

No. 696,187.

Patented Mar. 25, 1902.

A. D. PAGE & G. WOOD.
OIL ATOMIZER AND MIXER FOR VAPOR ENGINES.

(Application filed Mar. 27, 1901.)

(No Model.)

Fig. 1.

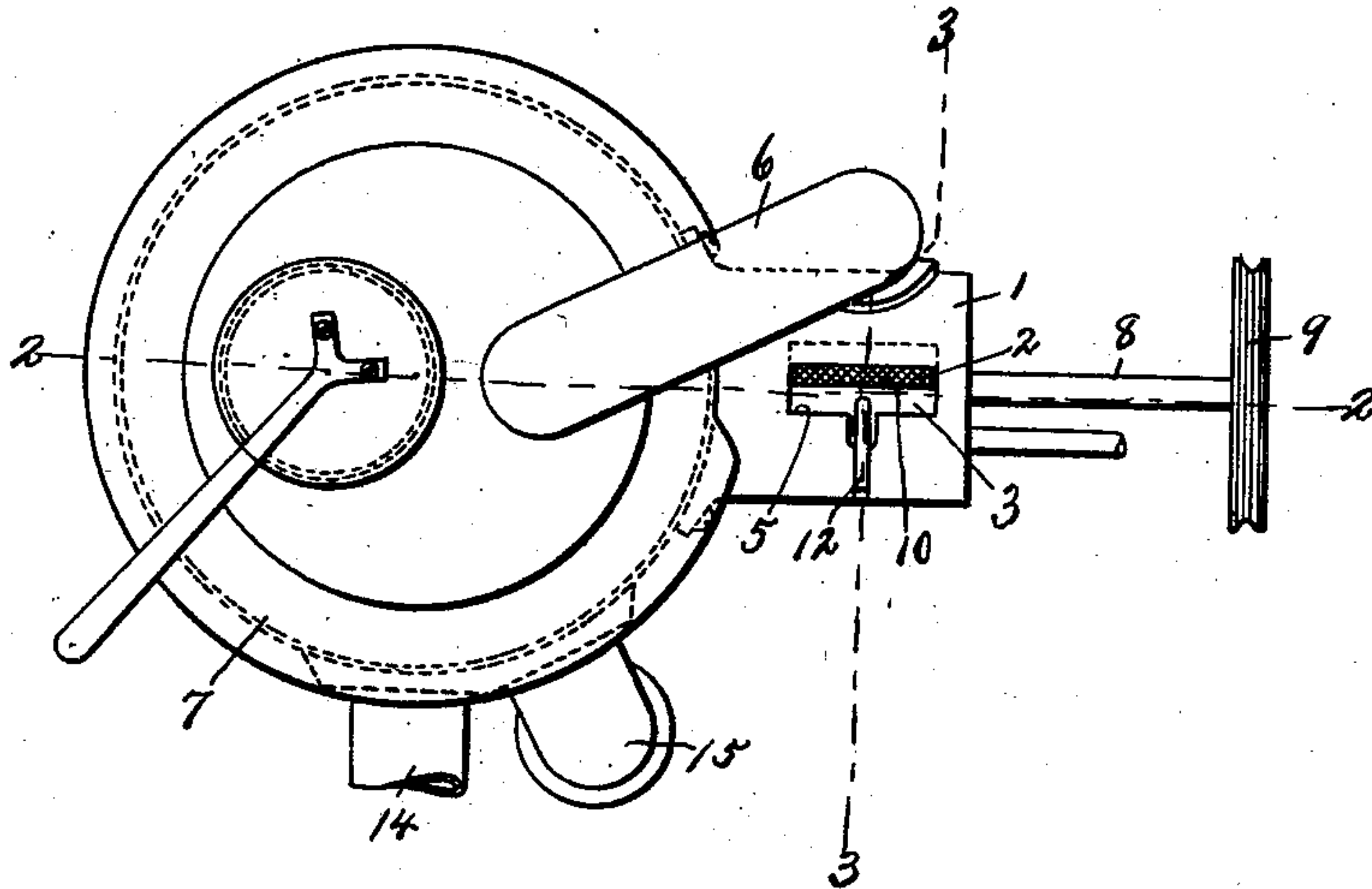


Fig. 2.

