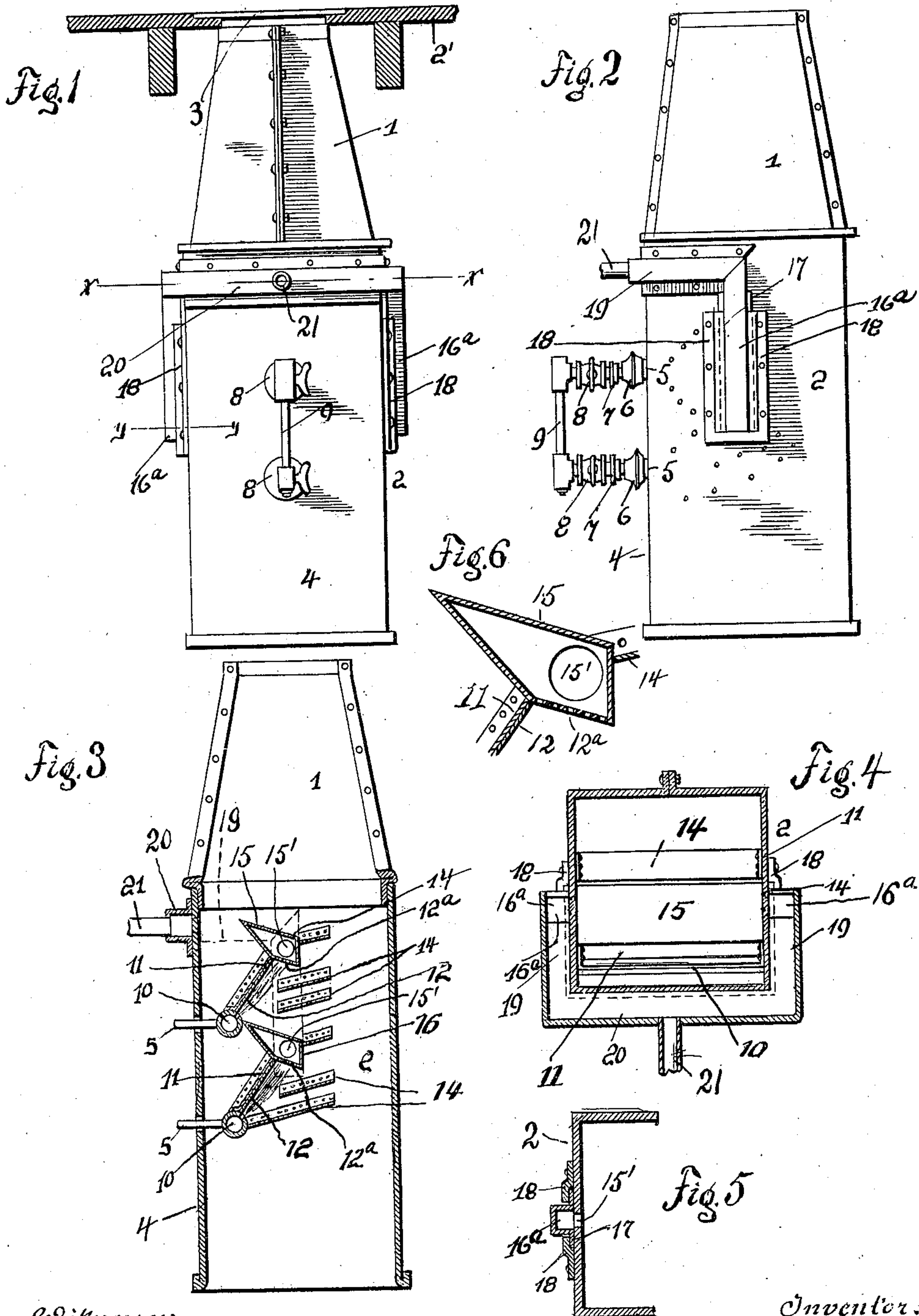


No. 862,382.

PATENTED AUG. 6, 1907.

I. H. BLACK.  
HEATER.

APPLICATION FILED JULY 16, 1906.



Witnesses:  
C. Kostermann

A. H. Butler

Inventor:  
I. H. Black

H. C. Everett & Co.  
by  
Attorneys.



# UNITED STATES PATENT OFFICE.

IRA H. BLACK, OF CARNEGIE, PENNSYLVANIA.

## HEATER.

No. 862,382.

Specification of Letters Patent.

Patented Aug. 6, 1907.

Application filed July 16, 1906. Serial No. 326,452.

*To all whom it may concern:*

Be it known that I, IRA H. BLACK, a citizen of the United States of America, residing at Carnegie, in the county of Allegheny and State of Pennsylvania, have  
5 invented certain new and useful Improvements in Heaters, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to certain new and useful improvements in heaters particularly designed as a hall  
10 heater.

The invention has for its object the provision of novel means for obtaining a maximum amount of heat from a minimum expenditure of fuel, this being accomplished by providing a heater with a plurality of  
15 baffling plates which are adapted to deflect the products of combustion, heating the baffling plates until they have become intensely hot before the products of combustion are permitted to escape through suitable flues provided therefor.

