2 Sheets—Sheet 1.

J. PROCTOR.

Apparatus for Supplying Fuel to Boiler and Other Furnaces.

No. 213,067. **Patented Mar. 11, 1879.**

Fig. 1.

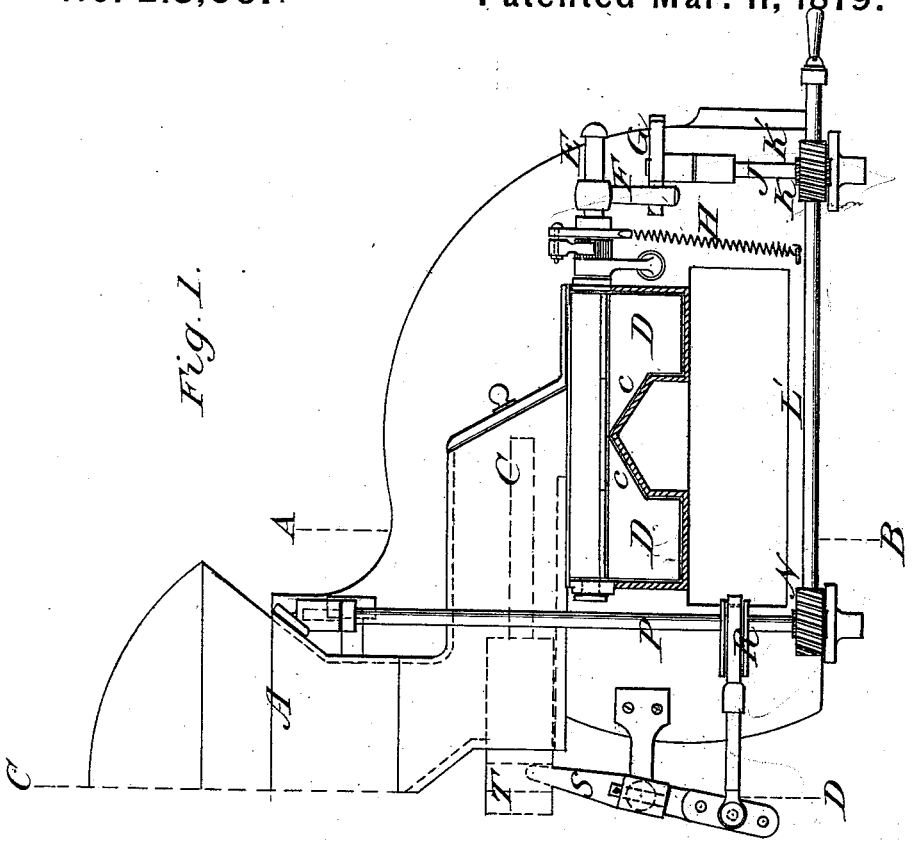
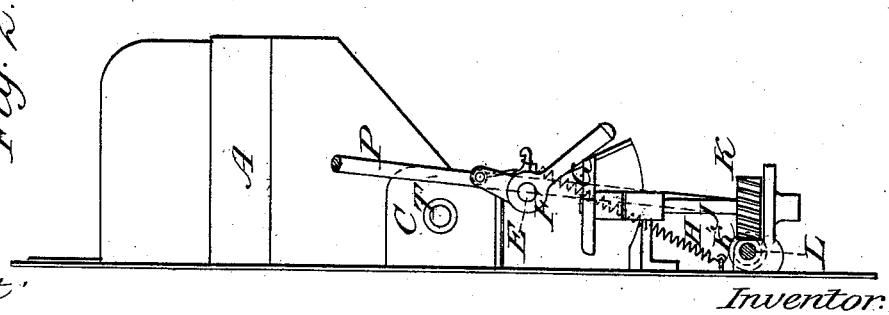


Fig. 2.



Attest:

John C. Trimbridge
James Turk

Inventor:

James Proctor
by his attorney
A. v. Briesen

2 Sheets—Sheet 2.

J. PROCTOR.

Apparatus for Supplying Fuel to Boiler and Other Furnaces.

No. 213,067. **Patented Mar. 11, 1879.**

Fig. 3.

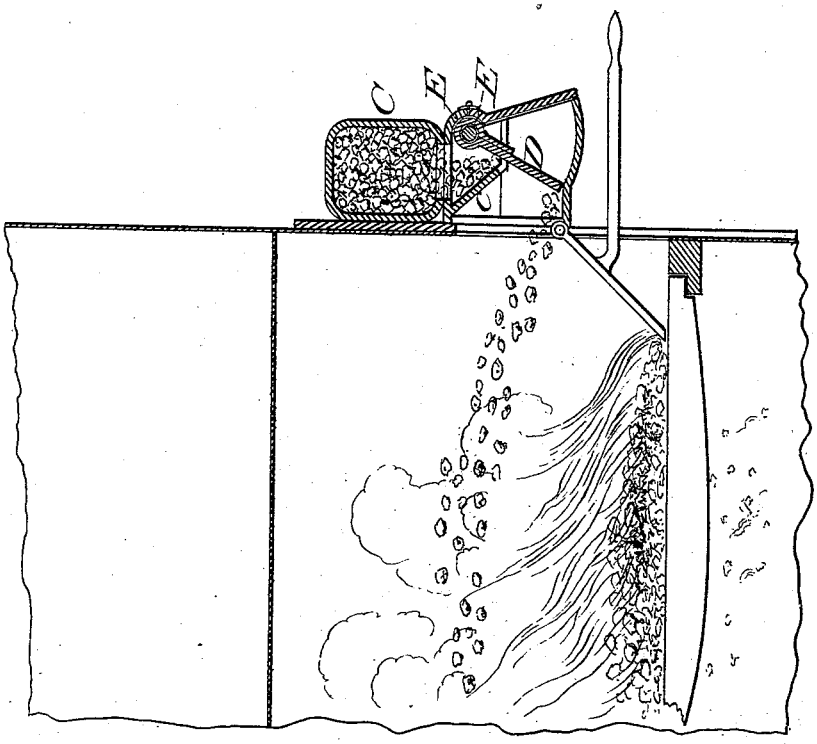
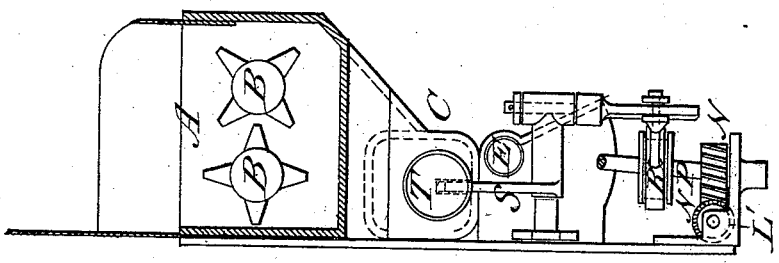


