J. B. HYZER.

Radiating Attachment for Stoves and Furnaces.

No. 48,180.

Patented June 13, 1865.

Fig. 5.

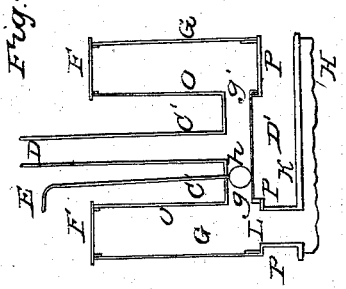


Fig. 6.

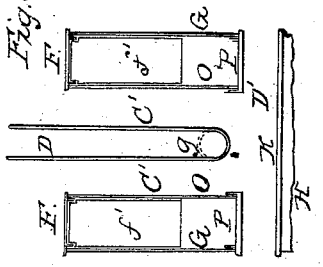


Fig. 3.

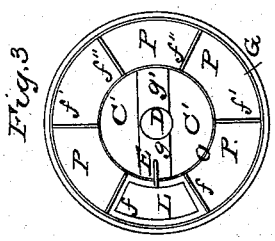


Fig. 4.

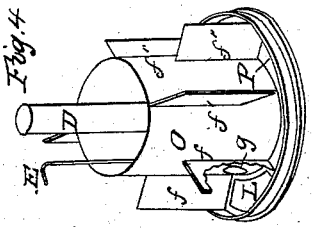


Fig. 2.

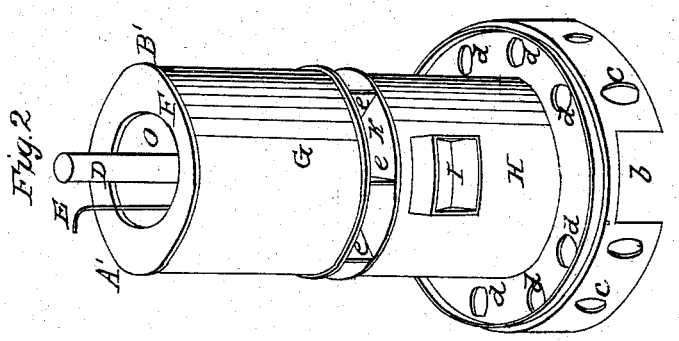
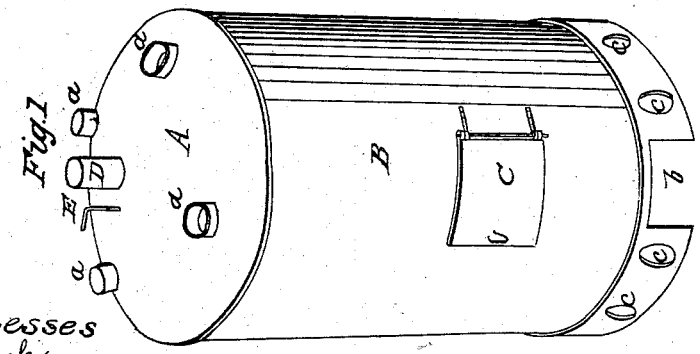


Fig. 1.



Witnesses
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UNITED STATES PATENT OFFICE.

JACOB B. HYZER, OF JANESVILLE, WISCONSIN.

HEAT-RADIATING ATTACHMENT FOR STOVES OR FURNACES.

Specification forming part of Letters Patent No. **48,180**, dated June 13, 1865.

To all whom it may concern:

Be it known that I, JACOB B. HYZER, of the city of Janesville, county of Rock, and State of Wisconsin, have invented a new and Improved Mode of Constructing Hot-Air Furnaces and Heat-Radiating Attachments to Stoves; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the accompanying drawings, making a part of this specification, like characters referring to like parts in each figure.

The nature of my invention consists, first, in constructing a hot-air furnace with an outer case inclosing in a hot-air chamber a stove and heat-radiating attachment, which latter can be used with the case as a furnace or without as a heat-radiator; second, in constructing the heat-radiating attachment with an inner radiating-surface and an inner hot-air space, ventilated above and below; third, in applying the ascending and descending smoke or hot-air flues heretofore used to heat-radiating attachments in such a manner that one plain ordinary damper supplies the place of the two costly dampers heretofore required.

To enable others skilled in the mechanic arts to construct and operate a hot-air furnace or heat-radiating attachment to stoves with my improvement, I will refer to the accompanying drawings, in which—

Figure 1 is a perspective drawing of a hot-air furnace complete. Fig. 2 is a perspective drawing of the same with the outside case or cylinder, B, and cap A removed to show the heat-radiating attachment A′ B′. Fig. 3 is a plan or top view of the heat-radiating attachment shown in Fig. 2 with the upper plate, F, removed. Fig. 4 is a perspective drawing of the heat-radiating attachment with the plate F and outer cylinder or case, G, removed. Fig. 5 is a vertical section on the line A′ B′, Fig. 2, of the heat-radiating attachment, with all of the stove except a portion of the top broken away. Fig. 6 is a vertical section of the same at right angles to Fig. 5.

