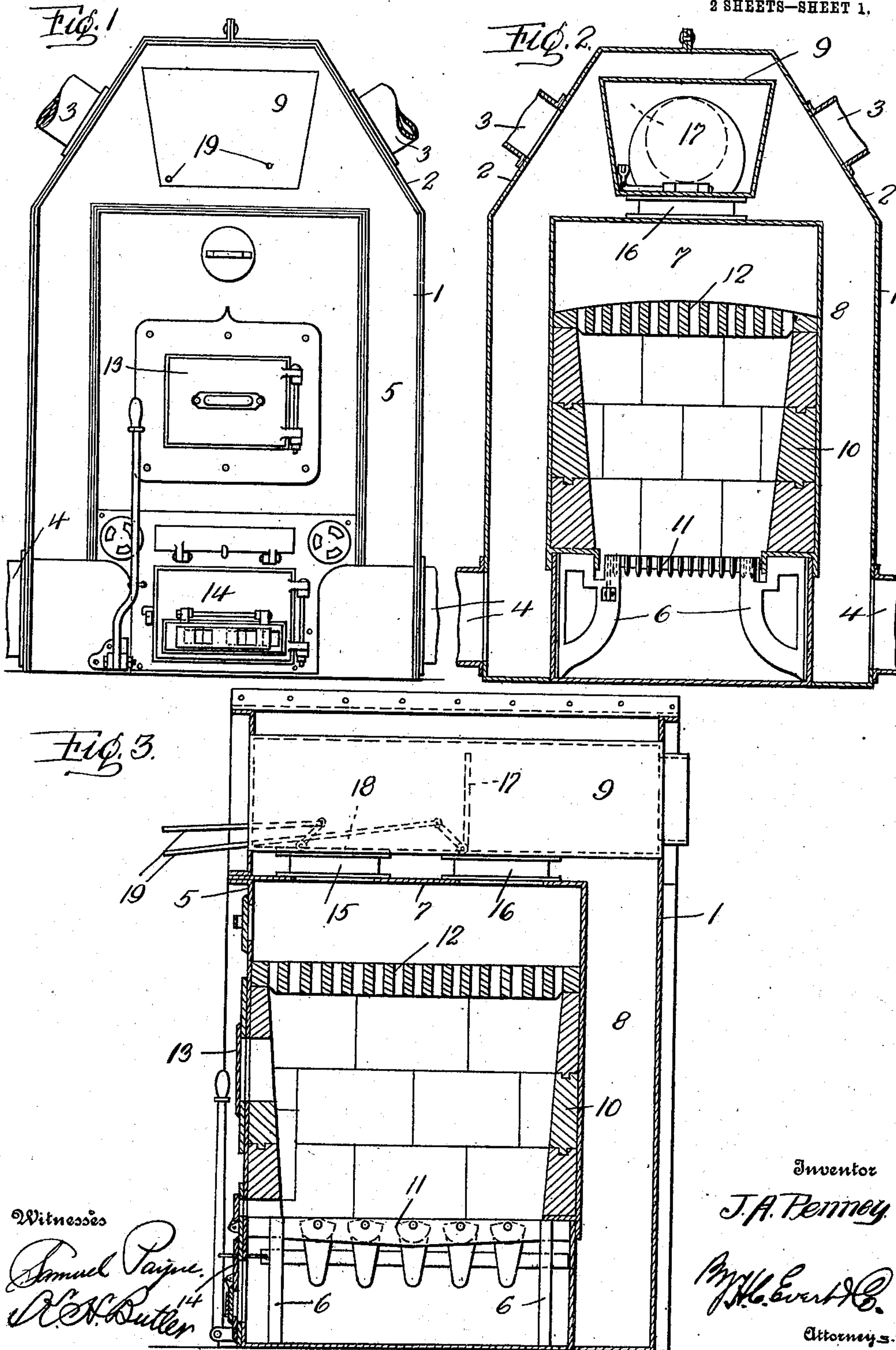


J. A. PENNEY.
FURNACE AND HEATER.
APPLICATION FILED FEB. 13, 1908.

923,697.