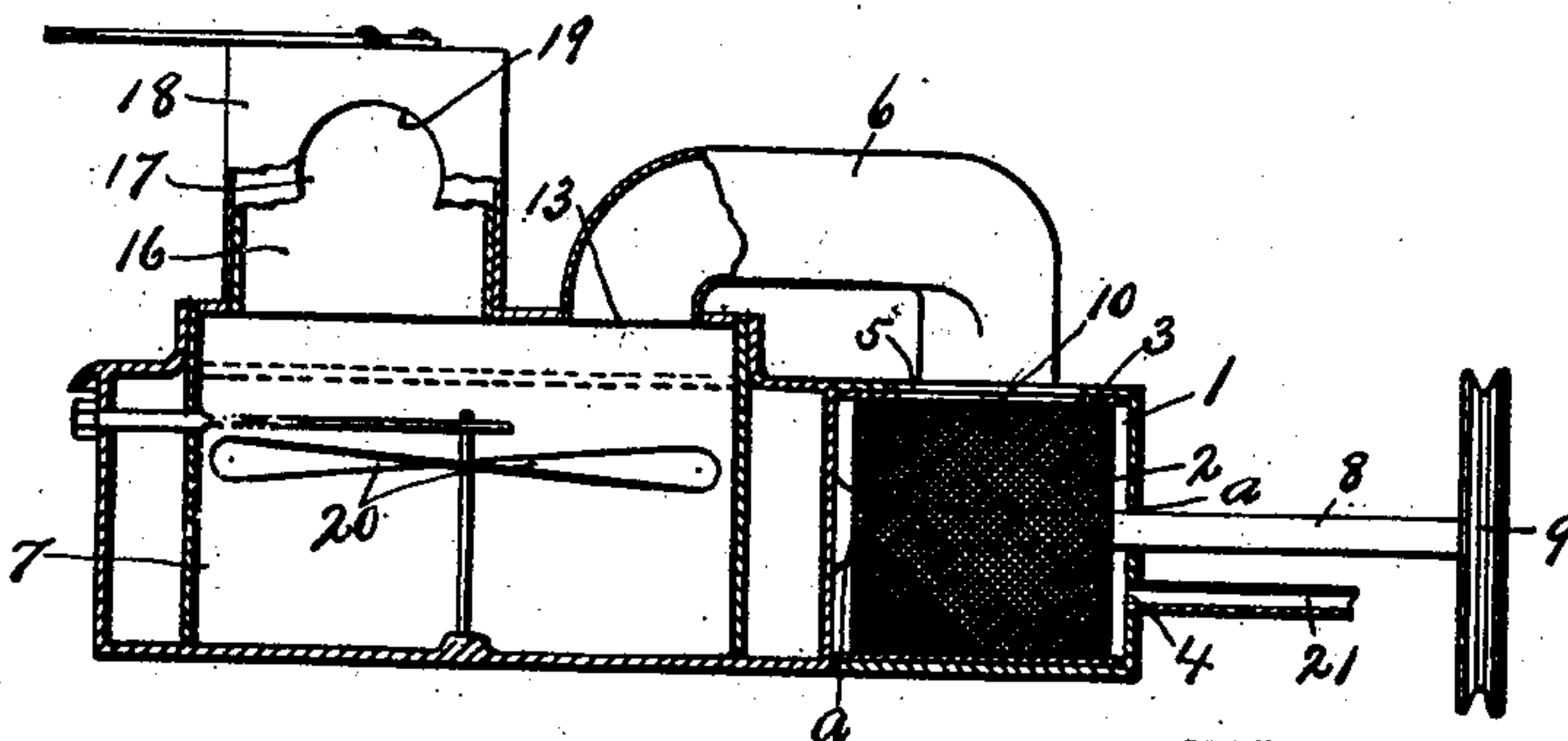


Fig. 3.

