H. F. MUELLER.

SUCTION VALVE FOR GAS ENGINES.

APPLICATION FILED MAR. 2, 1908.

963,463. Patented July 5, 1910.

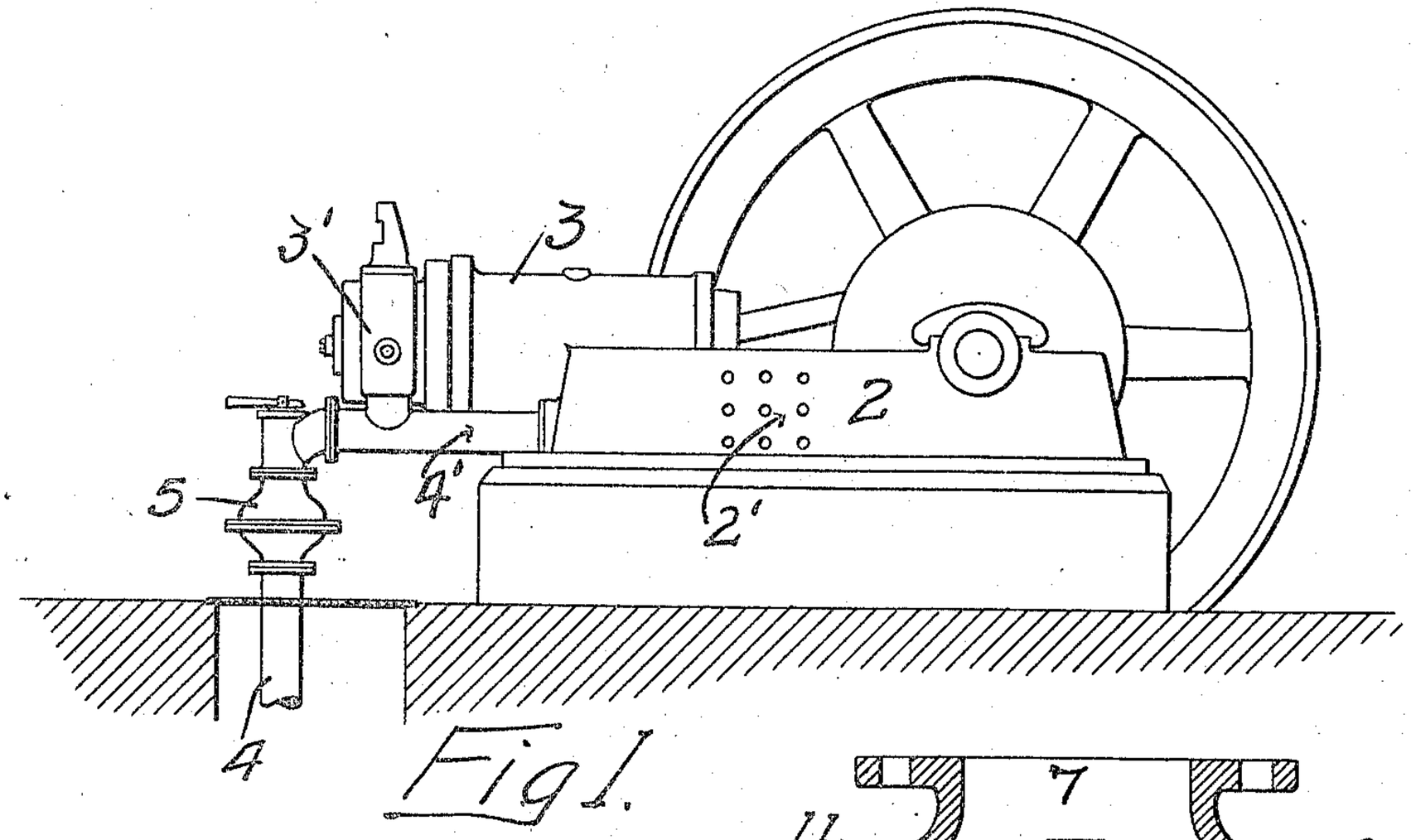

Fig 1.

