2 Sheets--Sheet 2.

J. ENRIGHT.

Boiler for Portable Engines.

No. 165,810. Patented July 20, 1875.

Fig. 4.

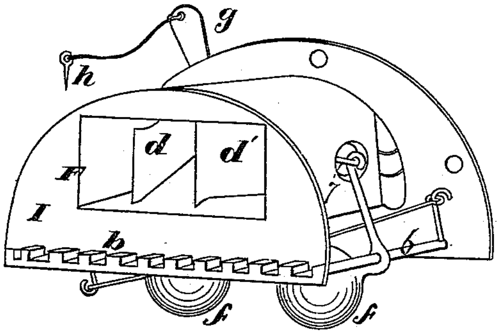
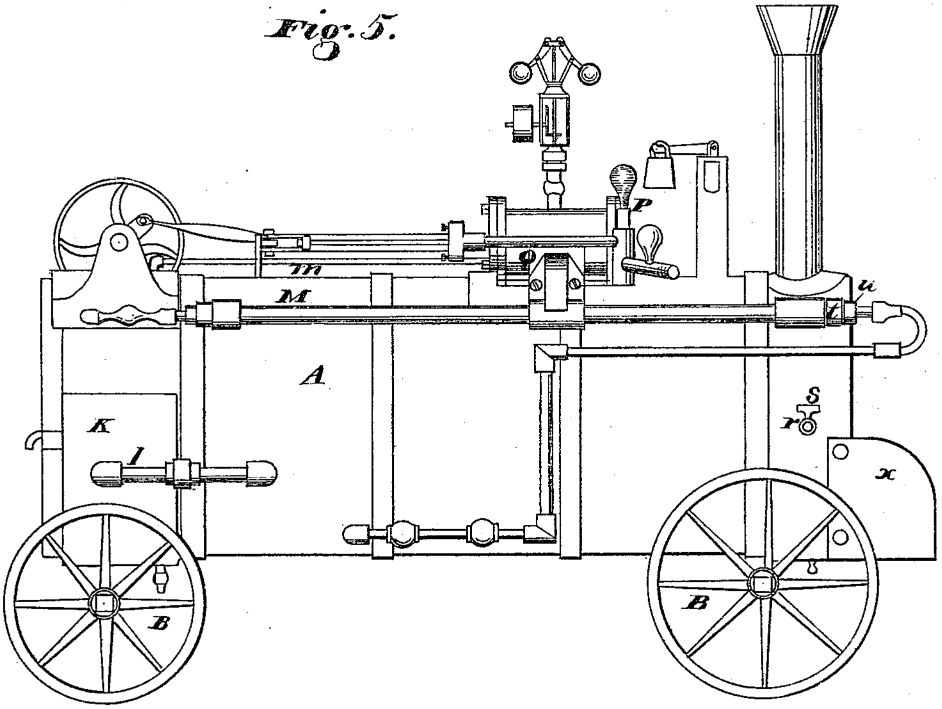


Fig. 5.



Witnesses

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UNITED STATES PATENT OFFICE.

JOSEPH ENRIGHT, OF SAN JOSÉ, CALIFORNIA.

IMPROVEMENT IN BOILERS FOR PORTABLE ENGINES.

Specification forming part of Letters Patent No. **165,810**, dated July 20, 1875; application filed May 6, 1875.

To all whom it may concern:

Be it known that I, JOSEPH ENRIGHT, of San José, Santa Clara county, State of California, have invented Improvements in Steam-Engines and Boilers; and I do hereby declare the following description and accompanying drawings are sufficient to enable any person skilled in the art or science to which it most nearly appertains to make and use my said invention or improvement without further invention or experiment.

My improvements are especially applicable to portable engines, such as are known as thrashing-engines; but they can also be applied to stationary engines and boilers where it is desired to burn straw, brush, or other light fuel in the furnace for generating steam in the boiler.

When straw or other light, quick-burning fuel is used under a boiler for generating steam the feeding is continuous; consequently a very high degree of heat is maintained, which few ordinary boilers will withstand for any length of time. Other difficulties also present themselves, which must be remedied in order to render the utilization of straw as a fuel economical.

My improvements are intended to remedy the difficulties heretofore encountered in this class of engines, and provide a superior thrashing-engine in which either wood, coal, or straw can be burned.

In order to explain my improvements so that others will understand their nature and application, reference is had to the accompanying drawings forming a part of this specification, in which—

Figure 1, Sheet 1, is a longitudinal section of my boiler. Fig. 2 is a front-end view. Fig. 3 is a rear-end view. Fig. 4 is an interior view of the feeder. Fig. 5 is a side elevation.

A is a boiler, which is mounted upon wheels B B, in the usual manner of mounting portable or thrashing engines.