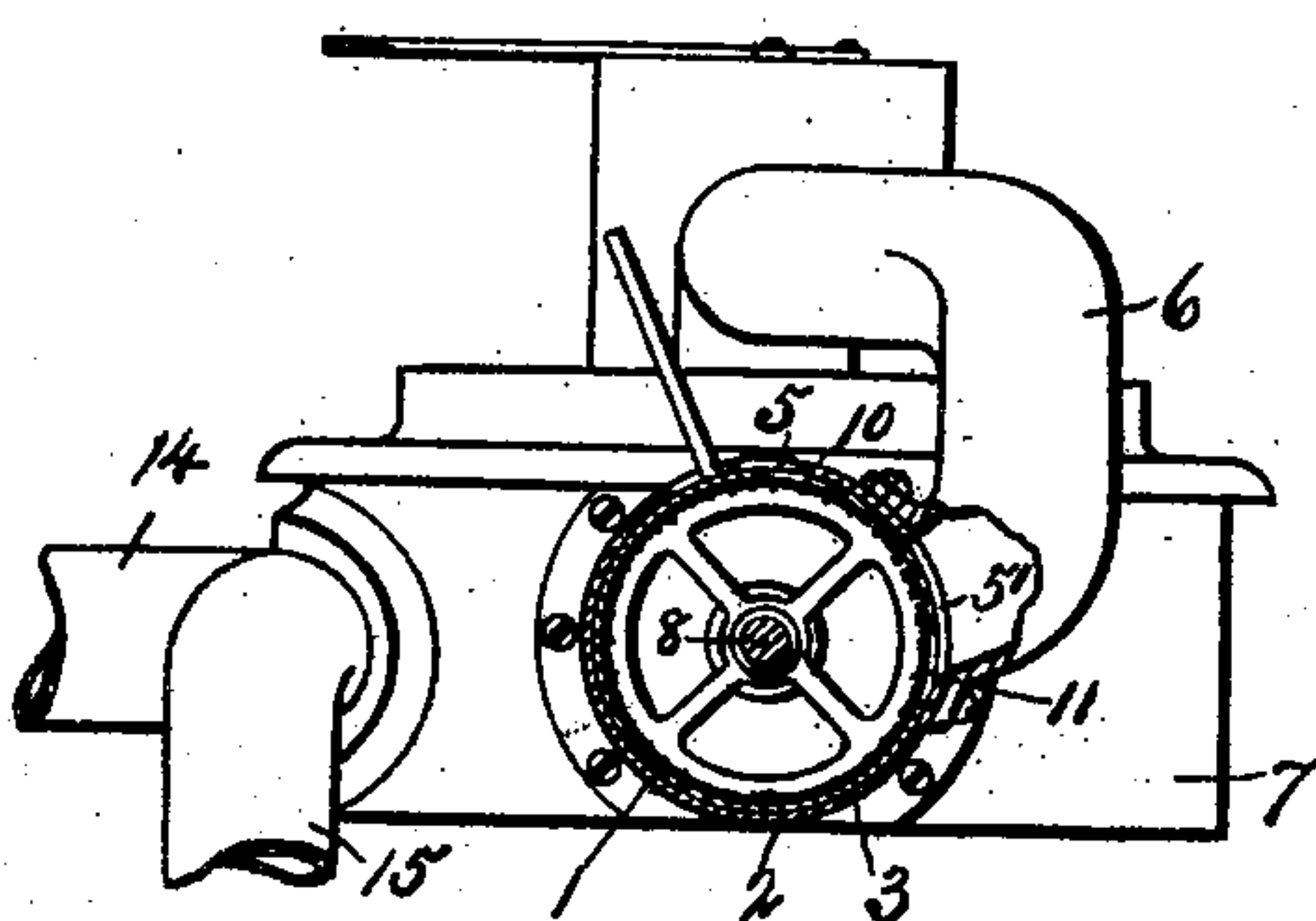


Fig. 4.