Patented June 1, 1909.

2 SHEETS—SHEET 1.



Witnesses

Samuel Payne.
H. H. Butler

Inventor

J. A. Penney

Wm. H. Evert & Co.

Attorneys

J. A. PENNEY.
FURNACE AND HEATER.
APPLICATION FILED FEB. 13, 1908.

923,697.

Patented June 1, 1909.

2 SHEETS—SHEET 2.

Fig. 4.

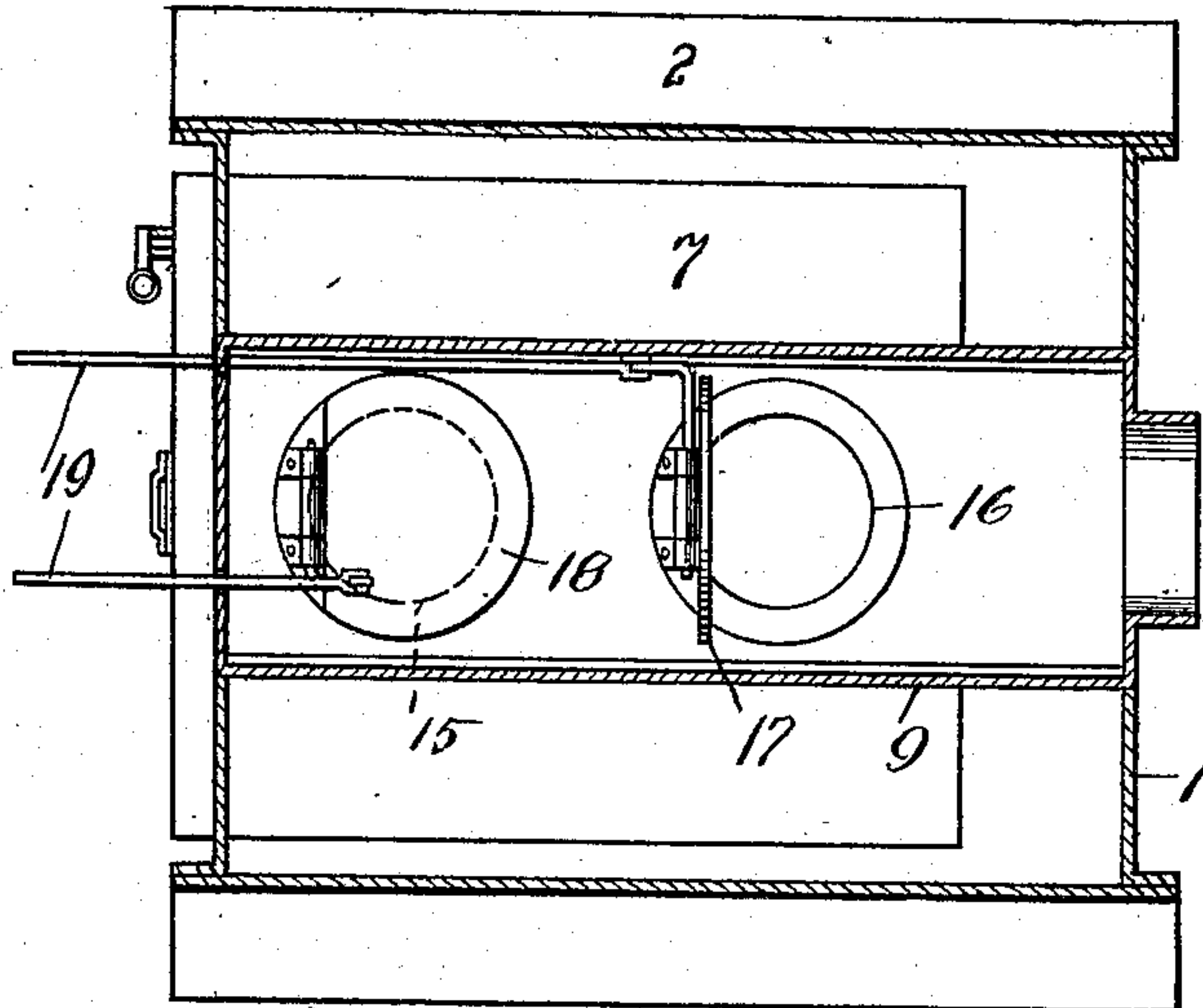


Fig. 5.

