A. J. CHENEY.

DUSTPROOF CONNECTION FOR HOT AIR FURNACE PIPES.

APPLICATION FILED NOV. 8, 1918.

1,399,748. Patented Dec. 13, 1921.

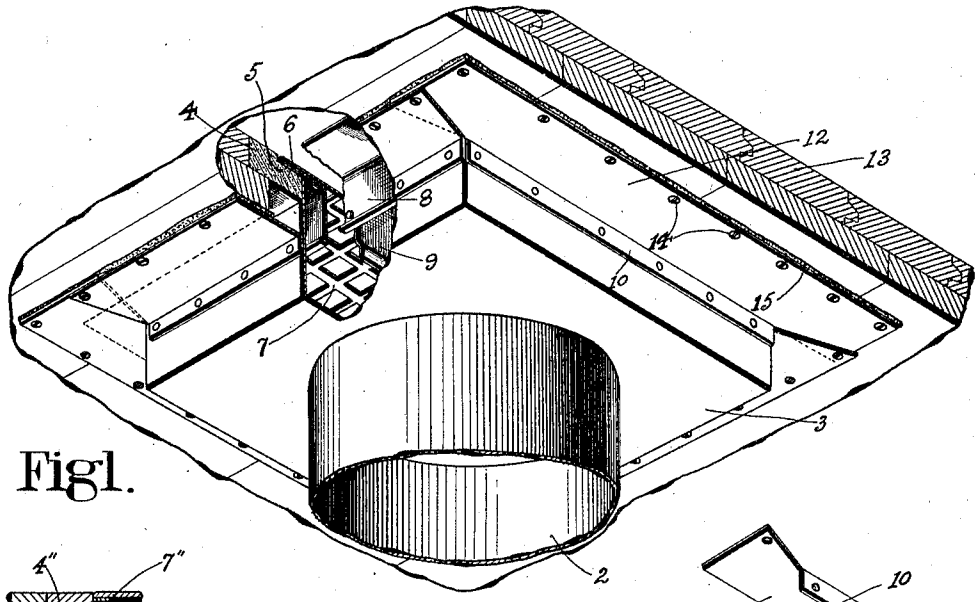


Fig1.

Fig.2.

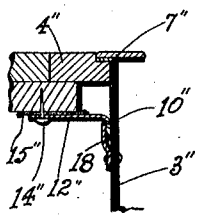


Fig.3.

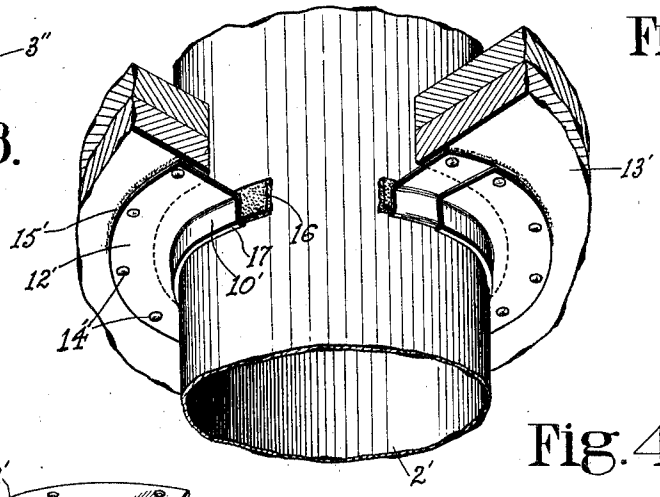


Fig.4.

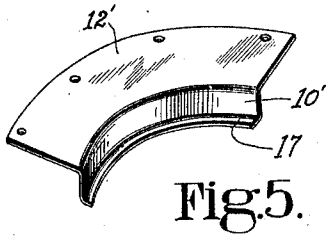


Fig.5.

INVENTOR.

Ansel J. Cheney,

By his Attorney,

J. H. McCrady.

UNITED STATES PATENT OFFICE.

ANSEL J. CHENEY, OF BEVERLY, MASSACHUSETTS.

DUSTPROOF CONNECTION FOR HOT-AIR-FURNACE PIPES.

1,399,748. Specification of Letters Patent. Patented Dec. 13, 1921.

Application filed November 8, 1918. Serial No. 261,673.