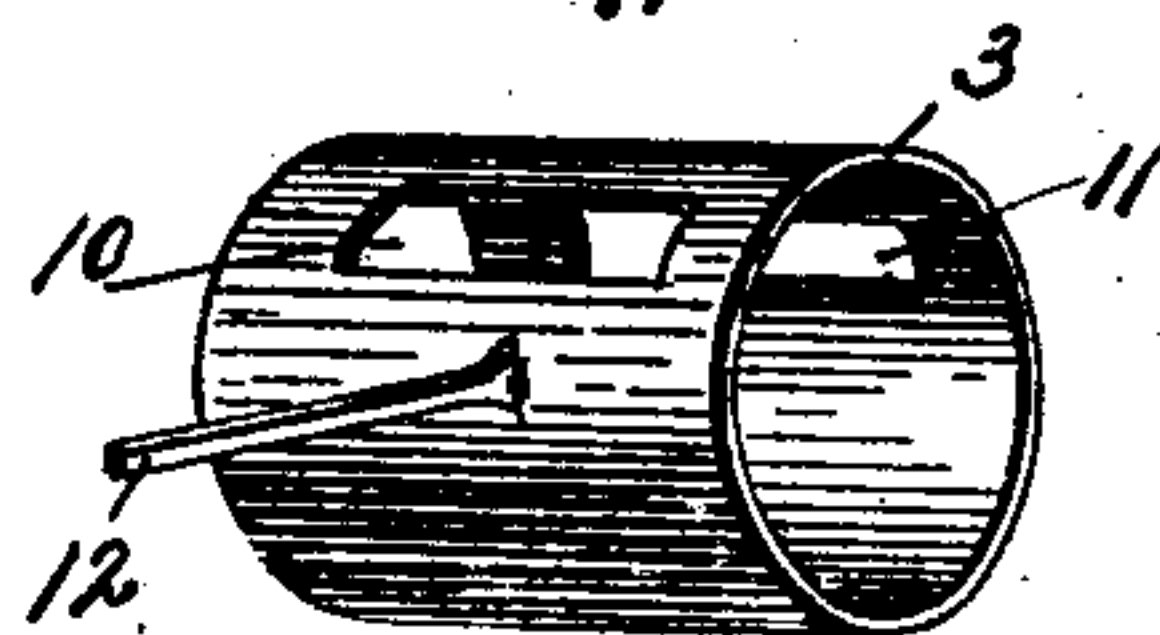
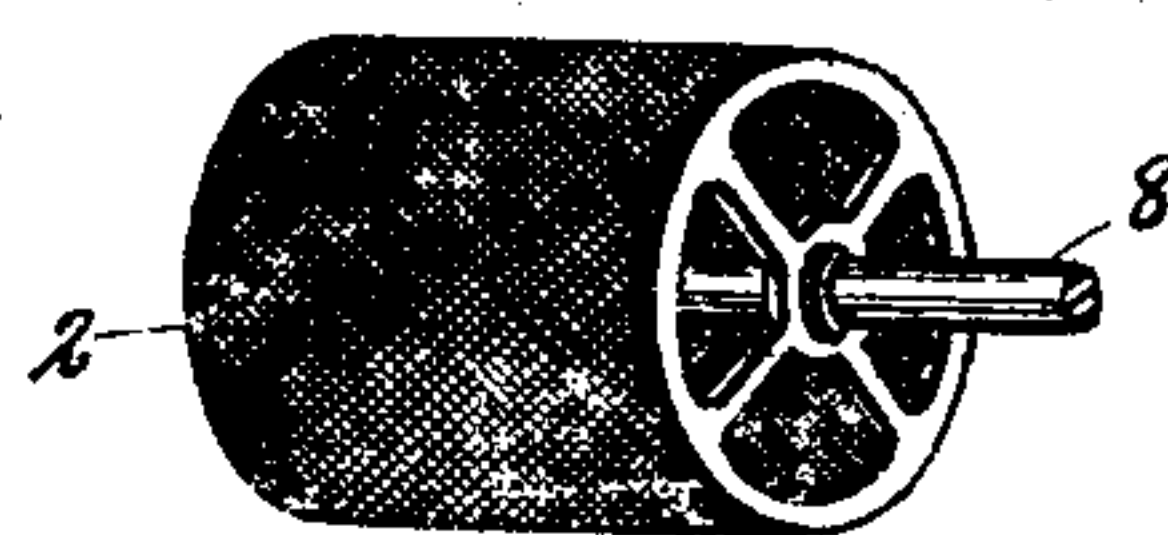


Fig. 5.



WITNESSES:

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UNITED - STATES - PATENT - OFFICE.

ALMON D. PAGE, OF HARRISON, AND GEORGE WOOD, OF NEWARK, NEW JERSEY, ASSIGNORS TO THE KEROMOTER DEVELOPEMENT COMPANY, OF NEWARK, NEW JERSEY, A CORPORATION OF NEW JERSEY.

OIL ATOMIZER AND MIXER FOR VAPOR-ENGINES.

SPECIFICATION forming part of Letters Patent No. 696,187, dated March 25, 1902.

Application filed March 27, 1901. Serial No. 53,099. (No model.)

