July 8, 1924.

H. MIILLER

1,500,838

HEATING ATTACHMENT FOR STOVE OR FURNACE PIPES

Filed March 23, 1922

Fig 1

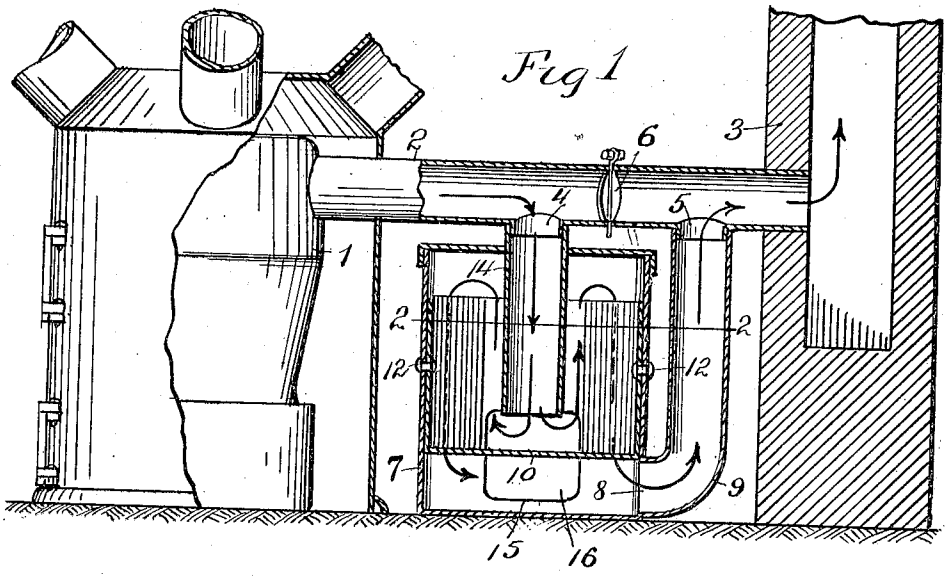


Fig 2

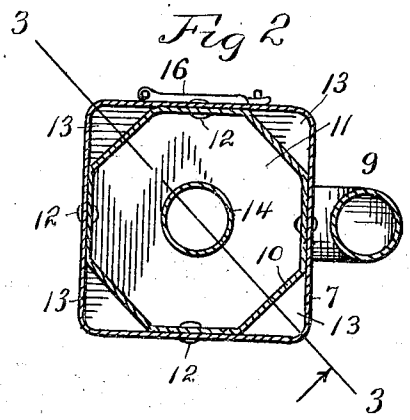
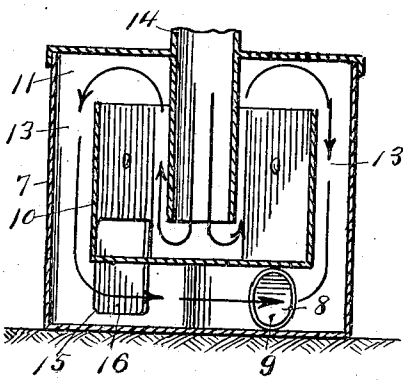


Fig 3



Witness:

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UNITED STATES PATENT OFFICE.

HENRY MIILLER, OF KANSAS CITY, MISSOURI.

HEATING ATTACHMENT FOR STOVE OR FURNACE PIPES.

Application filed March 23, 1922. Serial No. 546,102.

To all whom it may concern:

Be it known that I, HENRY MIILLER, a citizen of the United States, residing at Kansas City, in the county of Jackson and State of Missouri, have invented a certain new and useful Improvement in Heating Attachments for Stove or Furnace Pipes, of which the following is a specification.

My invention relates to improvements in heating attachments for stove or furnace pipes.

One of the objects of my invention is to provide an attachment adapted to be connected with a smoke pipe of a stove or furnace, by means of which a great saving in fuel is effected, which greatly reduces the heat discharged from the flue, which is simple in construction, cheap to make, durable, not liable to get out of order, which may be readily attached to the smoke pipe of a stove or furnace now in use, which may be readily cleaned, and which is efficient in operation.

In carrying my invention into effect, the gaseous products of combustion on the way from the stove to the flue are carried through a drum having an expansion chamber in directions first downwardly, then upwardly and then downwardly, after which the products are discharged into the flue.

In the accompanying drawing, which illustrates the preferred embodiment of my invention,

Fig. 1 is a view, partly in side elevation and partly in vertical section of a furnace and flue of ordinary type provided with my improvement.

Fig. 2 is a horizontal section on the line 2—2 of Fig. 1.

Fig. 3 is a vertical sectional view on the line 3—3 of Fig. 2.

Similar reference characters designate similar parts in the different views.

1 designates the combustion chamber of an ordinary furnace, to which is connected a horizontal smoke pipe 2, which discharges into a flue 3.

