

No. 680,500.

Patented Aug. 13, 1901.

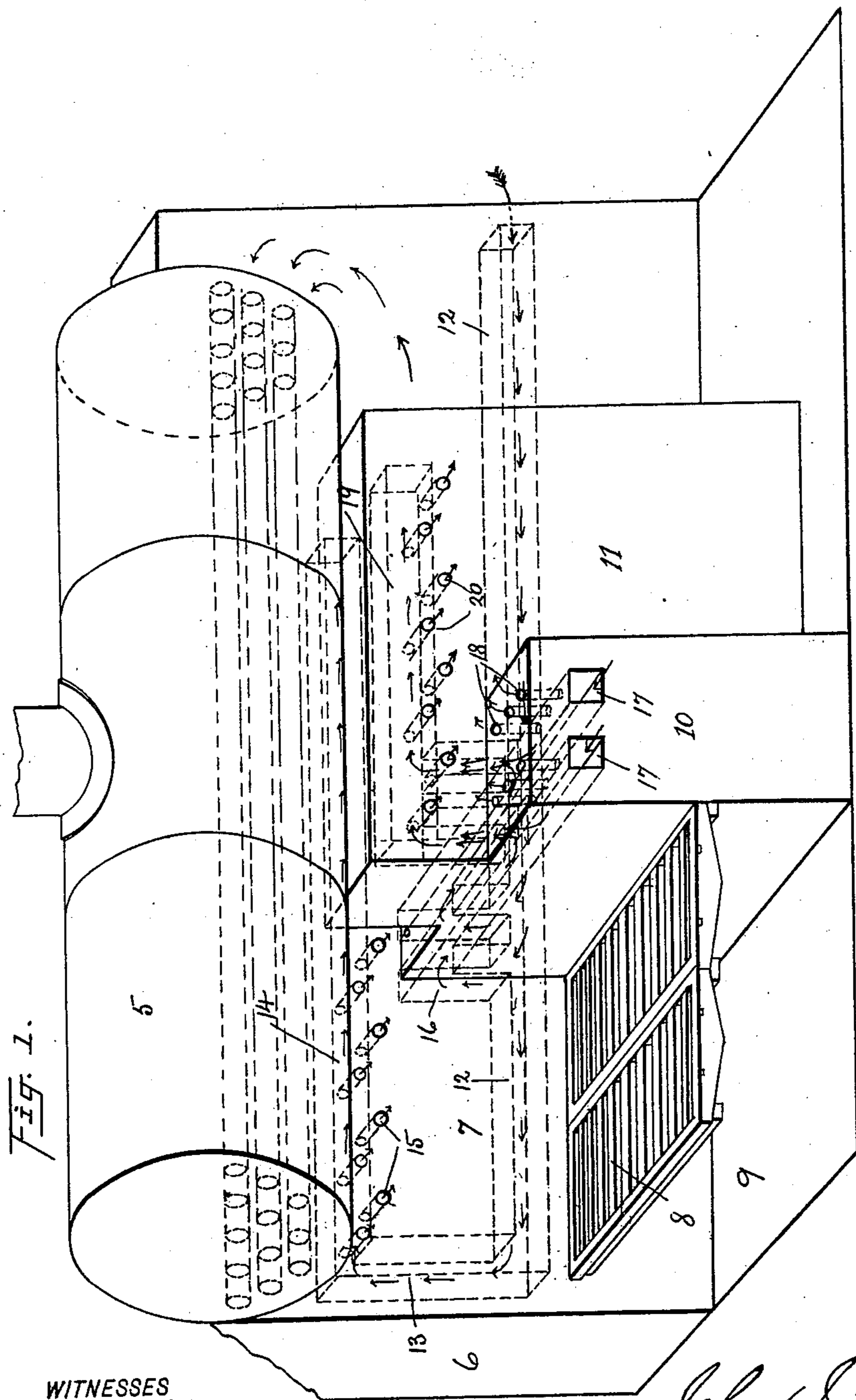
J. J. QUINN.

FUEL SAVING AND SMOKE CONSUMING DEVICE FOR FURNACES.

(Application filed Dec. 31, 1900.)

(No Model.)