My first improvement relates to the construction of the front boiler-head, furnace, and feed-opening or furnace-door.

The front boiler-head C I cast in two pieces, as shown, so as to provide for the expansion and contraction to which it is subjected, and thus prevent warping of the boiler-sheet to which it is secured. The main flue D extends but a short distance through the front tube-sheet of the boiler, so as to form a projecting flange between it and the boiler-head; and on the inner side of the boiler-head, surrounding the opening which communicates with the flue D, I make an inward-projecting flange, *a*. To connect these two flanges I use a thimble or short tube, E, the inner end of which fits over the projecting end of the flue, while its opposite end fits over the flange *a* on the inside of the boiler-head. Thus, when the boiler-head is secured on the end of the boiler, the thimble or short tube E forms a section of the main flue, and connects the tube-sheet with the boiler-head.

By this arrangement, when it is desired to clean or repair the tubes it will only be necessary to remove the front boiler-head and thimble, when the ends of the tubes will be exposed, and there will be no obstructions in the way to hinder the operations; and, besides this, it renders that part of the flue which more immediately surrounds the furnace removable, so that when it becomes burned out it can easily be replaced with a new one. It also renders the boiler easier constructed.

The feed-opening consists of a tube, F, which is secured to the furnace-front G, so as to project inside of the boiler-head, instead of outside of it, as heretofore.

The furnace-front consists of a semicircular sheet, which can be bolted onto the boiler-head across the upper part of the flue-opening, thus leaving the lower part open for the draft.

A door, H, similar to any furnace-door, is hinged to the furnace-front, so as to cover the outer end of the tube F when closed. The tube F can be of any desired length; but its usual length is from twelve to eighteen inches. On the sides and bottom of the inner end of this tube I make a flange, I, which extends across the flue-space, and on the lower end of this bottom flange I make a ledge, *b*, upon which the forward end of the grate-bars rest, while their rear ends rest upon a cross-bar, *b′*, inside of the main flue, beneath the boiler. Inside of the feeding-tube F I secure two doors, *d d*,′ one upon each side of the passage. One end of each door is hinged to each side of the

J. FEIX.

Crucible.

No. 165,811. Patented July 20, 1875.

Fig. 2.

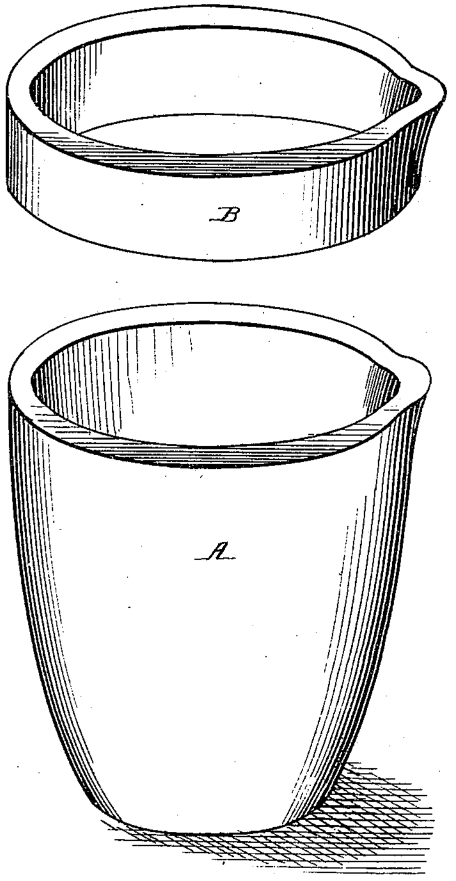
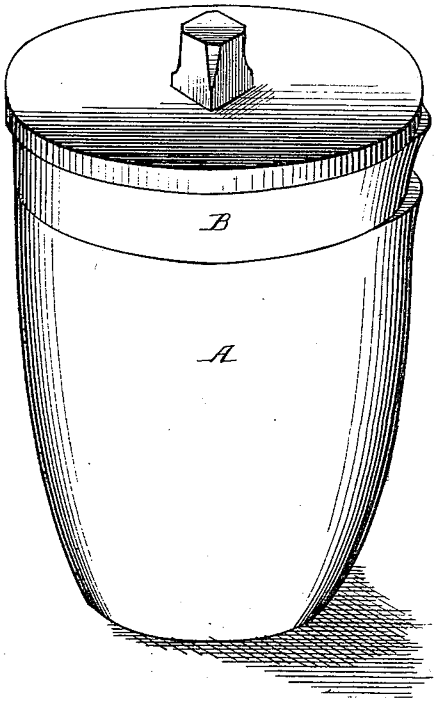


Fig. 1.



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Inventor:
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