

F. SHMONSKY.  
 COMBINED GAS AND SMOKE CONSUMING ATTACHMENT.  
 APPLICATION FILED JULY 19, 1909.

961,810.

Patented June 21, 1910.

2 SHEETS—SHEET 1.

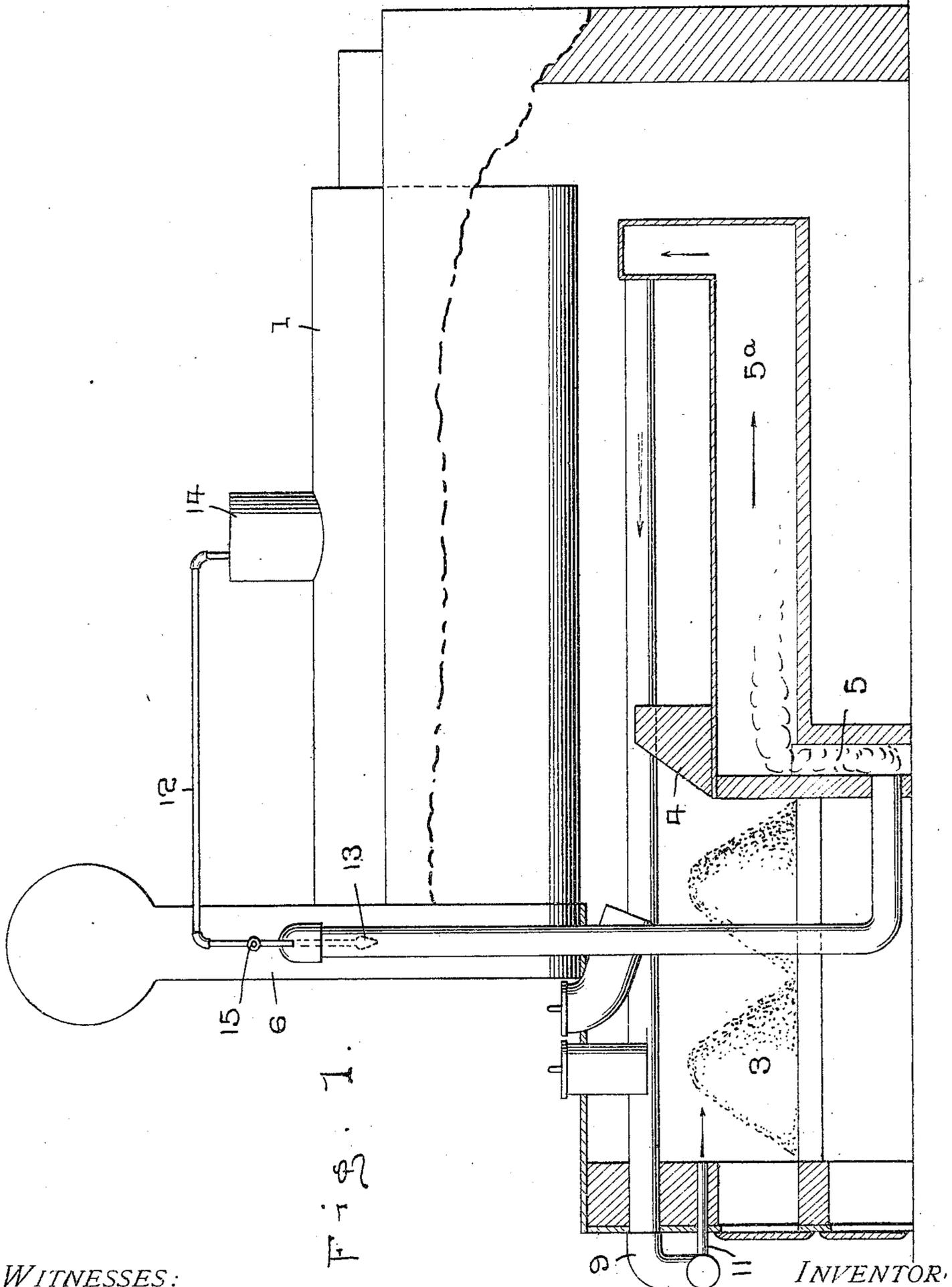


Fig. 1.