Fig. 4.



Attest:

John C. Tunbridge
James Tuck

Inventor.

James Proctor
by his attorney
A. V. Briesen

UNITED STATES PATENT OFFICE.

JAMES PROCTOR, OF BURNLEY, ENGLAND.

IMPROVEMENT IN APPARATUS FOR SUPPLYING FUEL TO BOILER AND OTHER FURNACES.

Specification forming part of Letters Patent No. **213,067**, dated March 11, 1879; application filed November 11, 1878; patented in England, June 3, 1875.

To all whom it may concern:

Be it known that I, JAMES PROCTOR, of Burnley, Lancaster county, England, have invented certain Improved Self-Acting Apparatus for Supplying Fuel to Boiler and other Furnaces, of which the following is a specification:

The first part of my invention relates to an inclined door or flap, on which the fuel is received before it reaches the furnace proper. The door or flap is secured to a cross-shaft, to which, by means of a lever and tappets, a partial turn or rotary motion is given, drawing back the door or flap until the tappet shall have passed its greatest throw, whereon the partial rotation of the cross-shaft referred to is suddenly reversed by means of a coiled spring applied thereto. By such reversing action the door or flap attached to the cross-shaft receives a rapid forward movement in the direction of the furnace-bars, throwing and distributing the fuel over a portion of the fire. The tappet is provided with two or more varying throws, so that the spring will be coiled more or less as the fuel is to be alternately thrown onto the front, midway, or back of the fire-surface. The tappet-shaft receives motion from a worm and worm-wheel, or by other means.

The second part of my invention relates to a reciprocating ram for supplying or measuring the fuel as delivered to the chamber containing the doors or flaps.

Figure 1 is a front elevation, showing one-half of a two-flued boiler having my improved apparatus applied thereto. Fig. 2 is an end view thereof. Fig. 3 is a section on the line A B of Fig. 1. Fig. 4 is an end elevation, in section, on line C D, Fig. 1.

Similar letters of reference indicate corresponding parts.

At A is the feed-hopper, applied to the front of the boiler, which, by means of spiked or other rollers B B, will give a supply of fuel to the chambers C C. The fuel is received upon the inclined doors or flaps D D, working within guide-plates. The said doors or flaps are each secured to a cross-shaft, E, to which, by means of levers F F and tappets G G, a partial turn or rotary motion is given, drawing back the door or flap until the said tappets G G shall have passed its throws, whereon the partial rotation of the shaft E is suddenly reversed by means of a coiled spring, H, or a weight applied thereto. By such reversing action the door or flap attached to the shafts E E receives a rapid forward movement in the direction of the furnace-bars, throwing and distributing the fuel over a portion of the fire.

The tappet is provided with two or more varying throws, so that the spring will be coiled more or less as the fuel is to be alternately thrown onto the fire-surface at the front, midway, or back of the fire-surface. The tappet-shafts J J receive their motion from worms K K and worm-wheels K′ K′ on the shafts J J and L′, which shaft L′ is driven by fast and loose pulleys. There is also on this shaft another worm and worm-wheel, N, for operating the spiked rollers by means of the vertical shaft P; and on the shaft P is an eccentric and strap, R, which operates the lever S, giving a rocking motion thereto, the upper end of the said lever being connected to the piston or ram T, giving to the latter a to-and-fro motion within the cylinders C C, whereby a positive and regular feed or quantity of fuel is pushed out of the cylinders alternately, and, descending upon the double inclines *c c c c*, reaches the doors D D, ready to be propelled on the next action of the tappet-springs and shafts.

I make no claim to the hopper A, nor to the spiked rollers B, nor to the shafts and worms for operating the same; but

I claim as my invention—

1. The combination of the tappet G, arm F, shaft E, and spring H with the door D in a feeding-chamber, C, substantially as and for the purpose hereinbefore set forth.

2. The combination of the ram T, lever S, and feed-chamber C with the shafts P L′, tappet G, and door D, substantially as and for the purpose hereinbefore set forth.

JAMES PROCTOR. [L. S.]

Witnesses:

WILLIAM ATKINSON,
JOHN BUTTERWORTH,
Both of Burnley.