(No Model.)

W. SPINNER.

FIREPLACE.

No. 507,390. Patented Oct. 24, 1893.

Fig. 1.

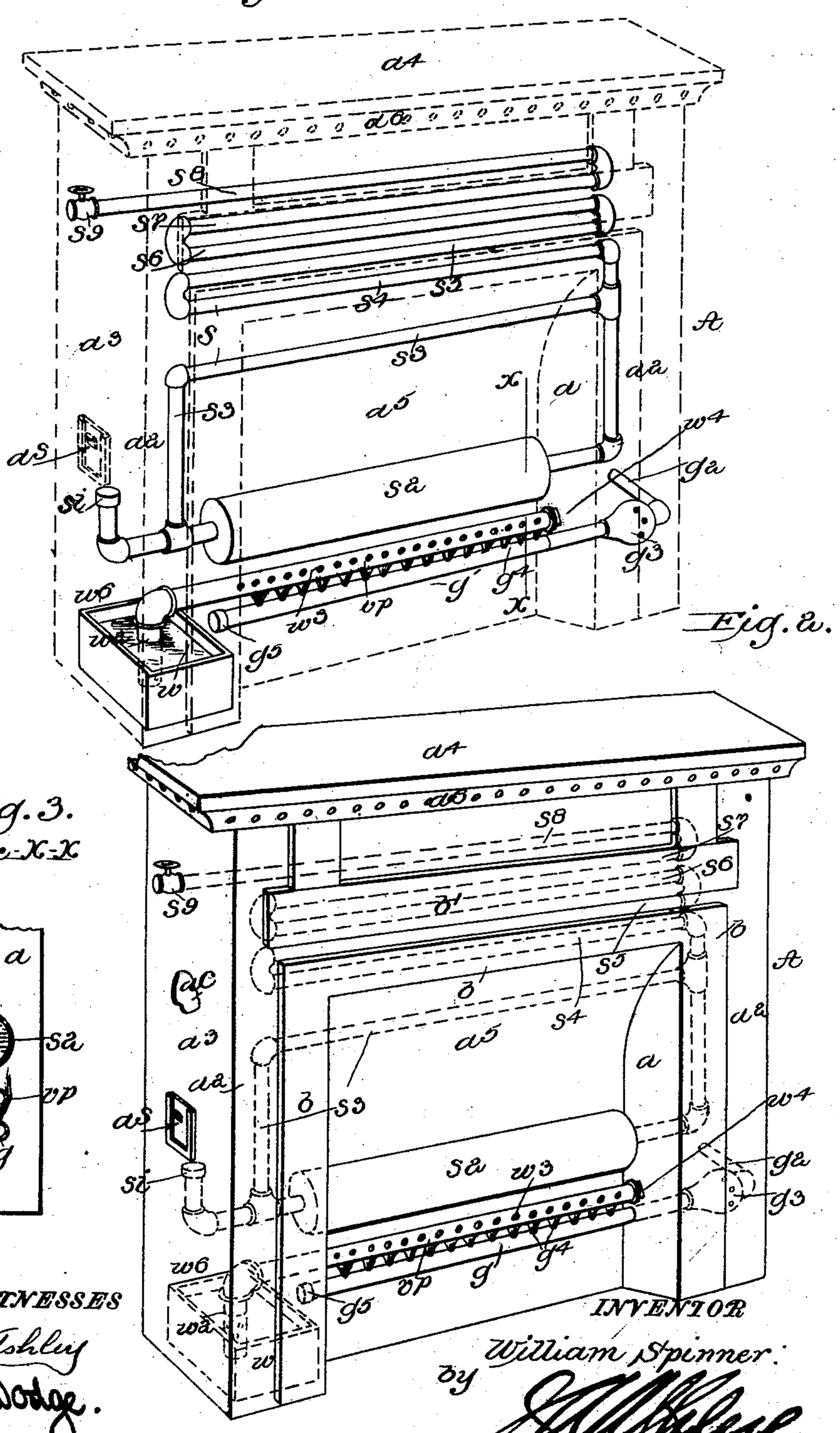

Fig. 2.

Fig. 3.
On line X-X

WITNESSES

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FIREPLACE.

SPECIFICATION forming part of Letters Patent No. 507,390, dated October 24, 1893.

Application filed March 13, 1893. Serial No. 465,784. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM SPINNER, a citizen of the United States, and a resident of the town of Warren, in the county of Warren, in the State of Pennsylvania, have invented a new and useful Fireplace, of which the following is a description.

