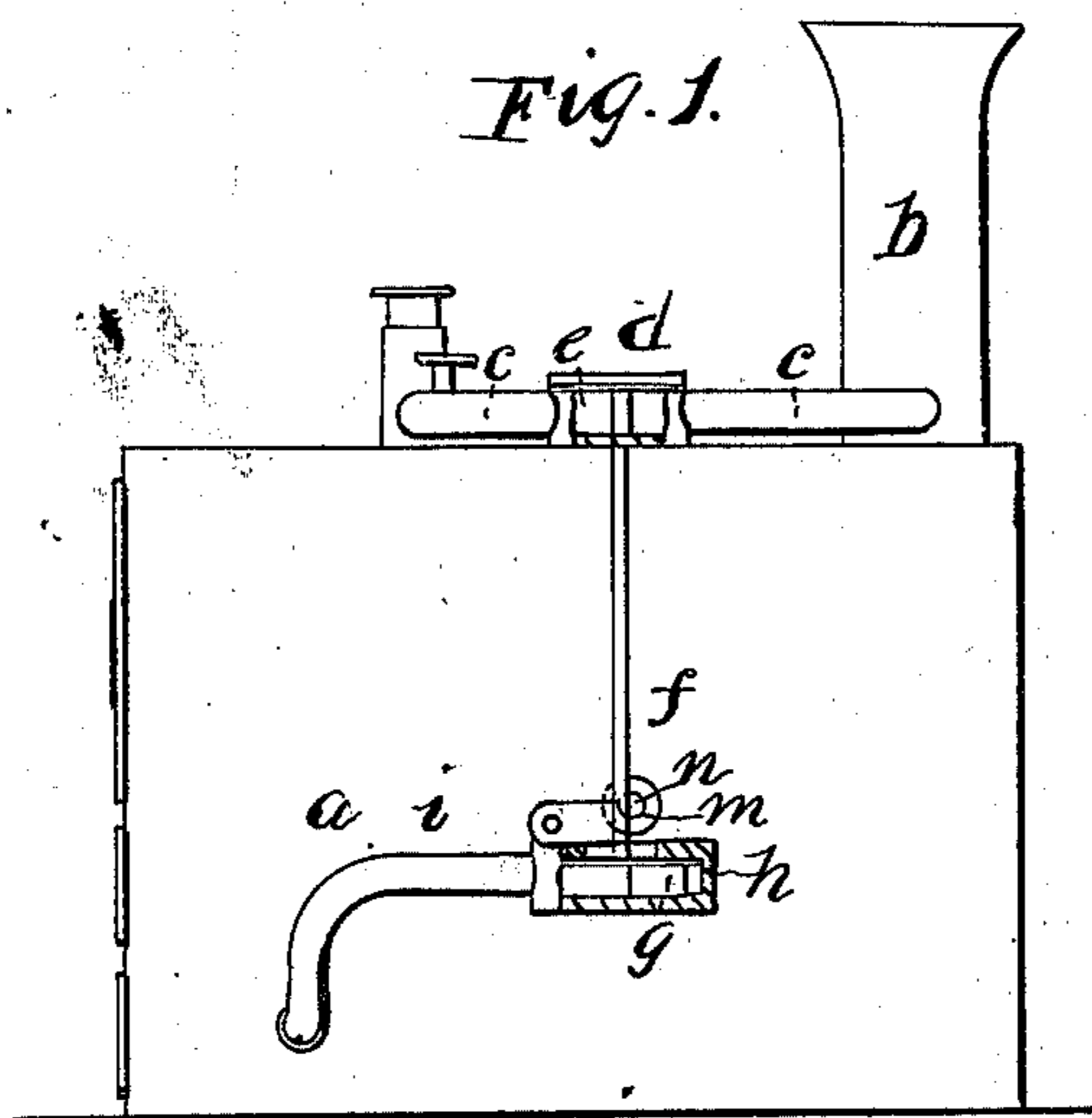
