Dec. 15, 1925. 1,565,359

M. M. GRANT

COMBUSTION HEAD

Filed Aug. 28, 1925

Fig. 1.

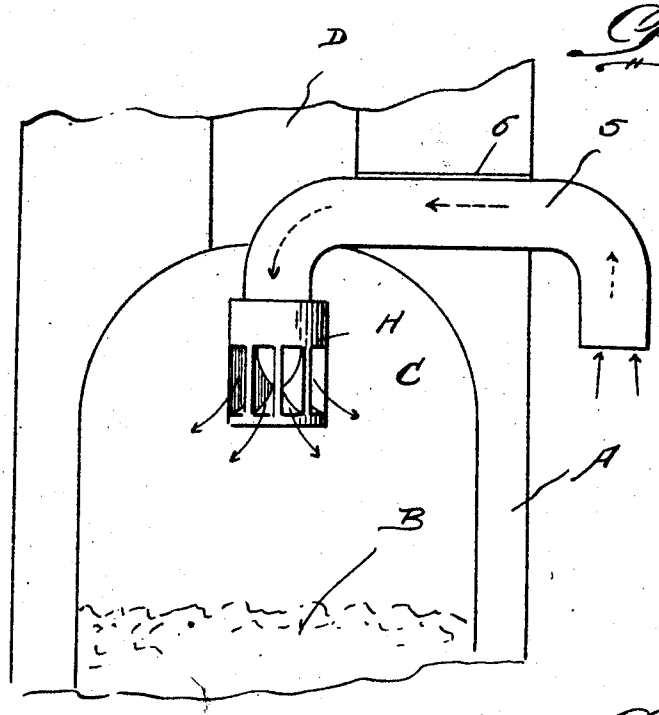


Fig. 2.

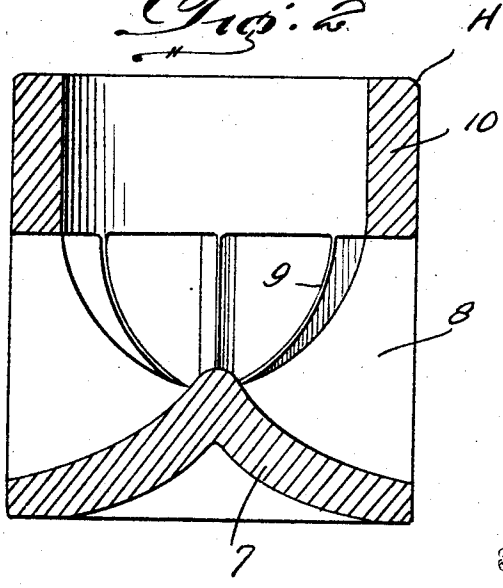
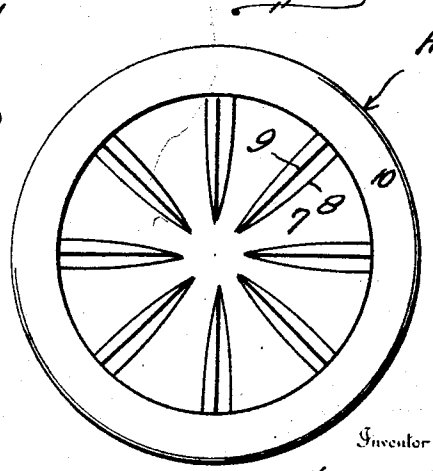


Fig. 3.



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UNITED STATES PATENT OFFICE.

MELVILLE M. GRANT, OF ALLIANCE, OHIO, ASSIGNOR OF ONE-HALF TO L. OSCAR FRANTZ, OF ALLIANCE, OHIO.

COMBUSTION HEAD.

Application filed August 28, 1925. Serial No. 53,097.

To all whom it may concern:

Be it known that I, MELVILLE M. GRANT, a citizen of the United States, residing at Alliance, in the county of Stark and State of Ohio, have invented certain new and useful Improvements in a Combustion Head, of which the following is a specification.

The present invention relates to a combustion head, and aims to provide a device adapted to be placed above the fire-bed of any kind of a furnace for the purpose of delivering and distributing the proper quantity of super-heated air to intermingle with the combustible gases about the fire so as to produce a smokeless furnace.

