

(No Model.)

R. E. WILLIAMS.
CONDENSER FOR STEAM ENGINES.

No. 255,372.

Patented Mar. 21, 1882.

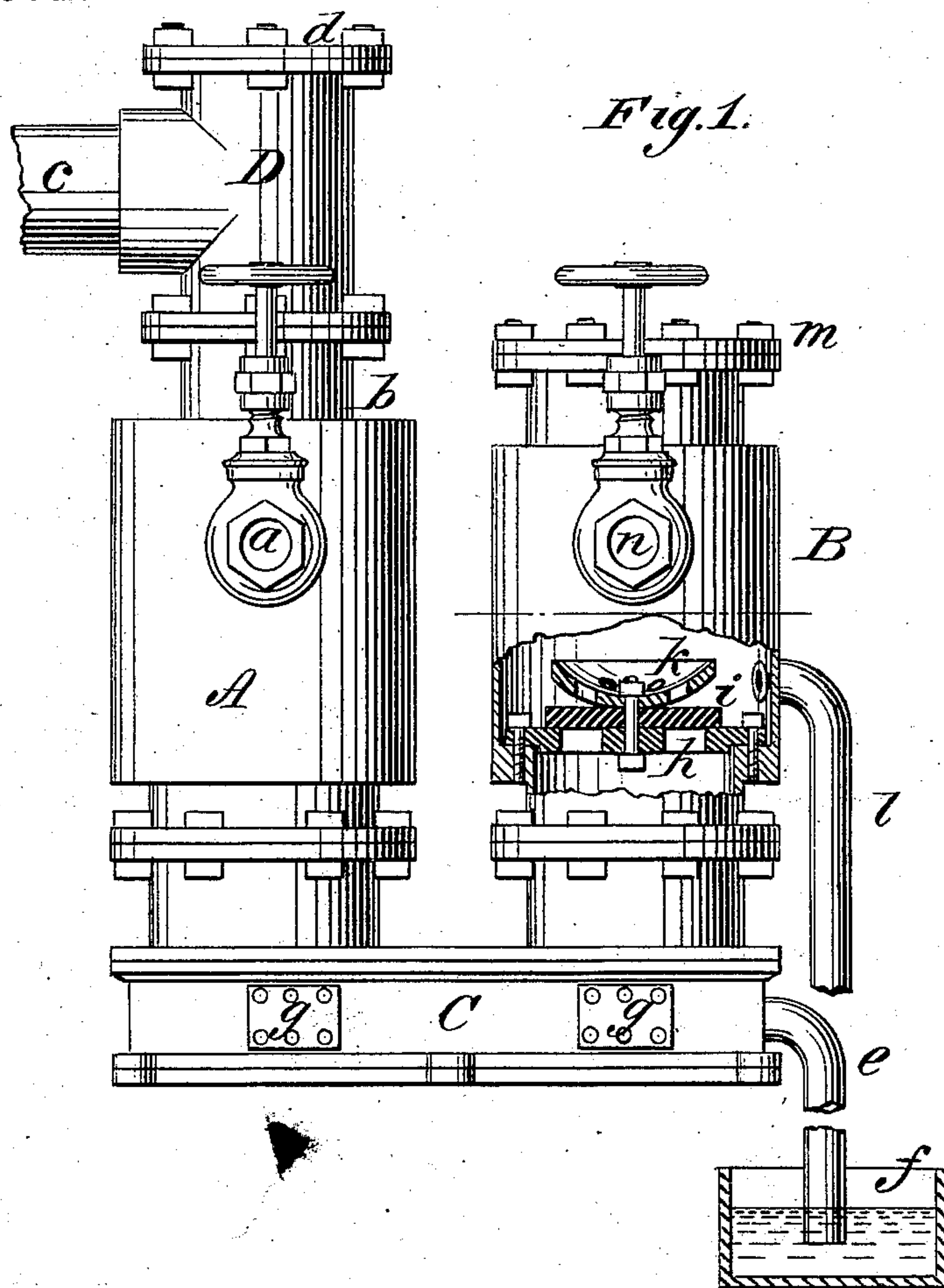
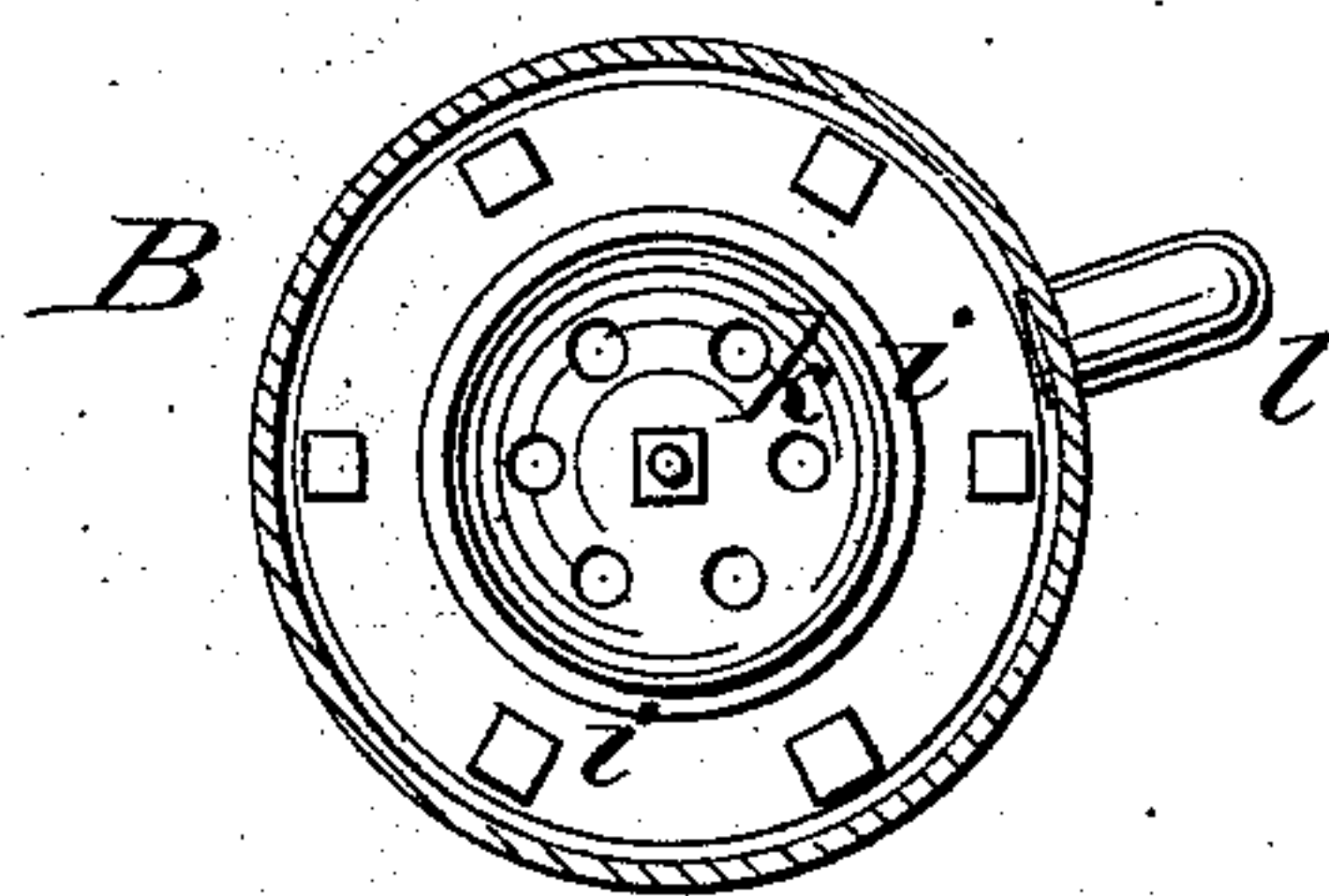


