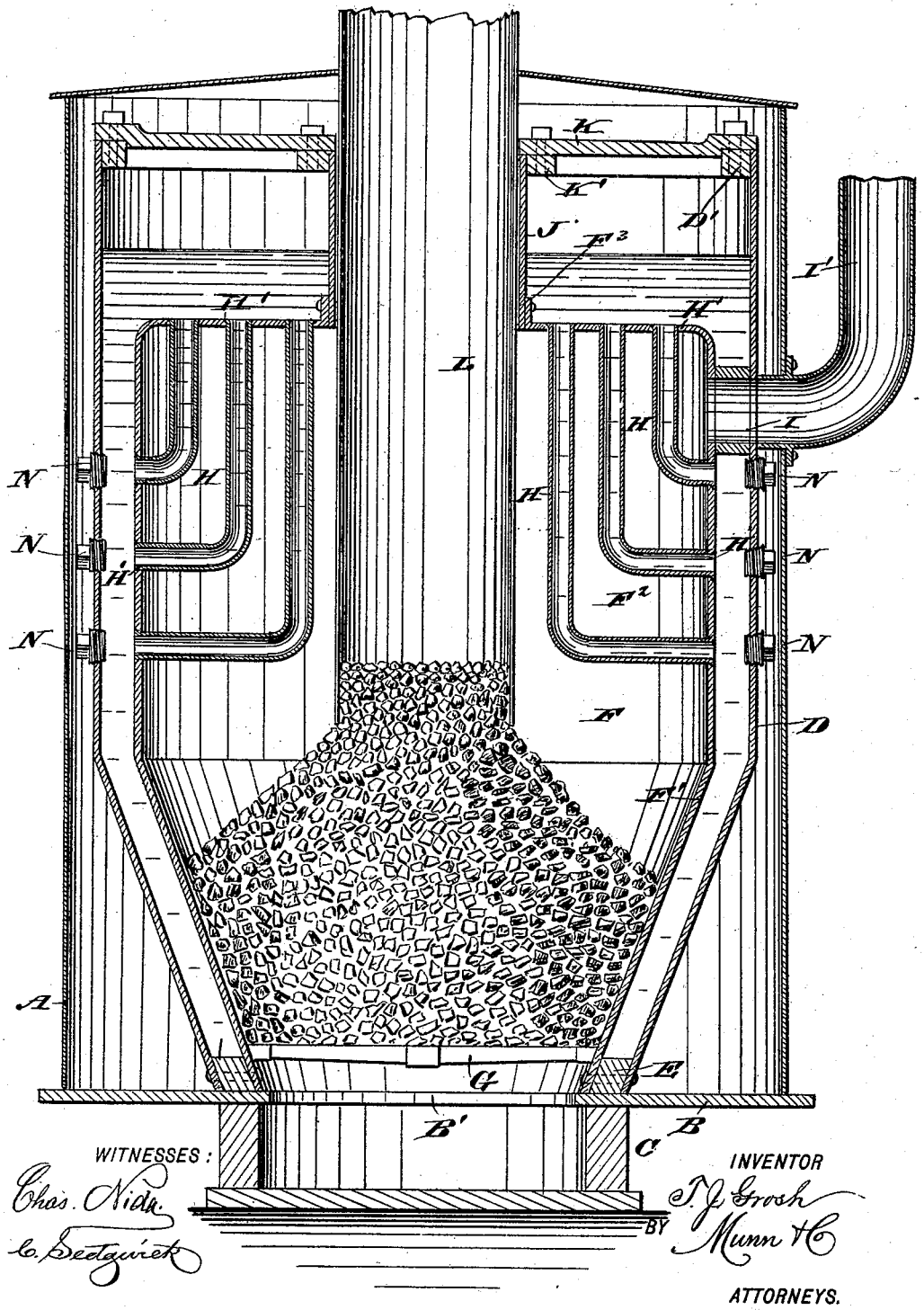
(No Model.)

T. J. GROSH.

BOILER FURNACE.

No. 490,962. Patented Jan. 31, 1893.



WITNESSES:

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THOMAS J. GROSH, OF SAVANNA, ILLINOIS.