WITNESSES:

*Thomas Riley*  
*Herbert J. Jacobi*

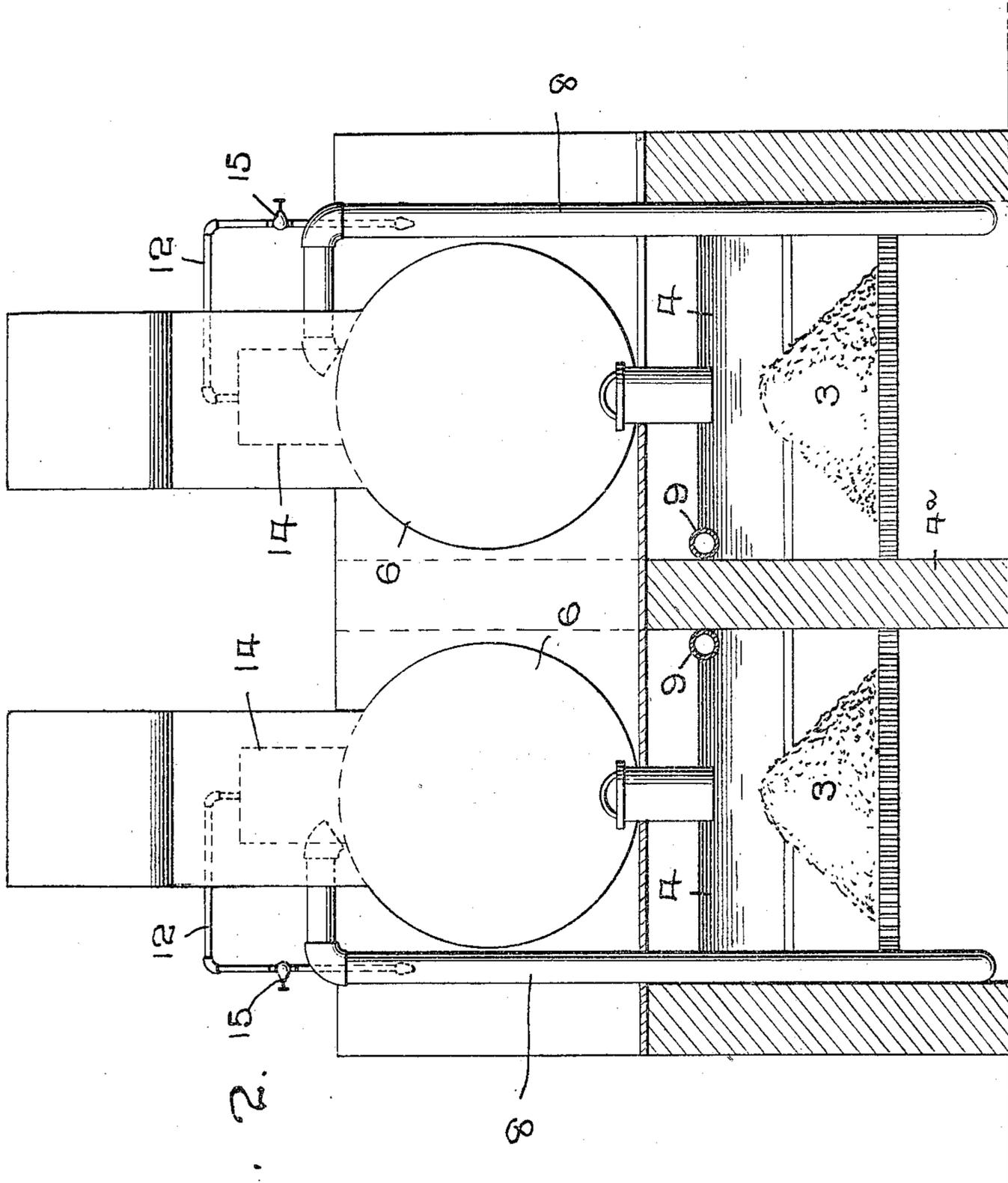
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WITNESSES:

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# UNITED STATES PATENT OFFICE.