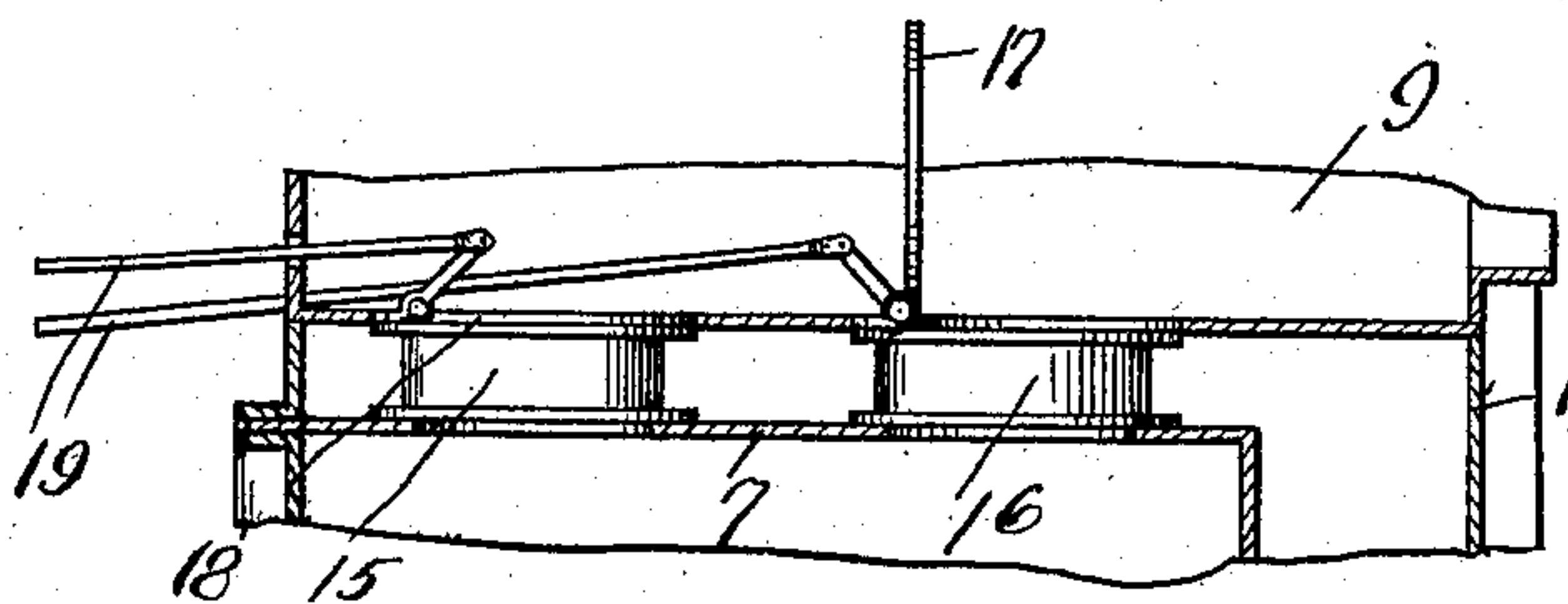
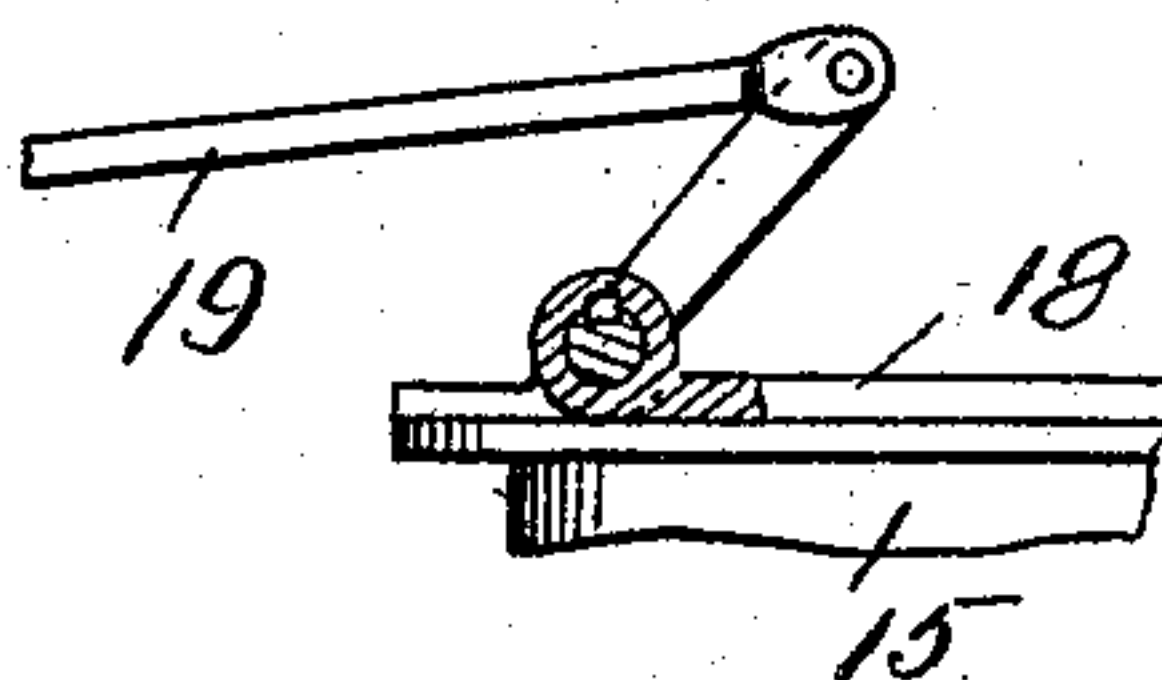


