July 6, 1937. H. W. TOMPKINS 2,086,007

SHEET METAL BOOT

Filed March 26, 1936

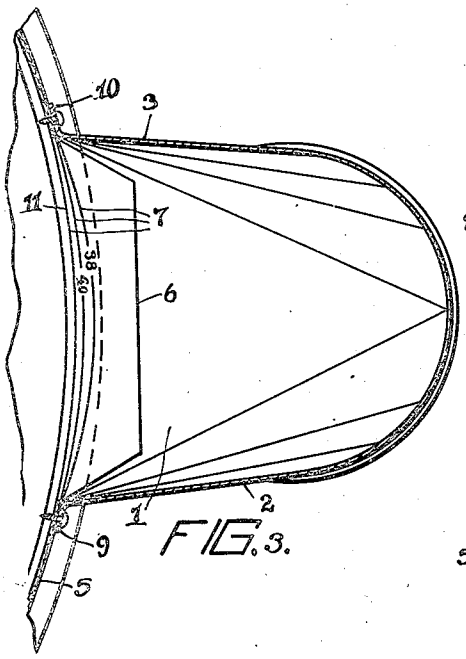

FIG. 3.

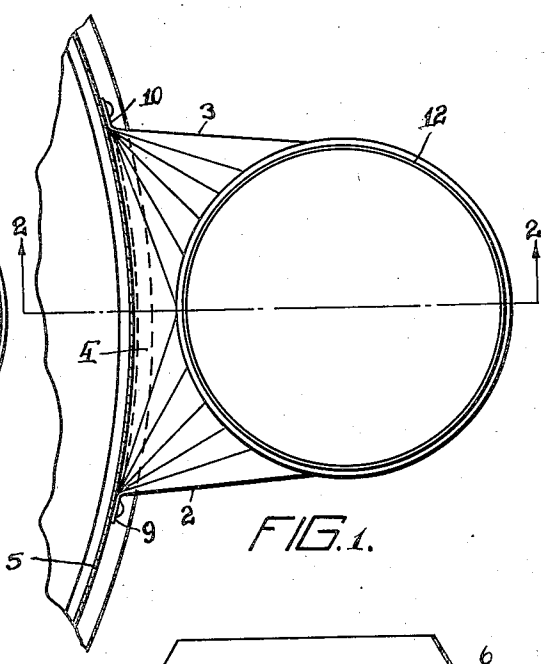

FIG. 1.

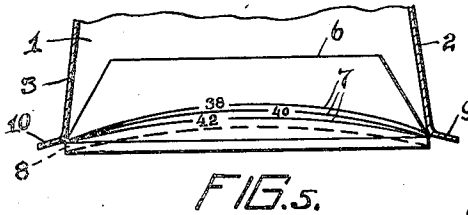

FIG. 5.

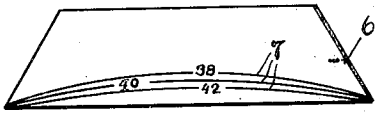

FIG. 6.

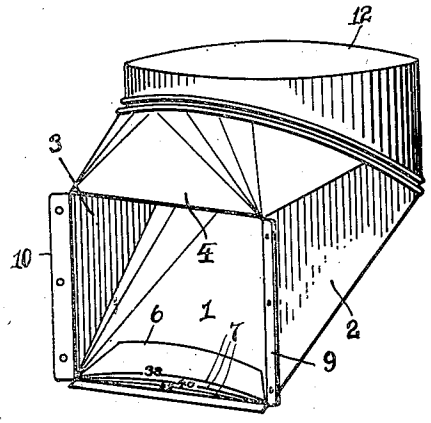

FIG. 4.

