2 Sheets—Sheet 1.

BRADY & SLOAN.

Hot-Air Furnace.

No. 76,590. Patented April 14, 1868.

Fig. 2.

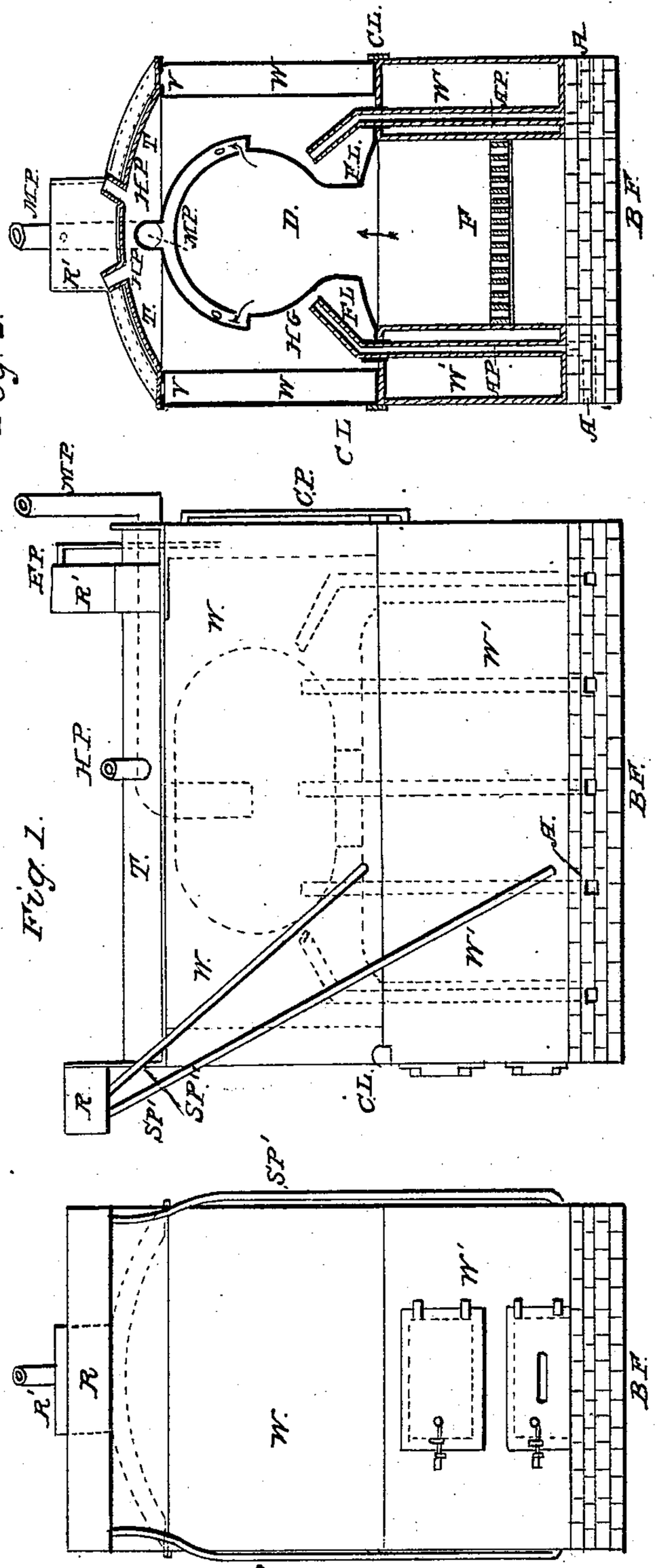

Fig. 1.

Fig. 3

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United States Patent Office.

EDWARD BRADY AND JOHN SLOAN, OF PHILADELPHIA, PENNSYLVANIA,
ASSIGNORS TO EDWARD BRADY.

Letters Patent No. 76,590, *dated April* 14, 1868.

HOT-AIR FURNACE.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that we, EDWARD BRADY and JOHN SLOAN, both of Philadelphia, in the county of Philadelphia, and State of Pennsylvania, have jointly invented a new and useful Improvement in "Furnaces" for heating dwellings, hotels, churches, &c., &c.; and we do hereby declare that the following is a full, clear, and exact description and operation of the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, making a part of this specification, and in which—

Figure 1, plate 1, is a perspective view.

