

(No. Model.)

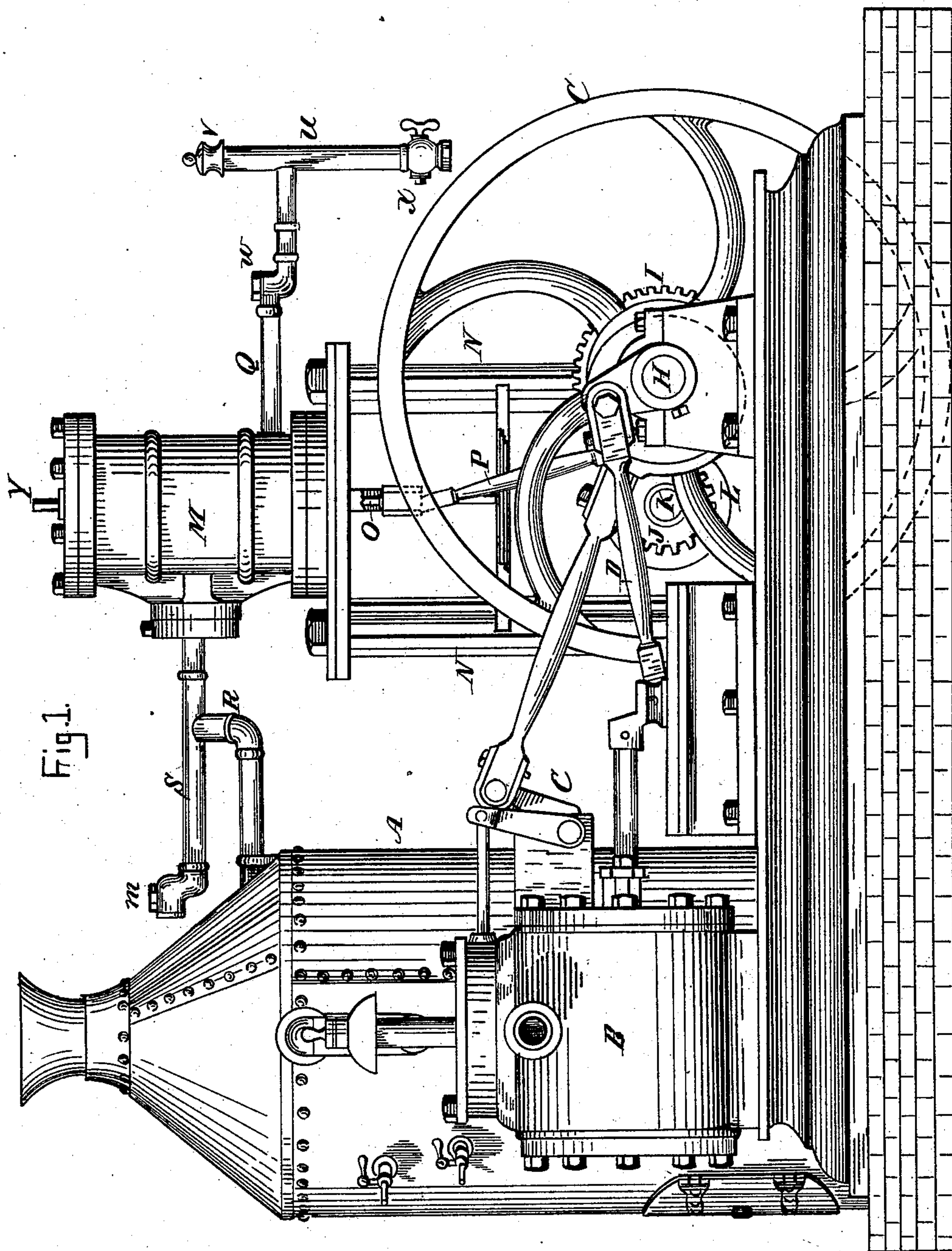
2 Sheets—Sheet 1.

F. McMELLON.

STEAM AND AIR ENGINE.

