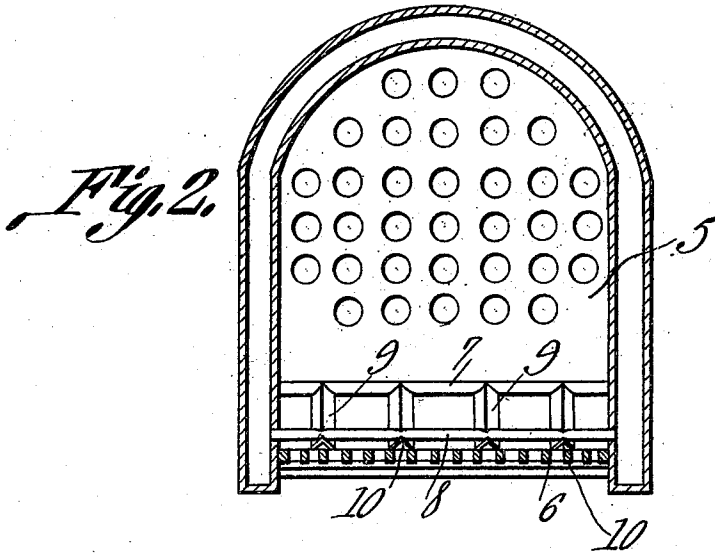
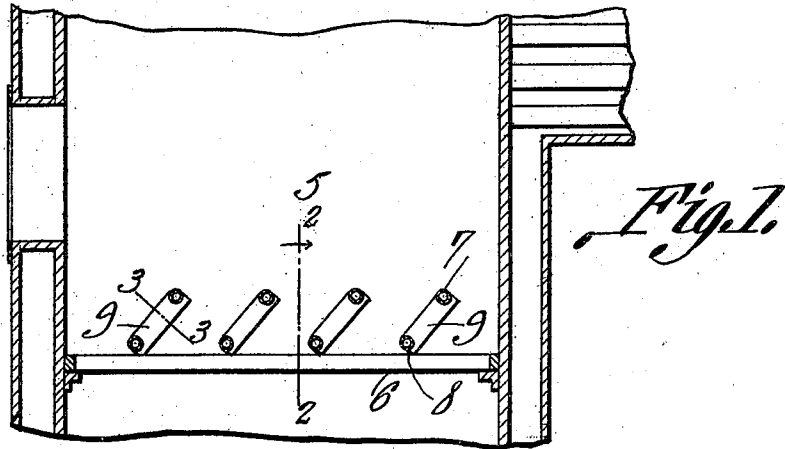


F. HILBURGER.  
 AIR FEEDING ATTACHMENT FOR GRATES.  
 APPLICATION FILED JULY 1, 1910.

981,263.

Patented Jan. 10, 1911.

2 SHEETS—SHEET 1.



Witnesses

*J. Hamilton*  
*W. A. Schmitt*

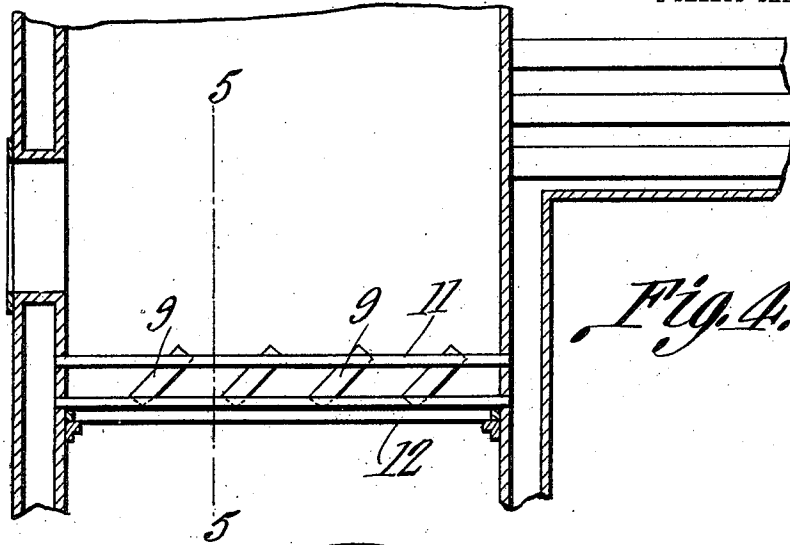
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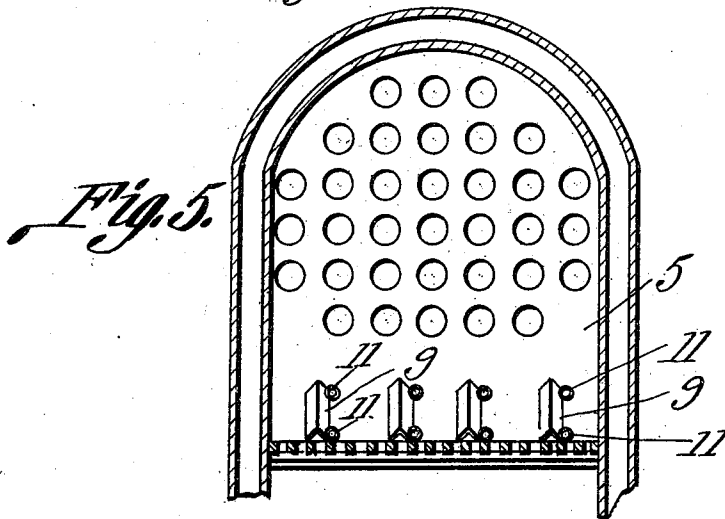
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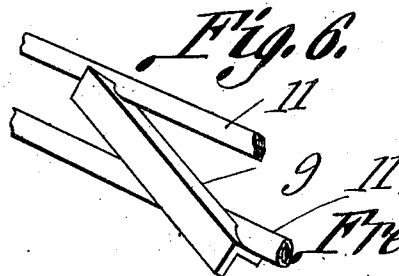
2 SHEETS—SHEET 2.



