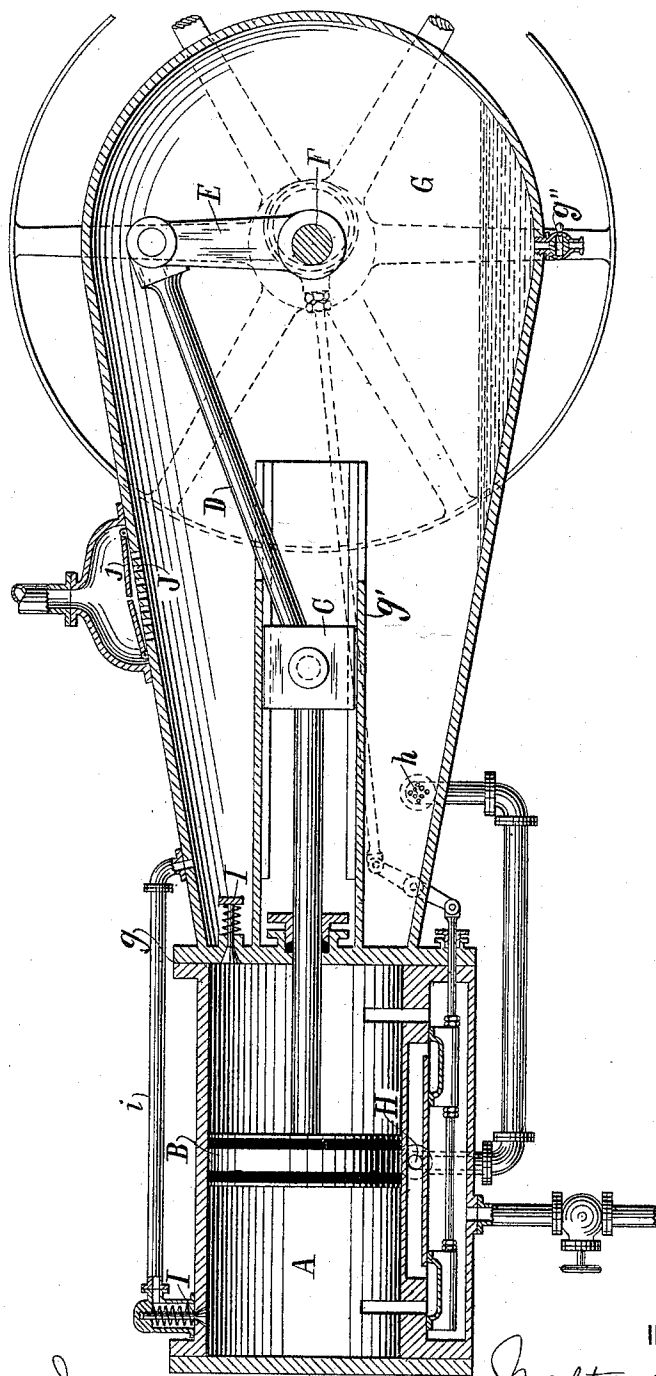


(No Model.)

W. H. KNIGHT.
FLUID PRESSURE ENGINE.

No. 585,339.

Patented June 29, 1897.



WITNESSES:

J. V. Bidgood
J. Green

INVENTOR

Walter H. Knight

BY

Thos. H. Brown

ATTORNEYS.

UNITED STATES PATENT OFFICE.

WALTER H. KNIGHT, OF NEW BRIGHTON, NEW YORK.

FLUID-PRESSURE ENGINE.

SPECIFICATION forming part of Letters Patent No. 585,339, dated June 29, 1897.

Application filed December 28, 1895. Serial No. 573,575. (No model.)

To all whom it may concern:

Be it known that I, WALTER H. KNIGHT, a citizen of the United States, residing at New Brighton, county of Richmond, State of New York, have invented a new and useful Improvement in Fluid-Pressure Engines, of which the following is a specification.

