No. 810,728. PATENTED JAN. 23, 1906.

E. J. DALY.

FURNACE FIRE DOOR PROTECTOR.

APPLICATION FILED SEPT. 6, 1905.

Fig. 1.

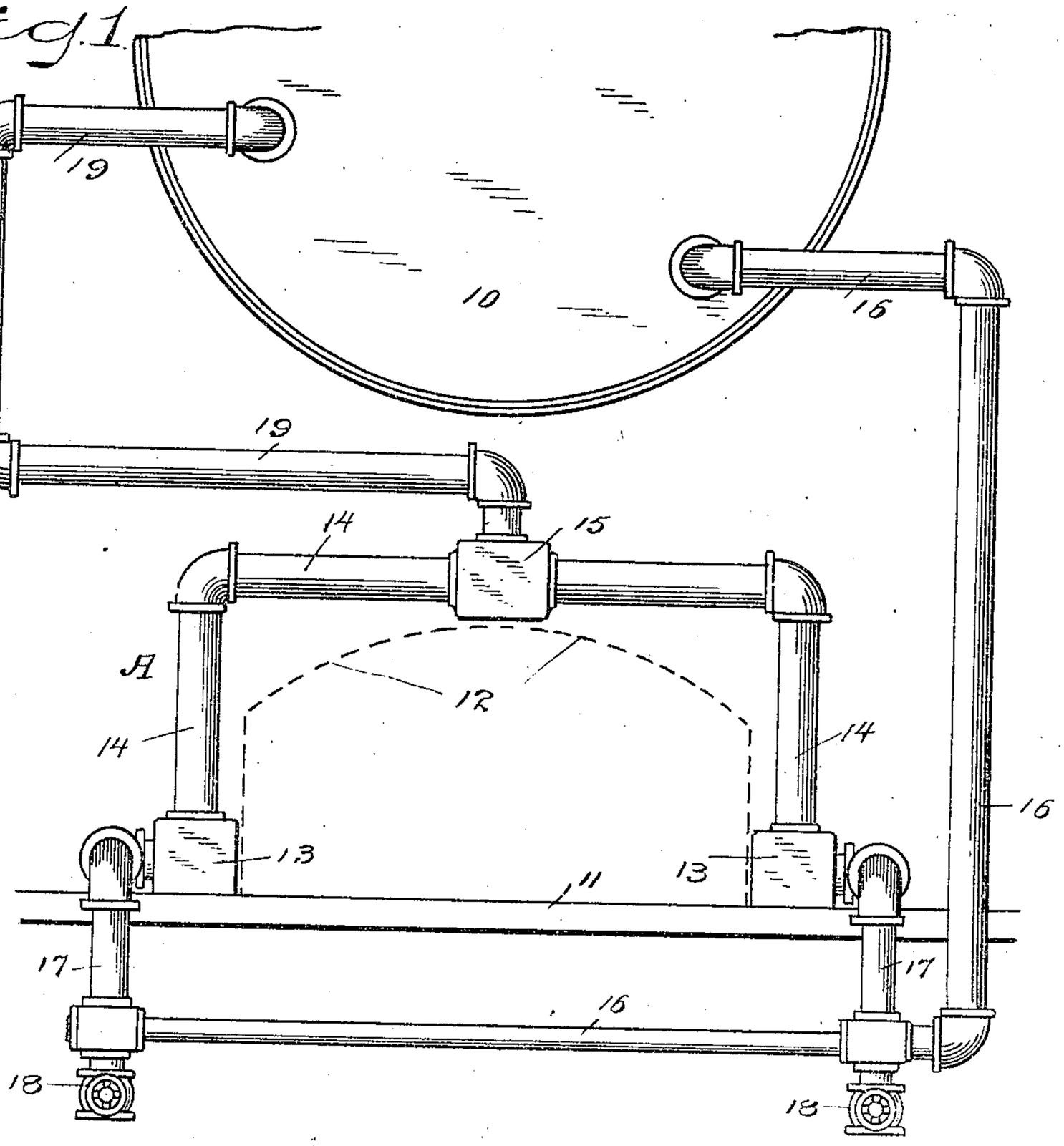
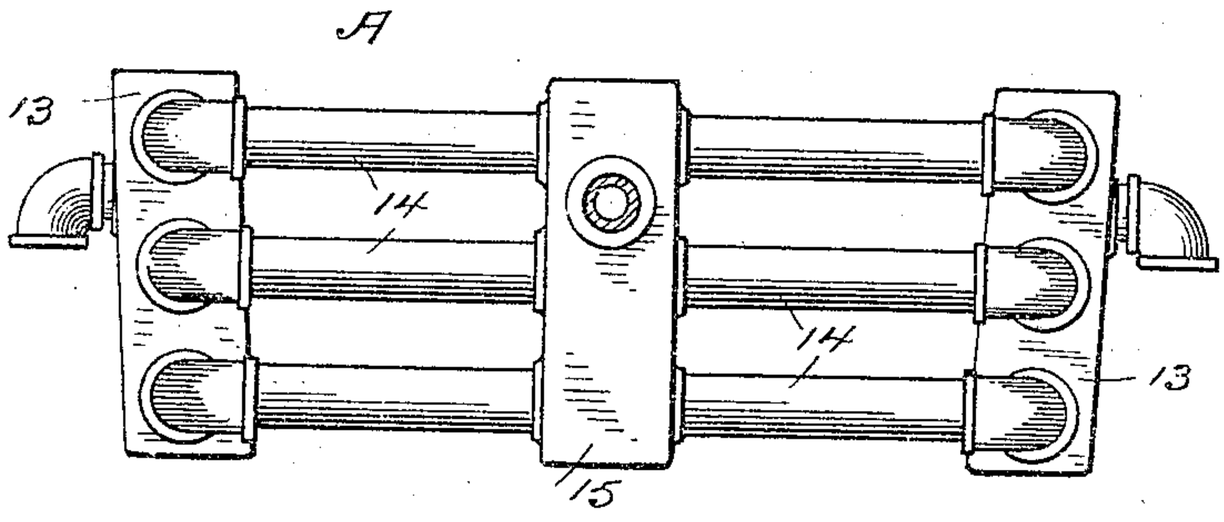


