

S. KEPNER.

AUTOMATIC STOVE-PIPE DAMPER.

No. 176,645.

Patented April 25, 1876.

Fig. 1.

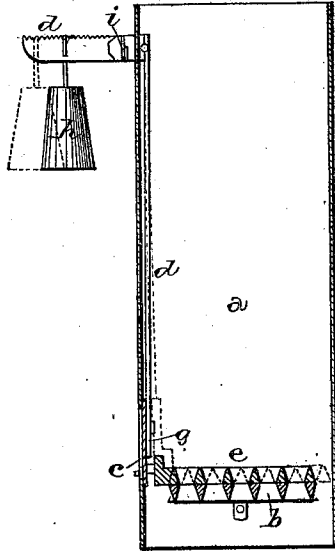


Fig. 4.

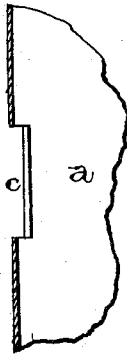


Fig. 2.

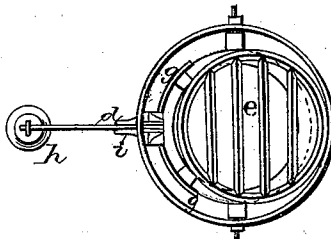
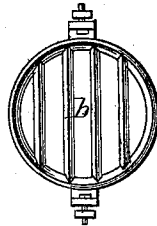


Fig. 3.



WITNESSES.

J. W. Garner
F. M. Burnham

INVENTOR.
Solomon Kepner
per
F. W. Lehmann,
att'y.

UNITED STATES PATENT OFFICE.

SOLOMON KEPNER, OF POTTSTOWN, PENNSYLVANIA.

IMPROVEMENT IN AUTOMATIC STOVE-PIPE DAMPERS.

Specification forming part of Letters Patent No. **176,645**, dated April 25, 1876; application filed March 24, 1876.

To all whom it may concern:

Be it known that I, SOLOMON KEPNER, of Pottstown, in the county of Montgomery and State of Pennsylvania, have invented certain new and useful Improvements in Automatic Stove-Pipe Damper; 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 pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to an improved automatic stove-pipe damper; and it consists in the peculiar arrangement and combination of parts, that will be more fully described hereinafter, whereby the damper can be regulated for any desired degree of heat, and made to automatically regulate itself, both by closing the damper and by opening a valve to admit cold air, so as to save trouble and time in watching the damper, overheating of the stove, and a useless waste of fuel.

Figure 1 is a vertical section of my invention. Fig. 2 is a plan view of the same. Fig. 3 is an inverted view of the lower valve alone. Fig. 4 is an enlarged sectional view of the pipe alone.

a represents a common stove-pipe, and *b* an iron perforated diaphragm, rigidly secured in position, in any desired manner, just below the opening *c* in the pipe, through which cold air is admitted. Suspended by a lever, *d*, of any desired length or construction, is a damper, *e*, of similar construction to the one *b*, and which moves laterally over the lower one, to just close the orifices or openings in it, yet leaving enough of an opening around its edges for the escape of the gas and smoke. Secured to one side of this damper is the valve *g*, which closes the opening *c* in the side of the pipe, so as to prevent the admission of cold air when it is desired to heat the stove up to any desired degree. It will be noticed that, the damper and valve being connected together, when the valve is open, admitting cold air, the damper is obstructing the passage of the products of combustion up the chimney, and thus the fire is at once checked in a double manner. The upper end of the lever *d* is bent at right angles, passed out through a slot in the side

of the pipe, pivoted between the ears *i*, so that it can vibrate back and forth, and has a number of notches cut in its upper edge for the adjustment of the weight *h* back and forth. By the adjustment of the weight on the horizontal arm of this lever, the damper and valve can be so balanced as to move very quickly and readily, or so that it will require some little force to move them.

After the fire is lighted and it is determined what heat is necessary, the weight is adjusted accordingly. As the air becomes heated it rises in a rarefied form through the pipe, forming more or less of a vacuum, and lowering the pressure inside of the pipe below what the atmospheric pressure is on the outside. As soon as the air in the pipe becomes so rarefied that the pressure within the pipe sinks far enough below the atmospheric pressure on the outside that the pressure of the air can overcome the force of the weight by pressing the valve *g* inward, then the damper *e* moves over the perforated diaphragm *b*, as already described, and the valve at the same time admits cold air. When a greater heat than usual is required, as for baking, the weight is so adjusted on the lever that the valve and damper will not move until the air in the pipe becomes so rarefied that its pressure is reduced far below the outside pressure of the atmosphere, when the pressure from the atmosphere forces open the valve. As soon as the fire becomes cooled down to that degree where the air in the pipe is not so rarefied, then the weight draws the damper and valve back into position, where they remain until the heat again reaches the regulated degree, when the air again opens the valve and closes the damper.

It will be readily seen that the damper is thus made self-acting after it has once been set, so as to require no further attention or thought, except to change it from time to time, as a greater or less degree of heat is required. By thus making it self-acting the stove can never become overheated, a useless waste of fuel is prevented, and an even, regular temperature always preserved.

Having thus described my invention, I claim—

1. An automatic damper consisting of the combination of a movable damper, an air-

valve, and a weighted lever, substantially as shown.

2. The combination of the movable damper, a perforated diaphragm, air-valve, and a hole in the pipe, whereby the damper is made to close and cold air is admitted into the pipe, substantially as set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 23d day of March, 1876.

SOLOMON KEPNER.

Witnesses:

ROBT. M. BARR,
F. A. LEHMANN.