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R. DEMPSTER.

UTILIZING EXHAUST OF GAS ENGINES.

APPLICATION FILED MAR. 19, 1903.

NO MODEL.

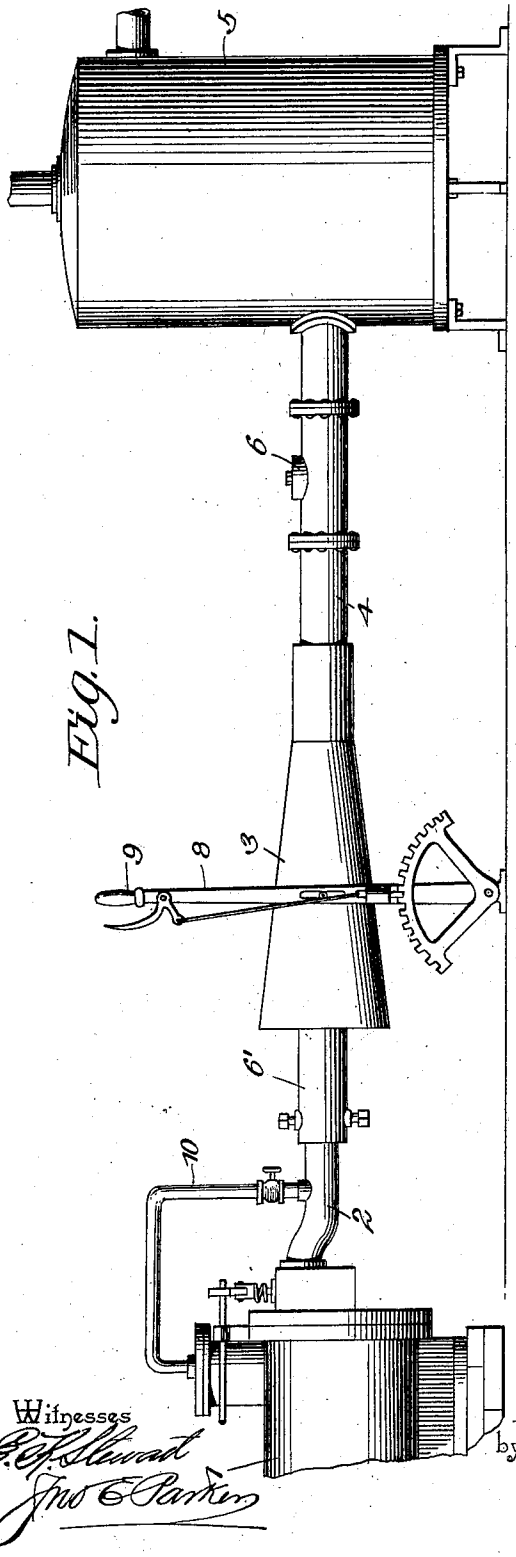


Fig. 1.

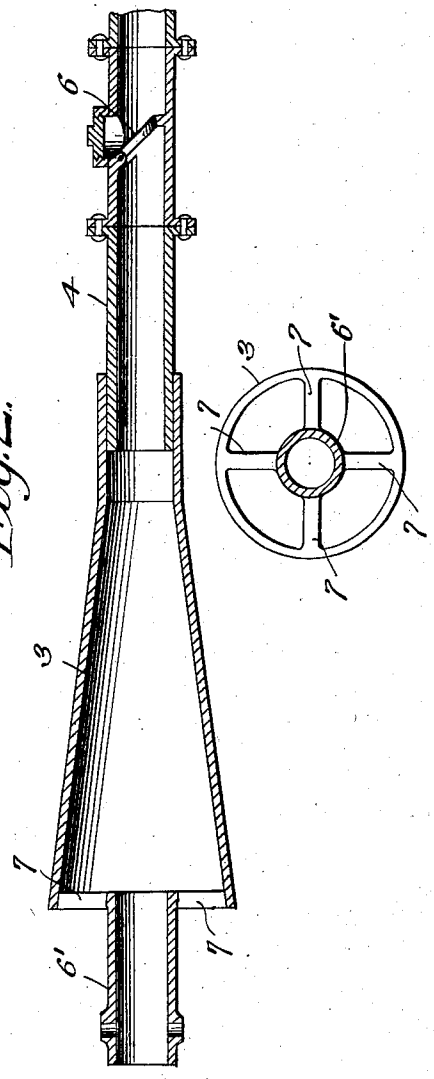


Fig. 2.

Witnesses
E. F. Stewart
Jno. E. Parker

Robert Dempster, Inventor:
by C. A. Snow & Co.
Attorneys

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

No. 751,472. Patented February 9, 1904.

UNITED STATES PATENT OFFICE.

ROBERT DEMPSTER, OF MARIETTA, OHIO.

UTILIZING EXHAUST OF GAS-ENGINES.

SPECIFICATION forming part of Letters Patent No. 751,472, dated February 9, 1904.

Application filed March 19, 1903. Serial No. 148,597. (No model.)