The invention relates in part to improvements in the construction of the jambs and of the mantel of the fire-place, whereby the heat generated in the process of combustion of the fuel, is quickly imparted to the body of the fire-place, and to the atmosphere contained in the chamber of such body;—and is quickly utilized in elevating the temperature of the apartment in which the fire-place is located, or if desired, that of one or more apartments in an upper story of the building. The invention relates also to the provision in connection with the fire-back of a fire-place, and with the chamber behind such fire-back, of a means for simultaneously utilizing the high temperature imparted to such fire-back, particularly that portion of the same which is exposed to the most intense heat,—and imparting to the atmosphere of the apartment the most advantageous degree of moisture. The invention relates also to means for introducing within the combustion-space of the fire-place, minute currents of suitably hydrated air, and minute jets of gas,—the two distinct series of currents being discharged coincidently, so as to intermingle, and as intermingled to be completely consumed.

The invention consists in various novel parts or elements, and in various novel combinations of elements, in a fire-place, as will be described with particular reference to the details of construction, and as will be specifically indicated in the claims which succeed such detailed description.

In the accompanying drawings, which constitute a part of this specification,—Figure 1 is a perspective elevation, the outline of the mantel being in dotted lines, and the heating and circulating appliances being represented in full lines. Fig. 2 is a perspective elevation, the outline of the heating and circulating appliances being shown in dotted lines, and the body of the fire-place proper, being shown in full lines. Fig. 3 is a detail vertical section, in the line x—x, of Fig. 1.

The jambs a, the fronts a^2, the ends a^3, and the capital or mantel proper a^4, are composed of sheet-metal, the exposed surface of which may be finished or ornamented in any approved manner. The fire-back a^5, also, may be of sheet-metal, but if desired, such fire-back and the jambs may be strengthened or protected by a facing or a lining of non-combustible material.

Upon the front of the fire-place, contiguous to the opening of the same, will be secured a border b, which is composed of cast metal, the exposed surface of which is coated with any suitable finishing substance. The space between the opening of the fire-place, and the ornamental mantel or capital proper a^4, of the fire-place A, may also be provided with cast-metal plates, as b'. These plates, suitably secured, serve to impart stiffness and rigidity to the structure and also to add to its attractiveness.

Within the cavity of one of the jambs and front of the fire-place, is provided a water-reservoir or tank w, within which is received a water-pipe w^2, which extends from a point near the bottom of the tank, upwardly, to and above the top thereof, from which point it is extended horizontally inward, through an opening in the jamb, and across the fire-opening and combustion-space of the fire-place. At its lower extremity, the pipe is in open communication with the contents of the tank w, and in its upper and horizontal portion or vapor pipe vp, it is provided with a series of openings w^3, and at its extremity, with a closing-cap w^4.

Coincident and parallel with the horizontally-extended portion of the water-pipe w^2, and by preference but a short distance below the same, is the gas-induction and gas-mixing pipe g, which embraces the induction-pipe proper g^2, which extends through an opening in the jamb of the fire-place, as shown, the mixing-chamber g^3, and the perforated section or gas-burner proper g^4, which at its inner extremity is closed by a suitable plug or screw-cap g^5.

Behind the combustion-chamber and within the air chamber ac of the fire-place, is arranged the steam-coil s, which in its circuit embraces a close water-reservoir or boiler s^2, which is placed in front of and in close prox-

imity to, the rear wall of the fire-back, and partially within the horizontal, rearwardly curved recess r thereof, as shown; and which is connected, right and left, with the vertically-placed steam-pipe quadrangle s^3, within the air-chamber of the fire-place, which is surmounted successively by the pipe sections s^4, s^5, s^6, s^7, s^8,—in any suitable number,—the open extremity of the uppermost pipe being provided with a suitable discharge-opening and controlling-valve s^9, as shown. The water-reservoir or boiler s^2, is provided with an inlet-pipe si; and the adjacent end of the fire-place is provided with an opening as, through which both the tank w, and the pipe si, of the boiler, may be readily supplied with water.

The capital or mantel a^4, of the fire-place, is provided with numerous openings a^6, for the free discharge of air from the space inclosed within the air-chamber of the fire-place.

In the operation of the fire-place, a suitable volume of gas, supplied through the induction-pipe g^2, will, in the chamber g^3, receive a suitable admixture of air, and in its further movement, will be ignited as it is discharged through the openings in the burner-pipe g^4. The vapor-pipe vp, becoming highly heated by contact therewith, of the jets of flame from the burner-pipe, will convey heat to the contents of the water-tank, in sufficient degree to cause rapid generation of vapor, which will be discharged in minute streams, through the openings in the pipe vp, and mingling with the jets in the burner-pipe, will cause complete combustion thereof, producing in the process an intense heat, which will by the fire-back be deflected outwardly, into the apartment. Simultaneously with the operation thus described, the contents of the water-reservoir or boiler s^2, will have become heated through the near proximity of the boiler to the burner-pipe, and within a brief period, steam will have been generated, and moved through the sinuosities of the steam-coil, the valve then being suitably adjusted to permit a slight continuous discharge, until a steam-circulation has been established, or until the desired temperature within the apartment has been produced. If desired, the lid w^6, of the water-tank w, will be left unclosed, to permit suitable hydration of the contents of the air-chamber ac, within which the steam-coil is placed, before its discharge into the apartment through the series of openings a^6, in the face of the capital or mantel a^4.