*Fig. 4.*



*Fig. 5.*



*Fig. 6.*

Witnesses

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# UNITED STATES PATENT OFFICE.

FRED HILBURGER, OF DENVER, COLORADO.

AIR-FEEDING ATTACHMENT FOR GRATES.

981,263.

Specification of Letters Patent.

Patented Jan. 10, 1911.

Application filed July 1, 1910. Serial No. 569,962.

To all whom it may concern:

Be it known that I, FRED HILBURGER, a citizen of the United States, residing at Denver, in the county of Denver and State of Colorado, have invented a new and useful Air-Feeding Attachment for Grates, of which the following is a specification.

This invention has for its object to provide a novel device for feeding air to a bed of fuel on the grate of a steam boiler furnace, and also to connect the device with the water space of the boiler so that it may aid in the heating of the water.

With these objects in view, the invention consists in a novel construction and arrangement of its parts to be hereinafter described and claimed, reference being had to the accompanying drawing forming a part of this specification, in which drawing—

Figure 1 is a longitudinal section of the fire box of a steam boiler furnace, and the air feeding device therein. Fig. 2 is a transverse section on the line 2—2 of Fig. 1. Fig. 3 is a cross section on the line 3—3 of Fig. 1. Fig. 4 is a longitudinal section of a fire box showing a slightly modified form of air feeding device. Fig. 5 is a transverse section on the line 5—5 of Fig. 4. Fig. 6 is a perspective view of a fragment of the modified form of air feeding device.

In the drawing, 5 denotes the fire box of a steam boiler furnace, and 6 is the grate.

The air feeding device which is the subject of the present invention comprises an upper and a lower series of horizontally extending pipes, the upper pipes being indicated at 7, and the lower pipes at 8. The pipes extend across the fire box a short distance above the grate, and are connected to the water leg of the boiler, so that the water may circulate through said pipes. The upper and lower pipes are connected in pairs by bars 9 which are hollow so that water may flow through the same also. The pipes of the upper series are so located with respect to the lower pipes, that the bars 9 are in an inclined position as clearly shown in Fig. 1. The rear side of each of the bars 9 is formed with a groove 10 extending throughout its entire length, and open at its ends. This groove may be formed by making the bar angular in cross section as shown in Fig. 3.

By having the water of the boiler circu-

late through the pipes 7 and 8 and also through the bars 9, the parts are prevented from burning out, and they also assist to heat the water. Air entering between the grate bars passes along the grooves 10, and is carried by the latter through the bed of fuel. The invention may also be applied to stoves, etc., in which case the pipes 7 and 8 may be arranged to open to the atmosphere to provide for a circulation of air therethrough.

In the modification illustrated in Figs. 4 to 6 the bars 9 are arranged as before, but the transverse pipes 7 and 8 are dispensed with. Instead of these pipes, each row of bars 9 is connected by upper and lower pipes 11 and 12, respectively, said pipes extending between the front and rear walls of the fire box as shown in Fig. 4. The pipes are also connected to the water leg as before, so that the water may circulate through the same, and also through the bars, as in the first instance.

What is claimed is:

1. The combination with a fire box and the grate thereof, of an upper and a lower series of pipes extending horizontally across the fire box above the grate, and inclined hollow bars connecting said upper and lower pipes in pairs, said bars being hollow and having longitudinal grooves.

2. The combination with a fire box and the grate of a steam boiler furnace, of an upper and a lower series of pipes extending horizontally across the fire box, and communicating with the water space of the boiler, and inclined longitudinally grooved and hollow bars connecting said upper and lower series of pipes in pairs.

3. The combination with a fire box and the grate of a steam boiler furnace, of a series of inclined hollow bars mounted above the grate, and said bars being longitudinally grooved, and pipes extending across the fire box, and communicating with the water space of the boiler and with the bars.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

FRED HILBURGER.

Witnesses:

EDWARD MENIG,  
RALPH B. GRAHAM.