To all whom it may concern:

Be it known that we, ALMON D. PAGE, of Harrison, Hudson county, and GEORGE WOOD, of Newark, Essex county, in the State of New Jersey, have invented new and useful Improvements in Oil Atomizers and Mixers for Vapor-Engines, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

This invention relates to improvements in oil atomizers and mixers for vapor-engines. The object of this invention is to produce a simple and practical device for breaking up the oil-globules and mixing the sprayed or atomized oil with air and then discharging the same into a suitable mixing and vaporizing chamber, from which latter chamber the oil-vapor may be drawn by the suction of the piston into the explosion-chamber of the engine.

A further object of our invention is to provide means for regulating the quantity of oil and air admitted to the vaporizing-chamber.

Referring to the drawings, Figure 1 is a top plan of a vaporizing and mixing chamber and our improved atomizer as connected thereto. Figs. 2 and 3 are sectional views taken on lines 2-2 and 3-3, Fig. 1. Fig. 4 is an isometric view showing the detached cylindrical gate for controlling the oil and air supply to the vaporizing-chamber. Fig. 5 is an isometric view of detached atomizer-screen.

Similar reference characters indicate corresponding parts in all the views.

In devices of this character it is very desirable and, in fact, important that the oil-globules be subdivided or split up into very fine particles and mixed with air before entering the explosion-chamber of the cylinder, and it has been demonstrated that far superior results are obtained by causing the oil-globules to be finely atomized or sprayed into a vaporizing and mixing chamber, the atomized oil being more readily and evenly vaporized than would be the case if the oil were admitted directly into the vaporizer or if the same were imperfectly atomized before entering the vaporizing-chamber. Our invention is designed to accomplish these re-

sults in a simple and practical manner, and consists of an oil-containing chamber 1, in which is a movable screen 2 and a rocking gate 3, said oil-containing chamber being provided with an oil-inlet 4, an air-inlet opening 5, and an oil-outlet opening 5', being connected by a conduit 6 to a suitable vaporizing and mixing chamber 7.

The oil-containing chamber 1 may be of any desired form or size, is preferably cylindrical in form, and is provided with suitable bearings *a* for receiving a rotary shaft 8, upon which is mounted a pulley 9, said pulley being adapted to be connected by a belt or other power-transmitting device to one of the rotary parts of the engine. This chamber 1 is adapted to receive a quantity of oil, which is maintained at a predetermined level in the chamber by any desired means not necessary to herein illustrate and describe, but is preferably connected to a device similar to the one set forth in our former application, Serial No. 47,699.

The screen 2, as previously stated, is movable in the chamber 1 and preferably consists of a rotary screen-shell, mounted upon the shaft 8 and having its peripheral wall movable across the outlet-opening 5 in close proximity to the walls of the chamber 1.

The gate 3, previously mentioned, may also be of any desired form or construction and usually consists of a cylindrical shell encircling the screen 2 within the chamber 1, the peripheral walls of said shell being interposed between the screen and inner face of the chamber 1, and is provided with an air-inlet opening 10 and an oil-outlet opening 11. This gate or shell is adapted to be rocked or partially rotated within the chamber 1 independently of the screen 2 and is formed with a suitable handpiece 12, projecting beyond the outer walls of the chamber 1, whereby said openings 10 and 11 may be moved into and out of registration, respectively, with the openings 5 and 5' for the purpose of varying the quantity of air admitted to the oil-chamber and also for varying the quantity of atomized oil discharged from the oil-chamber 1. It is apparent also that the openings 5 and 5'

may be entirely closed, if desired, by rotating the gate so that the openings 10 and 11 are out of registration with the openings 5 and 5'.

The vaporizing and mixing chamber 7, previously mentioned, may be of any desired form, size, or construction and is very similar to the one set forth in our former application, above referred to, being provided with an inlet-opening 13, to which the conduit 6 is connected, and with discharge-conduits 14 and 15, which are connected to the explosion-chambers of a double-cylinder engine of the type set forth in our former application, although it is evident that our device may be used in connection with a single-cylinder engine, if desired, and one of the pipes 14 or 15 dispensed with. This vaporizing-chamber is adapted to be placed in proximity to a suitable heater (not illustrated) and is provided with an air-inlet chamber 16, having an opening 17 for the admission of air to the vaporizing-chamber, the amount of air admitted through said opening 17 being regulated by a valve 18, having an opening 19, registering with the opening 17, said valve 18 having a rocking movement upon the walls of the chamber 16 for varying the position of the aperture 19 relative to the opening 17, and thereby regulating the amount of air admitted to the vaporizing-chamber.