To all whom it may concern:

Be it known that I, ANSEL J. CHENEY, a citizen of the United States, residing at Beverly, in the county of Essex and State of Massachusetts, have invented certain Improvements in Dustproof Connections for Hot-Air-Furnace Pipes, of which the following description, in connection with the accompanying drawings, is a specification, like reference characters on the drawings indicating like parts in the several figures.

One of the chief objections to the use of hot air heating systems for domestic purposes is the fact that in most installations there is a very disagreeable escape of dust and coal gas into the rooms so heated. Some times the cause for this trouble is in the furnace itself but investigation shows that far more frequently the dust and coal gas escape into the rooms not through the hot air pipes themselves, but through the crevices and faulty joints between the furnace pipe or register and the floor or wall. The fact that the furnace pipe is warm naturally creates a draft through any crack or crevice around the pipe and consequently dust originating in the cellar is carried upwardly by this current of air into the rooms. The coal gas finds its way into the rooms in the same manner, the gas being admitted to the cellar by the opening of the furnace door when the dampers are shut. Dust or coal gas escaping into the rooms in this manner is circulated very rapidly by the currents of warm air and readily finds its way through the greater part of the house.

The present invention has for its chief object to devise a connection that will effectually prevent the entrance of dust and gas into the rooms in the manner above described. It is also an object of this invention to devise a connection of this character which can be economically manufactured and can readily be applied either to present heating systems or to new installations.

The manner in which it is proposed to accomplish these objects will be readily understood from the following description and the novel features of the invention will be particularly pointed out in the appended claims.

Referring now to the accompanying drawings,

Figure 1 is an angular view of a construction embodying this invention, the view being taken from a point in the cellar and looking upwardly, certain parts being broken away for the sake of clearness;

Fig. 2 is an angular view of a part of the connection used in the construction shown in Fig. 1;

Fig. 3 is a vertical cross sectional view of a modified construction;

Fig. 4 is an angular view of a further modification; and

Fig. 5 is an angular view of a part of the connection shown in Fig. 4.

Referring particularly to Figs. 1 and 2, 2 indicates a hot air conductor or pipe leading from the furnace and joined to another conductor 3 which, to all intents and purposes, so far as the present invention is concerned, is a continuation of the pipe 2, the fact that it is of square instead of round cross-section being immaterial for present purposes. The conductor or register box 3 is constructed to fit very loosely within a register border 4 having a depression 5 cut in its inner marginal edge to receive the outer edge or margin of the register 7. Usually the vertical wall of the register box 3 is provided with an outturned flange 6 which rests in this recess. The margin of the register 7 also rests in this recess and this register carries depending flanges, one of which is indicated at 8, to support a series of pivoted shutters, one of which is shown at 9, these shutters being mounted to swing to open or close the air conducting space in the register.

The construction so far described is like that of the usual connection between a register and a furnace pipe and it will readily be seen that if the register box is not carefully made and does not fit snugly into the border 4, or if the joint around the border is poor, the cracks or crevices provided by this poor construction afford abundant opportunity for the entrance of currents of air which will be induced by the heat of the furnace pipe and by the current of hot air passing through the register, and that these stray currents will carry the dust and gases from the cellar upwardly into the rooms.

According to the present invention this action is prevented by surrounding or encircling the furnace pipe or conductor 2, or its continuation 3, as the case may be, with a collar which comprises a short sleeve portion 10 and a flange or flashing 12. The sleeve 10 may be soldered or riveted to the vertical wall of the hot air conductor 3 and

the flange 12 is turned outwardly at right angles to the sleeve and is provided with a series of apertures along its edge to receive screws or nails 14 by means of which it is secured to the floor 13. It will be understood that the term "floor" is used herein to designate a floor, wall, partition, or the like, through which the hot air is conducted by the pipe.

It is obvious that the soldered connection between the sleeve 10 and the register box 3 is dust proof and in case a riveted or bolted joint is used a suitable packing may be introduced between these parts to make a dust proof joint. In order to form a dust proof joint between the flashing 12 and the floor 13 a relatively heavy sheet packing 15, such as asbestos, felt, or the like, is interposed between this flashing and the floor. The collar preferably is put up with screws so that this packing will be compressed and will conform to any irregularities in shape between the parts 13 and 12.

