

No. 845,460.

PATENTED FEB. 26, 1907.

W. W. GORE.
CENTRIFUGAL TAR EXTRACTOR.
APPLICATION FILED APR. 2, 1906,

Fig. 2.

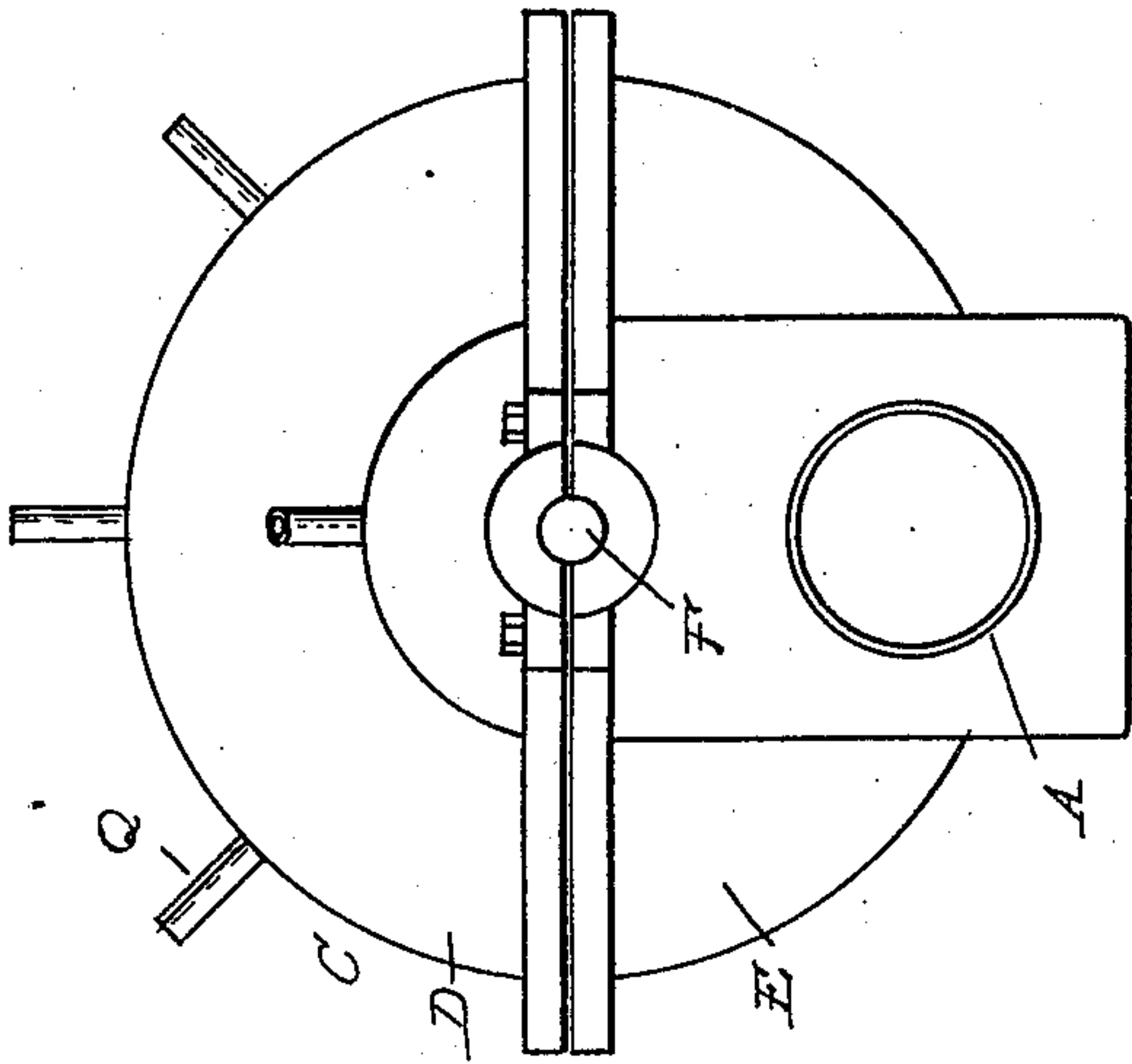
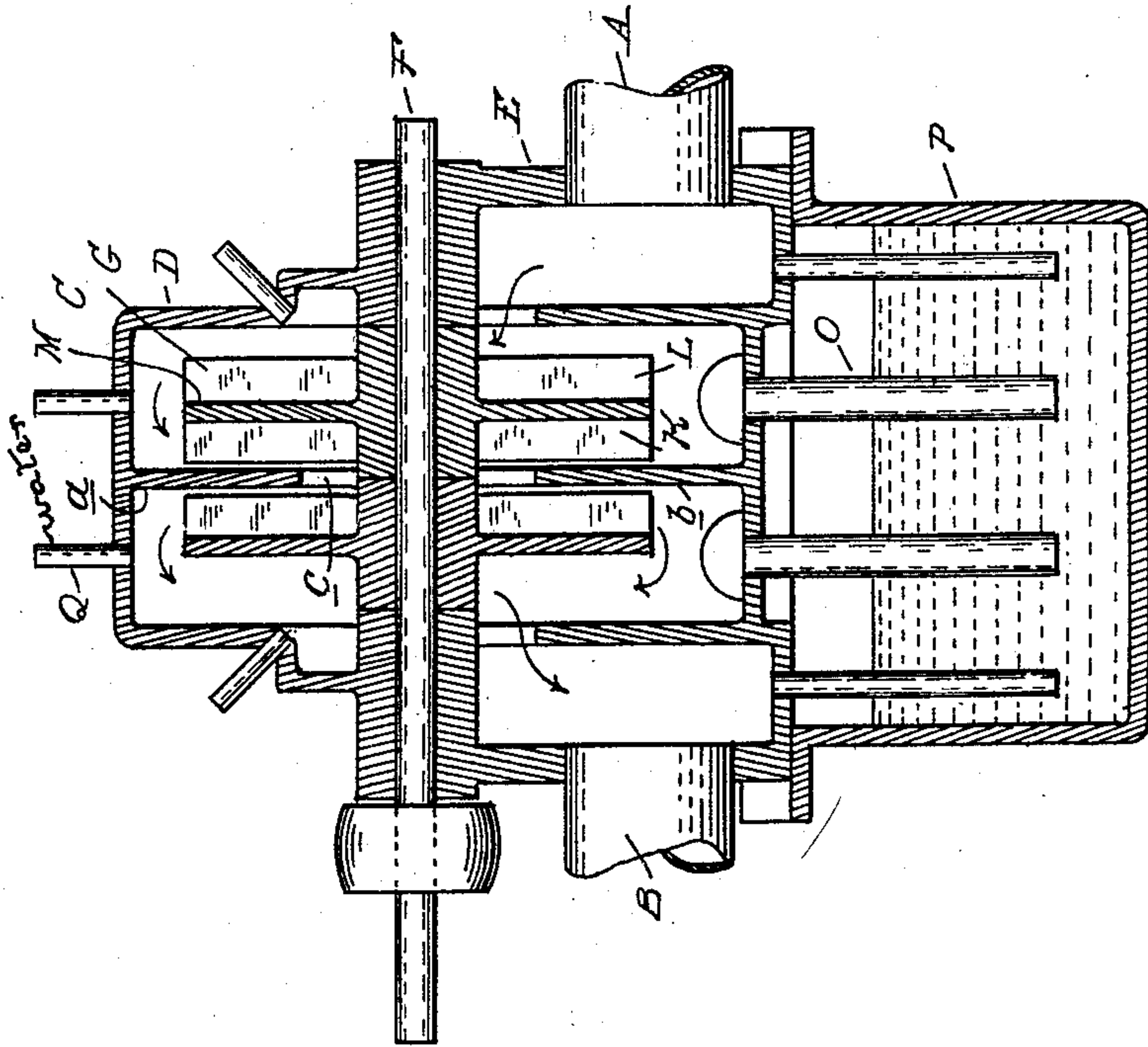


