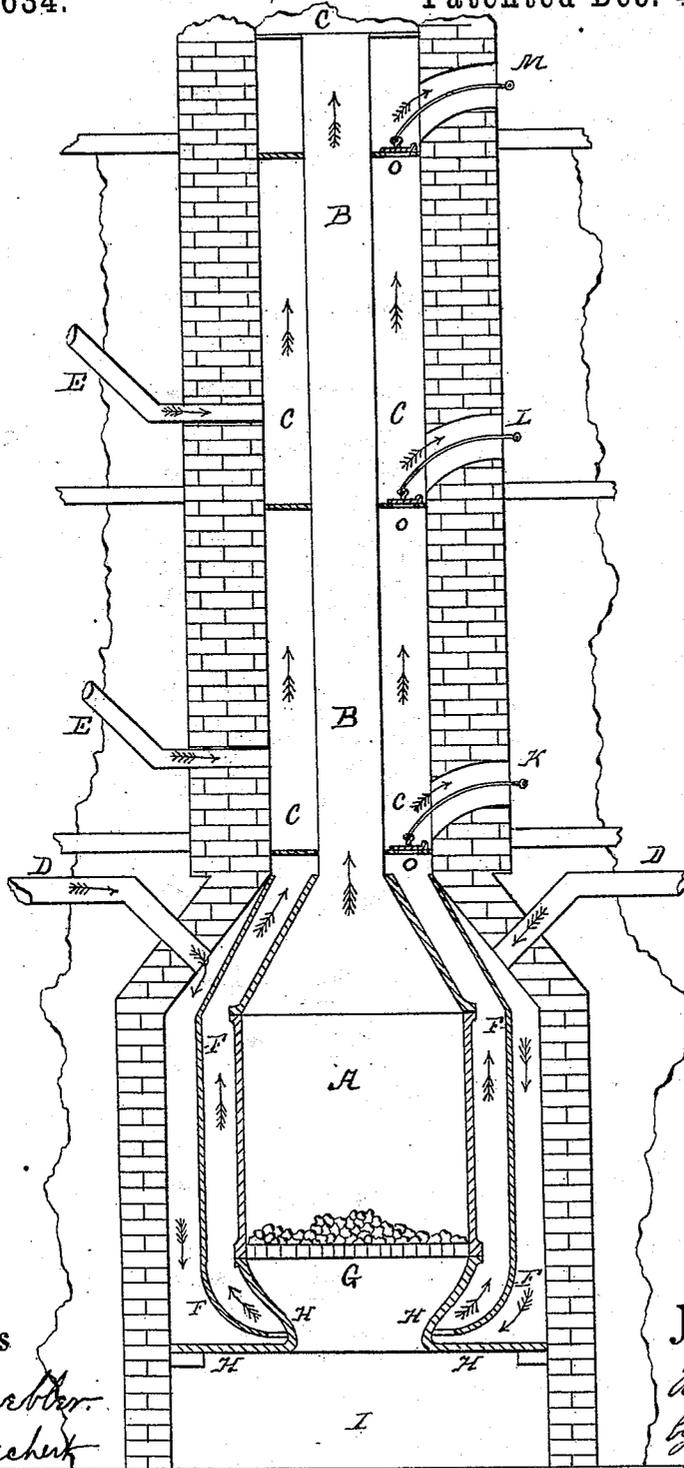


(No Model.)

W. ERNST.
FURNACE.

No. 289,634.

Patented Dec. 4, 1883.



Witnesses

Louis Kuebler.
Henry T. Dreher.

Inventor

Wilson Ernst
by his attorney
Chas. A. Matter.

UNITED STATES PATENT OFFICE.

WILSON ERNST, OF CAMDEN, NEW JERSEY.

FURNACE.

SPECIFICATION forming part of Letters Patent No. 282,634, dated December 4, 1883.

Application filed July 16, 1883. (No model.)

To all whom it may concern:

Be it known that I, WILSON ERNST, a citizen of the United States, and a resident of the city and county of Camden, and State of New Jersey, have invented a new and useful Improvement in Heaters for Heating Buildings, &c., of which the following is a specification.

