

Feb. 23, 1954

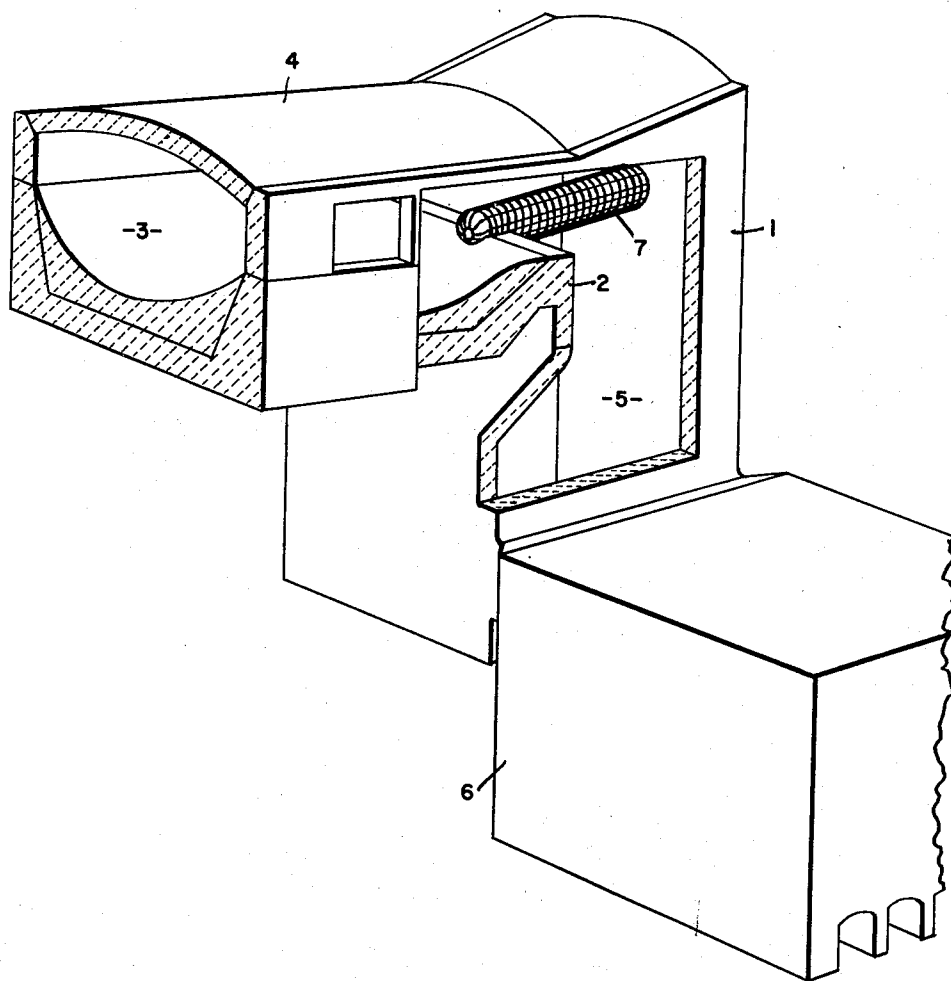
G. P. REINTJES
INSULATING ENCASEMENT

2,670,192

Filed Sept. 4, 1951

3 Sheets-Sheet 1

FIG. 1



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FIG. 2

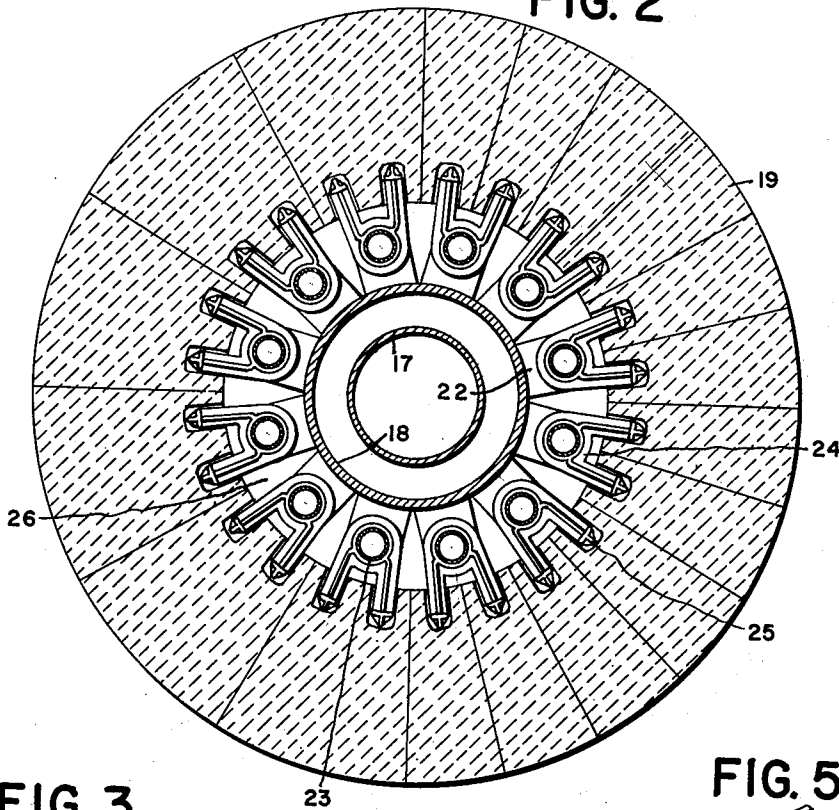


FIG. 3

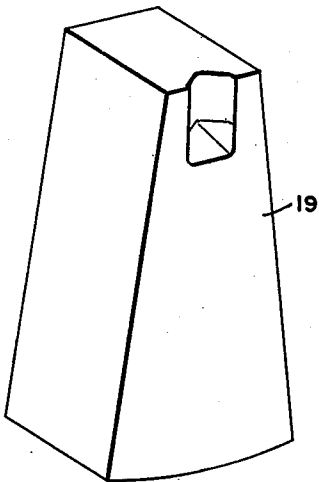


FIG. 4

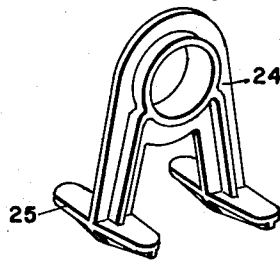
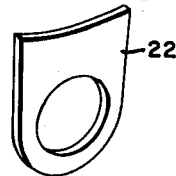


FIG. 5



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FIG. 6

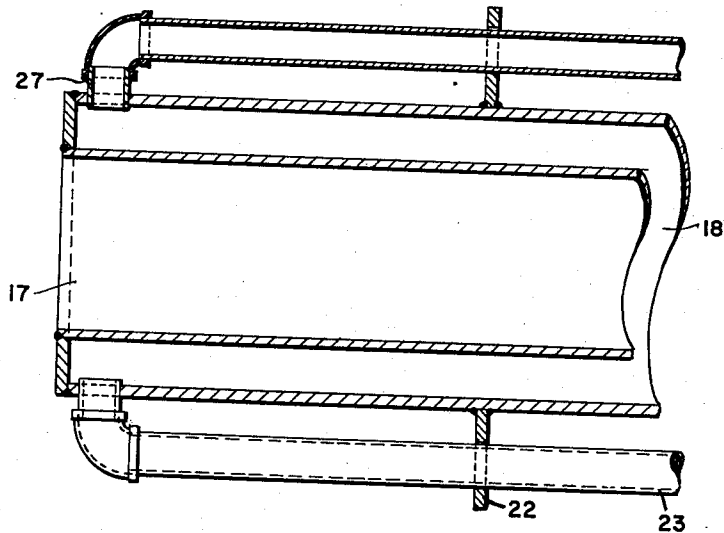
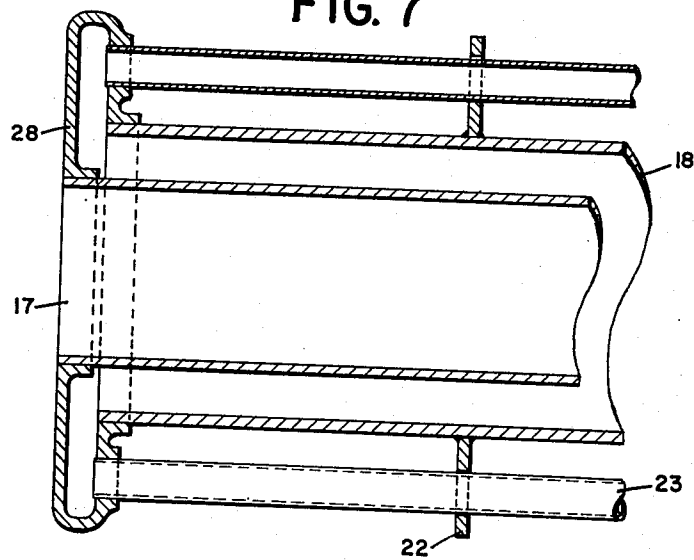


FIG. 7



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UNITED STATES PATENT OFFICE

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INSULATING ENCASEMENT

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1 Claim. (Cl. 263-44)

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This invention is partly directed to supporting structures for burners as used in open hearth furnaces to protect the burner and mount same as a beam, either cantilevered at one end, or supported at both ends or at intermediate points as may be desired. With this arrangement the use of a heavy or massive bridge wall for the support of the burner or burners is avoided, since such bridge walls have been found to require an increase in velocity of exiting gases with the result that they entrain more or less solids into the checker chamber rather than depositing them into the slag pocket.