Fig. 6.



Witnesses

Samuel Payne
R. H. Butler

Inventor

J. A. Penney

By

H. C. Everett

Attorney

UNITED STATES PATENT OFFICE.

JAMES A. PENNEY, OF McKEESPORT, PENNSYLVANIA.

FURNACE AND HEATER.

No. 923,697.

Specification of Letters Patent.

Patented June 1, 1909.

Application filed February 13, 1908. Serial No. 415,664.

To all whom it may concern:

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

10 This invention relates to furnaces, and has for its primary object to provide a furnace having means for deflecting the products of combustion toward the front side of the furnace, whereby the cold air admitted to the
15 furnace will be subjected to the action of such products of combustion, and will be thoroughly heated before being exhausted from the furnace to the rooms or compartments of a building.

20 An additional object of my invention is to provide a furnace with means for creating a direct draft to the exhaust flue of the furnace when the door thereof is opened and fuel is being added to the fire in the fire-box.

25 A still further object of my invention is to provide simple and easily operated dampers for controlling the exhaust of the products of combustion.

30 With the above and other objects in view which will appear as the invention is more fully described hereinafter, the invention consists of novel construction, combination and arrangement of parts as will be hereinafter described, and then specifically claimed.

35 Referring to the drawings forming a part of this specification: Figure 1 is a front elevation of a furnace as constructed in accordance with my invention, Fig. 2 is a cross sectional view of the same partly in elevation,
40 Fig. 3 is a longitudinal cross sectional view of the furnace, Fig. 4 is a horizontal sectional view taken through the exhaust casing or flue of the furnace, Fig. 5 is a vertical sectional view of a part of the furnace, and,
45 Fig. 6 is an enlarged detail view partly in side elevation and partly in section showing the manner in which the damper operating levers are connected to the dampers.

50 To put my invention into practice, I provide an outer metallic shell or casing 1 which is substantially oblong in plan, having slanting walls 2 adjacent the upper end, which walls are provided with openings, from which lead exhaust flues 3. Opposite sides

of the casing or shell, adjacent the lower end 55 thereof, are provided with cold air inlet openings or flues 4.