For convenience in installing it may be desirable to make the collar in sections, and it is shown in Fig. 1 made in four sections, a part of one of these sections being illustrated in Fig. 2. In cases where it is necessary to insert the connection from the upper side of the floor, the collar may be secured to the part 3 and the flange 12 may then be bent up so that it will lie closely beside the vertical wall of this part. The register box with the collar secured thereto may then be dropped down through the register opening in the floor, after which the flange 12 can be bent out into its horizontal position in readiness to receive the packing 15 and be secured in its operative position.

Figs. 4 and 5 illustrate a construction embodying the same general principles as that shown in Figs. 1 and 2 but adapted particularly to pipes of circular cross-section and is useful wherever such a pipe passes through a floor, wall or the like. In these figures the parts corresponding to those illustrated in Figs. 1 and 2 are designated by the same reference numerals as those used in the latter figures except that these reference numerals are primed. The collar may be made either in a single piece to be slipped on over the end of the pipe or it can be made in two sections, as illustrated, the latter construction being more convenient for present installations. In this construction, instead of permanently securing the sleeve 10′ to the pipe 2′, a slip joint is provided between these parts and this joint is made dust proof by the use of a packing 16 of felt, asbestos, or the like, which fills the space between the sleeve and the pipe and is held in place by a lip 17 that is turned inwardly at the lower edge of the sleeve.

Another modification is illustrated in Fig. 3 which is applicable to either form of the invention above described, the double primed numerals designating the parts corresponding to those in the constructions shown in Figs. 1, 2, 4 and 5. In this arrangement, as in Figs. 4 and 5, a slip joint is provided between the sleeve 10″ and the pipe 3″. The pipe 3″, however, has a circumferential series of clips 18 riveted to it, the upper ends of the clips being bent outwardly far enough to receive the sleeve 10 between them and the outer surface of the pipe. If any difficulty is experienced in making a tight joint between the parts 10″ and 3″ a strip of felt or equivalent material may be folded over the edge of the sleeve 10″ before the pipe 3″ is slipped into place and this strip of material will perform the same function that is performed by the strip 16 in Fig. 4.

It will now be understood that this invention provides a connection that can conveniently be made between any of the usual forms of hot air furnace pipes and the wall or floor through which they pass, which can be economically manufactured and can readily be installed without special tools. It will also be seen that this connection effectually stops any currents of air which otherwise would be drawn upwardly around the furnace pipe and thus prevents the entrance of dust or coal gas into the rooms in the manner above described. It also avoids the passage of cold air into the rooms which, in very faulty installations, materially reduces the efficiency of the heating system. A further advantage of this arrangement is that it reduces the danger of fire catching in the cellar from reaching the upper rooms, since the draft which otherwise would be present around the furnace pipes and would tend to carry the flames with it is blocked and, consequently, the smoke and flames do not have the opportunity to spread to upper parts of the building which otherwise would be afforded.

What is claimed as new, is:

1. A connection of the character described for hot air conductors for furnaces, comprising a collar to surround the conductor, said collar having a sleeve portion constructed to extend substantially parallel to and embrace the conductor and a flashing projecting away from said sleeve at an abrupt angle thereto and constructed to be secured to a support adjacent to the conductor, and means for fastening the sleeve portion of said collar to said conductor.

2. A dust proof connection for hot air conductors for furnaces comprising the combination with an air conductor and a floor having an opening therethrough with which the conductor communicates, of a collar surrounding said conductor and having a sleeve portion extending parallel to the outer surface of said conductor closely adjacent

thereto, and also having a flashing projecting at substantially right angles away from the upper part of said sleeve portion, said collar consisting of overlapping sections, means for securing said flashing to the lower surface of the floor adjacent to the edge of said opening, and a packing closing the joint between said flashing and the floor.

3. A dust proof connection for register boxes comprising the combination with a register box and a floor having a register opening therethrough communicating with said box, of a plurality of collar sections each comprising a flashing and a portion extending downwardly at substantially right angles thereto, said sections forming a collar that surrounds said box, said downwardly extending portions uniting to form a sleeve extending parallel to the outer surface of the box and closely adjacent thereto, the end portions of said sections overlapping, means for fastening said sleeve portion to the box, means for securing said flashing to the lower surface of the floor adjacent to the edge of the register opening, and a packing of yielding material between said flashing and the floor.

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

ANSEL J. CHENEY.