BOILER-FURNACE.

SPECIFICATION forming part of Letters Patent No. 490,962, dated January 31, 1893.

Application filed April 15, 1892. Serial No. 429,289. (No model.)

To all whom it may concern:

Be it known that I, THOMAS J. GROSH, of Savanna, in the county of Carroll and State of Illinois, have invented a new and Improved Boiler-Furnace, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved boiler furnace, which is simple and durable in construction, very effective in operation and arranged to prevent all leakage at the water tubes.

The invention consists of certain parts and details, and combinations of the same, as will be hereinafter described and then pointed out in the claim.

Reference is to be had to the accompanying drawing forming a part of this specification, in which the figure is a sectional side elevation of the improvement.

The improved boiler furnace is provided with the usual outer cover A, set on a base B, supported on a suitable foundation C, forming the ash pit. In this cover or casing A is arranged the exterior shell D, made cylindrical at its upper part, and inverted cone shaped at the lower part, as plainly illustrated in the drawing; the lower end being fastened by rivets or other means to a ring E, supported on the base B directly above the foundation C.

To the inside of the ring E is riveted or otherwise secured the lower inverted cone shaped end F′, of the shell of the fire box F, formed in the small end near the bottom with a suitable grate G, on which the fuel to be burned is placed, the said grate discharging or opening into the fire box formed in the foundation C, an opening B′ in the base making the connection. The fire box F is the upper part F^2, made cylindrical to form a combustion chamber into which extend the water flues H, each made of lap-welded iron, bent at right angles, as shown, without any elbows whatever, the ends H′ of each tube being expanded and calked in the sides and top of the fire box F.

It is understood that the space between the shell of the fire box F and the exterior shell D forms the usual water compartment, the water circulating through the tubes H, so that the water is rapidly heated by the burning fuel in the combustion chamber of the firebox F. It is further understood that the water flows in through the lower horizontal arms of the tubes H and rises in the vertical parts to discharge on top of the fire box into the water compartment, so that a complete circulation of the water is established in the water compartment.

In the side of the fire box F is arranged a smoke and gas outlet I, connecting a smoke flue I′, held on the casing A and extending into the said outlet I. On the top of the fire box F is formed an upwardly-extending annular flange F^3, onto which is riveted a sleeve J, extending upwardly onto the inside of a ring K′, bolted or otherwise fastened to the under side of the cover K, for the exterior shell D.

On the inner surface of the shell D and at the upper edge of the same is secured, by bolts or rivets, a ring D′ on which rests the cover K, the said cover being adapted to be fastened to the said ring by bolts, which, when removed permit of lifting off the said cover so as to allow ready access to the upper ends of the flues H, for expanding or calking purposes. Through the sleeve J passes the filling tube L, through which the fuel is introduced into the fire box F it being understood that the lower end of the said filling tube L extends to about the junction of the cylindrical part of the fire box with the conical part, as will be readily understood by reference to the drawing. Opposite the horizontal ends of the flues H are screwed in the exterior shell B, screw plugs N, which, when removed give ready access to the ends of the flues in the sides of the fire box F for expanding or calking purposes.

It is understood that by constructing a boiler furnace in this manner, no leakage whatever is possible, as the ends of the water flues H can be readily attended to, that is expanded and calked, so as to prevent all leakage. As no elbows whatever are employed on the water tubes, no leakage is possible within the fire box from such a cause.

Having thus fully described my invention, I claim as new and desire to secure by Letters Patent,—

In a boiler furnace the combination with an exterior cylindrical shell having an inverted cone-shaped lower end, of a fire box arranged concentric within the shell and provided with

an inverted cone-shaped lower end for the fuel and arranged concentric to the end of the said shell, the said shell forming a water compartment with the said fire-box, and water flues having their ends expanded and calked in the top and cylindrical sides of the said fire box, the said tubes extending in the combustion chamber of the fire box and open at their ends into the said water compartment, a sleeve connecting the top of the fire box with the removable cover of the said shell and a filling tube extending through the said sleeve below the said water flues to deliver the fuel into the cone-shaped end of the fire box, substantially as shown and described.

THOMAS J. GROSH.

Witnesses:
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