Fig. 2.



WITNESSES :

Donn Twitchell.
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UNITED STATES PATENT OFFICE.

RICHARD E. WILLIAMS, OF GRASS VALLEY, CALIFORNIA.

CONDENSER FOR STEAM-ENGINES.

SPECIFICATION forming part of Letters Patent No. 255,372, dated March 21, 1882.

Application filed December 23, 1881. (No model.)

To all whom it may concern:

Be it known that I, RICHARD E. WILLIAMS, of Grass Valley, in the county of Nevada and State of California, have invented certain new and useful Improvements in Condensers for Steam-Engines, of which the following is a full, clear, and exact description.

My invention consists in certain improvements in condensers, having the object to maintain the vacuum and facilitate access to the interior for cleaning, as hereinafter described and claimed.

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

In the drawings, Figure 1 is a side elevation of the condenser with the air-chamber broken open, and Fig. 2 is a horizontal section of the air-chamber.

A is the water-cylinder, and B the air-chamber, which is also of cylindrical form, and both cylinders are secured in an upright position on the hollow base C. The cylinder A is provided with a pipe, *a*, for supply of cold water, the pipe having a valve for regulating the supply, and on its upper end the cylinder A is formed with a short tube, *b*, having flanges, to which is bolted a T-coupling, D, for connection of the exhaust-pipe *c* from the engine. On the upper end of the T is attached a cap, *d*. The object of this construction is to save stopping the engine for any length of time when the condenser requires repairs or cleaning. In that case cap *d* will be removed, a pipe secured in its place, and a plate placed between the T and the tube *b*, and the engine may then be run at high pressure.

From the end of base C a discharge-pipe, *e*, extends into a tank, *f*, that contains water, to prevent air entering the base. On the sides of the base are plates *g*, covering man-holes, used for cleaning out the base.

In the air-chamber B is fixed a perforated plate, *h*, on which is secured a disk-valve, *i*, of

flexible material, and above the valve is a guard, *k*, that limits the movement of the valve in opening.

l is a pipe for discharge of air from cylinder B, and *m* is a removable cap on the cylinder to allow access to the valve. When the exhaust-steam enters the condenser the shock will raise the valve *i*, and the air in the condenser will pass to chamber B and out by pipe *l*, thereby insuring an instantaneous vacuum, and at all times, when the engine is at work, the air that may be in the condenser or that may come in with the exhaust-steam will be forced out, and the closure of valve *i* on its seat will prevent any return. Water rising with the air will run out by pipe *l*, and I prefer to set pipe *l* a little above the valve, so as to keep the valve covered with water to render it airtight.

At *n* is a pipe and valve for supplying a jet of water to keep valve *i* covered and the chamber B cooled.

This condenser is especially useful when it is necessary to use muddy water.

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

1. In a condenser, the combination, with air-chamber B, provided with the valve *i*, of the pipe *l*, entering the chamber a little above the said valve, substantially as and for the purpose set forth.

2. The air-chamber B, provided with valve *i* and pipe *l*, in combination with base C and condensing-cylinder A, substantially as shown and described.

3. The condensing apparatus consisting of cylinder A, water-supply pipe *a*, hollow base C, air-chamber B, provided with valve *i*, and discharge-pipe *l*, substantially as shown and described, combined for operation as set forth.

RICHARD ENELBY WILLIAMS.

Witnesses:

JOHN PALAMOUNTAIN,
ROBERT JOHNS.