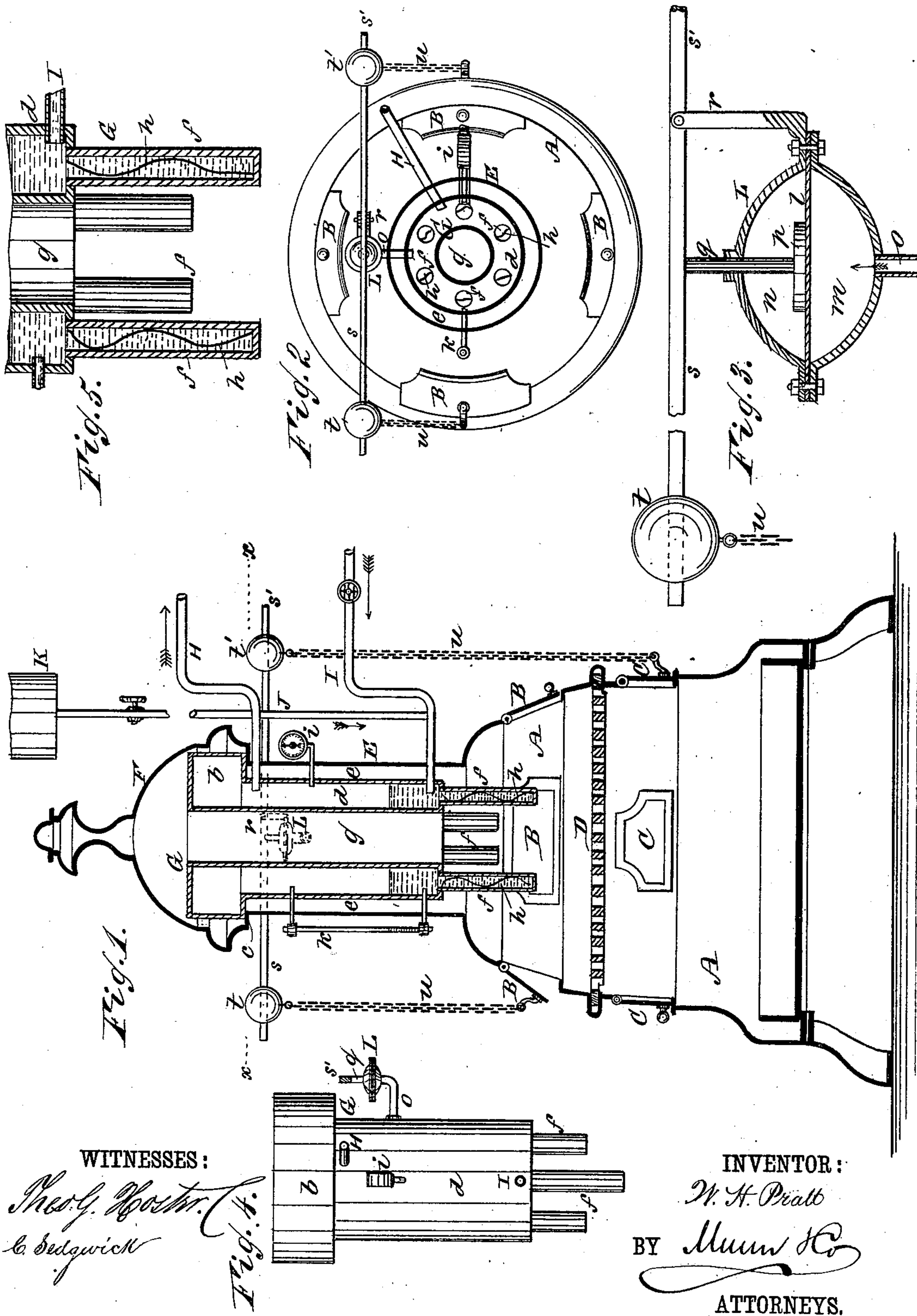


(No Model.)

W. H. PRATT.
STEAM HEATING ATTACHMENT FOR STOVES.

No. 272,768.

Patented Feb. 20, 1883.



WITNESSES:

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STEAM HEATING ATTACHMENT FOR STOVES.

SPECIFICATION forming part of Letters Patent No. 272,768, dated February 20, 1883.

Application filed November 20, 1882. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. PRATT, of Rondout, in the county of Ulster and State of New York, have invented certain new and useful Improvements in Steam Heating Attachments for Stoves, of which the following is a full, clear, and exact description.

This invention has for its object the fuller or more perfect utilization of the heat derived from stoves used for warming apartments in dwelling-houses, stores, and for other purposes, including parlor and cook stoves or ranges, and whereby, without interfering with the primary use of the stove or detracting from its capacity to heat the apartment in which it is placed, the same stove is made capable of heating several apartments in a much more effectual manner than can be done by the employment of mere drums or hot-air registers.

The invention consists in a special construction of steam apparatus as combined with a stove, whereby great compactness, simplicity, and efficiency are obtained, substantially as hereinafter described.

While the drawings represent the invention as applied to a magazine or base-burning stove—such as is used for heating a parlor or other apartment—and may be so applied without changing the construction of such stove, it may be used with very little alteration or additional expense with other kinds of stoves as well.