2 Sheets—Sheet 1.



WITNESSES

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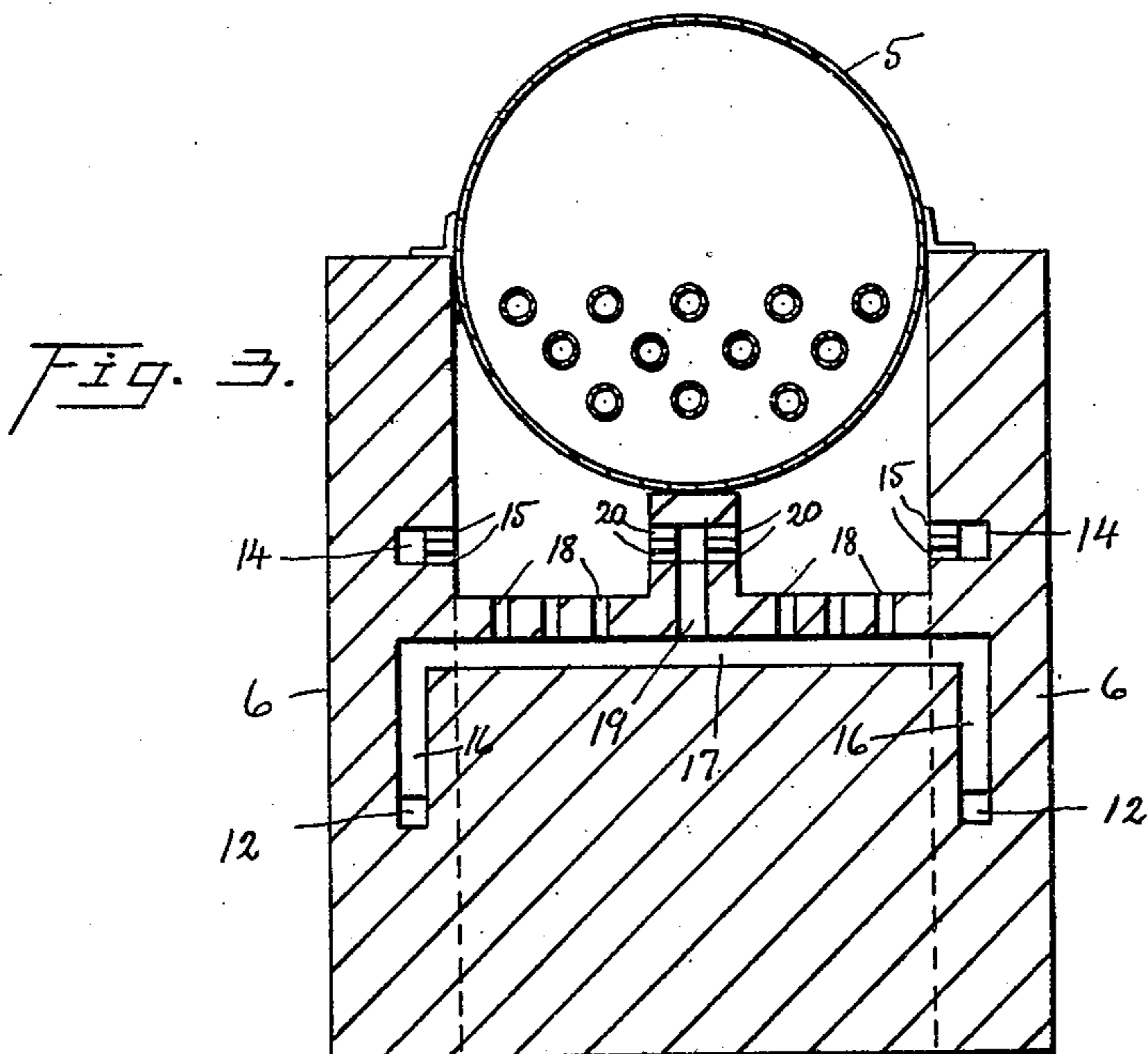
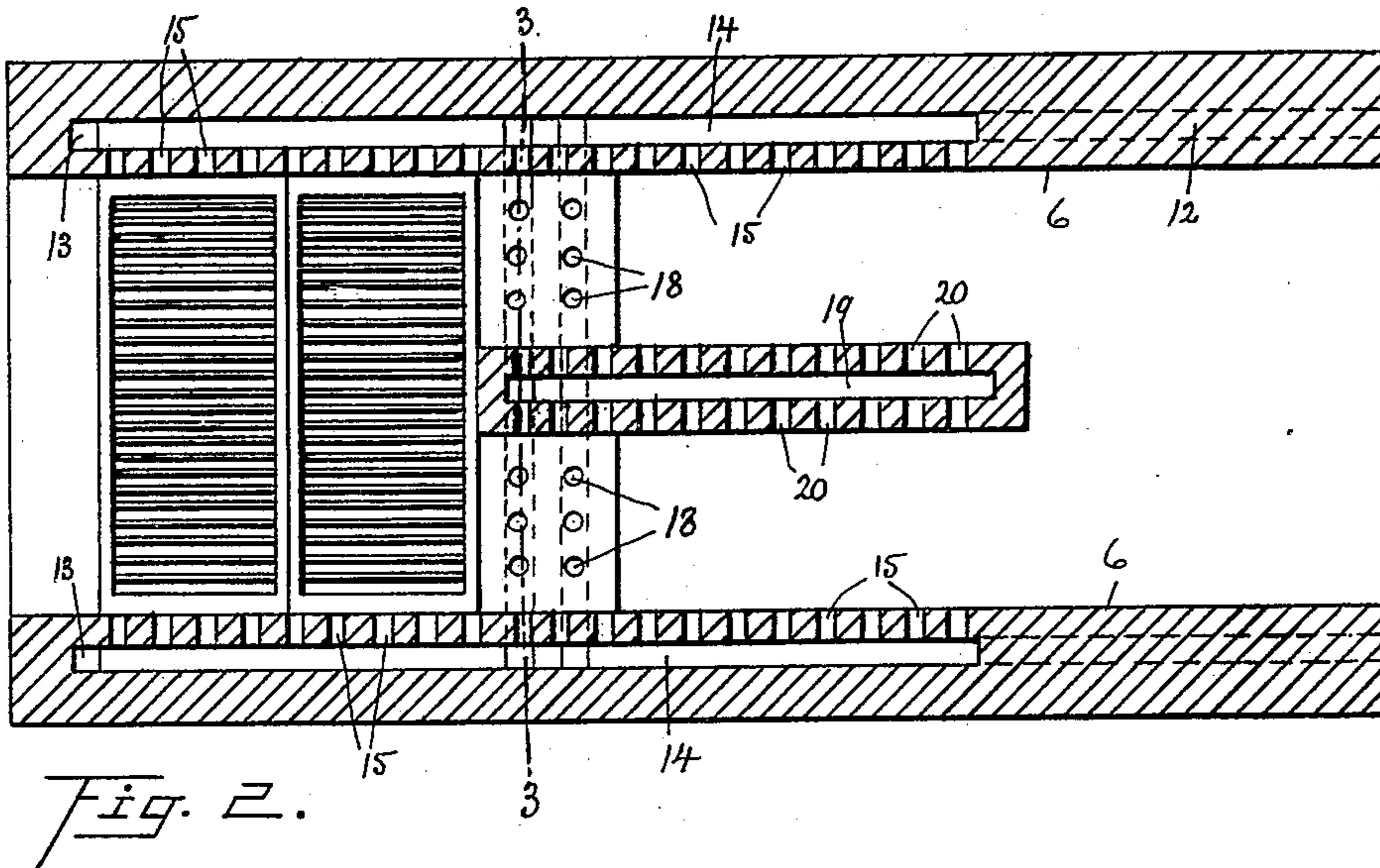
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# UNITED STATES PATENT OFFICE.

