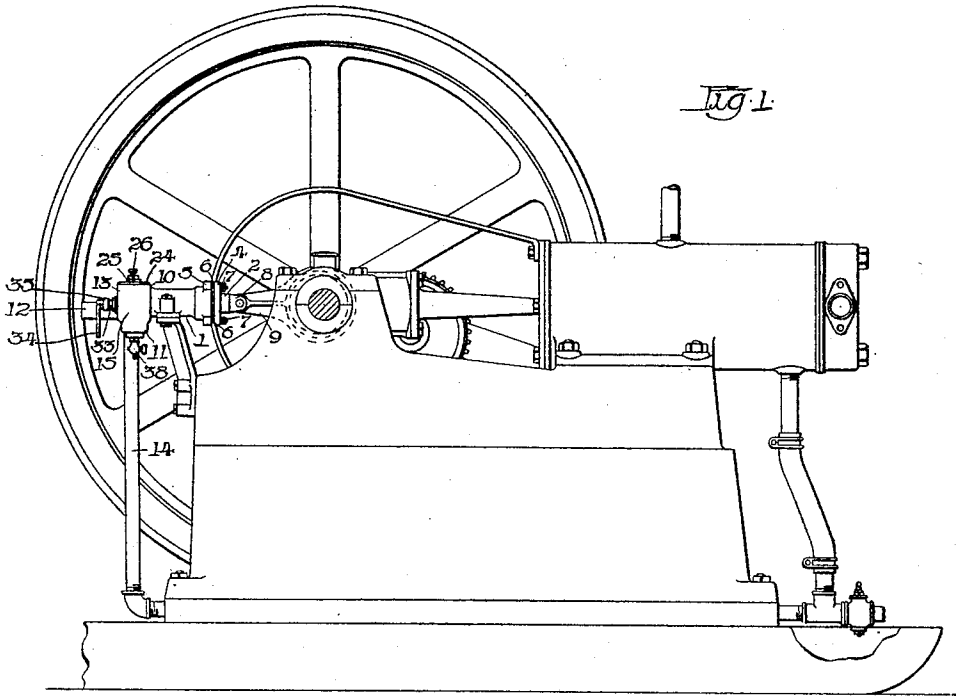


W. K. ANDREW.
 WATER CIRCULATING PUMP.
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933,045.

Patented Sept. 7, 1909.



Witnesses:
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UNITED STATES PATENT OFFICE.

WILLIAM K. ANDREW, OF MILWAUKEE, WISCONSIN, ASSIGNOR TO INTERNATIONAL HARVESTER COMPANY, A CORPORATION OF NEW JERSEY.

WATER-CIRCULATING PUMP.

933,045.

Specification of Letters Patent.

Patented Sept. 7, 1909.

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To all whom it may concern:

Be it known that I, WILLIAM K. ANDREW, a citizen of the United States, residing at Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented certain new and useful Improvements in Water-Circulating Pumps, of which the following is a specification.

My invention relates to water circulating pumps, and is designed particularly for use in connection with explosive engines wherein it is desirable to have a constant circulation of water through the cylinder jacket for cooling purposes.

It consists in improved valve mechanism and means for controlling the valves in a manner whereby the valve chamber and the pipes connected therewith may be quickly drained as required; its object being to provide a mechanism simple in construction, positive in action and not liable to become disarranged and inoperative. I attain this object by means of the mechanism illustrated in the accompanying drawing, in which—

Figure 1 represents a side elevation of an explosive engine having my invention attached thereto; Fig. 2 is an end elevation of the pump; Fig. 3 is a vertical sectional elevation of Fig. 2; and Fig 4 is a section of Fig. 3 along the line A—B.

The same reference numerals designate like parts throughout the several views.

1 represents the pump cylinder, 2 the plunger adapted to be reciprocated therein, 3 the packing ring, 4 a movable ring encircling the plunger and operative with the packing to form a stuffing box for the plunger.

5 represents the head of the cylinder, 6 studs screwed therein received by openings in ring 4, 7 adjusting nuts at the outer ends of the studs, 8 a removable head connected with the plunger and by means of which the latter may be connected with a moving part of the engine, as by means of a pitman 9, as shown in Fig. 1.

10 represents a vertical valve chamber arranged at right angles with the cylinder, integral therewith and offset laterally therefrom, having its lower end 11 communicating with any source of water supply by means of a pipe 12, and its upper end 13 with an engine cylinder by means of a pipe

14, and an intermediate chamber 15 communicating with each of said first mentioned chambers and with said cylinder.

16 represents a valve cage having at its lower end an annular ring 17 provided with a collar 18 fitting against the upper surface of an inwardly extending annular flange 19 upon the wall of the valve chamber below the intermediate chamber 15.

20 represents an annular ring at the upper end of the cage fixed closely into the end of the valve chamber above the intermediate chamber, the two rings being connected by means of a series of vertical bars 21, and 22 represents vertical columns extended upward from the upper surface of ring 20 into the upper end of valve chamber.

23 is a flat disk resting upon the upper ends of the columns.

The valve chamber is closed at its upper end by means of a removable head 24 screw threaded in a manner to engage with the wall of the valve chamber and having a central angular boss 25; and 26 represents a set screw received axially by the head and extending into the chamber contacts with the disk 23 and operates to press the valve cage against its seat upon the flange 19.

27 represents a check valve that is arranged to close the port between the lower end of the valve chamber and the intermediate chamber, and is provided with upwardly extending bars 28 that connect it with a ring 29 axially arranged relative to the valve portion, the valve being guided in its movement by means of the vertical bars 21, and 30 represents a check valve operative to control the port between the upper end of the valve chamber and the intermediate chamber, and depending from its lower side is a stem 31, the columns 22 operating as guides for the valves.

32 represents the body of a valve lifting member journaled in a sleeve 33 screwed into the wall of the intermediate valve chamber, the body being reduced in size at its outer end and provided with a controlling lever 34 secured thereto, and 35 represents a cap piece screwed upon the outer end of the sleeve and operative in connection with a packing ring 36 to form a stuffing box for the body of the valve lifting member. Projecting inwardly into the chamber is a stem 37 integral with the body portion of the valve lifting mem-

ber and arranged eccentric to the axis thereof and engaging with the lower side of the ring 29 and the lower end of the stem 31 in a manner to lift both valves from their seats
5 when the valve lifting member is rotated about its axis.

38 represents a drain cock screwed into the lower end of the valve chamber.

In operation the pump draws water from
10 the tank or other source of water supply and causes it to circulate through the water jacket of the engine in a common way, and when desired the valve chamber and connecting pipes may be drained by turning the
15 valve lifting member about its axis and opening the drain cock.

What I claim as my invention, and desire to secure by Letters Patent, is:

A pump including, in combination, a cylinder, a vertically arranged cylindrical valve
20 chamber communicating therewith, said chamber having inlet and outlet openings, a

removable valve cage mounted in said chamber and having upper and lower ports communicating with said cylinder, a check valve
25 adapted to control said lower port, said valve having vertically arranged bars connected with its upper side, said bars having a ring secured to their upper ends, a check valve
30 adapted to control said upper port, said valve having a downwardly projecting stem, a rotatable valve controlling member journaled in the wall of said chamber and having a stem arranged eccentric to the axis of
35 said member, said stem extending into said chamber between said ports and engaging with said ring on the lower valve and said stem on the upper valve in a manner to lift said valves from their seats when said valve
lifting member is rotated.

WILLIAM K. ANDREW.

Witnesses:

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