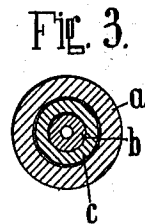
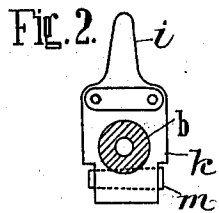
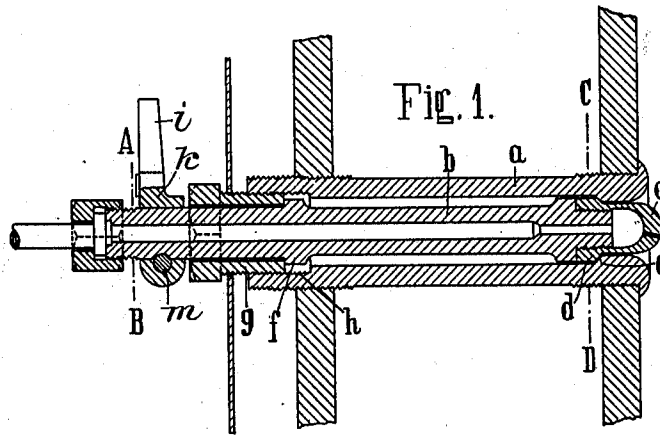


G. DE GRAHL.
 STEAM NOZZLE FOR STEAM FAN FURNACES.
 APPLICATION FILED JUNE 17, 1910.

982,591.

Patented Jan. 24, 1911.



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GUSTAV DE GRAHL, OF ZEHLENDORF, NEAR BERLIN, GERMANY.

STEAM-NOZZLE FOR STEAM-FAN FURNACES.

982,591.

Specification of Letters Patent.

Patented Jan. 24, 1911.

Application filed June 17, 1910. Serial No. 567,404.

To all whom it may concern:

Be it known that I, GUSTAV DE GRAHL, a subject of the German Emperor, and residing at Zehlendorf, near Berlin, Germany, have invented certain new and useful Improvements in Steam-Nozzles for Steam-Fan Furnaces, of which the following is a specification.

My invention relates to steam nozzles for steam-fan furnaces.

In the arrangements of nozzles known heretofore for steam-fan furnaces the tubes or nozzle-spindles carrying the nozzles are mounted in such manner in hollow stay-bolts that the nozzle is not fitted to the inner wall of the stay-bolt. Consequently, the space between the nozzle-spindle and the hollow stay-bolt becomes filled with soot, ash and other impurities. The nozzle oxidizes and finally burns so fast that it cannot be removed from the cab or stoke-hole. It is therefore necessary, in most instances, to knock out the nozzle from the fire-box with the hammer, the nozzle being destroyed.

A primary object of my invention is to remedy these defects. According to my invention the nozzle is fitted in such manner to the inner wall of the stay-bolt that impurities are prevented from penetrating between the nozzle and the wall of the bolt, and consequently it is impossible for the nozzle to burn fast.

One illustrative embodiment of my invention is represented by way of example in the accompanying drawing, wherein:—

Figure 1 is a longitudinal section showing the new arrangement of steam nozzles, while Fig. 2 is a cross-section on the line A—B in Fig. 1, and Fig. 3 is a cross-section on the line C—D in Fig. 1.

Referring to the drawing, *a* designates the

hollow stay-bolt, through which the nozzle spindle *b* having the nozzle *c* is passed. This nozzle *c* is provided with the seat *d* with which it can be pressed against the corresponding seat *e* of the wall of the bolt. For this purpose the nozzle-spindle has a collar-like boss *f*, against which the muff *g* can be screwed. The latter is provided with a screw-thread which screws into the female thread *h* in the inner wall of the bolt. Now when the muff *g* is screwed into the stay bolt it presses on the collar *f* and thereby presses the nozzle-spindle *b* having the nozzle *c* and seat *d* against the seat *e* whereby a good closure is obtained.

The spindle *b* of the nozzle is provided with a pointer *i*. The pointer is secured to the spindle by means of the hub *k* which is held against rotation with respect to the spindle by means of the pin *m*. The spindle and the pointer are assembled in such mutual relation that the passage in the nozzle *c* for the discharge of the steam is directed downwardly on a slant when the pointer extends in vertical direction upwardly. By this means the correct position of the spindle *b* in the stay bolt can easily be ascertained.

I claim:

The combination of a hollow stay-bolt having an internal seat at the inner end thereof, a nozzle spindle in the bolt, and a nozzle attached to the inner end of the nozzle-spindle seated on said seat, substantially as shown.

In testimony whereof, I affix my signature in the presence of two witnesses.

GUSTAV DE GRAHL.

Witnesses:

HENRY HASPER,
WOLDEMAR HAUPT.