M. DAVISON.
Steam-Engine.

No. 218,943. Patented Aug. 26, 1879.

Fig. 1.

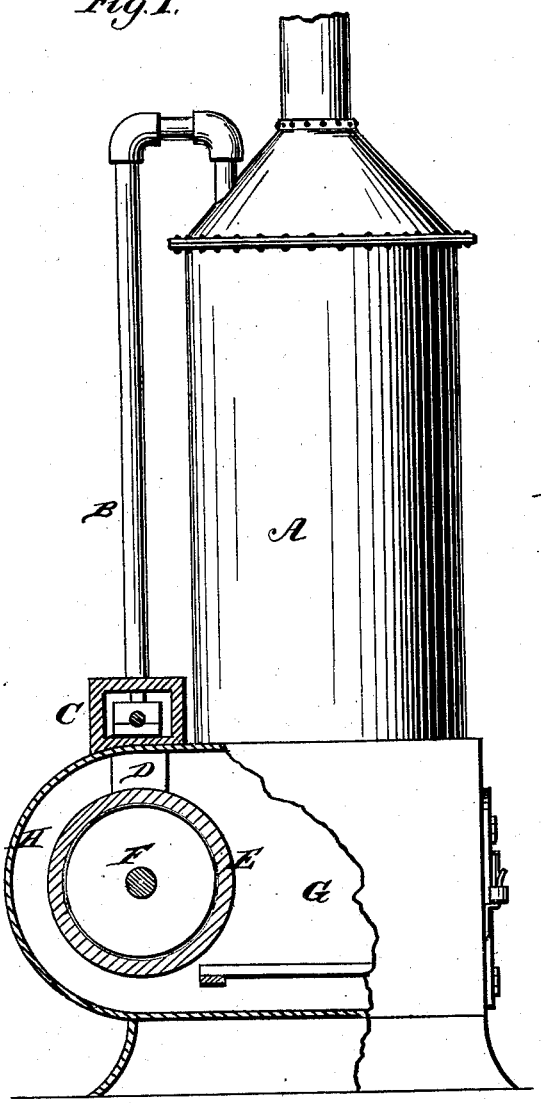
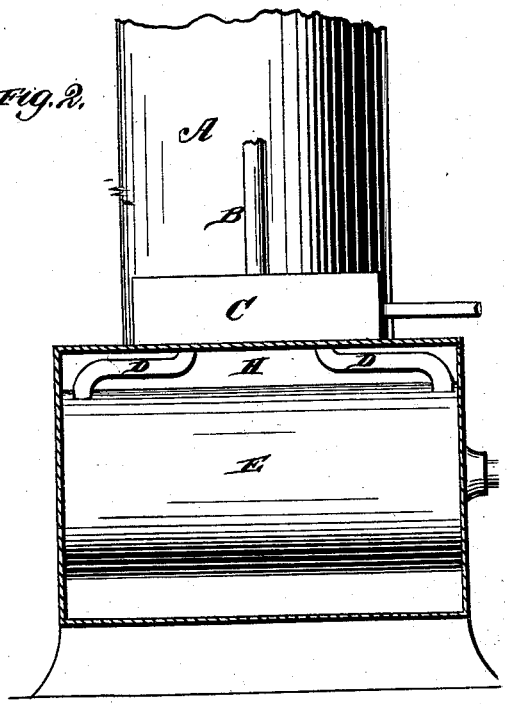


Fig. 2.



WITNESSES
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UNITED STATES PATENT OFFICE.

MALON DAVISON, OF CROTON, IOWA.

IMPROVEMENT IN STEAM-ENGINES.

Specification forming part of Letters Patent No. **218,943**, dated August 26, 1879; application filed July 19, 1879.

To all whom it may concern:

Be it known that I, MALON DAVISON, of Croton, in the county of Lee and State of Iowa, have invented certain new and useful Improvements in Steam-Engines; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawings is a representation of a side elevation, partly in section, and Fig. 2 is a vertical sectional view.

My invention relates to steam-engines; and it has for its object to obtain an effective pressure of steam with economy of space and fuel. This I accomplish by generating steam in a small tubular boiler, or boiler of other construction, and admitting the steam through a steam-pipe from the boiler by means of a throttle-valve to a slide-valve, gear, or other valve arrangement, and thence alternately through induction-passages into a hot cylinder, the cylinder being placed within a furnace and previously heated to such a temperature as to produce a great expansion of the steam. The steam so admitted within the cylinder or piston-chamber being suddenly expanded in volume its force is at once applied to move the piston to the end of its stroke, and then escaping, thus starting and impelling the apparatus of the engine and valve arrangement, so that steam is, as described, admitted into the cylinder by another induction-passage, and its force applied to the other face of the piston to move the same back to the end of its return-stroke, and so continuing to operate as described.

The expansion of the steam within the cylinder occurring at a time when the boiler and cylinder are in communication, the steam so expanded cannot exceed—though that portion is greatly augmented in volume—the pressure of the steam from the boiler.

It is essential, of course, that the metals used for, in, and about the cylinder be of such combination and adaptability as to afford equal and uniform expansion of the metals so used, and to prevent severe friction.

The furnace or fire-box is so constructed as to allow the fire and other products of combustion to pass around, or partly around, the cylinder, or the oven or envelope in which the cylinder is inclosed, and through the tubes or flues in the boiler, and thence by a chimney into the open air.

In the drawings, A represents the boiler. B is the steam-pipe connecting the boiler with the valve-gear C. D D are the induction-passages. E is the cylinder; F, the piston; G, the furnace; and H, the oven or envelope around the cylinder. I do, however, not confine myself to the precise form and arrangement of these parts, as they may be varied under different circumstances.

My invention is equally applicable to and may be used in the operation of engines impelled by gas, air, or any expansible vapor; and to avoid too great a pressure in the cylinder at any time a balanced slide-valve or a valve held in place by spring or other suitable device weighted to a given pressure is arranged at each end of the exhaust or side pipe to permit the discharge of the superfluous steam.

I am aware that cylinders have been surrounded by a jacket for hot air, and I do not broadly claim the same.

I claim—

The cylinder E, provided with the ports D D, and a surrounding jacket, H, in combination with the furnace, boiler, and valve, all constructed and arranged substantially as shown, and herein set forth.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

MALON DAVISON.

Witnesses:

J. W. HANCOCK,

ELR. WARMAN.