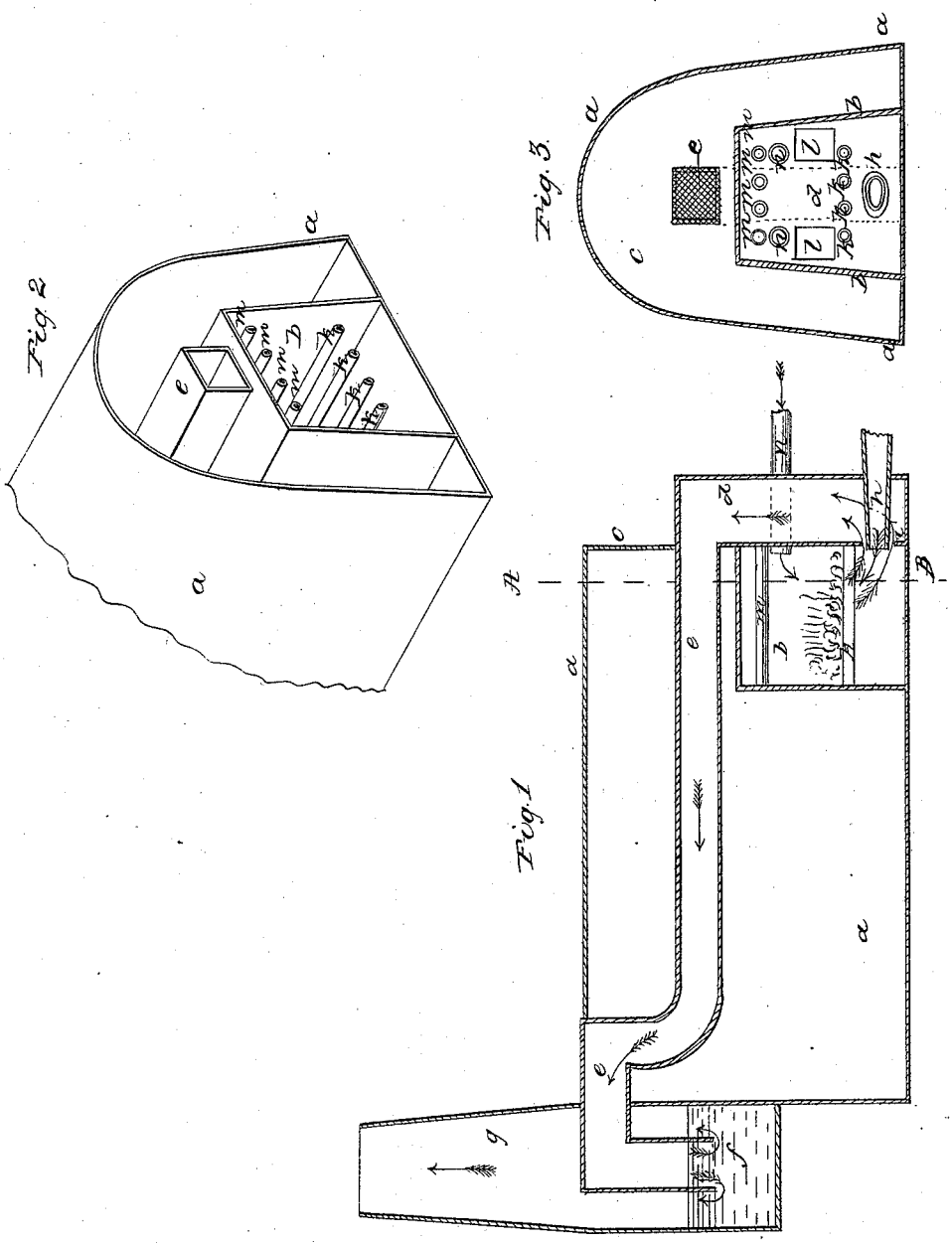
L. Bradley,

Steam-Boiler Furnace.

No. 3853. Patented Dec. 12, 1844



UNITED STATES PATENT OFFICE.

LEMAN BRADLEY, OF SHARON, CONNECTICUT.

FURNACE OF STEAM-BOILERS.

Specification of Letters Patent No. 3,853, dated December 12, 1844.

To all whom it may concern:

Be it known that I, LEMAN BRADLEY, of Sharon, in the county of Litchfield and State of Connecticut, have invented a new and useful Improvement in Steam-Boilers; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing, in which—

Figure 1, is a longitudinal section vertically through the center. Fig. 2 is an isometrical view of the fire chamber with the front of the boiler removed. Fig. 3, is a section of the front of the boiler through A, B, of Fig. 1.

The letters in all the figures designate similar parts.

The nature of my invention consists in the method of conducting the air into the fire chamber and driving off the products of combustion by which a more intense heat is produced and a saving of fuel effected.

The apparatus can be combined with any shaped boiler but that which I shall describe and figure is the common wagon shaped boiler represented in the different figures and designated by the letter *a*. In the front end of this boiler is a fire chamber which is a rectangular box *b*, the front of which is formed by the front plate *c*, of the boiler; attached to said front plate there is a smoke flue *d*, that extends from near the bottom of the fire chamber up above its top, where it joins a horizontal pipe *e*, that extends horizontally through the boiler as represented at Fig. 1; this pipe may run out at the other end of the boiler horizontally, or may turn upward near the rear end, and then turn again horizontally out, as shown by the drawing; after it leaves the end of the boiler it turns downward, and terminates in a reservoir *f*, at the bottom of the smokestack *g;* said reservoir *f*, is filled with water above the mouth of the pipe *e*. Near the lower end of the upright flue *d*, above named, a twyer or nozzle of the air pipe *h*, (which connects with a cylinder bellows of common construction) passes through into the fire chamber; this nozzle is stopped air tight when it passes into the flue but the aperture *i*, in the flue, when the nozzle enters the fire chamber, is large enough to have a space sufficient for all the products of combustion to pass through around the blast that is blown in through the nozzle of pipe *h*. Just above this opening *i*, there is a row of tubes *k*, which communicate with the boiler; they form the grate on which the fuel is placed. Just above them are the doors *l*, in the front plate of the boiler, one on each side of the flue *d*. Near the top of the fire chamber are a similar row of tubes to those before named, and these are lettered *m*. Below them and over each of the doors of the fire chamber are air pipes *n* leading from the bellows, so that when the apparatus is in operation there will be a current of air into the fire chamber above and below the fuel which will meet, and when the pressure is sufficient, the smoke &c., will be forced out down around the nozzle of pipe *h*, and through flue *d*, *e*, and passing through the water will be discharged into the smokestack. In the drawings the red arrows denote the air blast, and the black arrows the course of the smoke. By forcing the products of combustion through the water any amount of pressure may be maintained in the fire chamber, by having the water more or less deep, and by it all the sparks will be effectually extinguished.

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

1. Forcing the air into the fire chamber in the manner described above and below the fire, in combination with the method of discharging the products of combustion as herein set forth from the fire chamber.

2. I also claim in combination with the above the forcing the products of combustion through a reservoir of water substantially in the manner and for the purpose above set forth.

LEMAN BRADLEY.

Witnesses:
J. J. GREENOUGH,
RICHARD KEY WATTS.