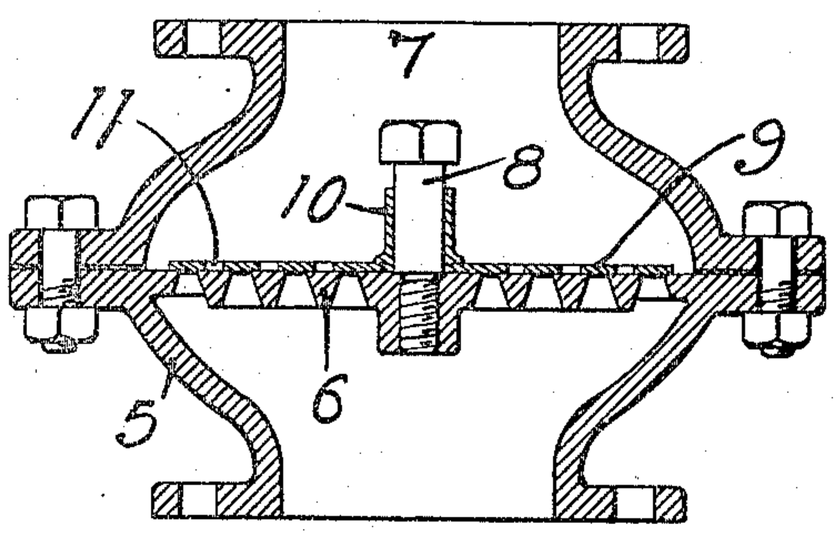

Fig 2.

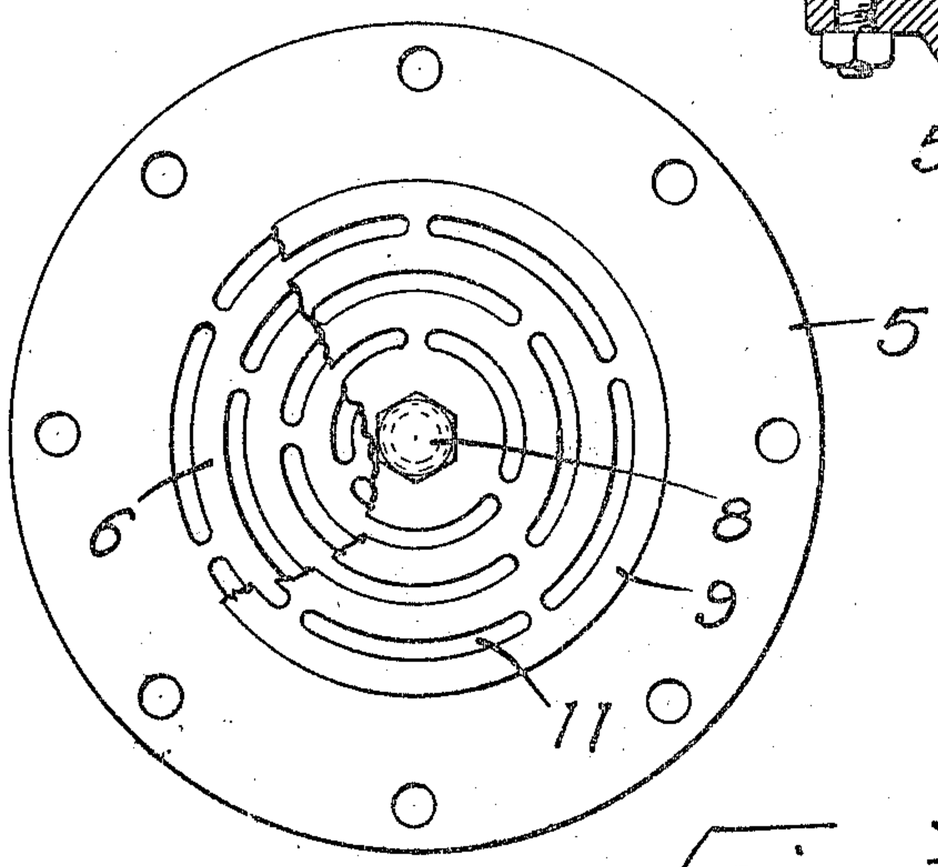

Fig 3.

WITNESSES
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UNITED STATES PATENT OFFICE.

HERMANN F. MUELLER, OF MINNEAPOLIS, MINNESOTA.

SUCTION-VALVE FOR GAS-ENGINES.

963,463. Specification of Letters Patent. **Patented July 5, 1910.**

Application filed March 2, 1908. Serial No. 418,711.