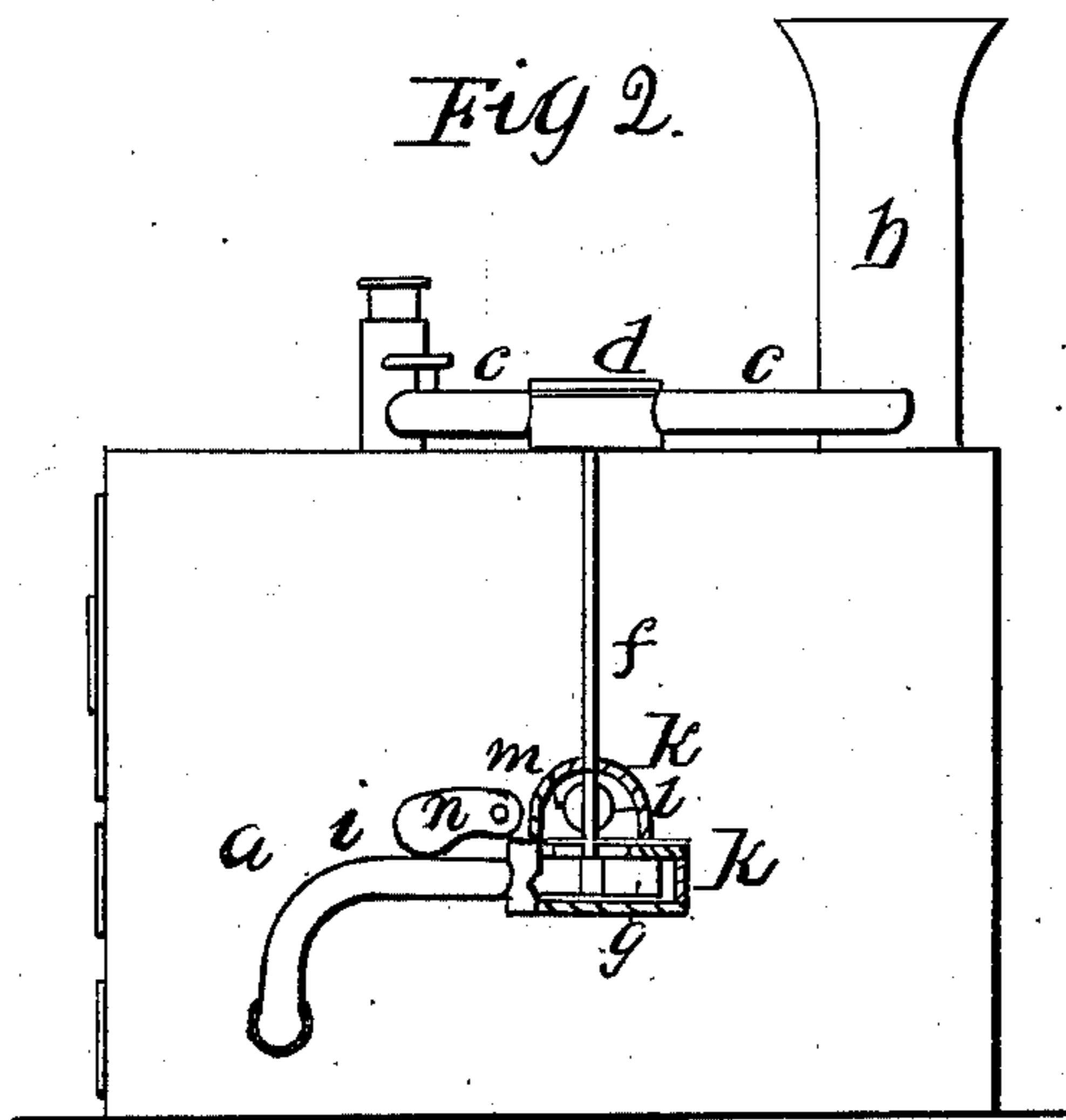


