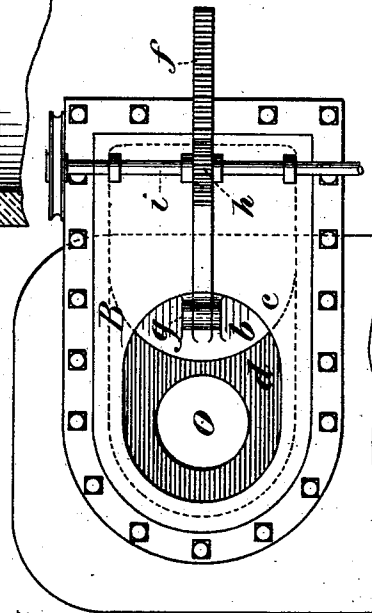
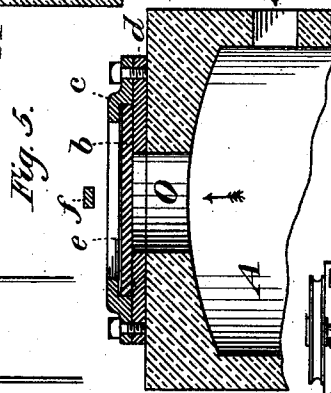
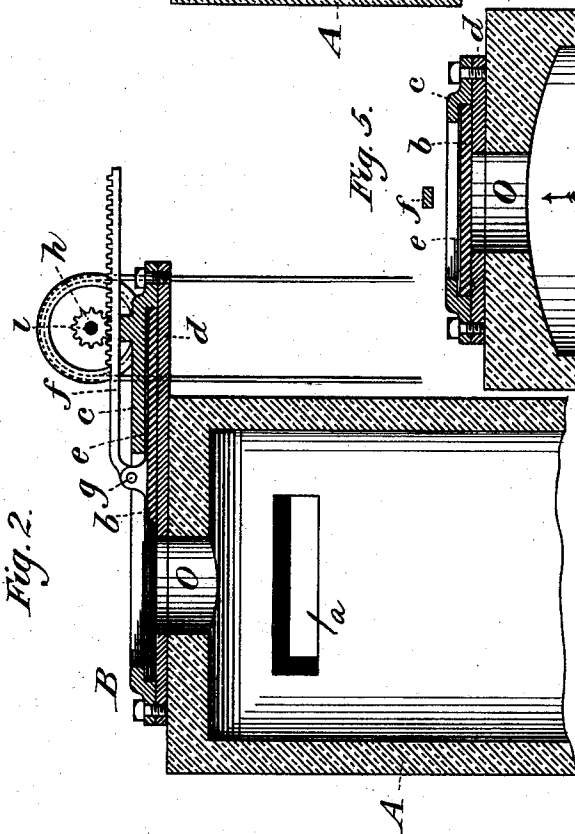
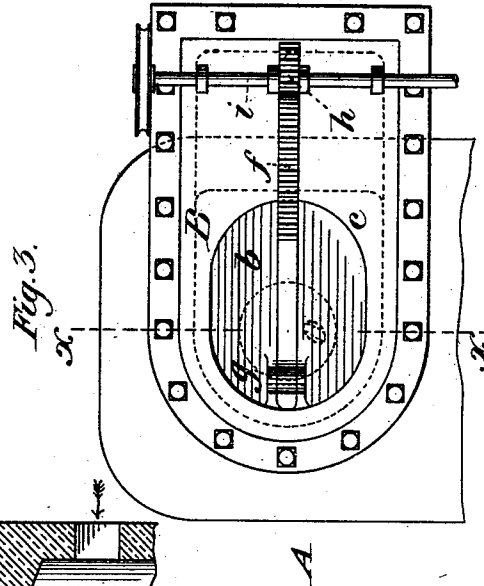
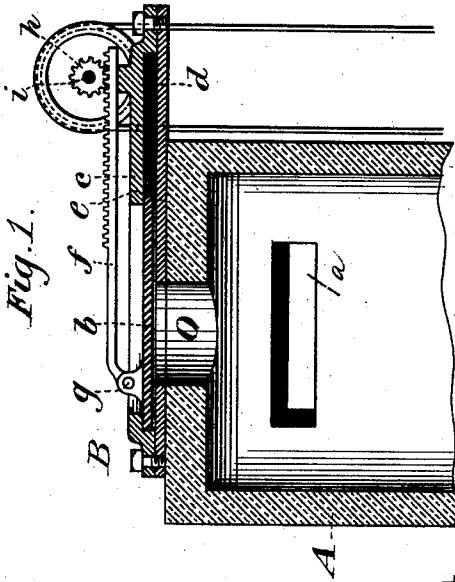


(No Model.)

