F. McILVANE.

BOILER CLEANER.

APPLICATION FILED OCT. 1, 1915.

1,231,276.

Patented June 26, 1917.

2 SHEETS—SHEET 1.

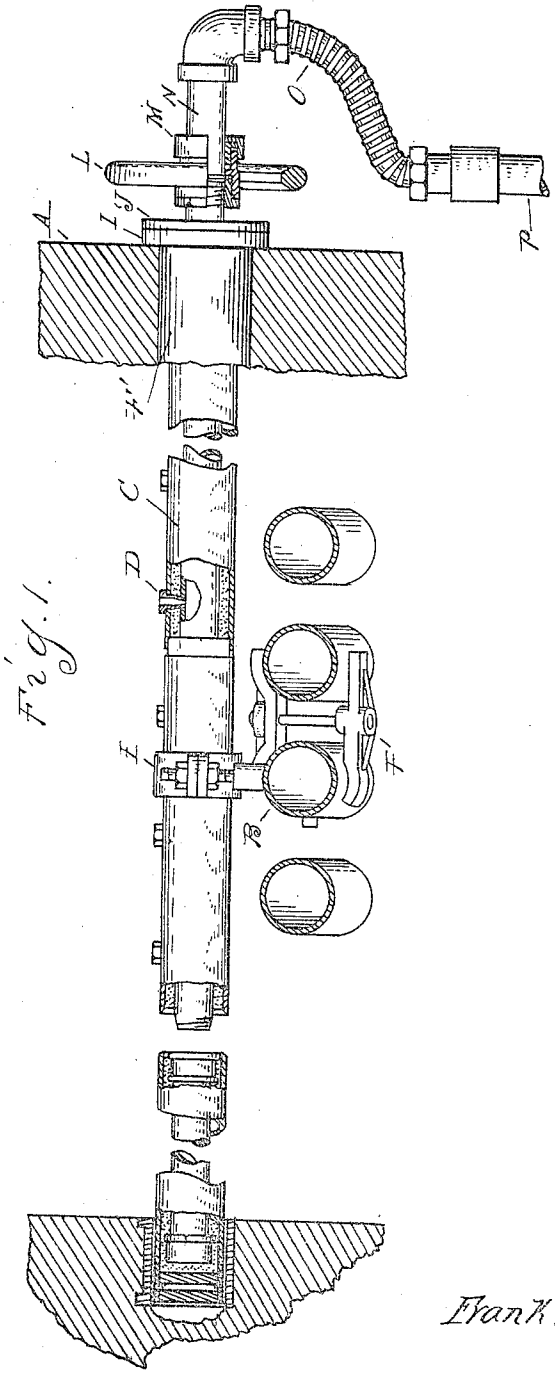


Fig. 1.

Inventor

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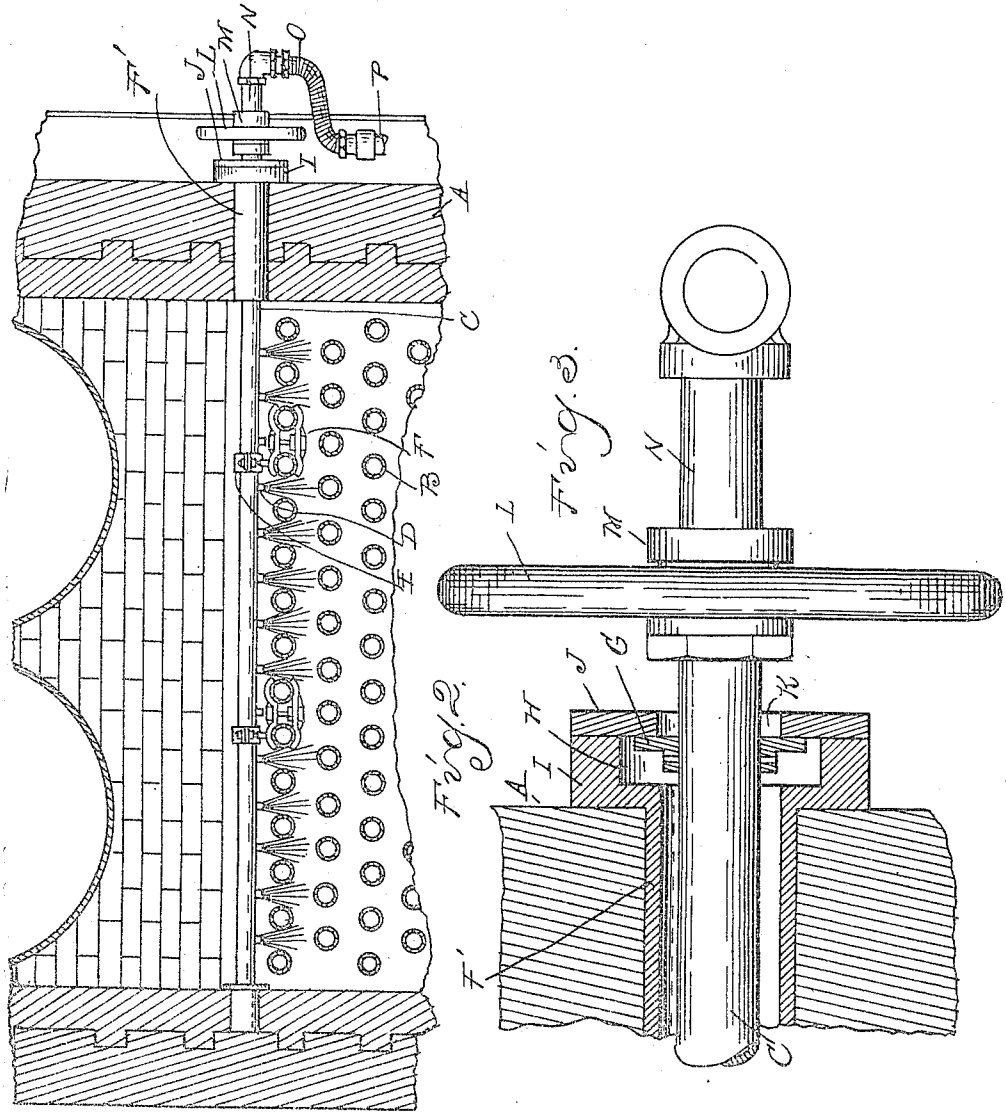
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Atty's

UNITED STATES PATENT OFFICE.