What may be termed the furnace proper, is mounted in the front wall 5 of the casing 1, and extends into the chamber or space 60 inclosed by said casing 1 for some distance, but does not occupy either the full depth or the full width of the said chamber or space, as is clearly shown in Figs. 1 to 3. This furnace proper embodies a casing 7, the forward 65 end of which is mounted in the front wall 5 of the casing 1. The casing 7 is supported at its bottom upon brackets 6 mounted on the bottom of the casing 1, and said casing 7 is of a length so that its inner end terminates 70 short of the adjacent wall of the casing 1, and is of a width so that its side walls are spaced some distance away from the adjacent walls of the casing 1, forming an air space 8 at the inner end and at the sides of the casing 7, 75 which is herein designated as a cold air space.

An exhaust flue or casing 9 is mounted in the casing 1 in the upper portion thereof, the forward end of said exhaust flue being mounted in the front wall of the casing 1, 80 and the rear end of said exhaust flue 9 being mounted in the rear wall of said casing 1, the said rear end of the flue 9 being open as shown in Fig. 4 in order that communication with a chimney or stack (not shown) may be 85 established therewith.

A fire-box or combustion chamber is within the inner casing 7, a lining of tile or similar non-fusible material 10 of any desired form is arranged within the casing 7 and 90 supported by the bottom of the latter as clearly illustrated in Fig. 2. On the top of the fire-box lining is mounted a perforated baffle plate 12, also preferably made of tile or other non-fusible material. In the front 95 wall of the casing 7 I have provided an opening to give access to the fire-box, which opening is normally closed by the fire door 13. A door 14 is also provided for closing the doorway to the ash-pit underneath the fire 100 box or combustion chamber.

The exhaust flue or casing 9 is in communication with the chamber within the inner casing 7 by means of pipes 15 and 16, best shown in Fig. 5. The passage of the prod- 105 ucts of combustion from the furnace proper to the exhaust flue or casing 9 is controlled by means of dampers 17 and 18 which are

operated independently to open or close the pipes 15 and 16, respectively. These dampers are actuated by means of levers 19 extending through the front wall of the exhaust flue 9, as clearly shown in Figs. 1, 4 and 5.

In practice, when the fire door 13 is open, the damper 18 is closed, and the damper 17 is opened, whereby the smoke and fumes from the fire-box will pass through pipe 16 directly to the stack or chimney. When the fire door is closed, the dampers are then reversed, that is, damper 17 is closed, and damper 18 is opened. This results in the products of combustion passing through pipe 15 into the forward end of the exhaust flue 9, necessitating travel of such products of combustion throughout the length of the flue 9 before they escape to the chimney or stack. In the meantime, the cold air which enters through the inlets 4 is partially heated as it rises in the space 8, and is further heated by the heat given off by the exhaust flue 9, so that before being discharged from the exits 3, it is in a highly heated condition. The baffle plate 12 is employed for the purpose of retarding the products of combustion as they pass from the fire-box to the exhaust flue 9, in order that the upper portion of the casing 7 will become thoroughly heated, and the heat given off therefrom heat the cold air rising in the cold air space 8.

Having now described my invention, what I claim as new is:—

A furnace comprising an outer casing having outlets near its upper end for the warm air and having cold air inlets at its lower end, a housing mounted in said casing and forming part of the front wall thereof, said housing having its side walls and rear wall spaced from the side walls and rear wall respectively of the outer casing to form a cold air space between said casing and housing, a fire-pot within said housing, a baffle plate arranged above said fire-pot and within said housing, an exhaust casing arranged above said housing with its ends mounted in said outer casing, the forward end of said exhaust casing forming a part of the front wall of the outer casing, pipes connecting said housing with said exhaust casing near the forward and rear ends of the housing, a damper within the exhaust casing for each of said pipes, and independent operating means for each damper, said means comprising actuating rods extending through the front wall of said exhaust casing.

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

JAMES A. PENNEY.

Witnesses:

MAX H. SROLOVITZ,
K. H. BUTLER.