H. KENNEDY.
VALVE FOR HOT BLAST STOVES.

No. 472,640.

Patented Apr. 12, 1892.



WITNESSES

M. J. Carson
Philip Y. Pendleton

INVENTOR.

Hugh Kennedy
By his atty,
H. P. Potter

UNITED STATES PATENT OFFICE.

HUGH KENNEDY, OF SHARPSBURG, ASSIGNOR TO RITER & CONLEY, OF
PITTSBURG, PENNSYLVANIA.

VALVE FOR HOT-BLAST STOVES.

SPECIFICATION forming part of Letters Patent No. 472,640, dated April 12, 1892.

Application filed April 29, 1891. Serial No. 390,899. (No model.)

To all whom it may concern:

Be it known that I, HUGH KENNEDY, of Sharpsburg, in the county of Allegheny and State of Pennsylvania, have invented or discovered a new and useful Improvement in Valves for Hot-Blast Stoves; and I do hereby declare the following to be a full, clear, concise, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which, like letters indicating like parts—

Figure 1 is a vertical section of the upper portion of one of the stoves shown and described in my former Letters Patent, No. 398,970, dated March 5, 1889, having my improved valve attached and showing the valve closed. Fig. 2 is a view of the same, showing the valve open. Fig. 3 is a plan view of the stove and the valve in the same position as in Fig. 1. Fig. 4 is also a plan view of the stove, showing the valve in the same position as at Fig. 2, and Fig. 5 is a sectional view taken on the line *x x* of Fig. 3.

My invention relates to the improvement of outlet-valves for hot-blast stoves, such as are shown in Letters Patent issued to me March 5, 1889, No. 398,970; and the object of my present improvement is to provide an outlet-valve for this class of hot-blast stoves which shall be simple in construction, effective in action, and have little liability to get out of repair.

Heretofore the valves controlling the outlet to hot-blast stoves have been operated by the use of an arm or rod running through a stuffing-box or other packing arrangement, which arrangement has not given good satisfaction. The position of the valve makes it very difficult to make the outlet gas-tight or air-tight without causing considerable extra friction, which makes the valve hard to control, and instead of moving easily and smoothly and seating firmly in place when required the valve-plate keeps tightening and binding, causing more or less difficulty of operation, and as more or less of the blast would force its way out in spite of the attempted packing or stuffing a disagreeable whistling noise was kept up more or less of the time.

By the use of a valve constructed and applied as herein described and pointed out

the need of a stuffing-box or of any packing material is entirely dispensed with and the operator is enabled to control the outlet of the stove and the action of the valve with ease and accuracy.

To enable others to understand my invention, I will proceed to describe it in detail.

A is a hot-blast stove of the usual construction, as heretofore referred to, the gas-outlet of which is shown at O. This outlet is governed or controlled by the valve B, which consists of the sliding plate *b*, which moves laterally in the recess between the parallel plates *c* and *d*, which form a casing for it extending around the side edges and ends of the sliding plate, so as to form an inclosing box or casing therefor, and being of sufficient length to permit the sliding plate to be moved so as to uncover the outlet O, over which it is set. This casing, formed by the plates *c* and *d*, does not fit tightly against the valve-plate *b*, but instead a sufficient space for clearance is allowed, as indicated at *e*, to permit of a slight vertical play to the plate *b*. Longitudinal movement is given to the plate *b* by means of the rack-arm *f*, which is pivotally secured to the surface of the plate *b* at *g* and geared with the spur-wheel *h* on the shaft *i*, which is operated in the usual manner. In the construction of the valve the lower face of the upper plate *c* and the upper face of the valve-plate *b* are planed smoothly, so as to admit of the valve-plate *b* being closely seated against the lower face of the casing *c* when the valve is closed.