No. 273,376.

Patented Mar. 6, 1883.



Witnesses:
W. E. Remick.
E. C. Heath

Inventor:
Frederick McMillon
Per C. C. Shaw
Atty.

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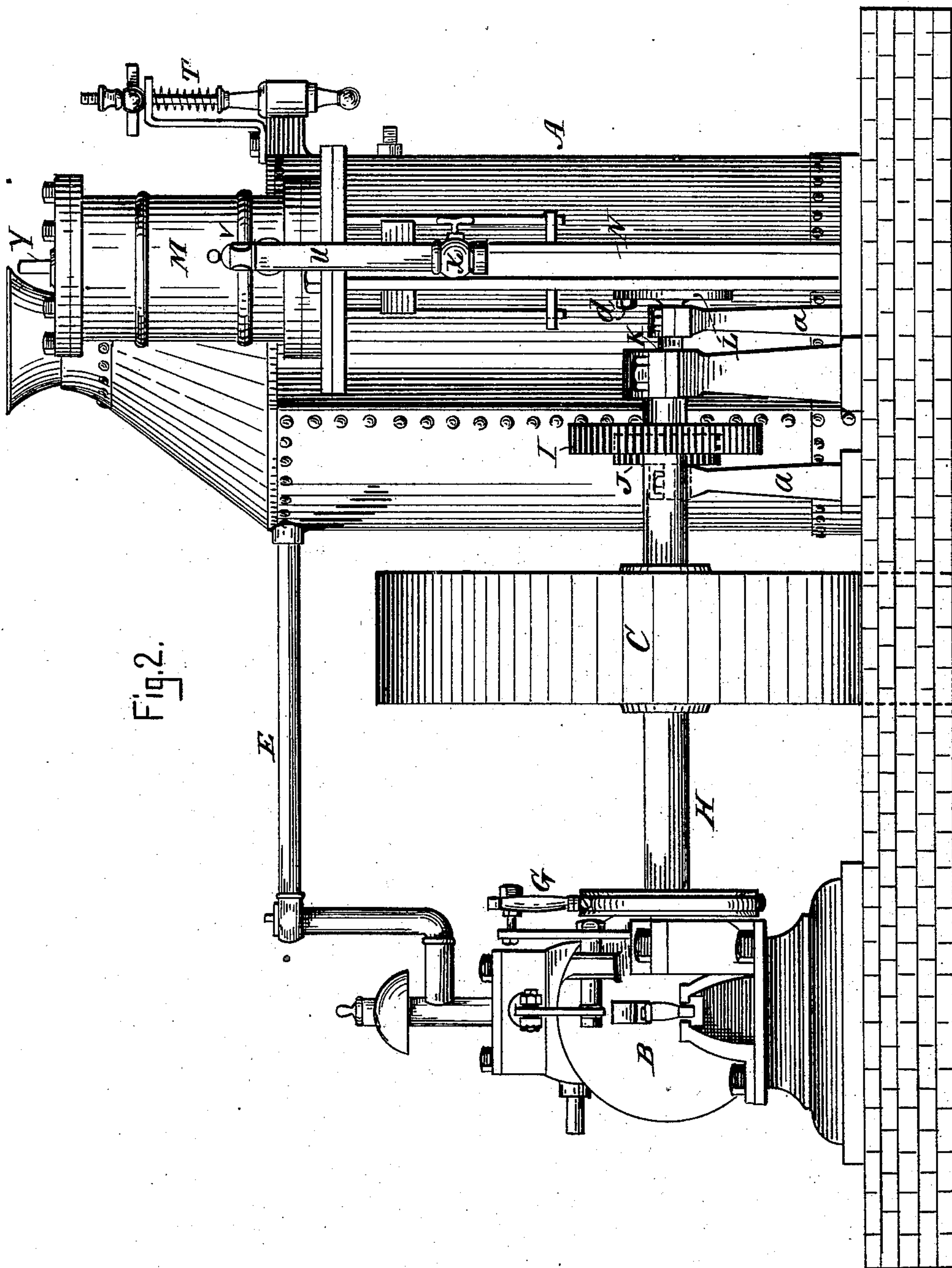
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Frederick M. Ellman

Per C.A. Shaw

Attg

UNITED STATES PATENT OFFICE.