To all whom it may concern:

Be it known that I, ROBERT DEMPSTER, a citizen of the United States, residing at Marietta, in the county of Washington and State of Ohio, have invented a new and useful Means for Utilizing Exhaust of Gas-Engines, of which the following is a specification.

This invention relates to certain improvements in apparatus for utilizing the exhaust of explosive-engines.

The principal object of the invention is to utilize the force or pressure of the exhaust for the storage of air under pressure and to utilize the heat of the exhaust for heating such air during its passage to the storage-tank.

The invention is applicable to various forms of explosive-engines, and the air compressed may be employed for any purpose, as for motor-power or in the production of some forms of gas or vapor when associated with hydrocarbon, or for the operation of forges or like purposes where a blast or jet of air is used.

With these and other objects in view the invention consists in the novel construction and arrangement of parts hereinafter described, illustrated in the accompanying drawings, and particularly pointed out in the appended claims, it being understood that various changes in the form, proportions, size, and minor details of the structure may be made without departing from the spirit or sacrificing any of the advantages of the invention.

In the accompanying drawings, Figure 1 is an elevation, partly in the nature of a diagram, illustrating a means of utilizing the exhaust of gas-engines and embodying the invention. Fig. 2 is a longitudinal sectional elevation of the adjustable injector-casing.

In carrying out the invention the exhaust from a gas-engine 1 is led through a pipe 2 to a point of discharge and is directed through a conical casing 3, the smaller end of which is connected to a pipe 4, leading to a storage-tank 5 or to a point of consumption, as the case may be. In the pipe 4 is placed a suitable check-valve 6 in order to prevent the outflow of air between intervals of escape of the products of combustion from the engine.

The conical sleeve 3 has its smaller end slidably mounted on the pipe 4 and at its larger end is provided with a sleeve 6′, mounted on the end of the pipe 2 and connected to said larger end of the casing by a number of radially-disposed arms 7. This permits of the adjustment of the casing with respect to the pipe 2, so that the latter may discharge into the casing at any convenient distance from the larger end, and by creating a partial vacuum at the outer portion of the casing cause an inflow of air, which is mingled with the gaseous products of combustion and is carried along through the pipe 4 into the storage-tank 5, the air becoming highly heated during its passage through the pipe 4 and held in the tank under considerable pressure. In order to provide for the proper adjustment of the injector-casing 3, I preferably employ a bifurcated lever 8, having a suitable operating-handle 9, and provided with a locking-segment by which it may be held in any position of adjustment.

In some cases it is preferred to connect the explosion-chamber of the engine with the exhaust-pipe 2 by means of a valved pipe 10, so that when necessary a portion of the power may be diverted through this pipe to assist in the compression of the air, although, as a rule, this will only be used in case of emergency.

In the operation of the device the exhaust is periodically discharged through the pipe 2 and enters the larger end of the injector-casing 3 without resulting in back pressure to any extent greater than that usual in gas-engines having escape-pipes for the exhaust. The jet of the gas issuing from this pipe causes a slight vacuum at the larger end of the injector-casing 3, causing an influx of air, which is mingled with the gaseous products of combustion and passes through the pipe 4 to the storage-tank 5, becoming highly heated during its travel to the tank. The check-valve 6 serves to prevent any backflow of air from the tank between intervals of operation.

The volume of compressed fluid may be utilized for any purpose, its pressure permitting its use for power purposes in any suitable engine for converting pressure into motion, or it may be conveniently employed in the manufacture of some kinds of gas or

gaseous vapor by associating the same with hydrocarbon, or it may be utilized as an air-jet for forges or similar purposes.

Having thus described the invention, what is claimed is—

1. A means for utilizing the exhaust of gas-engines, comprising a pipe connected to the exhaust-port, a secondary pipe for conveying the exhaust and mingled air to a point of consumption or storage, and an adjustable injector-casing mounted on the two pipes and provided with air-inlet openings at its larger end.

2. A means for utilizing the exhaust of gas-engines, comprising an escape-pipe connected to the exhaust-port, a secondary alining pipe leading to a point of consumption or discharge, a conical injector-casing having its smaller end slidably mounted on the second pipe, and a sleeve connected to the larger end of the injector-casing and mounted on the end portion of said escape-pipe.

3. A means for utilizing the exhaust of gas-engines, comprising a pipe connected to the exhaust-port, an alining pipe leading to a point of consumption or storage, a conical injector-casing having its smaller end mounted on the second pipe, a sleeve mounted on the end portion of the exhaust-pipe and connected to the larger end of the casing, and an operating-lever for adjusting the casing longitudinally of the two pipes.

4. A means for utilizing the exhaust of gas-engines, comprising a pipe connected to the exhaust-port, a second pipe leading to a point of consumption or storage, a check-valve in said second pipe, a conical injector-casing serving as a connecting means between the two pipes, and an auxiliary valved pipe connecting the explosion-chamber of the engine to the exhaust-pipe.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

ROBERT DEMPSTER.

Witnesses:
R. T. BROWN,
W. S. HANCOCK.