The accompanying drawing represents a vertical section of an engine embodying my improvement.

My invention has for its purpose a three-fold object: first, to muffle the exhaust; second, to collect the oil that is carried out with the exhaust, and, third, to provide that exhaust-gases only will be carried back into the cylinders when the same are sucking air.

My invention consists of a closed casing around the crank forming a crank-chamber, into which chamber the exhaust is made to discharge and from which chamber passages lead to the puppet-valves that are provided to destroy any vacuum that may occur in the cylinders on very short cut-off.

In the drawing, A is a cylinder, B the piston, C the cross-head, D the connecting-rod, E the crank, and F the shaft, of a fluid-pressure engine.

G is a crank-inclosing casing fastened to the cylinder with a tight joint at *g*, or it may be in one piece with the cylinder A and cross-head guides *g'*.

H is the exhaust-passage, which leads to and discharges into the crank-chamber at *h*.

I are vacuum-valves opening inward when there is a vacuum in the cylinder to draw the exhaust-gases from the crank-chamber back into the cylinder and thus destroy the vacuum. One valve I may in the arrangement here shown play directly into the interior of casing G.

i is a passage leading from the crank-chamber to the other suction-valve I.

J is a restricted dust-checking exhaust-passage of numerous orifices closed by flaps *j*, which permits the continuous and noiseless escape of the exhaust-gases from the crank-chamber and effectively prevents the entrance of dust into the crank-chamber, protecting the working parts of the engine and the exhaust-air from the dust. The restricted exhaust-passage also serves to retain a moderate pressure in the exhaust crank-chamber,

which materially assists in preventing the entrance of dust and dirt thereto.

The crank-chamber G, being of large capacity as compared with the cylinder, brings the exhaust-gases practically to a state of rest, so that they are made to deposit any oil they may be carrying in suspension, which, collecting in the bottom of the crank-chamber, may be drawn off by cock *g'*. The suction-valves I are made to draw from the exhaust-chamber rather than from the open atmosphere for the double reason that the exhaust is free from dust and is also warmer than the atmosphere and more or less charged with lubricant and moisture. The exhaust-chamber G, being considerably larger than the cylinder A, will act as storage for the exhaust and permit the same to escape by a continuous and reasonably-steady stream through the valve J, thus preventing noise of exhaust. The opening *h* from the exhaust H into the chamber G may be subdivided into numerous holes, so as to muffle the exhaust at this point, and it will be further muffled by escaping into the interior chamber, especially as this chamber will be loaded considerably with the weight of liquid.

My invention has particular reference to motors to be used in operating vehicles where it is particularly important to keep out dust and grit.

Having thus described my invention, the following is what I claim as new therein and desire to secure by Letters Patent:

1. The combination with a fluid-pressure engine, of a crank-chamber into which the exhaust discharges, and a muffled exhaust-passage leading from said chamber to the atmosphere.

2. The combination, in a fluid-pressure engine, of a crank-chamber into which the engine-exhaust discharges, and a restricted dust-checking exhaust-passage maintaining sufficient pressure in the chamber to insure keeping the dust out, as set forth.

3. In an air-motor for vehicles the combination of the cylinder and moving parts of the motor with a crank-chamber into which the exhaust discharges, a restricted exhaust-passage leading from said chamber to the atmosphere and protecting the exhaust from the atmosphere, and valved relief-passages

communicating between the protected exhaust-chamber and cylinder.

4. The combination with an air-motor for propelling a vehicle, a crank-chamber into
5 which the exhaust of the motors discharges, and suction-valves, opening from the exhaust-chamber into the cylinder of the motor to allow the exhaust-air to pass back into the cyl-

inder when the pressure in the cylinder falls below that of the exhaust-chamber; the said exhaust-chamber forming a crank-chamber for holding oil.

WALTER H. KNIGHT.

Witnesses:

HARRY E. KNIGHT,
M. V. BIDGOOD.