

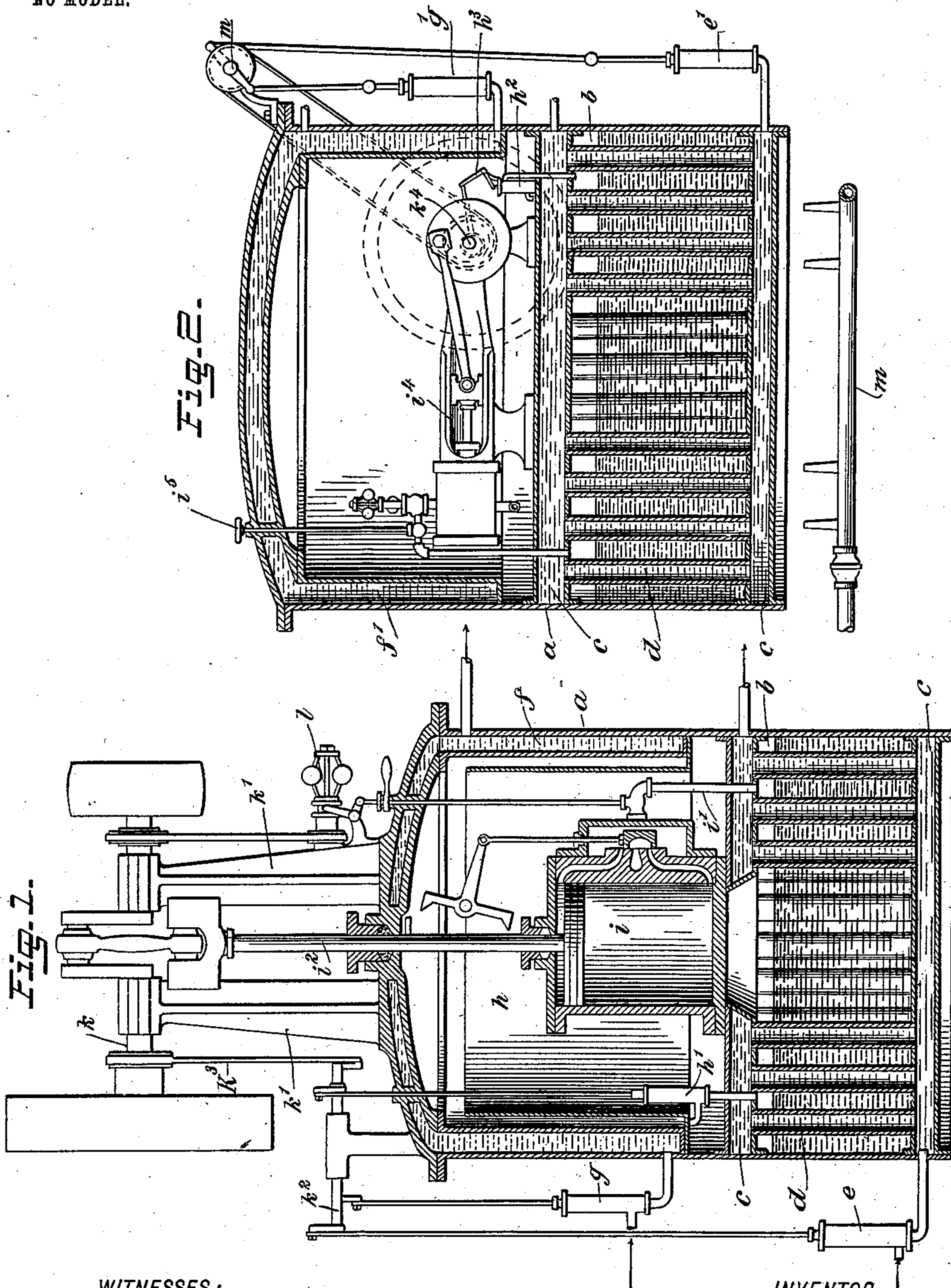
No. 722,948.

PATENTED MAR. 17, 1903.

C. B. COX.
MOTOR.

APPLICATION FILED DEC. 26, 1901.

NO MODEL.



WITNESSES:

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CHARLES B. COX, OF NEW YORK, N. Y.

MOTOR.

SPECIFICATION forming part of Letters Patent No. 722,948, dated March 17, 1903.

Application filed December 26, 1901. Serial No. 87,388. (No model.)

To all whom it may concern:

Be it known that I, CHARLES B. COX, a citizen of the United States, and a resident of the city of New York, borough of Manhattan, in the county and State of New York, have invented a new and Improved Motor, of which the following is a full, clear, and exact description.

This invention relates to a motor adapted to be actuated by a vapor produced from a highly volatile liquid, such as ether.

The invention involves certain novel features of construction and arrangement of parts, as will be hereinafter fully described.

This specification is a specific description of two forms of the invention, while the claims are definitions of the actual scope thereof.

Reference is to be had to the accompanying drawings, forming part of this specification, in which similar characters of reference indicate corresponding parts in both views.

Figure 1 is a sectional view of the invention, and Fig. 2 is a sectional elevation of a slight modification.