Fig. 1.



Witnesses
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UNITED STATES PATENT OFFICE

WARREN W. GORE, OF BELOIT, WISCONSIN, ASSIGNOR TO FAIRBANKS, MORSE & COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

CENTRIFUGAL TAR-EXTRACTOR.

No. 845,460.

Specification of Letters Patent.

Patented Feb. 26, 1907.

Application filed April 2, 1906. Serial No. 309,528.

To all whom it may concern:

Be it known that I, WARREN W. GORE, a citizen of the United States of America, residing at Beloit, in the county of Rock and State of Wisconsin, have invented certain new and useful Improvements in Tar-Extractors, of which the following is a specification, reference being had therein to the accompanying drawings.

The invention relates to centrifugal separators, and is more particularly designed for use in separating tar from producer-gas, so as to prevent the clogging of the valves of a gas-engine.

The invention consists in certain novel features of construction, as hereinafter set forth.

In the drawings, Figure 1 is a central longitudinal section through the extractor, and Fig. 2 is an end elevation thereof.

A is the inlet-conduit, and B the outlet, connected to opposite sides of a casing C. This casing is preferably formed of two sections D E, each of substantially semicylindrical form and provided at opposite sides with part bearings for a shaft F. The sections D E are further provided with complementary inwardly-projecting flanges *a b*, which divide the space into a plurality of compartments communicating with each other through the annular space *c* between the flanges and the shaft.

In each of the compartments of the casing is arranged a rotary member G, mounted upon the shaft F, and consisting of a disk M of greater diameter than the annular passage *c*, and radially-extending flanges K L on opposite sides of said disk extending in proximity to the walls of the compartment. The diameter of the casing is preferably somewhat greater than the diameter of the disk and wings, providing an annular space surrounding the latter, and the lower portion of the casing is apertured in each compartment and connected with depending pipes O. These pipes O extend below a water seal formed in a casing P, secured to the section E. Q are water-jets entering the several compartments of the casing and preferably arranged around the same at a plurality of points, as indicated.

With the construction as described in operation the shaft F is revolved, preferably at high speed, communicating motion to each of

the members G in the several compartments. The gas is forced through the casing by any suitable means, such as the suction of the engine, and is compelled to pass alternately outward and inward around the disks M and flanges *a b*. On account of the high velocity of the rotating members G the tarry matter and other impurities are thrown outward by centrifugal action to the walls of the casing and pass around the latter to the pipes O and then through said pipes into the water-trap. The gas is thus freed from impurities, this action being facilitated by the spray of water from each of the jets Q. The last of the members G—i. e., the one adjacent to the outlet-conduit B—is preferably formed with radial flanges or wings on its inner side only, the outer wings used on the other members being omitted. This decreases the back pressure or opposition to the inward movement of the gas due to centrifugal action, so that there is but slight difference in the pressure of the gas at the inlet and outlet.

What I claim as my invention is—

1. The combination of a casing divided into a plurality of compartments centrally communicating with each other, gas inlet and outlet connections respectively to the opposite end compartments, a plurality of water-jets in the top of each compartment, a rotary impeller in each of the compartments consisting of a disk and lateral wings extending from the hub to the periphery of said disk, the impeller in the last compartment having wings on its inner side only, and the impellers in the other compartments having wings upon both sides, said compartments having apertures in their bottoms, for the purpose described.

2. The combination with a casing having inwardly-projecting annular flanges dividing the space therein into a plurality of compartments centrally communicating with each other, inlet and outlet connections to the opposite end compartments, a rotary impeller in each of the said compartments consisting of a disk of greater diameter than the opening between compartments, whereby the gas is compelled to pass alternately outward and inward around said disks and annular flanges, and laterally-extending radial wings on the face of said disks for impelling the gas during its outward and inward movement, the wings

operating on the gas during its outward movement being in excess of those operating during its inward movement.

3. The combination with a casing having
5 inwardly-extending annular flanges dividing the space within the casing into a plurality of compartments centrally communicating with each other, inlet and outlet connections to the opposite end compartments, a shaft ex-
10 tending axially through said casing, impellers mounted on said shaft in each of said compartments consisting of a disk and later-

ally-extending radial wings on the face thereof, the disk in the compartment connecting with the outlet having wings on its inner face 15 only, and the other disks being provided with wings on both faces.

In testimony whereof I affix my signature in presence of two witnesses.

WARREN W. GORE.

Witnesses:

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