JOHN J. QUINN, OF NEW YORK, N. Y., ASSIGNOR TO THE ECONOMY  
FURNACE COMPANY, OF SAME PLACE.

FUEL-SAVING AND SMOKE-CONSUMING DEVICE FOR FURNACES.

SPECIFICATION forming part of Letters Patent No. 680,500, dated August 13, 1901.

Application filed December 31, 1900. Serial No. 41,623. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN J. QUINN, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Fuel-Saving and Smoke-Consuming Devices for Furnaces, of which the following is a full and complete specification, such as will enable those skilled in the art to which it appertains to make and use the same.

This invention relates to boiler-furnaces and boilers; and the object thereof is to provide an improved boiler-furnace which is particularly designed to consume smoke and other carbon-charged products of combustion; and with this and other objects in view the invention consists in a boiler-furnace constructed as hereinafter described and claimed. The invention is fully disclosed in the following specification, of which the accompanying drawings form a part, in which the separate parts of my improvement are designated by the same reference characters in each of the views, and in which—

Figure 1 is a perspective view of a boiler-furnace and boiler, one side of the furnace-wall being removed, so as to show the construction of the furnace; Fig. 2, a horizontal section of the boiler-furnace, and Fig. 3 a transverse section on the line 3 3 of Fig. 2.

In the drawings forming part of this specification I have shown at 5 an ordinary tubular boiler, and in the practice of my invention I provide a furnace one of the side walls of which is shown at 6, and said furnace is provided with the usual furnace-chamber 7, having a grate 8, and an ash-pit 9. The furnace is also provided with a transverse bridge-wall 10, arranged rearwardly of the grate 8, and with a longitudinal bridge-wall 11, arranged centrally of the furnace and centrally of the transverse bridge-wall 10, and the longitudinal bridge-wall 11 is higher than the transverse bridge-wall 10, as clearly shown in the drawings, and in practice the boiler 5 is so placed that the longitudinal bridge-wall forms a support or partial support therefor, and said longitudinal bridge-wall is also preferably shorter than that por-

tion of the furnace at the rear of the transverse bridge-wall.

