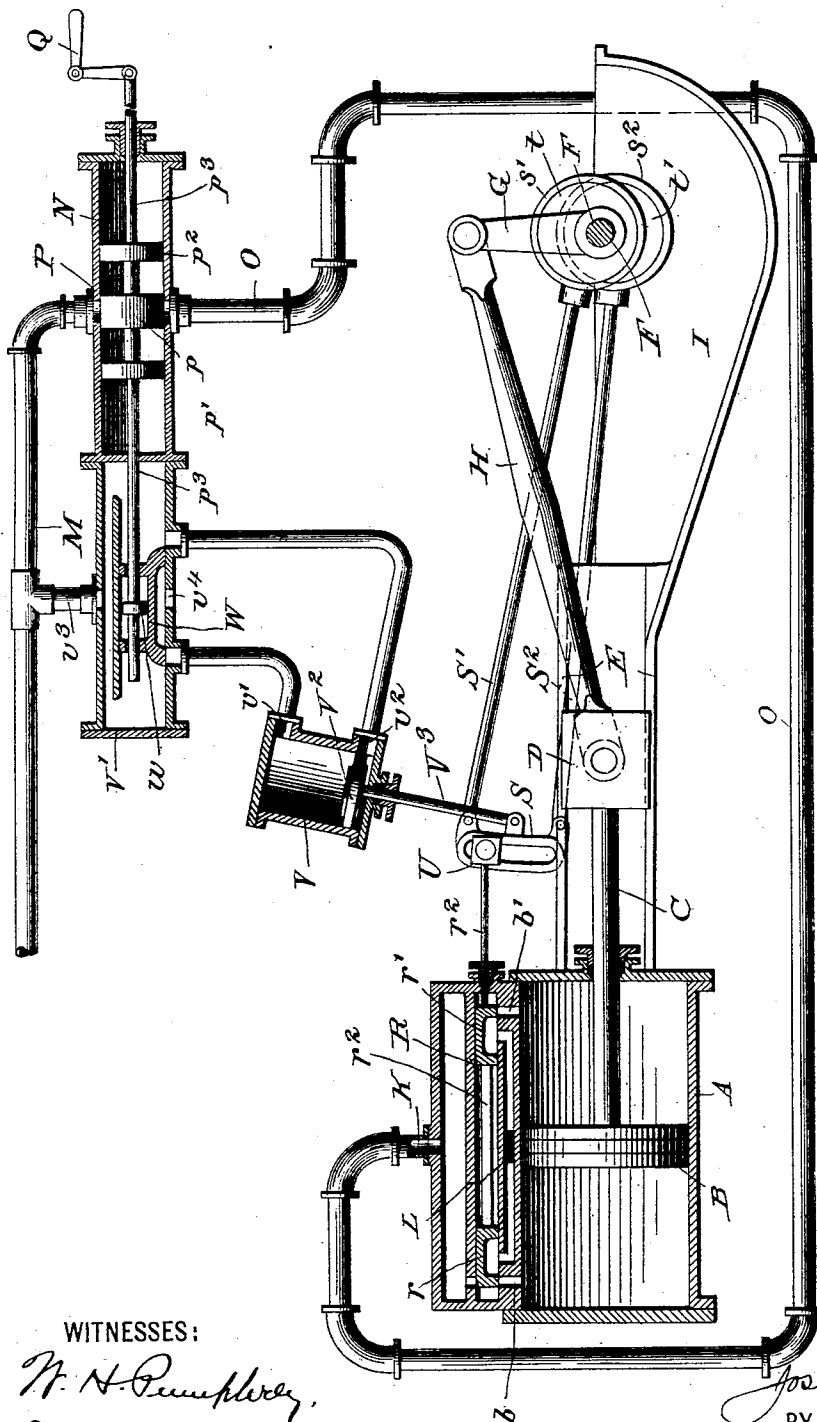


(No Model.)

J. H. HOADLEY.
FLUID PRESSURE MOTOR.

No. 586,384.

Patented July 13, 1897.



WITNESSES:

W. H. Humphrey,
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INVENTOR

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UNITED STATES PATENT OFFICE.

JOSEPH H. HOADLEY, OF NEW YORK, N. Y.

FLUID-PRESSURE MOTOR.

SPECIFICATION forming part of Letters Patent No. 586,384, dated July 13, 1897.

