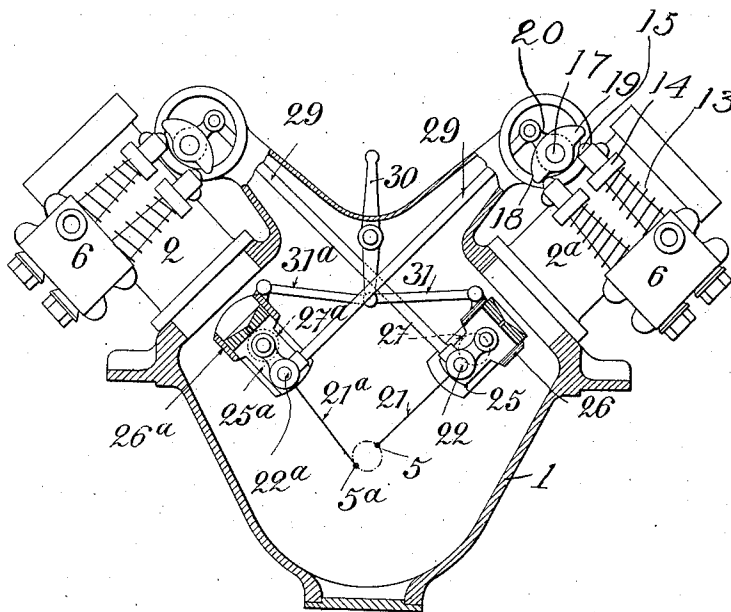


A. BUGNON.
DISTRIBUTING VALVE OPERATING AND REVERSING MECHANISM FOR MOTORS WORKED BY
EXPANSIBLE MOTIVE FLUIDS.
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1,039,893. Patented Oct. 1, 1912.



Witnesses:-
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UNITED STATES PATENT OFFICE.

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DISTRIBUTING-VALVE OPERATING AND REVERSING MECHANISM FOR MOTORS
WORKED BY EXPANSIBLE MOTIVE FLUIDS.

1,039,893.

Specification of Letters Patent.

Patented Oct. 1, 1912.

Application filed February 9, 1909. Serial No. 477,009.

To all whom it may concern:

Be it known that I, ACHILLE BUGNON, a citizen of the Republic of France, residing at 3 Rue Gerbier, Paris, in the Republic of France, engineer, have invented certain new and useful Improved Distributing-Valve Operating and Reversing Mechanism for Motors Worked by Expansible Motive Fluids, of which the following is a specification.

This invention has for object to provide an improved valve operating and reversing mechanism applicable to single acting and double acting motors worked by the expansion of a fluid such as steam, air, carbonic acid, etc.

The improved valve operating mechanism has more particularly the following advantages:—(1) There is no consumption of motive fluid at the dead centers of the motor; (2) the direction of working of the motor can be reversed instantaneously with certainty whatever may be the speed of the motor, because the admission of the motive fluid does not depend in any way on the working of the pistons; (3) the degree of expansion *i. e.*, the point of cut-off of the motive fluid can be varied at will; (4) the improved mechanism cannot get out of order. These advantages are due to the particular manner of operation of the parts controlling the admission and exhaust valves as will be hereinafter described by way of example with reference to the accompanying drawing which represents a diagrammatic view of the improved mechanism constituting this invention applied to a motor having two single acting cylinders arranged at right angles to each other.

In the embodiment illustrated a motor frame 1 is shown on which are mounted the motor cylinders 2 and 2^a in which operate pistons for drawing the crank shaft. These cylinders 2 and 2^a are shown placed at right angles to each other. These cylinders have fixed to them the valve boxes 6 containing the admission and exhaust valves (not shown) and to which the steam or other motive fluid is supplied from a suitable source and which escapes to the atmosphere or to a condenser when the exhaust valves are open. The admission and exhaust valves are closed by the action of springs 13 arranged between the valve boxes 6 and washers 14 on the valve spindles, said washers

being preferably adjustable and adapted to be fixed in position by means of caps 15. These valves are operated by means of two shafts 17 on each of which are mounted two cams 18 and 19 arranged to act upon the caps 15 of the admission and exhaust valves respectively. The shafts 17 are provided with levers 20 connected by connecting rods 29 to eccentric rods 21 and 21^a which are jointed at a suitable point 22 or 22^a. In this arrangement the motor shaft has fixed on it two eccentric sheaves, the centers of which are indicated at 5 and 5^a and the corresponding eccentric levers 21 and 21^a are jointed to slide blocks 25 and 25^a which move in slides 26 and 26^a arranged at right angles to each other. Each of these slides oscillates on an axis 27 or 27^a and its position is regulated by means of a common lever 30 connected to the slides by means of the rods 31 and 31^a.

From the above description it will be obvious that the slides 26 and 26^a form swinging guide ways for the levers 21 and 21^a said guide ways corresponding to a cylinder placed between the other cylinder and the crank shaft and that said guide ways are actuated by means of the hand lever 30 arranged on an axis in the middle of the angle of the cylinders. The improved valve operating mechanism may be also applied to motors having four cylinders arranged in opposite pairs or situated side by side or arranged at right angles to one another. For double acting motors it may be preferable to replace the left valves by cylindrical slide valves connected directly to the connecting rods.

Claims—

1. In a steam motor comprising two cylinders placed perpendicularly to one another, a crank shaft, two eccentrics on the said shaft placed at an angle of 180° the one with respect to the other, two eccentric levers, two swinging guide ways for the said levers, valves on the said cylinders, means actuated by the two eccentric levers for moving the valves of the two respective cylinders, each swinging guide-way corresponding to a cylinder being placed between the other cylinder and the crank shaft, and means to cause the two guide-ways to swing at one and the same time.

2. A steam motor comprising two cylinders placed perpendicularly to one another, a crank shaft, two eccentrics on the said shaft placed at an angle of 180° the one with respect to the other, two eccentric levers, two swinging guide ways for the said levers, valves on the said cylinders, means actuated by the two eccentric levers for moving the valves of the two respective cylinders, each swinging guide-way corresponding to a cylinder being placed between the other cylinder and the crank shaft, and means to cause the two guide-ways to swing at one and the same time.

other, a crank shaft, two eccentrics on the
said shaft placed at an angle of 180° the
one with respect to the other, two eccentric
levers, two swinging guide ways for the said
5 levers, valves on the said cylinders, means
actuated by the said two eccentric levers to
move the valves of the two respective cylin-
ders, each swinging guide way correspond-
ing to a cylinder being placed between the
10 other cylinder and the crank shaft, a hand
lever on an axis in the middle of the angle

of the cylinders, and rods connecting the
said lever with the two guide-ways to cause
the said guide-ways to swing at one and the
same time.

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

ACHILLE BUGNON.

Witnesses:

H. C. COXE,
MAURICE ROUX.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,
Washington, D. C."