A suitable mixer or agitator 20 is revolvably mounted in the vaporizing-chamber and is actuated by the influx of the atomized oil and the withdrawal of the vaporized oil to and from the vaporizing-chamber.

The operation of our invention is as follows: Oil is admitted to the oil-containing chamber or reservoir 1 through the opening 4 by a suitable conduit 21, which oil enters the screen-cylinder 2, so that a portion of said cylinder is always immersed in the oil, and rotary motion is transmitted to the screen by means of a pulley 9 and serves to break up the oily mass or globules into very fine particles, which percolate through the screen as said screen is rotated and pass out through the openings 11 and 5' into the conduit 6, where the atomized or sprayed oil is vaporized, it being understood that the air is admitted to the oil-chamber 1 through the openings 5 and 10 simultaneously with the admission of oil and that the mixed oil and air passes out through the openings 11 and 5' through said conduit 6 to the chamber 7, where the oil is vaporized by any suitable burner which is arranged to heat the vaporizing-chamber 7, and as the vaporized oil is drawn from the vaporizing-chamber by the moving piston of the engine in a manner well known and not here necessary to illustrate or describe it is evident that the mixer 20 will be rotated by the influx and exit of the oil and oil-vapor to and from the chamber 7.

The operation of our invention will now be readily understood upon reference to the foregoing description and the accompanying drawings, and it will be noted that some

change may be made in the detail construction and arrangement of the component parts of this invention without departing from the spirit thereof—as, for instance, the gate 3 may be dispensed with, and the screen-cylinder may be of sufficient size to rotate in closer proximity to the openings 5 and 5', and that when said gate is used it need not necessarily be a cylinder and may consist of a segmental plate provided with either an air-inlet and an oil-opening or with a single opening for permitting the escape of the oil through the conduit 6. It is further evident that, if desired, the conduit 6 may be connected directly to the explosion-chamber of the engine without the interposition of a vaporizer.

Having thus described our invention, what we claim, and desire to secure by Letters Patent, is—

1. An oil atomizer and mixer for vapor-engines comprising an oil-containing receptacle having an air inlet and an outlet, a gate movable across the outlet and a screen within the gate and movable across the outlet for the purpose set forth.

2. An oil atomizer and mixer for vapor-engines comprising a rotary cylindrical screen, a conduit for feeding oil into the screen-cylinder, a cylindrical gate inclosing the screen and provided with an aperture, and an additional conduit communicating with said aperture, said second conduit being adapted to be connected to the piston-chamber of the engine.

3. The combination with an oil-vaporizing chamber, a rotary mixer or agitator in the chamber, an oil-receiving chamber having an outlet-opening communicating with the former chamber, a gate movable across the outlet-opening for the purpose set forth, and a movable screen within the gate.

4. The combination with an oil-containing chamber having an outlet, a movable gate having an aperture registered with the outlet, and a screen within the gate and registered with the outlet and aperture.

5. The combination with an oil-containing chamber having an outlet, a gate having an aperture movable into and out of registration with the outlet and a rotary screen within the gate and movable across said aperture for the purpose set forth.

6. The combination with an oil-containing chamber having an air-inlet and a vapor-outlet, a gate having apertures movable into and out of registration with said inlet and outlet, and a movable screen within the gate and registered with said apertures for the purpose described.

7. A cylindrical oil-containing chamber having an air-inlet and a vapor-outlet, a cylindrical gate within the chamber and provided with apertures movable into and out of registration with the inlet and outlet and a rotary cylindrical screen within the gate for the purpose described.

8. The combination with an oil-vaporizing

chamber, an oil-reservoir having an air-inlet
and an outlet the outlet being connected to
the vaporizing - chamber, a movable cylin-
drical gate having apertures movable into
5 and out of registration with the inlet and out-
let and a rotary cylindrical screen movable in
the chamber for the purpose set forth.

In witness whereof we have hereunto set
our hands this 21st day of March, 1901.

ALMON D. PAGE.
GEORGE WOOD.

Witnesses:

GEORGE W. DUNN,
WM. A. JONES.