Another object of the invention is to provide for the protection of any burner, girder, pipe or the like which must span or project over or into a furnace or heated chamber, by surrounding same with a circumferential sheath of refractory or tile. If desired the burner or element being protectively encased may be removably mounted so that it may be withdrawn without dismantling of the encasement.

A further object of the invention is to provide a protection of the character mentioned which may be water and/or air cooled, and may also be used as a means of introducing secondary air into a furnace if desired.

With the general objects named in view and others as will hereinafter appear, the invention consists of certain novel and useful features of construction and organization of parts as hereinafter described and claimed; and in order that it may be fully understood, reference is to be had to the accompanying drawings, in which:

Figure 1 is a broken perspective of one end of an open hearth furnace equipped with a burner supported and protected by the construction of the invention.

Figure 2 is an enlarged section through the burner encasement shown in Figure 1 with the burner removed.

Figure 3 is a perspective view of one of the tile shown in Figure 2.

Figure 4 is a perspective view of a tile support as used in Figures 2 and 3.

Figure 5 is a view of the clips for supporting the pipe shown in Figure 2.

Figure 6 is a fragmentary longitudinal section through the open burner end of the protecting beam shown in Figures 1 and 2, to illustrate the use of pipe and nipples for water circulation.

Figure 7 is a view similar to Figure 6, but shows a manifold rather than pipe nipples.

In the said drawings, where like reference characters identify corresponding parts in all

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of the figures, reference may be had to Figure 1 to illustrate the beam embodiment of the invention, as applied to an open hearth furnace, in which, 1 is an outer wall and 2 the inner wall of one end of an open hearth.

The hot gases flow from the hearth chamber 3 over the wall 2 below the roof 4, and turn down through passage 5 into a checker chamber 6. On the reverse cycle, heated air is delivered up through passage 5 and is discharged into the hearth chamber 3. Positioned at opposite ends of the hearth (one end only being shown), are burners which alternately fire as above described, and it has been common practice to build costly and heavy bridge walls for the support of these burners. These heavy walls more or less confine the gases or restrict the area through which they flow and consequently the velocity of the gases is increased to such point that the deposit of solids in the slag pocket is not as large as would occur if the speed of the gases was lessened. These solids are carried over into the checker work chamber.

In the present invention, a gun type burner protected against the heat of the furnace by a refractory encased hollow beam 7 hereinafter particularly described, is supported at its opposite ends by an outer and inner wall of the furnace, such construction being relatively streamlined and of small area. Interference with the flow of gas or air is therefore very slight. The protecting encased beam may also be used as a means of feeding secondary air to the furnace, if desired, and the burner or element being protected may be retracted from the encasement without dismantling of any of the parts. It is to be noted that this protective encasement is not limited in use to burners, but may have an extensive application in the protection of any element which must project into or span a heated chamber and be insulated therefrom.

The preferred construction involves a double-walled beam, the inner and outer walls being respectively numbered 17 and 18. The element to be protected, such as a burner, not shown, is mounted within inner wall 17. As shown in Figure 2, the outer wall 18 of the conduit carries a series of perforated fins 22 having openings through which liquid circulating pipes 23 are threaded through a series of spaced tile hangers 24 having tile engaging heads 25 to support the tile 19. With this arrangement an air lane 26 is provided around the tile and pipes. The ends of the pipe 23 may be connected by nipples 27 to the space between the double-walled beam to

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provide for circulation of cooling water or the like as shown in Figure 6, or the alternative construction of Figure 7 may be used, where a manifold 28 is connected to the pipes and double-walled beam.

From the above description, it will be apparent that I have produced a construction embodying all of the features of advantage set forth as desirable, and while I have described and illustrated the preferred embodiment, it is to be understood that I reserve the right to all changes within the spirit and scope of the appended claim.

I claim:

A cooling housing comprising a double-walled beam, a series of pipe concentrically arranged around and connected at one end to the space between the inner and outer walls and externally paralleling and spaced from the outer wall, means to circulate cooling medium through the pipes and space between the double walls, hangers carried by the pipe, and tile extending in an entire circle around and carried by said

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hangers and spaced from the pipe and beam to provide an air lane between the outer face of the beam and the inner end of the tile.

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