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CONNECTING COLLAR FOR FURNACES

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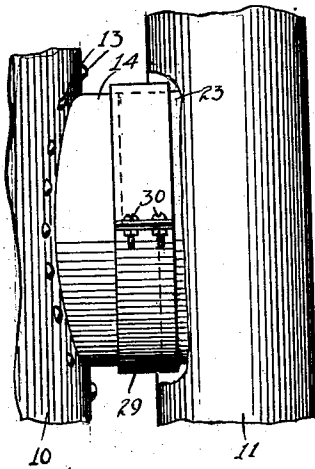


Fig. 1.

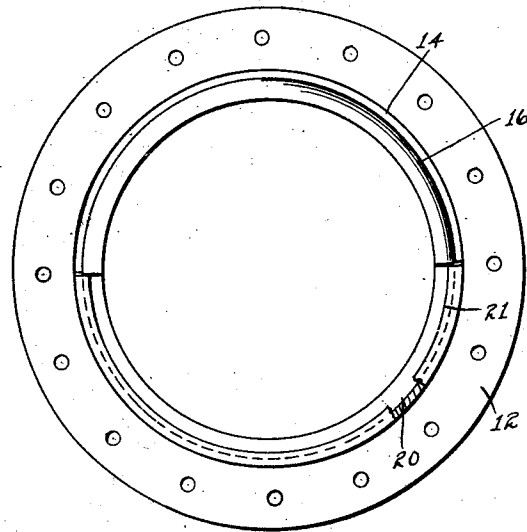


Fig. 2.

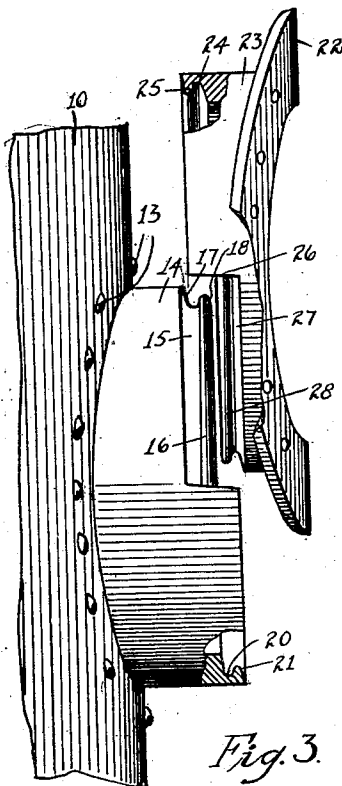


Fig. 3.

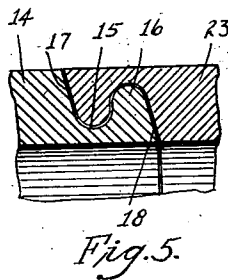


Fig. 5.

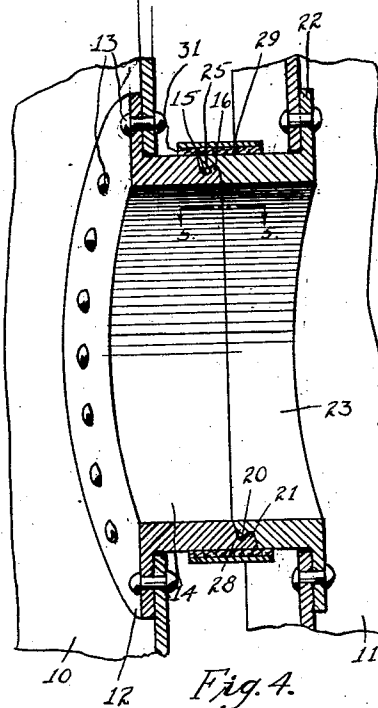


Fig. 4.

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UNITED STATES PATENT OFFICE

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CONNECTING COLLAR FOR FURNACES

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The object of my invention is to provide an improved connecting collar device of simple, durable and inexpensive construction, especially designed for use in hot air furnaces for connecting a radiator to the furnace body, and for permitting the products of combustion to pass from the furnace body to the radiator before passing to the flue.

Heretofore numerous devices have been employed for this purpose, and it has been customary in such devices to seal the joint in the connecting collar by furnace cement or the like. This is objectionable because after the cement has set and hardened, it will crack and portions thereof fall out and permit the escape of gas and smoke.

One of the objects of my invention is to provide a connecting collar of this class in which the collar may be made of cast iron without machine work, and when the two parts are being fitted together they will have a wedging action tending to draw the two parts firmly toward each other to provide as nearly as practicable a gas and air tight joint, and a joint which will firmly support the radiator against movement in all directions relative to the furnace, except straight upwardly.

A further object is to provide a collar of this character so arranged that when assembled there may be applied to its exterior a clamping metal band with an asbestos lining so arranged as to lock the radiator collar member against upward movement, and at the same time form a gas and air tight joint, and whereby the parts may be readily and easily removed or replaced without injury.

My invention consists in the construction, arrangement and combination of the various parts of the device, whereby the objects contemplated are attained, as hereinafter more fully set forth, pointed out in my claims, and illustrated in the accompanying drawings, in which:

Figure 1 shows a side elevation of a part of a hot air furnace and a part of a radiator with my improved connecting collar applied to both, with the locking and sealing band applied thereto.

Figure 2 shows an end view of the con-

necting collar with parts broken away to show the depth of the groove in the furnace collar member.

Figure 3 shows an enlarged, detail, side view of a portion of a furnace, a furnace collar member connected thereto and a radiator collar member in position so that the two collar members may be connected by a downward movement of the radiator collar member. In this view parts are broken away to show the grooves in the collar members.

