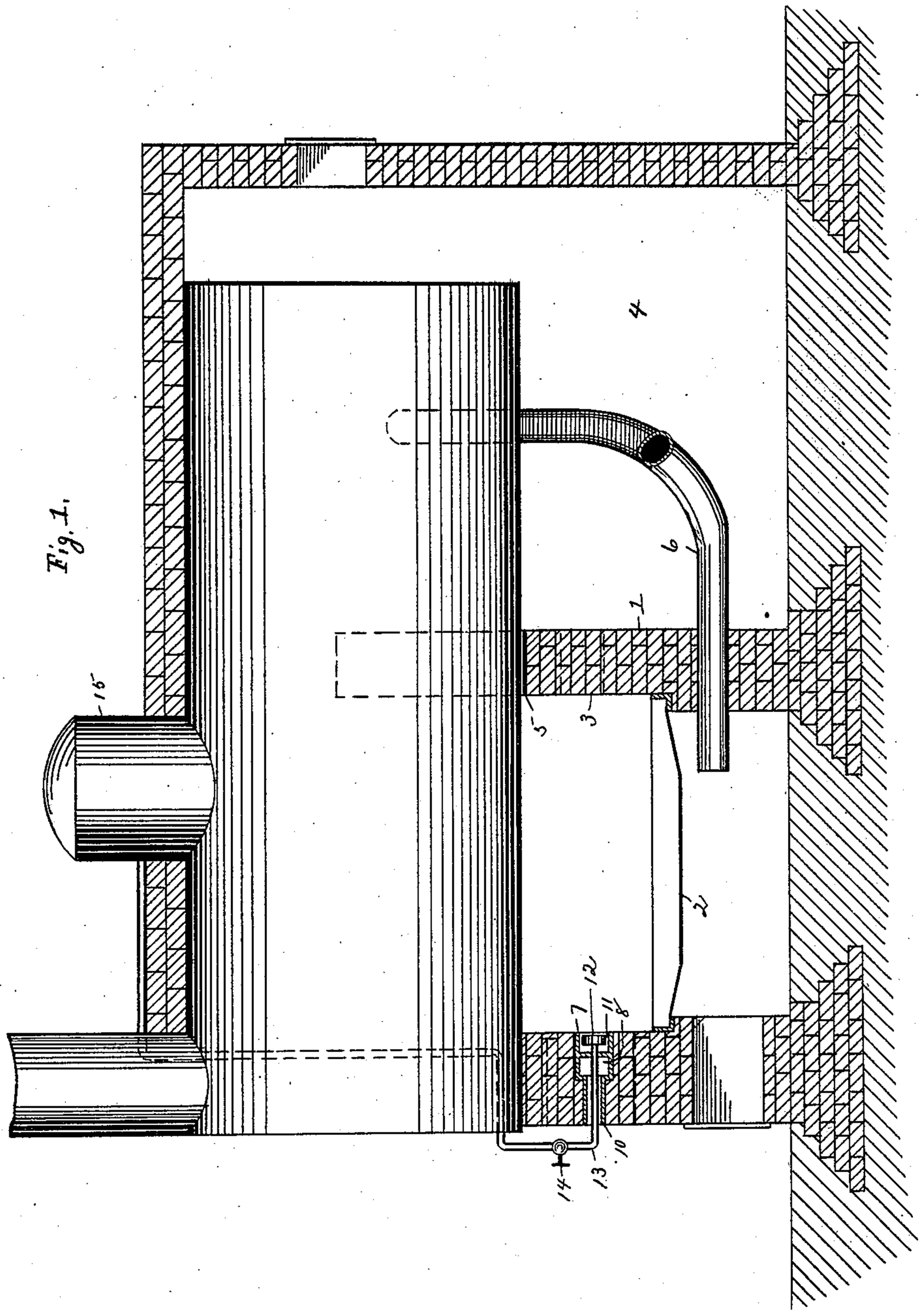
(No Model.) 2 Sheets—Sheet 1.

W. W. DAVIN.

BOILER FURNACE.

No. 574,786. Patented Jan. 5, 1897.

Fig. 1.



Witnesses
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(No Model.) 2 Sheets—Sheet 2.