Figure 2, plate 1, is a vertical section through centre.

Figure 3, plate 1, is an end view.

Figure 4, plate 2, is a perspective view with a slight modification.

Figure 5, plate 2, is a sectional view of the same.

Figure 6, plate 2, is an end view of same.

The object of our invention is to construct a "furnace" to be economical in the use of fuel, and to be simple in its construction, and capable of being easily managed, to be durable, so as not to require frequent or expensive repairs, and accessible in case repairs are needed; also, from its peculiar construction, as hereinafter described, to give out a moist, pleasant, and copious supply of heat, instead of the dry heat generated from the present style of furnaces now in use; and furthermore, to preserve the inside of the furnace from being burnt out, by means of a wall of water surrounding the same.

To enable others skilled in the art to make and use our joint invention, we will now proceed to describe its construction and operation.

B F is a brick foundation, upon which our furnace is erected, having on its side apertures or openings, A, to admit of a supply of cold air.

W W′ are water-tight compartments, constructed of cast or galvanized iron, or other suitable material, and made in sections, parallel or otherwise with the base. Said compartments are kept constantly filled with water, and receive their supply through pipes S P, S P′, S P″, from cistern R, which is a rectangular box, made of cast or galvanized iron, and placed on a level with the water in evaporation-box R′.

Connecting W and W′ is pipe C P, to carry off steam and vapor generated in compartment W′.

D, fig. 2, is an elliptic-shaped dome, made of cast or wrought iron, or other suitable metal, supported by flanges, F L, resting on top of compartment W′, the said dome being so constructed as to intercept the heat in its passage to the chimney, and diffuse it more thoroughly, the smoke and gas passing out through opening O into smoke-pipe M P. In case of repairs, dome D can be removed by means of the flanges F L, as hereinbefore described.

Between dome D and compartment W is heating-chamber H C, into which currents of cold air from the aperture A pass through the air-pipes A P, and strike against dome D.

H P are the heater-pipes, for conveying the heat to the building, &c.

T is a cast-iron top, resting on compartment W′, enclosing dome D and heating-chamber H C, and made to lift off in case of repairs or cleaning; top T to be overlaid with an outside course of brick, cemented.

R′ is an evaporation-box, resting on and connected with compartment W. The water in evaporation-box R′ to be kept on a level with water in cistern R, through opening V.

E P, fig. 1, is a pipe for the purpose of conveying the vapor from the evaporation-box R′ into the heating-chamber H C, so as to moisten the hot air.

Compartments W and W′ are held in place by cleats C L, as shown in fig. 2.

The upper parts of air-pipes A P, in plate 1, are made with loose joints to turn, in case it becomes necessary to remove dome D.

Operation.

We build our fire in furnace F. The products of combustion pass up into dome D, as shown by arrows, the smoke and gas passing out through openings O into smoke-pipe M P. The current of air is maintained in the heating-chamber H C, through air-pipes A P, said pipes passing through the hot-water compartments W′ on the side nearest the furnace-fire. The air thus becomes heated in its passage. The water in compartments W and W′ prevents the radiation of heat from furnace F and heating-chamber H C, thereby throwing all the heat into the furnace F and hot-air chamber H C, and thence into the building, &c.

Plates 1 and 2 are similar, with the exception of evaporation-box R′ being dispensed with in plate 2, and substituting evaporation-boxes W B, open at the top, inside the chamber H C, by which the vapor or steam can mingle, so as to render the hot air moist; also, the compartment W, and pipes C P and E R, and opening V being dispensed with. The top of the air-pipes A P are on a level with top of compartment W′.

Having thus described our invention, its construction and operation, what we claim as new, and desire to secure by Letters Patent of the United States, is—

Furnace F, compartments W W′, dome D, heating-chamber H C, air-pipes A P, movable top T, cistern and evaporation-boxes R and R′, connecting-pipes S P, S P′, S P″, and C P, evaporation-boxes W B, smoke and gas-escape apertures O, all constructed and combined and operating in the manner and for the purposes above set forth and described.

EDWARD BRADY,
JOHN SLOAN.

Witnesses:
WM. J. PROWRIE,
CHARLES H. EVANS.