I construct the stove H of any in the known forms, providing it with the necessary appendages, as a door or opening, I, for the reception of fuel, one or more suitable apertures, as *b c*, &c., for the admission of air to feed the combustion, and a smoke flue or pipe, L, of any known form or pattern. I place the heat-radiating attachment A′ B′ in any convenient position with reference to the stove H, but prefer to place it immediately over the stove, sustaining it by the supporters *e e e*, or in any other suitable manner. The smoke-pipe L leads into the radiating-chamber formed by the cylinders O and G and plates F and P, from the opposite sides of which the flues *g* and *g′* communicate with the discharge smoke-flue D. Within the radiating-chamber are the radial plates *f*, *f′*, and *f″*, arranged substantially as shown in Figs. 3, 4, and 5, to partition alternately the upper and lower portion of the chamber to turn the draft. Within the flue *g*, which enters the chamber directly over the flue L, is a damper, *h*, operated by the hand-rod or handle E. Within the inner cylinder, O, is an unconfined hot-air space, C′ C′, which I leave partially or entirely open, both above and below, to freely admit the cold air from below, and to as freely allow it to pass out above when warmed.

In constructing a furnace I inclose the heat-radiating attachment and stove shown in Fig. 2 in a case, B, (which I construct ordinarily in the cylindrical form,) and cap A, Fig. 1, leaving between them and the former a hot-air chamber, into which I allow the cold air to enter through one or more suitable orifices in the bottom, as *d d*, &c., and from which the hot air escapes through the hot-air flues *a a a a*, leading wherever desired. The case B has a door, C, for the admission of fuel into the stove, and rests upon a projecting rim of the stove, as shown in the drawings, or upon any other suitable support.

When in operation, with the damper as shown in the drawings, the heated air, smoke, and flame from the stove pass through the flue L into the radiating-chamber, and thence directly into the pipe D through the flue *g*, Figs. 3, 4, and 5, thus leaving a full and direct draft; but with the damper turned at right angles to the position shown in the drawings, so as to close the flue *g*, the heated air, smoke, and flame, before entering the pipe D, must pass upward and over the plate *f*, Figs. 3 and 4, thence downward and around plate *f′*, thence upward again and over the plate *f″*, and thence downward again and into and through the flue *g′*, thereby imparting the greater part of their heat to the plates P F, and cylinders O G, and

flues *g*, *g'*, and D, which are so many radiating-surfaces, that severally radiate it into the apartment to be warmed or into the hot-air chamber of the furnace, (when the furnace is used,) from whence it is conducted by the flues *a a a a*.

It will be seen that by the arrangement of the cylinders O G and smoke-flues *g*, *g'*, and D an increased extent of radiating-surface is secured, and that the hot-air space C' C' serves an important part in the economy of the radiated heat, as by it a constant draft of cold air from below is brought into close proximity to a large amount of direct radiating-surface, that heats and discharges it over the top of the radiator into the apartment or into the hot-air chamber aforementioned.

I am aware that in a patent granted to myself September 13, 1864, the combination of ascending and descending hot-air flues, regulated by dampers as described, is therein described and claimed, and I do not herein claim it.

I am also aware that in the patent aforementioned the combination of an outside radiating-case with an inside radiating-cylinder with stationary radial and radiating plates is therein claimed when the heat at all times and under all circumstances shall be confined to the outer radiating-surface, (see second clause therein of the declared nature of the invention;) and I do not herein claim the same, except when used with an inner unconfined hot-air space, and when the inner cylinder, instead of, as therein, radiating into the smoke-flue, becomes, like the outer cylinder, a direct radiating-surface; but

What I do claim, and desire to secure by Letters Patent of the United States, is—

1. The combination of the flue *g* and damper *h* with the flue *g'* and central smoke-pipe, D, substantially as and for the purpose set forth.

2. The combination of the outer and inner radiating-cylinders, G and O, and the radial plates *f*, *f'*, and *f''*, producing ascending and descending flues, with the inner unconfined hot-air space, C', ventilated above and below, substantially as and for the purpose set forth.

3. The combination of the flue L, cylinders G and O, and radial plates *f f' f''* with the flues *g* and *g'*, damper *h*, smoke-pipe D, and inner unconfined hot-air space, C', when constructed and arranged substantially as and for the purpose set forth.

JACOB B. HYZER.

Witnesses:
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