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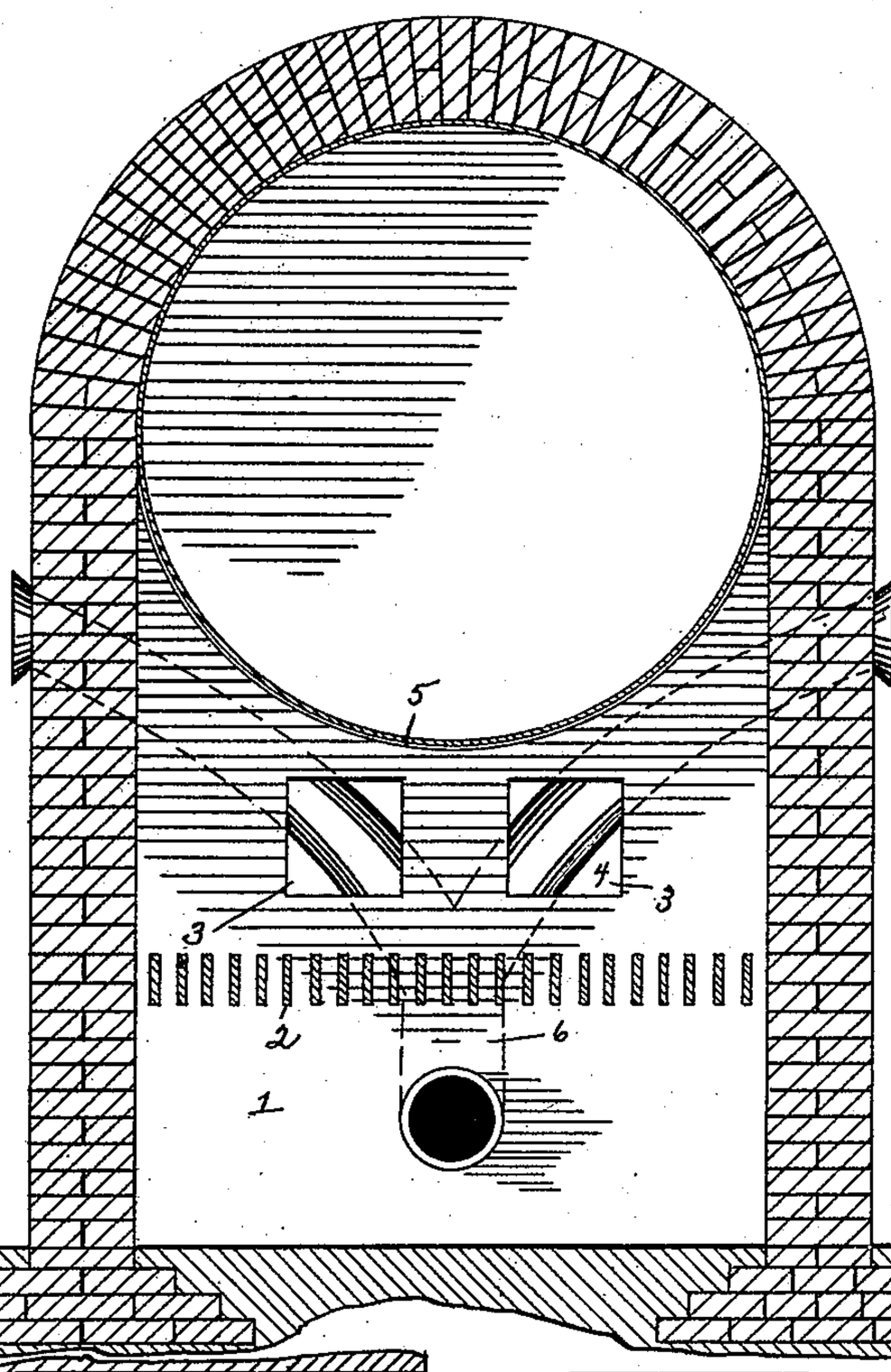

Fig. 2.

