(No Model.) 2 Sheets—Sheet 1.

C. H. HOLTON.

VALVE FOR GAS FURNACES.

No. 457,118. Patented Aug. 4, 1891.

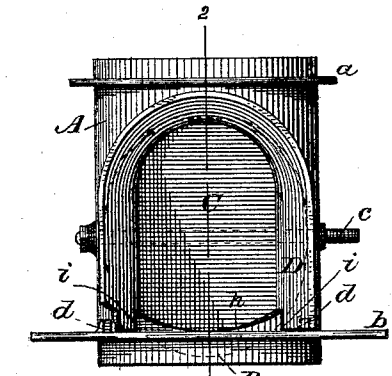


Fig 1.

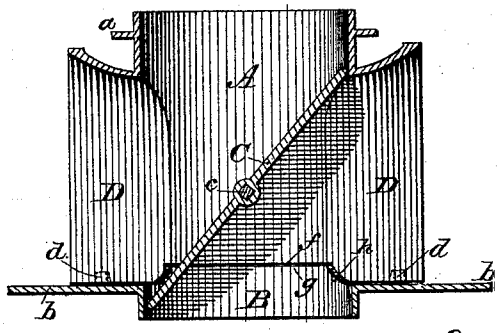


Fig 2.

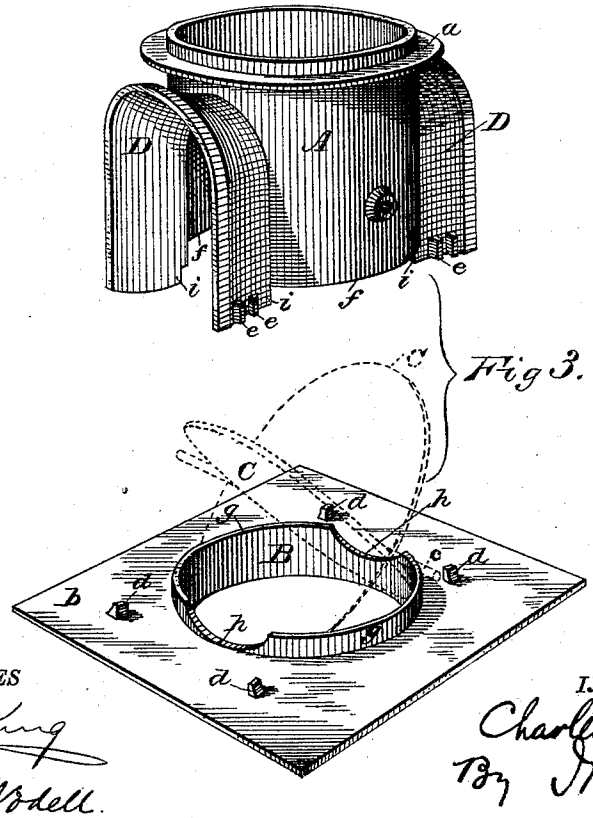


Fig 3.

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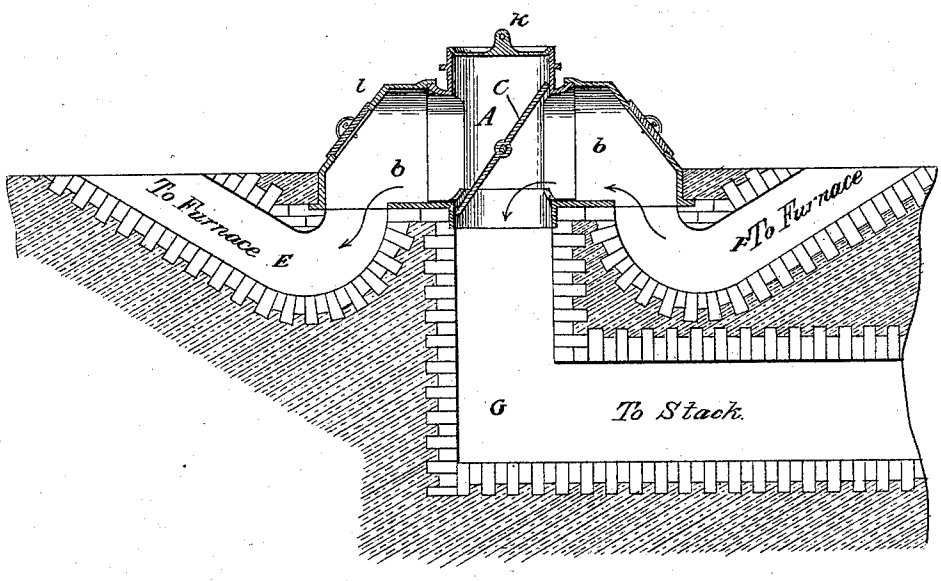
(No Model.) 2 Sheets—Sheet 2.

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Fig. 4.



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UNITED STATES PATENT OFFICE.

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VALVE FOR GAS-FURNACES.

SPECIFICATION forming part of Letters Patent No. 457,118, dated August 4, 1891.

Application filed August 7, 1890. Serial No. 361,328. (No model.)