It will be understood that the arrangement of the water-reservoir or boiler, substantially as represented in Fig. 3, is that which is preferably employed, but it will be obvious that such part might relatively be either somewhat higher or somewhat lower than as represented. It will also be understood that air, in suitable quantities, will be supplied to the air-warming chamber of the fire-place, either from the apartment in which the fire-place is located, or from a suitable source of pure air outside the building.

I am aware that a fire-place has before been made to inclose an air-warming chamber; that a water-receptacle has been employed in connection with the combustion-chamber of a fire-place; and that "gas-logs" or gas-burning pipes, have been employed in lieu of wood or coal, in a fire place. I believe, however, that I am the first to provide in a portable metallic, air-chambered fire-place, a horizontal recess in the fire-back thereof, which is adapted to wholly or partially receive a cylindrical boiler; the first to provide in a fire-place, an air-warming chamber, an air-and-flame hydrating-vessel within such air-warming-chamber, and a gas-burner pipe in front of such air-chamber;—all operating conjointly, for the accomplishment of a single common, definite object; the first to provide in a fire-place an air-hydrating appliance and an air-warming steam-system in which the boiler is directly exposed to the flame, while the steam-circulating pipes, connected with the boiler, are excluded from the flame, and are exposed only to the air within the air-chamber; and the first to combine in co operative relation, to heat the atmosphere of the apartment in which the fire-place is contained,—a recessed fire-back which is provided at its front with a boiler, a gas-burning pipe below the boiler, a vapor-tank and pipe which supply vapor to the gas flame, and also to the atmosphere of the air-chamber, and a system of steam-pipes which are connected with the boiler, and are arranged within the air-chambər behind the fire-back, and behind the boiler.

The invention having been thus described, what is claimed is—

1. In a fire-place, a front, ends, jambs, and mantel, which are composed of sheet metal; a water-reservoir or tank, within one of the jambs of the fire-place; an open vapor-pipe, one extremity of which is within the water-tank, and the main outer portion of which is provided with a series of vapor-discharge openings, and is extended horizontally across the opening or combustion-space of the fire-place, from jamb to jamb; and a gas-consuming appliance which consists of an induction-pipe, a mixing-chamber and a perforated burner-pipe which extends through one of the jambs of the fire-place, and across the fire-place opening or combustion-space, in close proximity to the vapor-discharging tube, in combination; substantially as and for the purposes specified.

2. A fire-place which embraces a body which is composed of sheet-metal, a water-tank, within one of the jambs; a vapor receiving and discharging pipe which in one portion extends within the water-tank, and which in another portion extends across the front opening or combustion-chamber of the fire-place; a gas-receiving and consuming appliance

which consists of an induction-pipe, a mixing-chamber, and a burner-pipe which extends across the front opening or combustion-chamber of the fire-place, in close proximity to the vapor-pipe; a steam-coil, behind the fire-back of the fire-place, embracing a series of superposed pipes; a boiler, at the rear of the combustion-chamber, in front of the fire-back and in communication with the steam-coil through openings in the jambs of the fire-place; and a mantel which is provided with openings for the discharge of the air which is warmed by the joint action of the gas and vapor burning appliances, in front of the fire-back, and of the boiler and its steam pipes,—respectively in front of and behind such fire-back; the whole being combined and operating substantially as and for the purposes specified.

3. A fire-place which by its vertical walls and its mantel incloses an air receiving and air-discharging chamber, and which in its construction and operation combine a gas-induction and consuming pipe which extends across the opening or combustion-chamber of the fire-place; a vapor-discharging pipe which extends across the combustion-chamber of the fire-place, above and parallel with the gas-induction and consuming pipe; a boiler, directly above the vapor-discharging pipe; and a steam-coil or system, behind the fire-back of the fire-place, and receiving its steam-supply from the boiler which is above the vapor discharging pipe, and in front of the fire-back of the fire-place; substantially as set forth.

4. A fire-place, which has metallic walls, which inclose an air receiving and discharging chamber, and which at the rear of its combustion-chamber has a rearwardly-projecting semi-circular, horizontal recess; a boiler, which is adapted to such horizontal, semi-circular recess; a steam-coil or system in the air-receiving and discharging chamber of the fire-place, and communicating with the boiler through connections which extend through the jambs of the fire-place; a horizontal vapor-discharging pipe, arranged directly under the horizontal boiler; and a horizontal gas-burning pipe, arranged directly under the vapor-discharging pipe; combined and operating substantially as specified.

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Witnesses:
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