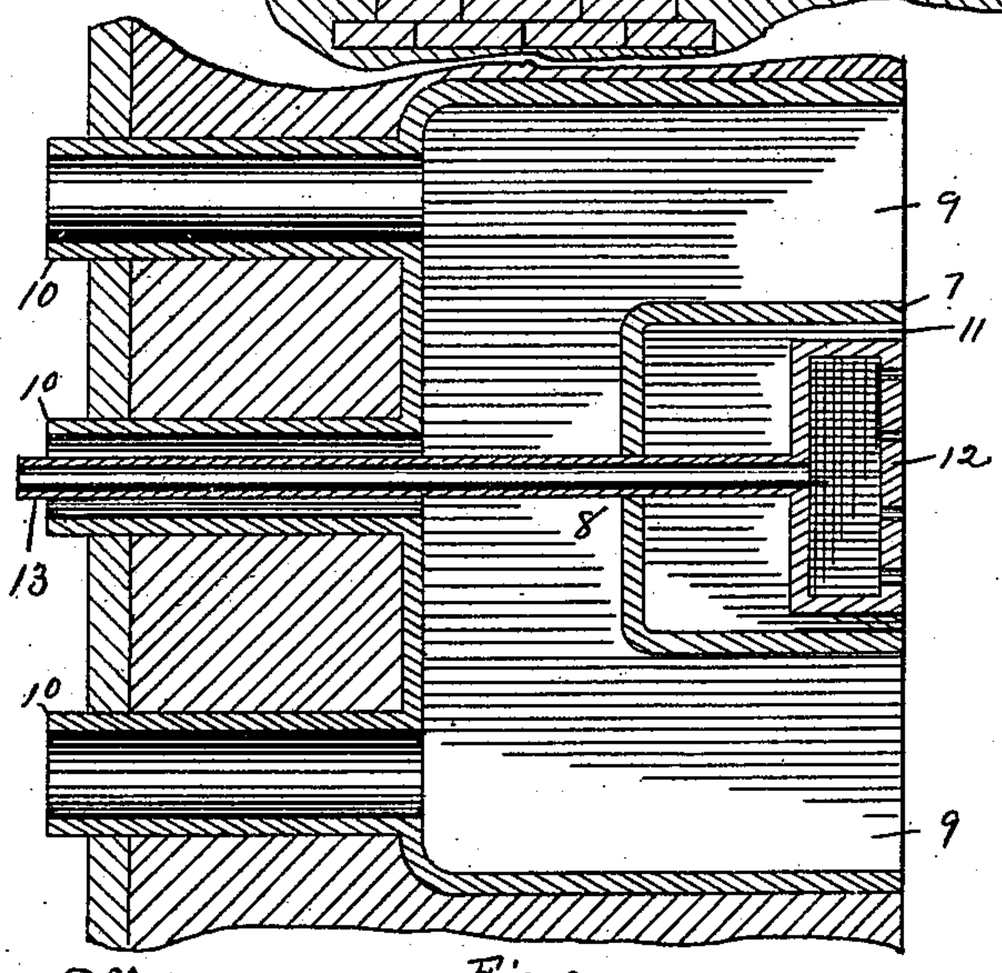

Fig. 3.

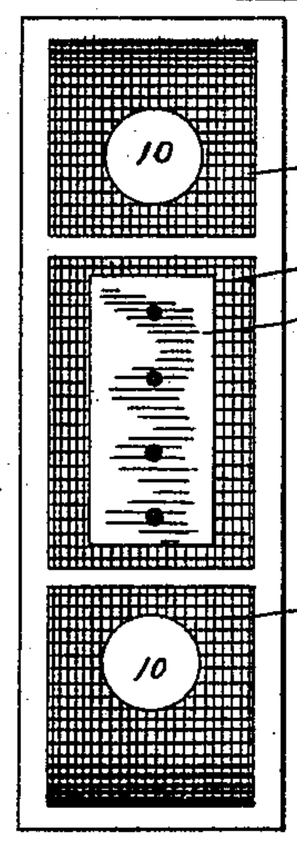

Fig. 4.

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UNITED STATES PATENT OFFICE.

WALTER W. DAVIN, OF NEW ORLEANS, LOUISIANA.

BOILER-FURNACE.

SPECIFICATION forming part of Letters Patent No. 574,786, dated January 5, 1897.

Application filed July 9, 1896. Serial No. 598,545. (No model.)

To all whom it may concern:

Be it known that I, WALTER W. DAVIN, a citizen of the United States, residing at New Orleans, in the parish of Orleans and State of Louisiana, have invented a certain new, useful, and valuable Improvement in Boiler-Furnaces, of which the following is a full, clear, and exact description.