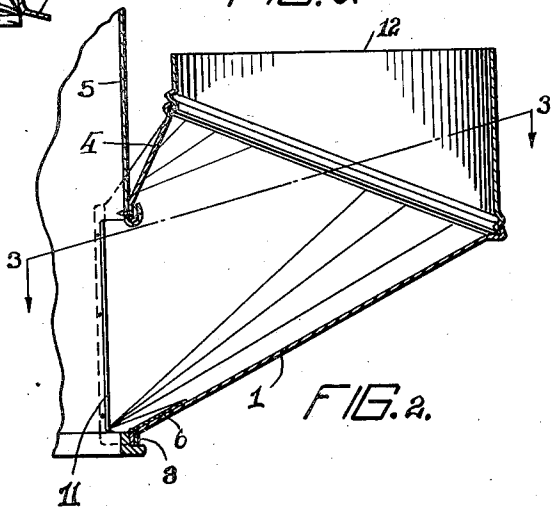

FIG. 2.

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SHEET METAL BOOT

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Application March 26, 1936, Serial No. 71,009

6 Claims. (Cl. 285—105)

This invention relates to sheet metal connections such as are found between cold air boots and warm air furnaces and the object of this invention is to provide a sheet metal boot or other sheet metal intake or outlet with means whereby it may be quickly and efficiently fitted to a cylindrical casing such as the jacket surrounding a warm air furnace.

This and other objects and attendant advantages will become more clearly apparent from the detailed construction of one embodiment of the invention, reference being had to the accompanying drawing in which

Figure 1 is a top plan view of a cold air boot embodying my invention as it appears connected to the jacket of a warm air furnace.

Figure 2 is a vertical sectional view of the cold air boot and the portion of the jacket to which it is attached, the section being taken on the line 2—2 of Figure 1.

Figure 3 is a horizontal sectional view of the cold air boot and jacket taken on the line 3—3 of Figure 2.

Figure 4 is a detail perspective view of a cold air boot embodying my invention.

Figure 5 is a detail sectional view of the front end of the bottom of the cold air boot showing the free bottom edge of the cold air boot before it is prepared for attachment to the jacket.

Figure 6 is a detail top plan view of the templet used in connection with my invention in the preparation for the connection between the cold air boot and furnace jacket.

In the several figures of the drawing like reference numerals indicate like parts.

The sheet metal connection forming the subject matter of this invention is especially adapted for use in connecting cold air boots to the cylindrical jackets of warm air furnaces. Such a connection is difficult to make because the top and bottom edge of the outlet of the cold air boot must be fitted so as to conform to the curvature of the cylindrical casing in order to provide a substantially air tight joint between them. This connection is even more difficult to make when the top and bottom edges of the outlet of the cold air boot are inclined because then the radius of the curved portion to be cut out from these inclined edges of the cold air boot is no longer the same as the radius of the jacket to which the cold air boot is fitted.

An inclined bottom is desirable in a cold air boot because it permits the cleaning of the floor below the cold air boot. Furthermore the inclined bottom directs the air more efficiently from the cold air boot into the jacket of the furnace.

My invention has therefore been embodied in a cold air boot having an inclined bottom 1, suitable, substantially vertical sides 2 and 3, and an inclined top 4. As will be seen from an inspection of Figure 2, the inclined top 4 has a considerably greater angle than the bottom 1; in fact is close to being vertical so that it serves as a yielding rear wall for the cold air boot. This wall can therefore be forced inwardly of the cold air boot so as to have its free edge assume any desired curvature. The cold air boot, when forced against the jacket 5 of a warm air furnace, will thus have the top 4 of the outlet, especially the outer end thereof, automatically conform to the curvature of the jacket.

The outer end of the bottom of the cold air boot on the other hand is non-yielding, it being substantially horizontal so that its edge abuts against the jacket when applied to the jacket 5. It is therefore necessary to cut out the bottom in order to provide a curved edge thereon that will conform to the curvature of the jacket. As heretofore pointed out, it is difficult to find the proper radius for the curvature especially when the bottom of the boot is inclined as is the case in the boot illustrated. To overcome this difficulty I provide the outer end of the bottom of the outlet of the boot with a templet 6 in the form of a paper sheet. On this sheet are provided a series of curved lines which have been worked out as giving the proper curvature for the connection of the bottom of the boot to the various sizes of furnace jackets to which the boot may be connected. In Figures 4, 5 and 6 but three curved lines 7, 7 are shown, indicating the curvature for a 38, 40 and 42 inch jacket. This is only for the sake of clearness as the curves for any size jacket may be marked thereon in order to provide for the fitting of the boot to any size hot air furnace. The templet 6 is cemented or otherwise attached to the inside of the boot as illustrated in Figures 2, 4, 5 and 6 so as to make it a part of the bottom of the boot.