To all whom it may concern:

Be it known that I, HERMANN F. MUELLER, of Minneapolis, Hennepin county, Minnesota, have invented certain new and useful Improvements in Suction-Valves for Gas-Engines, of which the following is a specification.

My invention relates to valve devices designed for use in the suction pipe of a gas engine.

The object of my invention is to provide means whereby a supply of gas can always be maintained close to the gas cock or starting valve of the engine, ready for the next suction stroke regardless of how many engines may be drawing gas from the same main.

A further object is to prevent atmospheric pressure from entering the gas mains or gas holders during the compression, explosion and suction strokes of the engine.

A further object is to provide means whereby preignition in the engine cylinder will not affect the gas in the mains or gas tanks, and should pre-ignition occur, only that portion of the gas will be wasted that has passed the suction valve.

A further object is to provide means whereby the compressed air used for starting gas engines will be prevented from entering the gas system and destroying the gas in the mains.

A further object is to provide means whereby a number of independent engines drawing gas from the same main or the same generator can be operated in parallel.

A further object is to provide means whereby the starting of an engine or series of engines, or changing over from one set to another, all taking gas from the same source is readily acomplished.

A further object is to provide means for equalizing the pressure in the gas mains or tank by enabling the generator to deliver a continuous stream of gas.

A further object is to provide means whereby the gas generator is rendered capable of generating an even flow of gas and of improved quality.

A further object is to provide means whereby increased power can be obtained from the engine, there always being present close to the engine a pure grade of gas which will permit a richer mixture in case of an increased demand for power.

The invention consists generally in various constructions and combinations, all as hereinafter described and particularly pointed out in the claim.

In the accompanying drawings, forming part of this specification: Figure 1 is a side elevation of a gas engine with my invention applied thereto. Fig. 2 is a detail sectional view showing the application of the suction valve to a suction pipe. Fig. 3 is a detail top view of the valve.

In the drawing, 2 represents a frame of a gas engine, preferably made of hollow casting and having holes 2′ therein.

3 is the engine cylinder and 4 a pipe leading from a gas generator not shown.

4′ is an air intake pipe leading from the frame of the engine and communicating with the intake ports 2′ and connecting the gas pipe 4′ with the cylinder 3, as plainly shown in Fig. 1.

5 is a casing arranged in the suction pipe and provided with a grating 6 which extends across the passage 7 through said casing and is provided with a centrally arranged post or pin 8. The casing 5 is located a considerable distance from the mixing chamber, or the point where the air and gas mingle before entering the cylinder. A disk 9 has a hub 10 adapted to slide on said post and having a limited vertical movement thereon, and said disk is provided with a series of curved slots 11 which, when the disk rests upon the grating 6, are over the bars of the grating, the unperforated portions of the disk covering the openings between the bars and closing effectually the passages therethrough. When the disk is raised these spaces are uncovered temporarily and gas may flow through the valve. This vertical movement of the disk takes place on the suction stroke of the engine, and on the compression and explosion strokes the valve will be closed, the disk being forced snugly against the grating, and the suction pipe will be temporarily cut off from the cylinder. The disk 9 is made preferably of metal of comparatively light gage and fits snugly against the bars of the grating and being comparatively light in weight will slide upward on the post 8 and open the passage through the suction pipe when the charge is drawn into the cylinder.

I claim as my invention:

In a gas engine, the combination, with a cylinder, of a pipe arranged to supply gas only to said cylinder, a valve arranged in

said gas supply pipe and normally held closed by gravity and consisting of a perforated disk having a seat provided with openings therethrough, said disk being comparatively light in weight and adapted to open on the suction stroke of the engine to permit the passage of gas through the openings in said seat and close to shut off the passage of gas through said seat with each compression stroke of the cylinder piston, a mixing chamber located between said cylinder and valve and with which chamber said gas supply pipe communicates, an air inlet pipe also located between said cylinder and valve and communicating with said mixing chamber, said valve being located a considerable distance from said mixing chamber and the mixing of the air and gas being accomplished independently of said valve, said valve closing automatically in case of preignition in the cylinder and preventing the ignition of gas in said gas supply pipe between said valve and the source of gas supply.

In witness whereof, I have hereunto set my hand this 25th day of February 1908.

HERMANN F. MUELLER.

Witnesses:
J. A. BYINGTON,
C. G. HANSON.