Application filed May 7, 1896. Serial No. 590,559. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH H. HOADLEY, a citizen of the United States, residing at New York, in the county and State of New York, have invented certain new and useful Improvements in Fluid-Pressure Motors, of which the following is a specification.

My invention relates to improvements in the reversing mechanism for fluid-pressure motors; and it consists, essentially, of operating the reversing mechanism by a fluid-pressure-operated device under the control of the mechanism which opens and closes the throttle-valve.

My invention is particularly applicable to the link-reversing mechanism in which the reversing-link is attached to a rod extending from a piston which works in the fluid-pressure cylinder communicating at its opposite ends with a fluid-pressure pipe or reservoir and a suitable exhaust. The communication between the cylinder and the reservoir and exhaust is controlled by a suitable valve attached to and operated by the handle which opens and closes the throttle-valve of the engine.

The accompanying drawing represents a sectional elevation of a fluid-pressure motor embodying my invention.

A is the engine-cylinder.

B is the piston, and C the piston-rod.

D is the sliding cross-head, to which the piston-rod C is attached and which slides in the ways E.

F is the crank-shaft, carrying the crank G, which is connected to cross-head D by the rod H. The crank G works in the crank-pit I.

$b\ b'$ are inlet and exhaust ports in the cylinder A.

K is the main supply-port, and L is the main exhaust-port.

M is the compressed-air or fluid-pressure supply-pipe.

N is the throttle-valve cylinder, communicating with air-pipe M and with the main supply-port K through the pipe O.

P is a throttle-valve comprising the main central piston p and the two end pistons $p' p''$, all of which are maintained on the valve-rod p^3 , which extends through a suitable packing-box in the head of the valve-cylinder and is

pivoted to the bell-crank-operating hand-lever Q.

R is the cut-off valve, comprising, preferably, two simple D slide-valves $r\ r'$, mounted upon a rod r^2 .

S is the reversing-link, having its end pivoted to the rods $S' S^2$, carrying the eccentric-yokes $s' s^2$ at their ends, which operate upon the eccentrics t and t' , keyed to the crank-shaft F.

U is the bearing-block, mounted upon the outer end of the rod r^2 , upon which the link S slides vertically.

V is the fluid-pressure reversing-cylinder, having passages v' and v^2 extending from its opposite ends to the valve-cylinder V', which is attached to or forms a continuation of the throttle-valve cylinder N.

V^2 is the piston, working in the cylinder V' and carrying the piston-rod V^3 , which is pivotally attached to the link S. The valve-cylinder V' communicates through the port v^3 with the air-pipe M and with the open air through exhaust v^4 .

W is a slide-valve supported in valve-cylinder V' and adapted to be operated by a collar w , which is mounted upon a continuation of the valve-rod p^3 , which extends from the valve-cylinder N into the valve-cylinder V'.

By means of the apparatus just described I am enabled to reverse the direction of the engine by the movement of the handle which opens the throttle-valve. In the intermediate position of the valves (shown in the drawing) the throttle-valve will be closed and one port of the reversing-cylinder V will be in open communication with the air-pipe while the other port will be closed, so that the reversing mechanism will not be moved. By the movement of the lever Q for opening the throttle-valve the reversing mechanism will be shifted to one position or the other for running the engine in the desired direction.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination, in a fluid-pressure engine or motor, of suitable reversing mechanism, a fluid-pressure-operated device controlling the reversing mechanism, a fluid-supply pipe communicating with the engine or mo-

tor and the reversing controlling device, a
throttle-valve in the supply-pipe controlling
the supply of fluid to the motor, a valve con-
trolling the supply of fluid to the reversing
5 controlling device, and a suitable engine-con-
trolling device constructed to simultaneously
operate the throttle-valve and valve of the
fluid-pressure-controlling device of the re-
versing mechanism.
10 2. The combination, in a fluid-pressure en-
gine or motor, of the reversing mechanism, a
fluid-pressure cylinder, a piston working in
the cylinder and connected with the revers-

ing mechanism of the engine, a valve con-
trolling the admission and exhaust to and 15
from the fluid-cylinder, the fluid-pressure-
supply pipe communicating with the engine
or motor and with the reversing fluid-cylin-
der, the main throttle-valve of the motor, and
a single controlling device constructed to op- 20
erate both valves simultaneously, substan-
tially as set forth.

JOSEPH H. HOADLEY.

Witnesses:

M. V. BIDGOOD,
GEO. E. BOUCHRE.