With the above and other objects in view, the invention resides in certain novel features of construction, and in the combination and arrangement of parts as will be hereinafter more fully described and claimed.

In the drawing:—

Figure 1 is a diagrammatic view of a furnace, showing my improvement associated therewith in elevation.

Figure 2 is a vertical section through the combustion head, and

Figure 3 is a top plan view thereof.

Referring to the drawing in detail it will be seen that A designates a furnace of any suitable construction having a fire-bed B, and a combustion chamber C located thereabove, and having chimney communication through a conduit D. The parts thus far described are well known, and may be of any desired or conventional construction, and have merely been illustrated for the purpose of exemplifying the utility and advantages of my improvement.

A pipe 5 is led through a passage 6 provided in the furnace and then downwardly through the conduit D to terminate in the combustion chamber C. My improved head H is mounted on the end of the pipe 5 within the combustion chamber C.

This head H is formed of a metal casting, although any other suitable non-combustible material may be used. The head includes a bottom plate 7 which has a convex upper surface, and a concave lower surface, and is cone-like in formation. Partitions 8 rise from the bottom plate 7 and are provided with inner curved knife edges 9. These partitions radiate from the axis of the head. A cylindrical wall 10 is mounted on the upper end of the partitions 8. The apex of the bottom 7 is coaxially aligned with the wall 10, and the breadth of the partitions 8 is equal at their upper ends to the thickness of the wall 10, and at their lower ends is approximately equal to the radius of the plate 7, as a matter of fact being slightly smaller than said radius. The cylindrical wall 10 receives the end of the pipe 5. The air enters through the pipe 5 and is distributed by the bottom plate 9, said bottom plate acting as a deflector, while the partitions 8 function as distributors.

A smokeless furnace can be attained after the furnace reaches the degree of heat to superheat the air, after starting the fire anew. This combustion head simply injects the superheated air into the furnace by the chimney draft alone, and of course, may be made in sizes to comply to the different sizes of furnaces. The larger furnaces may require several of the combustion heads which, with the pipes that support and supply the air to the combustion heads are suspended in the space above the fire-bed, and at all times must have sufficient air passing therethrough to support the combustion of the highly heated air and gases. As the chimney draft draws enough air through the supply pipe that supports the combustion head, there is no extra expense to operate with this device. The percentage of air required varies with that of the demand for complete combustion. Thus when complete combustion is attained, the interior of the furnace will be clean of soot that usually forms and delays the heat from transferring. A clean furnace without soot accumulation is evidence of high efficiency of fuel. The highest efficiency, however, can be attained with my combustion head at all times with the cheapest grade of fuel, as they can be burnt with ease and economy owing to the high heat conditions above the fuel-bed. The glow of the gases burning from the combustion head above the

fuel bed creates an intense heat, forcing the fuel to burn efficiently and thoroughly, and not wastefully, thus extracting all available heat units. The combustion head, in actual practice, remains at a dull red heat while in operation. The incoming air meeting the gases at the same heat is what causes the combustion head to do its work, thereby being called by me a combustion head.

This device can be relied upon to produce a smokeless operation as long as the furnace temperature is sufficiently high to superheat the incoming air.

The present embodiment of the invention has been disclosed in detail, since in actual practice it attains the features of advantage enumerated as desirable in the statement of the invention and the above description. It will be apparent that changes in the details of construction, in the materials, in the combination and arrangement of parts may be resorted to without departing from the spirit or scope of the invention as hereinafter claimed or sacrificing any of its advantages.

Having thus described my invention, what I claim as new is:—

1. A combustion head of the class described including a plate having its upper surface convexed, partitions rising from the plate forming distributors, and a cylindrical wall formed on the partitions for reception of a pipe, said partitions radiating from the axis of the cylindrical wall.

2. A combustion head of the class described including a plate having its upper surface convexed, partitions rising from the plate forming distributors, and a cylindrical wall formed on the partitions for reception of a pipe, said partitions radiating from the axis of the cylindrical wall, the inner edges of the partitions being sharpened and curved so that the breadth of each partition is substantially equal to the thickness of the wall at its upper end, while at its lower end said breadth is substantially equal to the radius of the plate.

In testimony whereof I affix my signature.

MELVILLE M. GRANT.