Referring to Fig. 1, *a* indicates a casing in which is formed a chamber *b* for the ether or other volatile liquid employed, this chamber being located at the lower part of the casing and having a water-chamber *c* above and below it, the upper and lower parts of the water-chamber being connected together by circulating-tubes *d*. Hot water is adapted to be circulated through this chamber and through the tubes by a pump *e*. In the upper part of the casing *a* is located an annular chamber *f*, which extends around the inner sides of the casing and beneath the top thereof in substantially the form of a water-jacket. This chamber is adapted to have cold water circulated through it by a pump *g*. Extending around the inner sides of the cold-water chamber or jacket *f* is an annular shield *h*, which forms a space or chamber between it and the walls of the chamber or jacket *f*, this chamber of the shield *h* serving as a condensing-chamber for the vapors which are discharged in the upper part of the casing *a*.

i indicates the motor proper, which may be of any form desired, this motor being situated in the casing *a* above the hot-water chamber *c* and being supplied with the vapor from the chamber *b* by means of a pipe *i'*. The gener-

ation of vapor in the chamber *b* is accelerated by the hot water surrounding it, and this vapor passes to the motor *i* to drive the same. The exhaust-vapor from the motor passes into the upper part of the casing *a* within the shield *h* and rises above the same. As it comes in contact with the cold walls of the chamber *f* the vapor is condensed and falls down into the space between this chamber and the shield *h*. The vapor thus condensed is forced back in liquid form into the chamber *b* by means of a pump *h'*. The rod *i²* of the motor *i* passes out through the top of the casing *a* and is connected in any suitable manner with the motor-shaft *k*. This shaft is supported on top of the casing *a* by pedestals *k'*. The apparatus may be fitted with a governor *l*, driven from the shaft *k* and regulating the passage of the vapor through the pipe *i*. The pumps *e*, *g*, and *h'* may be driven from a counter-shaft *k²*, connected by a link and eccentric *k³*, or in any other desired manner, with the shaft *k*.

Fig. 2 illustrates a gas-burner *m*, arranged under the hot-water chamber *c* to assist in heating the water therein. This burner *m* may be used or not, as desired. Fig. 2 shows a further modification, in which the water-jacket *f'* extends completely over the top of the casing. The engine *i⁴* is of the horizontal type and is located wholly within the condenser, except that its shaft *k⁴* extends outside to transmit the power. The collecting-shield *h* of Fig. 1 may or may not be employed. In Fig. 2 it is shown as omitted. The pumps *g'* and *e'* are driven from a counter-shaft *m*, and the pump *h²* is driven by a suitable gear *h³* inside of the condenser. The stem *i⁵* of the throttle-valve extends outside of the casing to permit easy operation of the valve. In other respects the construction and operation are the same as in Fig. 1.

I have paid no special attention in this specification to the valves and valve-gear of the motor itself, since these may be arranged in any convenient and desired manner and form no part of my invention. The arrangement illustrated in the drawings as a sample will be obvious to all skilled mechanics.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. A motor, having an exterior casing forming a condenser, walls forming a chamber adjacent to the condenser for a volatile liquid, means for vaporizing the liquid, a motor proper located in the said condenser and having a part running outside thereof to transmit the force of the motor, and means for conducting the liquid of condensation back from the condenser to the said chamber for the volatile liquid.
2. A motor having a main casing, walls forming a chamber in the lower part thereof for containing volatile liquid, means for heating said chamber, walls forming a cooling-chamber in the upper part of the casing, a motor proper mounted in the casing above the chamber for containing the volatile liquid and run from the vapor therefrom, said motor having a part extending outside of the casing to transmit the force thereof, the motor exhausting into the cooling-chamber, and means for returning the liquid of condensation from the cooling-chamber to the chamber for the volatile liquid.
3. A motor having a main casing, walls forming a chamber in the lower part thereof for containing a volatile liquid, means for heating said chamber, walls forming a cooling-chamber in the upper part of the casing, a motor proper mounted in the casing above the chamber for containing the volatile liquid and run by the vapor therefrom, said motor having a part extending outside of the casing to transmit the force thereof, the motor exhausting into the cooling-chamber, a shield adjacent to the walls of the cooling-chamber to form a condensing-chamber, said chamber being open at the top, and means for returning the liquid of condensation from the condensing-chamber to the chamber for the volatile liquid.
4. A motor having a main or exterior casing, walls forming a chamber in the lower part of the casing for containing a volatile liquid, means for heating said liquid, a motor proper mounted in the casing above the chamber for the volatile liquid and run by the vapor thereof, said motor having a part projecting out of the casing to transmit the force thereof, the motor exhausting into the upper part of the casing, and means for returning the liquid of condensation into the chamber for the volatile liquid.
5. A motor having a main or exterior casing, walls forming a chamber in the lower part thereof for containing a volatile liquid, means for heating said liquid, a motor mounted in the casing above the chamber for the volatile liquid and run by the vapor thereof, said motor having a part projecting beyond the casing to transmit the force of the motor, and the motor exhausting into the casing, a shield arranged in the upper part of the casing adjacent to the walls thereof to form a condensing-chamber, said chamber receiving the exhausted vapor, and means for returning the liquid of condensation from the condensing-chamber to the chamber for the volatile liquid.
- In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.
- CHARLES B. COX.
- Witnesses:
I. B. OWENS,
JNO. M. RITTER.