Reference is to be had to the accompanying drawings, forming part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 represents a vertical section of a magazine or base-burning stove with the invention applied. Fig. 2 is a horizontal section of the same on the line *xx* in Fig. 1. Fig. 3 is a partly sectional vertical view, upon a larger scale, of a regulating device connected with the steam heating attachment to the stove for causing the pressure of the steam to control the doors or dampers of the stove to maintain an approximately uniform pressure and uniform heat. Fig. 4 is a side elevation of the steam generating and superheating portion of the attachment, and Fig. 5 a vertical section of the same in part upon a larger scale.

A in the drawings indicates the lower or

body portion of a base-burning or magazine stove, having any number of doors, B C, which act as dampers, arranged respectively above and below the grate D of the stove.

E is the usual waist or magazine section, mounted upon top of the body A and closed by a removable hollow cap or cover, F.

Arranged to project down within the waist E is a steam generator and superheater, G, which is or may be formed with an enlarged head, *b*, that enters up within the cover F and rests upon an outer annular shoulder, *c*, at or near the top of said waist, and which generator and superheater is further formed with a body, *d*, of less cross dimensions than the waist E, leaving a surrounding space, *e*, between it and said waist, down within which it projects.

From the bottom of the body *d* are extended any number of water-tubes, *f*, which pass down into the fire. These tubes are closed at their lower ends, but open at their upper ones, where they form communication with the water-space of the body *d*, that is restricted to the lower portion of said body, leaving the remainder of the space in said body and in the head *b* as a steam-chamber, and in which the steam is not only collected as generated but is superheated by the heated gaseous products of combustion as they pass up within the spaces *e* to the usual stove-pipe or escape-opening in the rear. Furthermore, the steam generator and superheater G is constructed with a tube or fuel-magazine, *g*, extending down through its head and body and open at both ends, to provide for feeding the stove with fuel on removing the cap or cover F. By this construction and arrangement of the steam heating attachment G it is altogether contained within the stove and out of sight, thereby presenting no unsightly or objectionable exposure.

The legs or pendent water-tubes *f* are fitted with serpentine dividers *h*, which serve to promote circulation of the water within the boiler or steam generator and superheater G, which has connected with it a steam-gage, *i*, and water-gage *k*, visible from the exterior of the stove, and may also be provided, either directly or indirectly by pipe, with a safety-valve.

H is a pipe, by which the superheated steam is taken from the generator G to any suitable number of radiators that may be arranged in

other apartments of the same building in which the stove is placed, and doing its duty in heating the apartment in which it is, thus causing the stove to supply steam heat to numerous apartments.

I is the return-pipe from the radiator, by which the water of condensation is returned to the boiler or generator G, whereby the same water is used over and over again, and J is a feed-pipe connecting with an overhead cistern, K, or other source of water-supply for filling the boiler at starting, or for replenishing any deficiency of water therein consequent upon leakage. These pipes should each be provided with stop-cocks or valves.

L is an automatic regulating device for maintaining an approximately uniform steam-pressure and uniform heat. This device consists in part of a chamber or vessel divided by a rubber or other flexible diaphragm, *l*, into upper and lower spaces, *m n*. The lower one, *m*, of these spaces connects by a pipe, *o*, with the steam-space of the generator G, whereby the steam exerts a tendency to lift the diaphragm *l*, and with it a disk, *p*, resting on said diaphragm. This disk is connected by a rod, *q*, on one side of a fixed fulcrum, *r*, with a double-armed lever, *s s'*, on which are adjustable weights *t t'*, that may be slid along the two arms of the lever, to vary as required the lifting-power of the diaphragm and to regulate the working-pressure of the steam and heat of the stove with its steam heating attachment by checking or increasing the combustion of the fuel in the stove. To this end and to obtain an approximately uniform heat and pressure, the two arms *s s'* of the lever of the regulator L are connected respectively by chains *u* or otherwise, the one with one of the doors B, which is arranged above the grate D, and the other with one of the doors C below said grate, so that when steam, pressing on the diaphragm *l*, raises the one arm, *s*, of the lever it opens said door B and simultaneously causes the other or lowering arm, *s'* of the lever to

close the attached door C, thus producing a double-damper action—namely, of admitting or regulating the supply of air above the fire and of excluding or varying its supply below the grate, both of which actions tend to check the combustion. On the other hand, as the steam pressure and heat are lowered beyond their proper limits, as controlled by the adjustment of the weights *t t'*, the diaphragm *l* drops or relaxes and causes the superior weight on the arm *s* of the regulating-lever or the superior leverage of said arm over the other arm, *s'*, to relieve the controlled door B of lift and cause it to close and at the same time to open the other door, C, thus increasing the combustion. Other automatic and adjustable regulators or mechanism connected therewith for controlling the doors or dampers of the stove may be used, if desired.

Though I have described and shown means for automatically regulating the draft, it will be understood that the same is simply used as a convenience in connection with my invention.

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

1. The steam-generator G, constructed with a head, *b*, body *d*, fuel tube or passage *g*, and pendent water legs or tubes *f*, in combination with the waist E, body A, and grate D of a magazine or base-burning stove, essentially as described.

2. The steam-generator G, constructed with a head, *b*, body *d*, fuel tube or passage *g*, and pendent water legs or tubes *f*, in combination with the waist E, an intermediate heat-space, *e*, being provided between the waist and generator-body, and said waist having an annular shoulder, *c*, the body A, and grate D of a magazine or base-burning stove, substantially as described.

WILLIAM H. PRATT.

Witnesses:

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