FRANK SHMONSKY, OF RIDGWAY, PENNSYLVANIA.

COMBINED GAS AND SMOKE CONSUMING ATTACHMENT.

961,810.

Specification of Letters Patent. Patented June 21, 1910.

Application filed July 19, 1909. Serial No. 508,342.

*To all whom it may concern:*

Be it known that I, FRANK SHMONSKY, a citizen of the United States, residing at Ridgway, in the county of Elk and State of Pennsylvania, have invented certain new and useful Improvements in Combined Gas and Smoke Consuming Attachments; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to new and useful improvements in combined gas and smoke consuming attachments for boilers and my object is to provide means for gathering the unconsumed gases and re-conveying the same through the fire box of the boiler.

A further object is to provide means for super-heating the gases while passing through the fire box of the boiler and a further object is to provide means for discharging the gases directly into the fire box and over the burning material therein and a still further object is to provide means for causing the unconsumed gases, etc., to enter the pipe employed for conducting said gases.

Other objects and advantages will be hereinafter referred to and more particularly pointed out in the claims.

In the accompanying drawings forming part of this application, Figure 1 is a side elevation of a battery of boilers mounted on a foundation partly in section and showing my improved smoke and gas consuming device as applied. Fig. 2 is an end elevation of the same showing the foundation in section.

Referring to the drawings in which similar reference numerals designate corresponding parts throughout the several views, 1 indicates the boilers which may be constructed in the usual or any preferred manner and of that class adapted to rest horizontally and 2 indicates the foundation upon which said boilers are mounted and in said foundation is formed a fire box 3 one for each boiler, into which coal or other fuel is deposited for heating purposes.

Immediately in the rear of the fire boxes 3 are bridge walls 4, which bridge walls are constructed in the usual or any preferred manner, and are provided with cavities 5 and air tight chambers 5<sup>a</sup> adjoining said cavity for a purpose to be hereinafter set forth, the gases and products of combustion

from the fuel in the fire box, passing over the bridge wall 4 and to the rear end of the boilers 1, from whence they pass through tubes (not shown) within the boiler to the front end thereof, where they are discharged into a smoke drum 6, said smoke drum being attached to a chimney.

Entering the smoke drum 6 at a point above the entrance of the products of combustion and gases into the drum is a horizontally disposed pipe section 7, said pipe extending outwardly through one wall of the smoke drum and is attached to a vertically disposed pipe 8, which vertical portion extends downwardly through the upper wall of the foundation, and through one side of the fire box to the cavity into which the products of combustion and gases passing through said pipe sections will be discharged. The vertical pipe, it will be seen, passing through said fire box allows the gases, etc., within to become heated.

The gases, etc., discharged into the cavity 5, pass through said air-tight chamber 5<sup>a</sup>, then are conveyed through the combustion chamber to the forward end of the furnace or foundation through the medium of auxiliary pipes 9 which extend along each side of the division wall 4<sup>a</sup>, one for each boiler, the forward ends of the auxiliary pipes protruding through the front wall of the foundation and are provided with horizontal extensions 10, to which are attached a plurality of nozzles 11, said nozzles extending through the front wall of the fire box and in position to discharge the contents of the auxiliary pipes at a point immediately over the fuel in the fire box, thereby bringing the discharged products into commingled relationship with the flames from the fuel. As the gases, etc., pass downwardly through the pipe section 8 they are brought into close relationship with the fire box and through the bridge walls of the furnaces over which the heat passes, said gases will be superheated, in which event the combustion in the fire box will be increased without employing a force draft.

