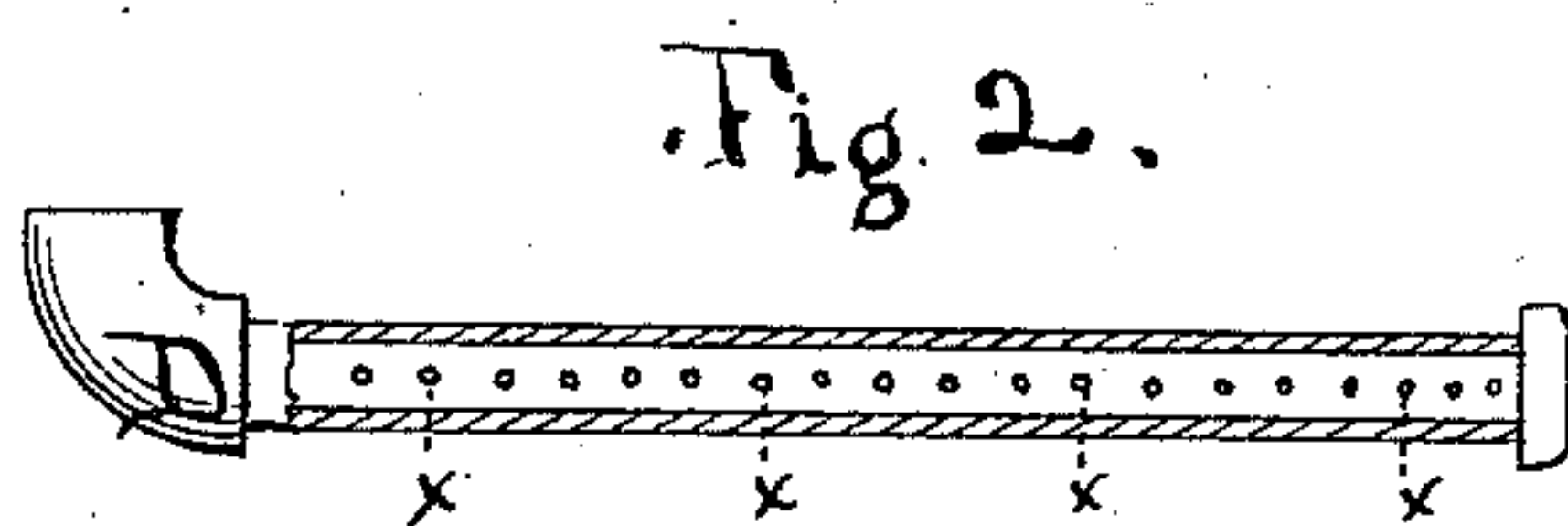
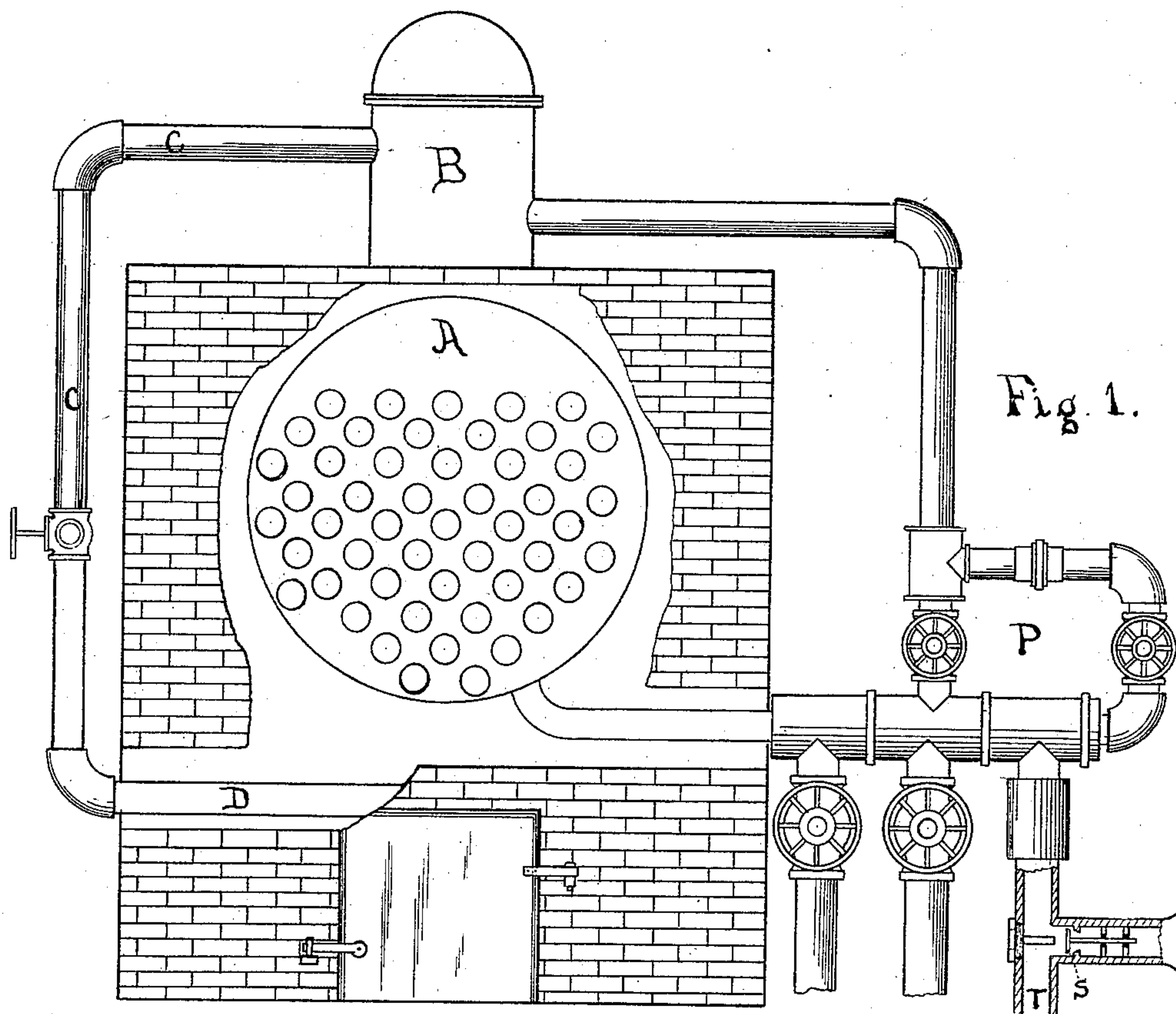