FREDERICK McMELLON, OF BOSTON, ASSIGNOR OF ONE-THIRD TO ROBERT G. PARKER, OF MANSFIELD, MASSACHUSETTS.

STEAM AND AIR ENGINE.

SPECIFICATION forming part of Letters Patent No. 273,376, dated March 6, 1883.

Application filed October 11, 1882. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK McMELLON, of Boston, in the county of Suffolk, State of Massachusetts, have invented a certain new and useful Improvement in Steam and Air Engines, of which the following is a description, sufficiently full, clear, and exact to enable any person skilled in the art or science to which said invention appertains to make and use the same, reference being had to the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a side, and Fig. 2 an end, elevation.

Like letters of reference indicate corresponding parts in the different figures of the drawings.

My invention relates to that class of steam-engines in which air is used as an auxiliary motor; and it consists in a novel construction and arrangement of the parts, as hereinafter more fully set forth and claimed, by which a new and more effective device of this character is produced than is now in ordinary use.

In the drawings, A represents the boiler; B, the cylinder; C, the balance or driving wheel; D, the pitman; E, the steam-pipe, connecting the boiler and engine; and G, the cut-off. As these parts, with their necessary connecting and operative mechanism, constitute the ordinary steam-engine, it is not deemed essential to give a more explicit description of the same.

Disposed on the shaft H of the wheel C there is a gear, I, which intermeshes with the gear J, mounted on the horizontal shaft K, supported in the vertical standards or bearings *a a*, and at the outer end of the shaft K there is a face-plate, L, provided with the crank-pin *d*.

A pump, M, provided with the vertical piston-rod O, is mounted on the upright framework N, the piston being connected with the pin *d* by means of the pitman-rod P. The pump is provided with an induction-pipe, Q, an eduction-pipe, R, and proper valves (not shown) to constitute it either an air or water pump, as occasion may require. The pipe R leads directly from the pump to the boiler A, entering the same above the crown-sheet, and is provided with a branch pipe, S, and relief or escape valve *m*.

The pipe Q is provided with the T-pipe U, connecting with a water-tank, (not shown,) air-valve *v*, and stop-cock *x*.

From the foregoing description it will be understood that the pump M is designed to force either air or water into the boiler A, as desired.

When the pump is used for air the stop-cock *x* is closed to prevent the entrance of water, the air entering the lower part of the pump, beneath the piston, through the valve *v*, and the upper part of the pump, above the piston, through a valve, the stem of which is seen at Y, being forced by the pump into the boiler through the pipe R. When the pump is used for water the valve *x* is opened and the valves *v* closed, the water being also forced into the boiler through the pipe R. A check-valve, *w*, prevents a reverse flow of either air or water through the pipe Q on the downward stroke of the pump-piston, and the pressure or escape valve *m* is designed to be so regulated as to discharge water when the pressure becomes too great in the boiler, or when it is full. Air forced into the boiler, as described, is immediately expanded by the heat, and, passing through the pipe E, acts as a powerful auxiliary to the steam in running the engine. It also maintains its pressure much longer than the steam, thereby enabling the engine to be started up after the steam is down.

Having thus explained my improvement, what I claim is—

In a device substantially such as described, the combination of the following instrumentalities, to wit: a boiler for generating steam, a pump adapted to force either air or water into the boiler, and an engine for operating the pump, the engine being connected to the pump by suitable operative mechanism, and to the boiler by an induction steam-pipe, and the pump connected to the boiler by the pipe provided with the branch S, having an automatic relief or escape valve, *m*, substantially as shown and described.

FREDERICK McMELLON.

Witnesses:

C. A. SHAW,
JAMES M. PALMER.