The lower side of the pipe 2 is provided with two lateral openings 4 and 5. In the smoke pipe 2, intermediate of the openings 4 and 5, is a damper 6, Fig. 1. 7 designates an upright drum having closed upper and lower ends and provided in one side near the bottom with a discharge opening 8, with which communicates the lower end of a pipe 9, the upper end of which communicates with the opening 5.

Mounted in the drum 7 is a cup-shaped member 10, having its bottom disposed above the opening 8, and having its upper end spaced apart from the top of the drum 7, and which forms with the latter an expansion chamber 11. The member 10 is preferably octagonal in cross section, and the drum 7 is preferably substantially square in cross section. Four of the sides of the cup-shaped member 10 are fastened respectively by rivets 12 to the inner sides of the four walls of the drum 7. By means of this construction, four vertical passages 13, Fig. 2, are provided between the side walls of the cup-shaped member and the drum.

Mounted in the top of the drum 7 is a vertical pipe 14, the upper end of which communicates with the opening 4, and the lower end of which is disposed above and spaced apart from the bottom of the member 10.

In order that the drum may be readily cleaned of soot, one side of the drum is provided with an opening 15, which extends above and below the bottom of the member 10 and which is normally closed by a door 16.

For obtaining the most efficient results with my improvement, the drum in connection therewith should be as nearly air tight as possible.

In the operation of my invention, the gaseous products of combustion passing from the combustion chamber 1 into the smoke pipe 2, will, when the damper 6 is closed, pass as indicated by the arrows in Figs. 1 and 3, first downwardly through and out of the pipe 14, into the cup-shaped chamber 10, which is of such relatively large diameter that the gaseous products of combustion will be greatly expanded. The gaseous products will pass upwardly in the expansion chamber and then downwardly through the passages 13, thence under the member 10 to and through the discharge opening 8, and thence upwardly to the flue 3 through the pipe 9 and pipe 2.

In starting the fire, the damper 6 is opened to furnish direct draft. After combustion has been well established, the damper

6 is closed, thus forcing the gaseous products to pass through the drum 7 on the way to the flue.

By reason of the expansion and change of direction of the gaseous products of combustion, after being discharged from the lower end of the pipe 14, into the expansion chamber, the velocity of the current is very much reduced and a substantially dead air space is afforded in the upper portion of the expansion chamber, whereby the gaseous products lose by radiation before reaching the flue a very large amount of their heat. The temperature, therefore, of the gaseous products which are discharged from the flue will be very much lower than when the products are discharged directly through the pipe 2 to the flue, that is, when the damper 6 is in the open position and the gaseous products are not compelled to pass through the drum 7.

I do not limit my invention to the structure shown and described, as many modifications, within the scope of the appended claims, may be made without departing from the spirit of my invention.

What I claim is:—

1. In a device of the kind described, an upright drum closed at its upper and lower ends and provided near its bottom with a lateral discharge opening, a cup-shaped member mounted in said drum with its bottom above said discharge opening and its upper end spaced apart from the upper end of said drum, said cup-shaped member forming with the side walls of said drum one or more vertical passages communicating with the spaces above and below said cup-shaped member, said discharge opening being adapted to be in communication with a pipe discharging into a flue, and a vertical inlet pipe extending through the top of said drum and adapted to be connected at its upper end with a smoke pipe of a stove or furnace and having its lower end spaced apart from the bottom of said cup-shaped member, substantially as set forth.

2. In a device of the kind described, the combination with a smoke pipe and a flue into which the pipe discharges, said pipe having two lateral openings and a damper located in the pipe between said openings, of an upright drum having near its lower end a lateral discharge opening, a cup-shaped member in said drum having its bottom above said discharge opening and its upper end spaceed apart from the upper end of said drum, the side walls of said cup-shaped member forming with the side walls of the drum one or more vertical passages communicating with the spaces above and below said member, a vertical pipe extending through the top of said drum and communicating with its upper end with one of said lateral openings of said smoke pipe and extending into said cup-shaped member and having its lower end spaced apart from the bottom of the latter, and a pipe communicating at its ends respectively with said discharge opening and with the other lateral opening of said smoke pipe, substantially as set forth.

3. In a device of the kind described, the combination with a smoke pipe having two lateral openings and a damper intermediate of said openings, and a flue into which said pipe discharges, of a drum having an expansion chamber and a lateral discharge opening below said chamber and having a vertical pipe communicating with one of said lateral openings at its upper end and discharging at its lower end above the bottom of said expansion chamber, the drum having means by which the expanded gaseous products of combustion after passing through said vertical pipe are carried upwardly and then downwardly to said discharge opening, and a pipe communicating at its ends with said discharge opening and with the other lateral opening respectively, substantially as set forth.

In testimony whereof I have signed my name to this specification.

HENRY MIILLER.