T. B. Dexter,
Steam-Boiler Furnace,
No. 49,241. Patented Aug. 8, 1865.



Witnesses.
F. Gould.
W. B. Gleason.

Inventor.
Thomas B. Dexter.

UNITED STATES PATENT OFFICE.

T. B. DEXTER, OF LYNN, ASSIGNOR TO T. W. BEAMIS, OF BOSTON, MASS.

IMPROVEMENT IN STEAM-BOILER FURNACES.

Specification forming part of Letters Patent No. **49,241**, dated August 8, 1865.

To all whom it may concern:

Be it known that I, T. B. DEXTER, of Lynn, in the county of Essex and State of Massachusetts, have invented an Improvement in Steam-Boiler Furnaces; and I do hereby declare that the following, taken in connection with the drawings which accompany and form part of this specification, is a description of my invention sufficient to enable others skilled in the art to practice it.

This invention relates to the construction and manner of application of apparatus to be used in connection with furnaces of steam-boilers for aiding and urging the combustion of the fuel. Various kinds of fan and steam blowers have been employed for these purposes, all of which are more or less objectionable.

In my construction I extend a steam-pipe from the boiler to the chimney, and this steam in its passage drives a rotary fan fixed on a vertical shaft, this shaft carrying a fan-blower, which by its rotation drives air into the ash-pit and through the fuel, while by a slight change this blower takes the gaseous products of combustion behind the bridge of the furnace-grate and forces them into the ash-pit and through the fuel, thus making a hot blast.

The invention consists in this peculiar construction and arrangement of parts.

The drawings represent a side elevation of a furnace embodying these improvements, Figure 1 showing the blower arranged to force atmospheric air into the fuel, while in Fig. 2 the blower takes the air and gases from behind the grate-bridge, the parts being broken to illustrate clearly the invention.

a denotes the furnace; *b*, the chimney; *c*, a steam-pipe leading from the boiler to the chimney. This steam-pipe in its passage to the chimney leads into and out of a box, *d*, in which is a wheel, *e*, mounted on a vertical shaft, *f*, and carrying blades so disposed that the pressure of the steam in its passage through the pipe *c* imparts rotation to the wheel and the shaft *f* on which it is fixed. This shaft extends down the side of the furnace-wall and carries at its lower end a fan-wheel, *g*, placed in an air box or chamber, *h*, from which chamber a pipe, *i*, leads into the ash-pit of the fur-

nace. This chamber has an opening in its top, which is closed, when desirable, by a cover, *k*. When the steam-cock in the pipe *c* is opened (the box *d* being closed and the cover *k* raised from the chamber *h*) the pressure of steam in pipe *c* rotates the wheel *e* and shaft *f*, whereby the fan-wheel *g* is driven, the air being drawn in through the opening in chamber *h*, and forced by the fan through the pipe *i* into the ash-pit and through the fuel, urging its combustion, as could be readily understood. The cover *k*, when closed, makes an auxiliary chamber, *l*, above and communicating freely with the chamber *h*. From this chamber *l* a pipe or passage, *m*, leads into the furnace directly behind the bridge-wall of the furnace. This passage is closed at proper times by a gate, *n*. Now, when it is desirable to urge the combustion of the fuel by a hot blast the cover *k* is closed and the gate *n* opened, communication being thereby effected between the space behind the bridge of the furnace and the ash-pit by the pipe *i*, chambers *h* and *l*, and passage *m*. The rotation of the fan will now draw the hot air and the unconsumed gaseous products of combustion from the rear of the fire and drive them through the pipe *i* into the ash-pit, thus supplying a hot blast to the fuel in a convenient and practical manner.

By shutting the gate *n* and raising the cover *k* this hot blast is changed to a cold one, and, vice versa, by shutting the cover *k* and opening the gate *i* the hot blast will be produced, as will be readily understood.

I claim—

1. The arrangement of the devices for driving the blower *g*, consisting of the steam-pipe *c*, wheel *e*, and shaft *f*, operating substantially as set forth.

2. The combination of devices by which the blast can be changed from a hot to a cold blast, substantially as set forth.

In witness whereof I have hereunto set my hand this 13th day of May, A. D. 1865.

THOMAS B. DEXTER.

Witnesses:

F. GOULD,

W. B. GLEASON.