FRANK McILVANE, OF DETROIT, MICHIGAN, ASSIGNOR TO DIAMOND POWER SPECIALTY COMPANY, OF DETROIT, MICHIGAN, A CORPORATION OF MICHIGAN.

BOILER-CLEANER.

1,231,276. Specification of Letters Patent. Patented June 26, 1917.

Application filed October 1, 1915. Serial No. 53,618.

To all whom it may concern:

Be it known that I, FRANK McILVANE, a citizen of the United States of America, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Boiler-Cleaners, of which the following is a specification, reference being had therein to the accompanying drawings.

The invention relates to boiler cleaners of that type in which the soot is removed from the tubes and other surfaces by jets of steam blown from a perforated pipe or header. It is the object of the invention to overcome injury to the apparatus, due to expansion and contraction, and to this end the invention comprises the construction as hereinafter set forth.

In the drawings:

Figure 1 is a plan view showing my improved construction as applied to a boiler;

Fig. 2 is a vertical cross section thereof; and

Fig. 3 is an enlarged section through the furnace wall at the point of entrance of the cleaner.

A are the walls of the furnace, and B are a series of tubes or flues forming a portion of the boiler. Heretofore such construction of boilers have been provided with cleaners comprising a pipe or header extending through the furnace wall, and having a series of nozzles or jet openings for directing steam against the tubes. The jets are directed along different portions of the surface of the tubes by a rotary movement of the header, which is imparted through the medium of a hand-wheel outside of the furnace wall.

One difficulty that has been experienced with apparatus of this type is the differential expansion and contraction which causes the warping or bending of the parts. Thus the coefficient of expansion of the metal differing from that of the furnace wall will produce a relative displacement, and where, as is generally the case, there are supporting bearings for the cleaner which are attached to the boiler tubes, a distortion is produced. I have overcome this defect by a floating construction, in which the cleaner is free to move with the tubular structure on which it is journaled, while at the same time provision is made for extending the header through the furnace wall without interference with its freedom of movement.

In detail, C is the tube or header extending transversely of the furnace adjacent to the tubes B, and having a series of jet nozzles D projecting laterally therefrom. E is a supporting journal bearing for the header which is secured to the tubular structure by suitable means, such as the clamps F. A plurality of these bearings are provided suitably distributed to sustain the header independently of any other support. F′ is a sleeve or bushing in the wall A forming an opening for the passage of the header, the diameter of this opening being sufficiently greater than that of the header to permit relative lateral movement. G is a disk-shaped head mounted upon the header and engaging an annular recess H in the sleeve, preferably formed in a lateral extension I thereof, having a closing cap J. The arrangement is such that the disk G, which closely fits the header C, also bears against the inner face of the cap J, closing the opening K therein, which is larger than the header C. Thus where there is an expansion of the internal structure the header is moved in relation to the walls, this movement being permitted without binding or unsealing the opening through said wall.

The header C is provided with a hand-wheel L, arranged outside of the furnace, by means of which it may be rotated to sweep the jets over the surface of the tubes. M is a stuffing box forming the swivel connection between the header and an external conduit N, and O is a flexible conduit connecting the conduit N with a supply conduit P. This flexible connection permits the header to move without restriction from the supply conduit, which might otherwise interfere with its freedom of movement.

What I claim as my invention is:—

1. The combination with a furnace wall provided with an aperture, of a tubular boiler, a cleaner comprising a tubular header passing through the aperture in said wall with clearance therein, said header being mounted upon and adapted to float with the tubular boiler, and means for sealing the aperture around the header in said wall.

2. The combination with a furnace wall provided with an aperture, of a tubular boiler, a cleaner comprising a tubular rotary header extending through the aperture in said wall and mounted upon and adapted to float with said boiler, a stationary supply conduit, and a flexible connection between

said stationary supply conduit and said header.

3. The combination with a furnace wall provided with an aperture, of a tubular boiler, a cleaner comprising a tubular header extending through said aperture and mounted upon and adapted to float with said boiler, a bushing within said aperture forming an opening of greater diameter than said header, through which the latter passes, means for sealing the opening through said bushing, and means exterior to said wall for actuating rotation of said header.

4. The combination with a furnace wall provided with an aperture, of a tubular boiler, a tubular rotary header mounted in journal bearings upon said boiler and extending outward through said aperture, a bushing in said aperture of greater diameter than said header and forming a clearance space thereabout, and a disk on said header engaging an annular recess in said bushing and sealing the opening thereof, said recess allowing lateral motion of the disk and header.

5. The combination with a furnace wall provided with an aperture, of a tubular boiler, a tubular rotary header mounted in journal bearings upon said boiler and extending outward through said aperture, a bushing in said aperture of greater diameter than said header and forming a clearance space thereabout, a recess being formed in the outer end of said bushing, a cap closing said recess formed with an opening through which the header extends, said opening allowing lateral play of the header, and a collar on the header within said recess for sealing the opening in said cap.

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

FRANK McILVANE.

Witnesses:
W. R. LOBDELL,
S. J. HERMAN.