The several views of the drawings only represent one of a series of stoves such as are shown and described in my former Letters Patent, hereinbefore referred to, and the port *a* is for the admission of air from the other stoves of the series.

The arrow shown within the casing or stove in Fig. 5 indicates the course taken by the gas, which enters the stove at its lower end and then flows upwardly through the gas-outlet, while the arrow upon the outside of the stove at the port *a* indicates the course taken by the air, which, after entering the stove, flows downwardly, as fully described in my former Letters Patent.

The mode of operation of the valve will be as follows: When it is desired to put the

stove in operation, the outlet O is closed by sliding the valve-plate *b* in position, as shown in Fig. 1. The pressure of the blast, when turned on, will then raise the plate *b* and press it firmly against the lower face of the upper portion of the valve-casing (shown at *c*) and cause it to seat itself there. So long as the blast is on the valve-plate will be held in position, and the stronger the blast the tighter and closer will the valve-plate be seated. When the blast is turned off, the valve-plate will drop by its own weight away from the casing *c* the distance allowed for clearance in the space *e*, and then by the proper manipulation of the spur-wheel it will slide back easily into the recess prepared for it between the plates *c* and *d*. The opening of the valve is of an oblong shape, preferably as shown in Figs. 3 and 4, and of sufficient length to admit of the valve-plate sliding back far enough to clear the outlet O without being stopped by the lug *g*, to which the rack-arm *f* is attached, striking the top plate or casing *c*. When the valve-plate *b* is closed, as shown in Fig. 1, and forced up against its seat by the internal pressure in the stove, the inclosing casing, formed by the plates *c* and *d*, constitutes a closed box, which entirely prevents the escape of air, and as no stuffing-boxes are required to be used, as in prior outwardly-seating valves of this class, the valve is not apt to get out of order or to leak. The prevention of waste of air and the saving of labor in manipulation and keeping in repair of the valve which I thus effect are very considerable, and render my valve an improvement over prior constructions. These features of advantage are of special importance where the valve is applied to the top of a hot-blast stove, where, from its difficultly accessible position, leaking of the air is apt to remain unnoticed by the workman who operates it from the base of the stove, while defects in its working are often productive of serious inconvenience. It will be understood that the valve is capable of use not only on hot-blast stoves, but in other types of furnace in which an opening is to be closed to prevent escape of gas or air from within. This mode of construction may be applied to a series of hot-blast stoves by arranging the-shafting so as

to operate the valve simultaneously, if so desired.

Having thus described my invention, I claim herein and desire to secure by Letters Patent of the United States—

1. A valve for hot-blast stoves and other furnaces, consisting in the combination, with an outwardly-seating sliding valve-plate, of a casing in which it is longitudinally movable, said casing having an opening adapted to register with the furnace-port to be controlled and inclosing the valve-plate at its side and end edges and at the margins of its surface, and operating mechanism connected with the outer exposed surface of the valve-plate and adapted to slide the same, substantially as and for the purposes described.

2. A valve for hot-blast stoves and other furnaces, consisting in the combination, with an outwardly-seating sliding valve-plate, of a casing in which it is longitudinally movable, said casing consisting of parallel plates having registering openings, against the upper one of which plates the valve-plate is seated by pressure on its inner surface, said plates inclosing the valve-plate at its side and end edges and at the margins of its surface, and operating mechanism connected with the outer exposed surface of the valve-plate and adapted to slide the same, substantially as and for the purposes described.

3. A valve for hot-blast stoves and other furnaces, consisting in the combination, with an outwardly-seating sliding valve-plate, of a casing in which it is longitudinally movable, said casing having an opening adapted to register with the furnace-port to be controlled and inclosing the valve-plate at its side and end edges and at the margins of its surface, a rack-arm pivotally connected to the exposed surface of the valve-plate, and a pinion in gear with the rack-arm and adapted to operate the same, substantially as and for the purposes described.

In testimony whereof I have hereunto set my hand.

HUGH KENNEDY.

Witnesses:

W. B. CARSON,
WM. A. STONE.