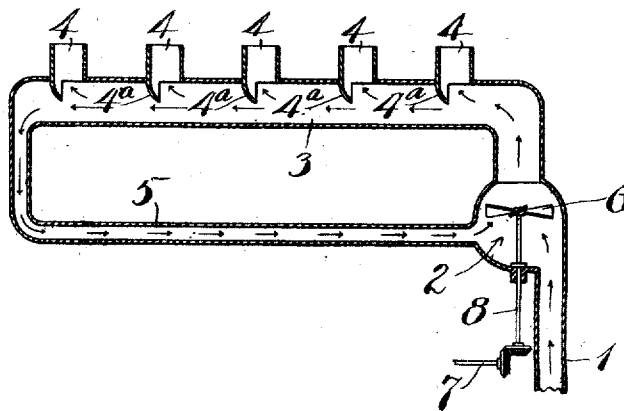


H. DOCK.
INTERNAL COMBUSTION ENGINE.
APPLICATION FILED FEB. 1, 1908.

906,393.

Patented Dec. 8, 1908.



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UNITED STATES PATENT OFFICE.

HERMAN DOCK, OF WESTERLY, RHODE ISLAND, ASSIGNOR TO DOCK GAS ENGINE COMPANY,
OF NEW YORK, N. Y., A CORPORATION OF NEW JERSEY.

INTERNAL-COMBUSTION ENGINE.

No. 906,893.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, HERMAN DOCK, a citizen of the United States, residing at Westerly, Washington county, Rhode Island, have invented certain new and useful Improvements in Internal-Combustion Engines, of which the following is a full, clear, and exact description.

My invention relates to improvements in engines of the internal combustion type, and is of particular value in an engine of the multiple-cylinder variety.

The object of the invention is to improve the construction of the so-called "intake pipe", whereby a proper quantity of gas will always be provided to each cylinder. One of the great difficulties in engines of this character is to provide an efficient and uniform supply of gas to all of the cylinders.

By my improvement this difficulty is practically eliminated, as will hereinafter be seen.

My invention is conventionally illustrated in the accompanying drawing, which shows the apparatus on a reduced scale and in section.

1 represents the supply pipe. Gas is supplied thereto from any suitable source, not shown. This supply pipe 1 terminates in a chamber 2.

3 is what I will term the "main" pipe. This main pipe extends from the chamber 2 alongside of the several cylinders of the engine (not shown).

4—4 are branch pipes arranged to lead from the pipe 3 to the several cylinders.

5 is a return pipe constituting a continuation from the remote end of pipe 3 back to the chamber 2. This pipe 5 is preferably slightly smaller in cross-sectional area than pipe 3.

6 represents a blower (or equivalent device) mounted in chamber 2 in such a way that when it is rotated it tends to force the gaseous contents of pipe 3 toward the branch pipes 4—4. This blower 6 may be driven from any source of power, for example, the engine with which the intake pipe is connected, in which event 7 may conveniently represent a portion of the cam shaft, which in turn is geared to the shaft 8 of the blower.

4^a are flanges or deflectors which may be provided at the entrance of each of the branch-pipes 4—4, said deflectors projecting into the path of the current of gas through main pipe 3, so as to catch it up and direct it

into said branch-pipes. A current of gas is maintained in the direction of the arrow through pipe 3 and back to the chamber 2, through pipe 5. As a result there will constantly be at all times and at all places in the pipe 3 a uniform supply of gas. By this means the demand for gas in any one of the cylinders is instantly supplied, no matter how near or remote said cylinder may be from the supply pipe 1.

By having the return pipe 5 suitably smaller in cross-sectional capacity than the pipe 3, vacuum is avoided and by making it sufficiently smaller a sufficient resistance or throttle effect may be provided at the remote end of the pipe 3 to provide an accumulation of gas.

In an intake pipe constructed after the manner of pipe 3, but without the return pipe 5, it is obvious that any demand for gas near the supply end, would tend to rob the remote end of said pipe, with the result that cylinders tapping into said remote end would not be as efficiently fed. By my improved invention, however, a constant circulation being maintained, a uniform supply will always be found in all parts of pipe 3.

It should be understood that my accompanying drawing is purely conventional and that no attempt has been made to show the proper proportions, since they would vary in any event, depending upon many varying conditions, such as, the design of the motor to which the appliance is attached.

What I claim is:

1. In a gas supply apparatus for gas engines, a supply pipe, a main pipe leading therefrom, a branch pipe leading from the main pipe to the point of use, a return pipe of smaller cross-sectional capacity than the main pipe leading from the remote end thereof back to a point near the supply end thereof to permit a continuous circulation of gas in said main pipe.

2. In a gas supply apparatus for gas engines, a supply pipe, a main pipe leading therefrom, a branch pipe leading from the main pipe to the point of use, and a return pipe leading from the remote end of said main pipe back to a point near the entrance end to permit a continuous circulation of gas through said main pipe, and a deflector on the branch pipe projecting into the path of circulation of the gas in the main pipe.

3. In a gas supply apparatus for gas en-

gines, a supply pipe, a main pipe leading therefrom, a branch pipe leading from the main pipe to the point of use, a return pipe leading from the remote end of the main pipe back to the supply end thereof, and means within one of said pipes to cause a continuous circulation of gas through said main and return pipes.

4. In a gas supply apparatus for gas engines, a supply pipe, a main pipe leading therefrom, a branch pipe leading from the main pipe to the point of use, a return pipe leading from the remote end of said main pipe back to a point near the entrance end to permit a continuous circulation of gas through said main pipe, and means to cause

a circulation of gas in one direction through said main and return pipes.

5. In a gas supply apparatus for gas engines, a supply pipe, a main pipe leading therefrom, a branch pipe leading from the main pipe to the point of use, a return pipe leading from the remote end of the main pipe back to the supply end thereof, and a blower within one of said pipes to cause a continuous circulation of gas through said main and return pipes.

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Witnesses:

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