My invention has relation to steam-boiler furnaces; and it consists in the novel construction and arrangement of its parts, as hereinafter described.

In the accompanying drawings, Figure 1 is a longitudinal sectional view of the boiler-furnace, showing the boiler located thereon. Fig. 2 is a transverse sectional view of the furnace and boiler. Fig. 3 is a horizontal sectional view of the steam-feeder. Fig. 4 is an end view of the steam-feeder.

The bridge-wall 1 is provided above the grate 2 with the openings 3 3, leading into the combustion-chamber 4. There is a space 5 about three-quarters of an inch between the top of the bridge-wall 1 and the lower periphery of the boiler.

An air-feeding pipe 6 is located in the combustion-chamber 4. The front end of said pipe passes forward through the bridge-wall 1 and terminates under the grate 2. The rear end of the said pipe 6 is bifurcated, the said pipe having the general appearance of the letter **Y**. The bifurcated ends of the pipe pass up on each side of the boiler and extend through the side walls of the furnace. (See dotted lines in Fig. 2.) Each bifurcated end of the pipe 6 passes up opposite one of the openings 3 in the bridge-wall 1.

The pipe 6 is preferably made of fire-clay. The heat passing through the openings 3 3 will come in direct contact with the bifurcated ends of the pipe 6, and thus the air passing through the said pipe is heated. The space 5 above the bridge-wall allows a small amount of the heat to pass under the boiler at that point, and thus the whole under surface of the boiler is exposed to the heat from the furnace.

A casting 7 is placed in the front wall of the fire-box of the furnace. Said casting 7 is provided with a mixing-chamber 8, having the outlets 9 9. The inlet-ducts 10 10 lead into the said chamber 8 from the outside of the furnace. The casting is provided on its inner side with the compartment 11, in which is located the steam-distributer 12. The steam-pipe 13 connects with the distributer. Said pipe 13 passes through the central inlet 10. (See Fig. 3.) The said pipe 13 passes up on the outside of the furnace and is provided with a valve 14. (See Fig. 1.) The said pipe then enters the smoke-box of the boiler and passes up and is connected with the steam-dome 15. By means of passing said pipe through the smoke-box of the boiler the steam becomes superheated before it is fed to the fire.

When the steam is turned on the fire, it creates a suction through the inlets 10 10 and the chamber 8, and thus air is drawn in and discharged through the outlets 9 9 upon the fire. In passing through the casting 7 the said air becomes heated. Thus the introduction of hot air above and below the fire makes complete combustion and the smoke from the fire is consumed before it passes through the boiler-flues. For the same reason the device is a great fuel-economizer.

The steam-distributer 12 is set back in the compartment 11, and thus it is not exposed to the flames from the fire on the grate 2.

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

1. A boiler-furnace having an air-inlet adapted to feed air under the fire-grate, said inlet consisting of a pipe located in the combustion-chamber and extending at its front end through the bridge-wall of the furnace, the rear end of the pipe being bifurcated, said bifurcations extending through opposite sides of the furnace-walls.

2. A boiler-furnace having an air-inlet adapted to feed air under the fire-grate, said inlet consisting of a pipe located in the combustion-chamber and extending at its front end through the bridge-wall of the furnace, the rear end of the pipe being bifurcated, said bifurcations extending up on opposite sides of the boiler and passing through the side walls of the furnace.

3. A boiler-furnace having in its bridge-wall openings leading into the combustion-chamber, an air-inlet adapted to feed air under the fire-grate, said inlet consisting of a

pipe located in the combustion-chamber and extending at its front end through the bridge-wall, the rear end of the pipe being bifurcated, said bifurcations each passing up opposite one of the openings in the bridge-wall and extending through opposite sides of the furnace.

4. A boiler-furnace having a casting set in the wall above the fire-grate, said casting having an air-mixing chamber, air-ducts leading into said chamber air-outlets leading from said chamber into the fire-box, a compartment formed in the casting between the air-outlets, a steam-distributer located in said compartment.

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

WALTER W. DAVIN.

Witnesses:
JOHN COONEY,
WILLIAM ALBERT BIRD.