My improved heater is extremely simple in construction, and comparatively small in size compared with ordinary heaters, the heater being designed whereby it may be suspended from the bottom of a floor within the cellar of a building, or supported from  
25 the cellar floor directly beneath the floor above.

The detail construction of the heater will be hereinafter more fully described and then specifically pointed out in the claims.

Referring to the drawing, Figure 1 is a rear elevation  
30 of my improved heater, Fig. 2 is a side elevation of the same, Fig. 3 is a vertical sectional view of the heater, Fig. 4 is a horizontal sectional view taken on the line  $x-x$  of Fig. 1, and Fig. 5 is a fragmentary horizontal sectional view taken on the line  $y-y$  of Fig. 1. Fig. 6  
35 is an enlarged sectional view of one of the conduits together with portions of the adjacent baffle plates.

My improved heater is constructed of two sheet metal casings 1 and 2, the casing 1 being rectangular in cross section and tapering in elevation, the smaller end of  
40 said casing being suitably secured in a floor 2' beneath a register 3 mounted in said floor.

The casing 2 is fitted upon the large end of the casing 1 and can be suitably secured thereto. The casing 2 is rectangular in cross section and has its lower end  
45 open, whereby air may enter the heater and assist in the combustion of the gas employed as a heating medium. Extending through the rear side 4 of the casing 2 are two burner pipes 5 which are provided with air mixers 6, needle valves 7 and inlet valves 8, said valves  
50 being connected to the main gas supply pipe 9. The mixers and valves are of an ordinary form. The pipes 5 within the casing 2 are provided with transverse tubular burners 10 and extending upwardly at an angle to the rear wall 4 are baffling plates 11, said plates being  
55 arranged transversely of the casing 2 and provided with steel shielding plates 12 which protect the sheet

metal baffling plates from the action of the gas flames of the burners 10.

At the upper edges of the baffling plates 11 are mounted transversely disposed conduits 15 and 16, said conduits being trapezoidal in cross section and having their lower faces perforated, as at 12<sup>a</sup> to receive the fumes of the burners 10. The conduit 16 bears against the uppermost burner 10, forming two burner compartments in the casing 2. The conduits 15 and 16 communicate through openings 15' in the casing 2, at the ends of conduits 15, 16, with vertically disposed flues 16<sup>a</sup> arranged upon the sides of the casing 2. The conduits are constructed of metal and are provided with flanged edges 17 whereby they may be slidably mounted in guides 18, carried by the sides of the casing 2. The flues 16<sup>a</sup> communicate with side flues 19, which extend rearwardly and communicate with a cross flue 20 carried by the rear side 4 of the heater, this flue being provided with a suitable exhaust or outlet  
75 pipe 21 adapted to convey the utilized products of combustion to a suitable chimney or stack.

My invention resides particularly in the construction and arrangement of the flues 15, 16, with relation to the baffle plates 11, whereby the fumes of the burned gas  
80 are largely conducted outside the heater casing. The flame of the burning gas being directed directly towards the perforated bottom plates of the flues 15, 16, the fumes arising from the burned gas, will, to a great extent, be conducted into the said flues and carried  
85 off outside the casing by flues 19, 20, and exhaust 21. The flame being in close position to the baffling plates 11, to the casings of flues 15, 16, and to deflector plates 14, these elements all become highly heated, so that the air passing in to the heater through the bottom of  
90 casing 2, becomes heated, before it is discharged into casing 1, and thence into the compartment. The heat of the air is, therefore, to a very great extent, accomplished by the heat which radiates or is thrown off from the baffling plates 11, the casings of the flues 15, 95 16, and the deflector plates 14.

I do not care to confine myself to the specific arrangement of baffling plates as shown, and such other changes in the details of construction as are permissible by the appended claims may be resorted to without departing  
100 from the spirit and scope of the invention.

What I claim and desire to secure by Letters Patent is:—

1. A heater of the type described, comprising a tapering casing, a rectangular casing carried by said tapering casing, transversely arranged tubular burners mounted in said rectangular casing and connecting with suitable supply pipes, angularly disposed baffling plates mounted adjacent to said burners, steel plates carried by the baffling plates and exposed to the action of said burners, transversely arranged perforated conduits mounted in said casing at the upper edge of the steel covered plates, flues carried by the outer sides of said casing and communicating  
105 110

with a suitable outlet pipe, and means to control the admission of gas to said burners, substantially as described.

2. In a heater, the combination with a register, of casings supported beneath said register and arranged one  
5 above the other, gas burners arranged within the lowermost casing, burners mounted in the lowermost casing and connecting with suitable gas supply pipe, baffling plates arranged transversely of said casing and adjacent to said burners, steel plates carried by some of said baffling plates, perforated conduits arranged at the upper  
10 edges of said steel plates, detachable flues carried by the outer sides of said casing and communicating with said conduits and with a suitable outlet pipe, substantially as described.

3. A heater of the type described, comprising casings, 15 one located above the other, burners mounted in the lowermost casing, baffling plates disposed at an angle to said burners, transversely arranged conduits mounted at the upper edge of some of said baffling plates and communicating with the exterior of said casing, substantially as 20 described.

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

IRA H. BLACK.

Witnesses:

MAX H. SROLOVITZ,

E. E. POTTER.