In preparing the bottom of the boot so that it will fit to the jacket, the outer free edge is trimmed parallel to the curved line that corresponds to the size of the jacket. However, instead of trimming on the line, a flange having a width of about 3/8 of an inch is left projecting from the proper line and after the edge is trimmed this flange is bent down along the proper curve to provide a vertical flange 8 at the end of the bottom of the boot which will closely conform to

the curvature of the jacket as illustratde in Figure 2.

The outer edges of the vertical walls 2 and 3 of the boot are provided with the outflaring flanges 9 and 10 respectively. These flanges are perforated to register with corresponding perforations along the sides of the opening 11 in the jacket for which the cold air boot is to provide the inlet. After preparing the bottom edge of the outlet of the boot for attachment in the manner above described, the boot is held against the jacket so as to be in line with the opening 11 of the jacket. In slightly forcing the boot into this position the top 4 of the outlet yields to automatically conform to the curvature of the jacket above the opening 11 while the trimmed and flanged bottom of the outlet will have the curvature of the jacket below the opening and snugly fit against it.

While held against the jacket suitable clamping screws or bolts are threaded thru the perforations in the flanges 9 and 10 into the jacket to securely hold the sides of the boot thereagainst after which another clamping screw or bolt is threaded thru a perforation in the yielding top 4 of the boot into the jacket so as to anchor the top of the boot to the jacket.

In addition the top edge of the opening 11 in the jacket is bent up on the inside of the top of the boot so as to hold it clinched to the jacket and provide a seal between the top of the boot and the jacket at the top of the opening in the jacket. This manner of fastening securely anchors the cold air boot to the jacket and provides a tight joint between them.

The cold air boot is supplemented by a tubular extension 12 which is mounted to rotate thereon so that any angular connection with the boot may be made therewith.

I claim:

1. A sheet metal boot for attachment to a cylindrical jacket comprising an open ended casing, a fixed edge on the bottom and sides of the open end of said casing and a yielding edge at the top of the open end of said casing.

2. A sheet metal boot for attachment to a cylindrical jacket comprising an open ended casing, a curved fixed edge at the bottom of the open end of said casing and a straight yielding edge at the top of the open end of said casing.

3. A sheet metal boot for attachment to a cylindrical jacket comprising an open ended casing, a substantially fixed bottom edge, fixed side edges and a yielding top edge surrounding the open end of said casing and means provided on the bottom of said casing and extending inwardly from the fixed edge thereof to indicate predetermined curves for trimming said bottom edge to cooperate with said yielding top edge to cause the open end of said casing to snugly fit against the curved wall of the jacket.

4. A sheet metal boot for attachment to a cylindrical jacket comprising an open ended casing, a yielding top edge on the open end of said casing and fixed edges on the sides of said casing, a templet mounted on the bottom of said casing having a linear curve indicated thereon so as to extend substantially from the fixed edge of one side of the casing to the fixed edge of the other side of said casing to indicate a line for trimming the bottom of said casing and provide a curved edge thereon to cooperate with said yielding top edge of said casing to snugly fit the open end of the casing against the curved wall of the jacket.

5. A sheet metal boot as set forth in claim 1 with outflaring flanges extending from the edges of the sides of said casing to provide means for fastening said boot against the wall of a jacket and hold the yielding top edge curved thereagainst.

6. A sheet metal boot for attachment to a cylindrical jacket comprising an open ended casing, a substantially flat bottom in said casing extended at an angle smaller than 45 degrees from the plane of the intake opening of the casing and a top on said casing extended at an angle greater than 45 degrees from the plane of the intake opening of the casing to make the top edge of the open end of the casing yielding and keep the bottom edge non-yielding when the open intake end of the casing is forced against the jacket, said bottom edge being cut to conform to the curvature of the jacket and the top edge yielding to conform to the curvature of the jacket.

HARRY W. TOMPKINS.