Figure 4 shows a vertical, central, sectional view in perspective through portions of the furnace and radiator and through the connecting collar members, and showing the clamping and sealing band in position thereon; and

Figure 5 shows an enlarged, detail, sectional view on the line 5—5 of Figure 4, showing the tapered edges of the ribs and grooves.

Referring to the accompanying drawings, I have used the reference numeral 10 to indicate that part of a furnace shown and that part of the radiator shown.

The connecting collar is made of two parts, one to be attached to the furnace and the other to the radiator. The furnace collar member comprises a flange 12 designed to fit against a furnace and to be connected thereto by bolts or rivets 13.

Extending rearwardly from the flange 12 is a substantially circular collar member 14. At the upper half of the collar member 14 I have formed a groove 15, and beyond the groove a rib 16. The outer surface of the rib is substantially lower than the outer surface of the adjoining collar portion 14, as shown in Figure 3. This rib 16 is tapered from a minimum width at its top to a maximum width at its bottom. The surface between the bottom of the groove 15 and the top of the collar 14 is inclined away from the furnace member, as shown at 17 in Figure 5. Likewise the rear end of the rib 16 is inclined away from the furnace member, as shown at 18 in Figure 5.

At the lower end of the rib 16 there is a shoulder 19 extended downwardly and out-

wardly from the furnace, and the lower half of the collar member 14 is somewhat longer than the upper half.

On the interior of this lower member of the collar member 14 there is formed a groove 20, and beyond it a rib 21. This groove and rib have the tapered and inclined features before described with relation to the groove 15 and the rib 16.

The collar member for the radiator comprises a flange 22 to be secured to a radiator, and a collar member 23 projecting from said flange toward the furnace. The upper half of this collar member 23 is formed with an internal groove 24 and an inwardly projecting rib 25, which latter have the same characteristics as the groove 15 and the rib 16 before described.

At the lower end of the part 23 is a substantially horizontal shoulder 26 and below that and formed on the exterior of the collar member 23 is a groove 27, and beyond it a rib 28. The groove 27 and rib 28 have the same characteristics as the groove 15 and the rib 16 before described.

In order to support the radiator upon the furnace, the two collar members 14 and 23 are placed in the positions shown in Figure 3. Then the collar member 23 is moved straight downwardly, whereupon the rib 25 enters the groove 15, the rib 16 enters the groove 24, the rib 28 enters the groove 20, and the rib 21 enters the groove 27, and the collar member 23 is pushed or driven downwardly until the shoulders 19 and 26 are in engagement, whereupon the collar member 23 is firmly supported by and locked to the collar member 14 against movement in all directions except straight upwardly.

Furthermore, it is obvious that during this downward movement of the collar member 23, the tapered ribs entering the various grooves will form a wedge action and tend to move the collar member 23 toward the collar member 14 and form a gas and smoke tight joint.

In addition to this the feature of tapering the walls of the ribs and grooves at 17 and 18, as shown in Figure 5, supplies an additional wedging action also tending to draw the parts firmly toward each other, yet this construction does not form any positive lock to prevent the upward movement of the collar member 23 when it is desired to disconnect the radiator from the furnace.

By means of this construction it will be observed that when the parts are assembled, the outer surface of the collar will be smooth and circular.

For the purpose of locking the collar member 23 to the collar member 14, and at the same time providing a gas and smoke tight joint without the use of cement or the like, I have provided a metal band 29, having lugs formed at its ends and provided with bolts 30 running through the lugs. On the inner surface

of this metal band I have provided a strip of asbestos or the like 31, and obviously when this asbestos lining band has been applied to the collar, covering the cracks between the collar members, and the bolts are tightly drawn, then a gas and smoke tight joint is provided and the member 23 is firmly locked against upward movement.

In the event that it is desired to remove the radiator the operator need only remove the band 29, whereupon the radiator can be readily and easily removed without breaking any cemented joints or the like.

I claim as my invention:

1. In a connecting collar for furnaces, the combination of two collar members having their body portions rounded in transverse sections, one of the members having on its upper portion an exterior groove and rib, both spaced inwardly from the surface of the collar, the lower portion of said collar member being projected outwardly beyond the upper portion and being formed with a rib and groove on its interior, the other collar member having its upper portion projected beyond the lower portion and having on the interior of said upper portion a rib and groove, and the lower portion of said collar member being formed with an exterior rib and groove both spaced inwardly from the surface of the collar, said ribs and grooves being shaped to coact and interlock when the collar members are moved to position in alignment and to form a smooth cylindrical outer surface, and a clamping member comprising a metal band with its ends extended to parallel positions, adjusting bolts in said ends, and an asbestos lining on the interior of the metal band fitted around and covering the joint between the collar members, substantially as and for purposes stated.

2. In a connecting collar, the combination of two collar members each having a body portion circular in transverse section, one of the collar members having its upper portion projected beyond the lower portion and being provided on its under surface with a rib adjacent the end of the collar member, and a groove adjacent to the rib, the outer face of the rib adjacent to the end of the collar member being inclined outwardly and away from the said end of the collar member, and the outer face of said groove being inclined substantially parallel with said inclined face of the rib, the lower portion of said collar member being formed with an exterior rib and groove, the faces of both which are nearest the adjacent end of the collar member being inclined outwardly and away from the adjacent end of the collar member, the other collar member having its lower portion projected beyond its upper portion and being formed with an interior rib and groove, the faces thereof nearest to the adjacent end of the collar member being tapered outwardly

and away from the adjacent end of the collar member, and the upper portion of the last mentioned collar member being formed with an exterior rib and groove, the faces of which
5 that are nearest the adjacent end of the collar member being tapered outwardly and away from the adjacent end of the collar member, said parts being so shaped and arranged that the various ribs and grooves of one member
10 are adapted to interlock with the complementary grooves and ribs of the other member.

Des Moines, Iowa, January 21, 1929.

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