The side walls of the furnace, one of which is shown in Fig. 1, are provided each with a longitudinal air-passage 12, which opens rearwardly and which is clearly shown in dotted lines in Fig. 1, and said air-passages are both shown in dotted lines in Fig. 2 and in full lines in Fig. 3. The air-passages 12 extend forwardly through the side walls of the furnace almost to the front end thereof, where each communicates with a vertically-arranged passage 13, and said vertically-arranged passages 13 communicate at their upper ends each with a horizontal air-passage 14, formed in the side walls of the furnace over and parallel with the air-passages 12, and these air-passages 14 extend backwardly, preferably to about the rear end of the central longitudinal bridge-wall 11, and said air-passages 14 are also above the transverse bridge-wall 10, and these air-passages 14 communicate with the interior of the furnace-chamber through lateral ports or passages 15, which extend along the sides of the furnace from the front edge of the furnace-chamber to the rear end of the longitudinal central bridge-wall 11. The side walls of the furnace are also provided at the ends of the transverse bridge-wall 10 with vertical air-passages 16, which communicate with transverse air-passages 17 in the transverse bridge-wall 10, and these air-passages 17 open upwardly through ports or passages 18 into the top portion of the furnace or above the transverse bridge-wall, and said air-passages 17 are also in communication with an air-passage 19, arranged in the top portion of the longitudinal bridge-wall 11, and the air ports or passages 20 communicate with the air-passage 19 and open laterally into the furnace rearwardly of the furnace-chamber and over the bridge-wall 10. As thus constructed it will be seen that the air conveyed inwardly through the air-passages 12 is discharged into the furnace-chamber over the grate and into the furnace over the bridge-wall 10 through ports or passages in the top of said bridge-wall and also laterally into the furnace through the top of the longitudinal bridge-wall 11.

The air that enters through the passages 12 and is discharged into the furnace-chamber and into the rear portion of the furnace, as shown and described, is highly heated and mingles in the furnace-chamber with the escaping products of combustion and also in the rear portion of the furnace over the bridge-wall 10 and along the sides of the bridge-wall 11, and this injection of air into the furnace rearwardly of the furnace-chamber and over and around the bridge-walls 10 and 11 facilitates the complete combustion of the smoke and other carbon-charged products of combustion.

The escaping gases of combustion in the form of construction shown pass forwardly from the rear end of the furnace through the boiler-tubes, as indicated by the arrows at the rear end of the boiler in Fig. 1, or any suitable form of boiler may be employed, and the products of combustion may be conveyed directly from the furnace into the smoke-stack or other flue.

By supplying hot air to the furnace and furnace-chamber in the manner described the heavily-charged smoke is almost entirely consumed and the products of combustion which pass upwardly through the chimney or flue are almost clear of carbon or other objectionable substances.

My improved furnace is simple in construction and operation and perfectly adapted to accomplish the result for which it is intended and is also comparatively inexpensive, and by means thereof a great saving in fuel is secured, as well as a combustion of the carbon-charged smoke that escapes from the furnace-chamber.

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

1. A boiler-furnace provided with a transverse bridge-wall arranged rearwardly of the grate, and a longitudinal bridge-wall arranged over and rearwardly of the transverse bridge-wall, and higher than said transverse bridge-wall, the side walls of the furnace and the bridge-walls being provided with communicating air-passages which open into the fur-

nace-chamber over the grate, and over the transverse bridge-wall and through the sides of the longitudinal bridge-wall, substantially as shown and described.

2. A boiler-furnace comprising side walls, a transverse bridge-wall arranged rearwardly of the grate, a longitudinal bridge-wall arranged over and rearwardly of the transverse bridge-wall, and air-passages extending longitudinally through the side walls of the furnace and open rearwardly, said air-passages being in communication at the front end of the furnace with upwardly-directed passages and with horizontal passages arranged over the first-named passages, said last-named passages being in communication with the furnace-chamber over the grate, and said first-named passages in the side walls being in communication with transverse passages in the transverse bridge-wall which open upwardly into the furnace, and said passages in the transverse bridge-wall being also in communication with longitudinal passages in the longitudinal bridge-wall which open outwardly through the sides of the longitudinal bridge-wall into the furnace, substantially as shown and described.

3. A furnace comprising side walls 6, a transverse bridge-wall 10, and a longitudinal bridge-wall 11, higher than the transverse bridge-wall, and air ports or passages arranged in the side walls of the furnace, and in both bridge-walls, said air ports or passages being in communication, and supplemental air ports or passages extending inwardly through the side walls of the furnace and upwardly through the transverse bridge-wall, and outwardly through the sides of the longitudinal bridge-wall, said first-named air ports or passages being in communication, substantially as shown and described.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of the subscribing witnesses, this 28th day of December, 1900.

JOHN J. QUINN.

Witnesses:

F. A. STEWART,  
F. TELLER.