The object of my invention is to provide a heater to be used for heating buildings, &c., inexpensive and simple in construction, easily understood and managed, and free from the objections that apply to many other heaters—viz., dust, smoke, and an enormous waste of heat, which entails a great expense for fuel.

The accompanying drawing represents a vertical section of my invention, and clearly represents its construction and operation.

A is the furnace, which is preferably made of cast-iron, and may, if desired, be made in the form of a truncated cone.

B is the smoke-pipe, which communicates with the furnace at its top, and which passes through the chimney C.

D D are pipes or openings for supplying fresh air to the furnace.

E E are openings or pipes for supplying air to the space surrounding the smoke-pipe.

F is a case surrounding the furnace, and around which the fresh air passes, as indicated by the arrows.

G is the grate.

H is the base-plate upon which the furnace stands.

I is the ash-pit.

O O are dampers, and K, L, and M are registers opening, respectively, upon the first, second, and third floors of the building to be heated.

My furnace A is constructed of cast-iron, and, as will be seen from the drawing, is exceedingly simple, containing no more parts than an ordinary stove.

The smoke-pipe B is connected with the furnace at its top, and passes up through the chimney C to a point, N, which is just above the register on the highest floor to be heated. At this point the chimney is shut off by a partition, N.

The air to be heated is introduced through pipes or openings D D, at the top of the fur-

nace, and passes down alongside of the case F and up alongside of the furnace, where it becomes greatly heated. From here it passes to the chimney or warm-air flue C, and through the registers into the rooms to be heated. This is the natural way for air to travel—the cold air down and the hot air up.

A great amount of heat is wasted in all heaters that I am aware of by escaping from the top of the chimney and by striking downward from the fire. To prevent the loss of heat through the smoke-flue, I have it inclosed, as shown, in the chimney, and as the heat will strike out through the smoke-pipe it will heat the air in the air-chimney or warm-air flue, and pass from there into the rooms to be heated. To utilize the heat which strikes down from the fire, I have the base drawn in, as shown. This base will become very hot, and will give off its heat to the air which is admitted through D, and which passes around F, as shown.

To prevent dust from entering the hot-air flues and passing from thence to the rooms of the building, I have the base H, on which the furnace rests, extending completely across the ash-pit. This shuts off all communication between the ash-pit and the air-chambers and hot-air flues. By this same arrangement all smoke is prevented from entering the hot-air flues.

Along the chimney or hot-air flue C, I have openings E, which communicate with the open air, and through which a supply of fresh air may be introduced into the hot-air flue to take the place of that which has passed into the rooms of the building. This air is very rapidly heated from the smoke-pipe B, and my plan of admitting cold air to both the furnace and hot-air flues is in keeping with the natural action of cold and hot air and secures quick action, carrying the heat generated at once where wanted, and prevents the waste of heat which occurs when the action is not so rapid, while my plan of incasing the smoke or draft pipe utilizes a very large amount of heat that otherwise goes to waste. These economies of heat naturally decrease the amount of fuel necessary for heating purposes. The hot-air flue C is furnished with dampers O, by

means of which the hot air may be all turned
 into one room, or may be allowed to pass up
 the flue. These dampers are similar in con-
 struction and operation to those usually used
 5 for like purposes, and will need no further
 description.

I am aware that the introduction of fresh
 air into the hot-air flue of a heater, and the
 incasing of the smoke-pipe in the hot-air flue
 10 are not new; and I am also aware that a de-
 flecting-plate has been used in connection with
 a stove to assist in utilizing the heat which es-
 capes from its front, and therefore I do not
 claim these broadly; but

15 What I do claim is—

1. The combination, in a heater, of the stove

A, smoke-pipe B, hot-air flue C, dampers O,
 cold-air inlets E and D, and annular partition
 F, surrounding the stove and dividing the
 space between said stove and the chimney into
 20 two chambers, substantially as shown and de-
 scribed.

2. As a device for utilizing the heat that
 strikes down from the grate G of a stove or
 heater, the base H, contracted on all sides at
 25 a point below the grate, substantially as shown
 and described.

WILSON ERNST.

Witnesses:

JAMES P. MOORE,
 CHAS. H. FELTON.