To all whom it may concern:

Be it known that I, CHARLES H. HOLTON, a citizen of Canada, residing at Poughkeepsie, in the county of Dutchess and State of New York, have invented certain new and useful Improvements in Valves for Gas-Furnaces; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to valves used in regenerative gas-furnaces and provided with a butterfly or reversing plate for the purpose of directing the heated gas alternately in opposite directions, as the needs of the work require; and the objects of my improvements are, first, to facilitate the placing and removal of the valves; second, to reduce to the greatest extent possible the cost of replacing or refitting the burned portions at the base of the valve, which are first to become warped and unfit for work, and, third, to provide means whereby a separable base may be maintained securely in its normal position with reference to the upper portion of the valve as well as if it were integral with the upper portion. I attain these objects by the device illustrated in the accompanying drawings, in which—

Figure 1 is a face view of my valve, showing the separable base and the upper portion placed together in readiness for work. Fig. 2 is a vertical longitudinal section cut through line 2 2 of Fig. 1. Fig. 3 is a perspective view of segregated parts of my device, showing the different positions of the butterfly-plate by dotted lines; and Fig. 4 a sectional view of the valve and a portion of the foundation of the furnace, showing the arrangement of the passages leading to and from the valve.

Similar letters refer to similar parts throughout the several views.

In the drawings, A represents the central chamber of the upper portion of the valve, and *a* the flange near its top for the convenient support of a connecting-pipe.

B represents the separable base portion of the chamber A, and preferably corresponds with it in thickness and diameter, so that the edges *f* may rest snugly upon the edges *g* when the parts are superimposed. *b* is an extended flange, preferably cast integral with B and in its center to serve as a convenient support for the valve upon the brick-work of the furnace.

C represents the butterfly or reversing plate, pivoted in A and turned with a wrench at the square end C of one of the pivots, for the purpose of conducting the heated gases alternately in either direction.

D represents a hood on either side of the central valve-chamber, into which or from which the gases are conveniently conducted by attaching a similar hood. The lower edges *i* of D are extended below A on either side, as is best shown in Fig. 3, so that they rest on the base-flange *b*, and the lugs *e* fit on either side of the several base-plate pins *d* for the purpose of holding the parts A and B securely together in the proper relative position. It may be found convenient and is entirely consistent with my invention to substitute for these pins and lugs a flange cast upon *b* and *g* and integral therewith and raised enough to cover the joints at *i* and *f* to make them fire-tight, as well as to hold the upper portion A D securely upon the base B. Under the hoods D the base B is lowered, as shown at *h* in Figs. 1 and 3, for the purpose of facilitating the passage of the heated gases from and into the valve. The separable base permits of its being taken from underneath and another base substituted by the raising of the upper portion a few inches without its entire removal—a distinct advantage in time and expense, as will readily be seen. This base, which is separable in my device, constitutes the whole of that portion of the valve which is most quickly warped by the intense heat of the gases, especially as they pass through the valve-chamber after coming from the furnace, base B being made to extend far enough above the flange *b* to include as much of the metal of the valve-chamber as is ever likely to be warped and burned by the heat of the passing gases. Base B may also be extended below the flange *b*, as shown in Figs. 1 and 2, to give the base a firmer seat in the brick-work of the furnace.

Heretofore it has been necessary when the base of the valve became so warped and burned by heat as to make an imperfect joint with the edge of the reversing-plate C to take

out and discard as useless the whole valve at very great trouble and expense. By my device it is only necessary to remove the base, as shown in Fig. 3, and substitute another casting of a similar base at only about one-seventh of the cost of an entirely new valve. Not only does my device provide for this ready substitution of the warped or useless portion of the valve, but it also affords as perfect and complete a valve as those heretofore made by reason of the use of the lugs *e* and pins *i*, or an equivalent—*e. g.*, a retaining-flange on the base to receive the upper portion. This mode of fastening unites the parts so securely in their normal position that the two parts present all the advantages of a single casting both in strength and utility, and in addition they afford a greater facility in removal and subject the user to much less outlay for repairs, as has been indicated, than do the ordinary valves hitherto used.

In Fig. 4 the valve is shown in position for operation. The valve shown in said figure may be either the air-valve or the gas-valve of the furnace, it being provided with the cover *k*, which is raised to permit the air or gas to enter the furnace. In the position of the plate C shown, the air or gas passes through the left-hand passage E to the furnace, and the heated mixture of air and gas coming from the furnace returns to the valve through the right-hand passage F and passes from the valve through the passage G to the stack. It will be understood that in the operation of the furnace the position of the plate C is reversed from time to time, and when reversed the air or gas goes to the furnace through the passage F and returns through the passage E. In either case the heated mixture returning from the furnace passes over the lower portion of the valve, so that it is this portion of it which becomes burned and quickly unfitted for use; but by the use of my invention the lower portion of the valve is readily removed and replaced without going to the expense of discarding those parts which are not affected by the heat and substituting an entire new valve.

The hoods *l l* are attached to the sides of the valve to direct the air and gas to and from the passages E F.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. A valve for gas-furnaces, consisting of a separable base, and an upper chamber fitted to rest accurately and firmly upon the base to form a single valve, as and for the purpose described.

2. In a valve for gas-furnaces, a separable base consisting of a plate having a raised circular rib forming the base portion of the circular valve-chamber, in combination with a corresponding upper circular valve-chamber adapted to rest upon the base and containing a butterfly or reversing plate, substantially as set forth.

3. In a valve for gas-furnaces, a separable base, as shown, in combination with a corresponding upper chamber adapted to fit upon the circular portion of the base and having downward-projecting ends from the valve-hoods on either side to rest upon the base and engage by lugs with corresponding pins upon the base-flange for the purpose of maintaining the separate portions of the valve securely in place, substantially as and for the purpose specified.

In testimony whereof I affix my signature in presence of two witnesses.

CHARLES H. HOLTON.

Witnesses:

IRVINE ELTING,

SILAS WODELL.