The gases, etc., or a considerable portion thereof are drawn into the pipe section in any preferred manner as by extending a steam pipe 12 into the upper end of the vertical section 8 to the lower end of which is secured a nipple 13, said steam pipe being connected preferably to the dome 14 of the boiler, whereby when the valve 15 is opened,

a jet of steam will be discharged into the vertical pipe section which will cause a suction at the open end of the horizontal pipe section 7, which will result in drawing the  
 5 gases, etc., in the smoke drum into said pipe section and causing the same to travel through the cavity 5 through said chamber 5<sup>a</sup> and into the auxiliary pipe sections 9 and from thence into the fire box through the  
 10 nozzles 11.

It will thus be seen that I have provided cheap and economical means for collecting the unconsumed gases, which would otherwise be wasted, and reconveying the same  
 15 through the combustion chamber, at the same time superheating said gases before they are discharged in the combustion chamber.

It will further be seen that no cold air  
 20 is taken in with the gases and further that it will not require a force draft to cause the proper combustion in the fire box and in view of the amount of induced heat accomplished by reconveying the gases  
 25 through the combustion chamber, a great saving of fuel will be accomplished.

It will also be seen that although I have shown the device as attached to a battery  
 30 of boilers, yet it will be understood that it can be applied to use in connection with a single boiler when so desired.

What I claim is:

1. In a gas and a smoke consuming device, the combination with a foundation having a  
 35 fire box and a bridge wall therein, said bridge wall having a cavity and a boiler on said foundation; of a pipe adapted to collect the gases and smoke when discharged from said boiler and convey the same into said  
 40 cavity, said pipe leading through said fire-box in its course to said cavity, an auxiliary pipe extending from said cavity to the forward end of said foundation and means to convey said gases into the fire box above the  
 45 fuel.

2. In a gas and smoke consuming device, the combination with a foundation having a fire box therein, a bridge wall in the rear of  
 50 said fire box, said bridge wall having a cavity, an air-tight chamber adjoining said cavity, a boiler above said bridge wall and fire box and a smoke drum attached to said boiler; of a pipe section extending into said drum, an additional pipe section extending

from the pipe section through said fire-box  
 55 to the cavity in the bridge wall, an auxiliary pipe section extending from the air-tight chamber to the forward end of said foundation and nozzles on said auxiliary pipe section adapted to discharge the gases into the  
 60 fire box and above the fuel therein.

3. In a combined gas and smoke consumer, the combination with a foundation having a fire box therein, a bridge wall in the rear of  
 65 the fire box, said bridge wall having a cavity therein, an air-tight chamber adjoining said cavity, a boiler above said bridge wall and fire box and a smoke drum connected to said boiler; of a pipe section communicating with  
 70 said drum, an additional pipe section extending from the first pipe section through said fire-box to one end of said cavity in the bridge wall, means to cause a suction in said pipe sections, whereby the contents of the  
 75 smoke drum will be drawn into said pipe section and discharged in said cavity, an auxiliary pipe section communicating at one end with said air-tight chamber and at its  
 80 opposite end with the fire box, whereby the gases in said auxiliary pipe will be discharged into the fire box and over the fuel therein.

4. In a combined gas and smoke consuming device, the combination with a foundation having a fire-box, a bridge wall to the  
 85 rear of said fire-box and a cavity within said bridge wall, an air-tight chamber adjoining said cavity, a boiler over said fire-box and bridge wall and a smoke drum on said boiler; of a pipe leading into said drum, an  
 90 additional pipe section attached to first referred to pipe and leading through said fire-box to one end of said cavity, whereby gases are superheated, an auxiliary pipe leading  
 95 from the rear of said air-tight chamber through the foundation in close contact with said fire-box to the forward end of said foundation and nozzles on said auxiliary pipe adapted to discharge said gases into the  
 100 fire-box.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

FRANK SHMONSKY.

Witnesses:

L. J. A. LESSER,  
 AGNES MULLEN.