(No Model.)

W. L. FITCH.
SMOKE CONSUMER.

No. 297,122.

Patented Apr. 22, 1884.



WITNESSES:
Ed. F. Burton
H. K. Jones,

INVENTOR
Wm. L. Fitch
BY Burton & Parker
HIS ATTORNEYS

UNITED STATES PATENT OFFICE.

WILLIAM L. FITCH, OF CHICAGO, ILLINOIS.

SMOKE-CONSUMER.

SPECIFICATION forming part of Letters Patent No. 297,122, dated April 22, 1884.

Application filed July 19, 1883. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM L. FITCH, a citizen of the United States, residing at Chicago, Cook county, Illinois, have invented a new and useful Method of and Device for Smoke-Consuming, of which the following is a specification.

My invention relates to the method of consuming the smoke of ordinary fires, especially such as are used for heating the water of steam-boilers.

The object of my invention is to more perfectly consume such smoke; and this I accomplish by discharging steam or air, or both, at a high pressure and temperature, and in a spray into and upon the smoke as it rises from the fire.

The invention is described in the following specification, and illustrated, so far as it is possible, in the accompanying drawings, wherein—

Figure 1 is a view of a steam-boiler with feed-water and air-supply devices attached, and a fire-box with a steam and air discharge pipe attached extending across the fire-box. Fig. 2 is a detail view of the steam and air discharge pipe, showing the perforations through which the steam and air are discharged upon the fire.

A is the steam-boiler. B is the dome. P is a well-known form of injector, of which T is the water-supply pipe, which has the air-inlet pipe R, controlled by the check-valve S, all constructed and operating as described in my application for patent for air-supply to steam-boilers allowed March 16, 1883.

C is a pipe leading from the dome and connecting with D, which is the steam and air discharge pipe. The discharge-pipe may be attached to the sides of the fire-box, and its connecting-pipe with the dome may be placed inside or outside the boiler-covering, if such arrangement is thought desirable.

From this construction it will be seen that dry steam is taken from the top of the boiler, passed through an intensely-heated pipe to further increase its temperature, and thence discharged in a fine spray upon and into the rising smoke. The elements of the steam and smoke combine or coact, so as to produce combustion of the latter. This result is facilitated by a more complete commingling of the particles, and this I seek to accomplish by the size

and arrangement of the perforations X X X on the pipe D, whereby the particles of steam are minutely subdivided and scattered through the smoke over the entire surface of the fire. It is found that the smoke is more perfectly consumed when air is mingled with the steam. I have also discovered that a very perfect combustion of the smoke takes place when air and steam, mixed within the steam-boiler, are discharged at a great pressure and high temperature upon and into the smoke. To accomplish this I introduce the air into the boiler by any of the well-known methods. I prefer, however, to introduce it by and with the feed-water, as shown in my application; No. 80,015, filed December 23, 1882, and allowed March 16, 1883, for by this method of introducing the air the final result is rendered more perfect. This air is mixed with and heated by the steam. The mixed and heated air and steam are then forced from any suitable part of the boiler by the pressure therein, and discharged in the usual manner onto the smoke. I prefer to take the steam from the top of the boiler.

I am familiar with the patent to Craig, May 30, 1868, No. 47,933, introducing smoke and gases, and the English Patent No. 3,140 of 1868, and do not wish to be understood as claiming anything therein contained; but

What I do claim, and desire to secure by Letters Patent, is—

1. The method of consuming smoke, which consists in discharging from the boiler superheated air and steam onto and into the smoke as it rises from the surface of the fire.

2. The method of consuming smoke, which consists in discharging from the boiler mixed superheated air and steam in a spray extending over the surface of the fire onto and into the smoke as it rises therefrom.

3. The method of supplying air to a smoke-consumer, which consists in first introducing it into the steam-boiler along with the feed-water, and thence conducting it to the consumer to be discharged onto the smoke.

Signed at Chicago this 14th day of July, A. D. 1883.

WM. L. FITCH.

Witnesses:

FRANCIS W. PARKER,
CHAS. S. BURTON.