Fig. 2.



WITNESSES

H. C. A. Lamb.

L. W. Atherton

INVENTOR

Edmund J. Daly

BY

A. M. Wooster

ATTORNEY

UNITED STATES PATENT OFFICE.

EDMUND J. DALY, OF WATERBURY, CONNECTICUT, ASSIGNOR TO M. J. DALY AND SONS, INCORPORATED, OF WATERBURY, CONNECTICUT, A CORPORATION OF CONNECTICUT.

FURNACE FIRE-DOOR PROTECTOR.

No. 810,728. Specification of Letters Patent. Patented Jan. 23, 1906.

Application filed September 6, 1905. Serial No. 277,141.

To all whom it may concern:

Be it known that I, EDMUND J. DALY, a citizen of the United States, residing at Waterbury, county of New Haven, State of Connecticut, have invented a new and useful Positive-Circulation Furnace-Front and Fire-Door Protector, of which the following is a specification.

This invention relates to the construction of boiler-furnaces, and has for its object to provide a furnace-front and fire-door protector in which there shall be no dead ends and the circulation of water shall be positive and in which the usual cast-iron cheek-pieces and arch, which quickly burn out, thereby necessitating new arches and cheek-pieces and a considerable amount of new brickwork, shall be wholly done away with.

A further object of the invention is to provide a furnace-front and fire-door protector which will take relatively cool water from the boiler and by absorbing heat from the most highly-heated portions of the furnace will cool the front of the furnace and the fire-door, thereby greatly lengthening the life of the furnace, will greatly reduce the temperature of the boiler-room, thereby adding greatly to the comfort of the firemen and making it easier to fire the boiler, and which will effect an appreciable saving in the amount of fuel required to produce a given result, owing to the fact that the large amount of waste heat which is extracted from the furnace-walls is utilized in heating feed-water for the boiler.

With these and other objects in view I have devised the novel positive-circulation furnace-front and fire-door protector, of which the following description, in connection with the accompanying drawings, is a specification, reference characters being used to indicate the several parts.

Figure 1 is a front elevation illustrating the construction of my novel furnace-front and fire-door protector and showing its location with relation to a boiler-head and the fire-door of a furnace, it being of course understood that in use the protector lies wholly inclosed in the brickwork of the furnace; and Fig. 2 is a plan view of the protector detached, the return-pipe being in section.

10 denotes the head of a boiler; 11, the dead-plate of a furnace; 12, the dotted outline of the fire-door opening, and A my novel furnace-front and fire-door protector as a whole. The protector comprises two lower headers, (indicated by 13,) which rest upon the dead-plate, and a plurality of pipes 14, in the present instance three on each side, which lead upward from the lower headers and then inward and connect with a central upper header 15.

16 denotes a supply-pipe which leads from near the bottom of the boiler and connects by branches 17 with the lower headers. At the lower ends of branch pipes 17 I provide blow-off valves 18, which enable the fireman to thoroughly clean out the protector at any time and prevent the possibility of the accumulation of sediment therein.

19 denotes a return-pipe which leads from the upper header and connects with the boiler at a point above the connection therewith of the supply-pipe, as is clearly shown.

The operation will be readily understood from the drawings. As soon as the water passes into the lower headers it is heated and rises. It is an important feature of the present invention that water is supplied to lower headers at both ends of the protector and as it is heated rises and passes into a central upper header from which it is returned to the boiler. The protector, in fact, performs the double function of cooling the furnace-front and fire-door and of heating feed-water for the boiler, which results in making the boiler-room a much more comfortable place to work in and making it easier to fire the boiler and also effecting an important saving in the amount of fuel required, as it supplies a large amount of highly-heated feed-water to the boiler, utilizing for this purpose what would otherwise be waste heat.

Having thus described my invention, I claim—

1. A furnace fire-door protector comprising lower headers, a plurality of pipes rising therefrom and extending inward and an upper central header with which said pipes connect.

2. A furnace fire-door protector comprising lower headers, a connection leading to said headers from the boiler, an upper central header, pipes rising from the lower headers and connecting with the upper header and a

connection leading from the upper header to the boiler.

3. A furnace fire-door protector comprising lower headers, a supply-pipe leading from the boiler, branch pipes leading from the supply-pipe to the headers, blow-off valves at the lower ends of the branch pipes, an upper central header, pipes rising from the lower headers and connecting with the upper header and a return-pipe leading from the upper header to the boiler.

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

EDMUND J. DALY.

Witnesses:
JAS. A. PEASLEY,
HENRY WEYAND.