L. C. SMITH.

COMBINED HEATING AND VENTILATING SYSTEM.

APPLICATION FILED OCT. 27, 1909.

974,928. Patented Nov. 8, 1910.

Fig. 3

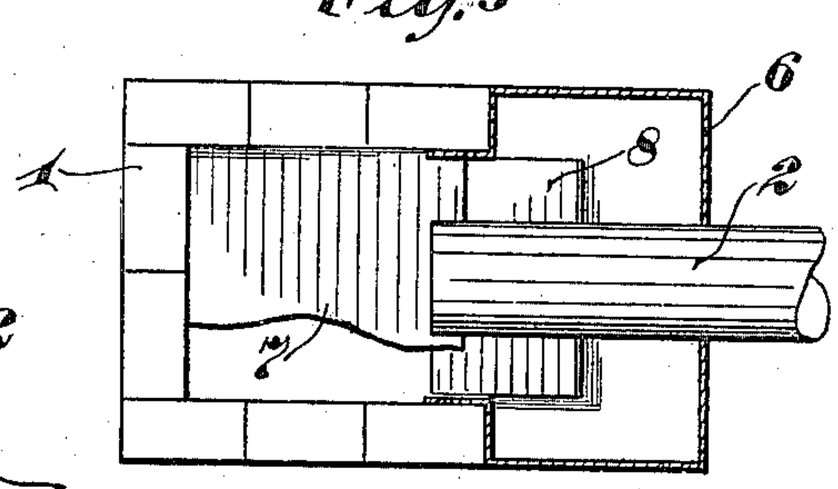


Fig. 2

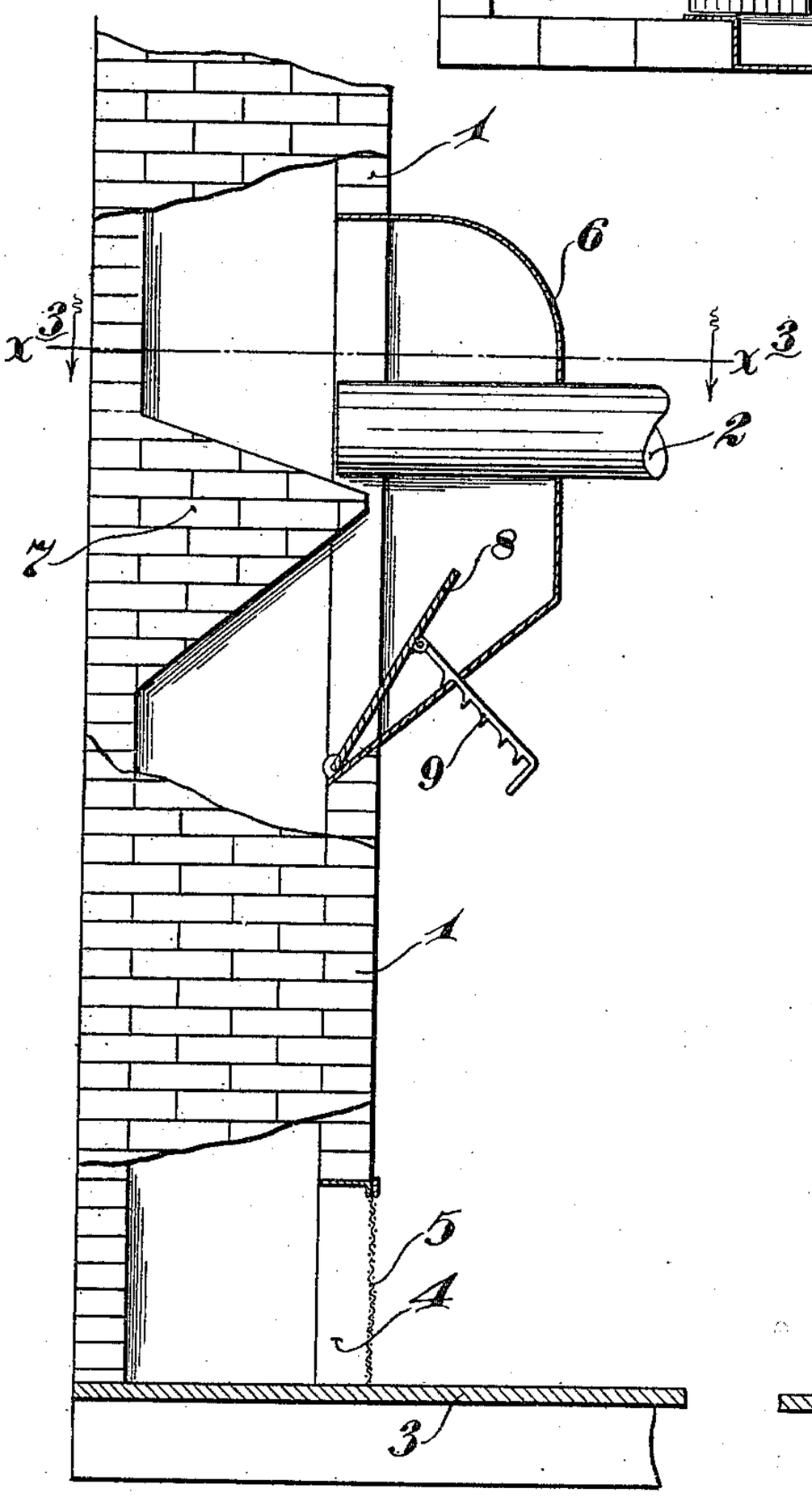
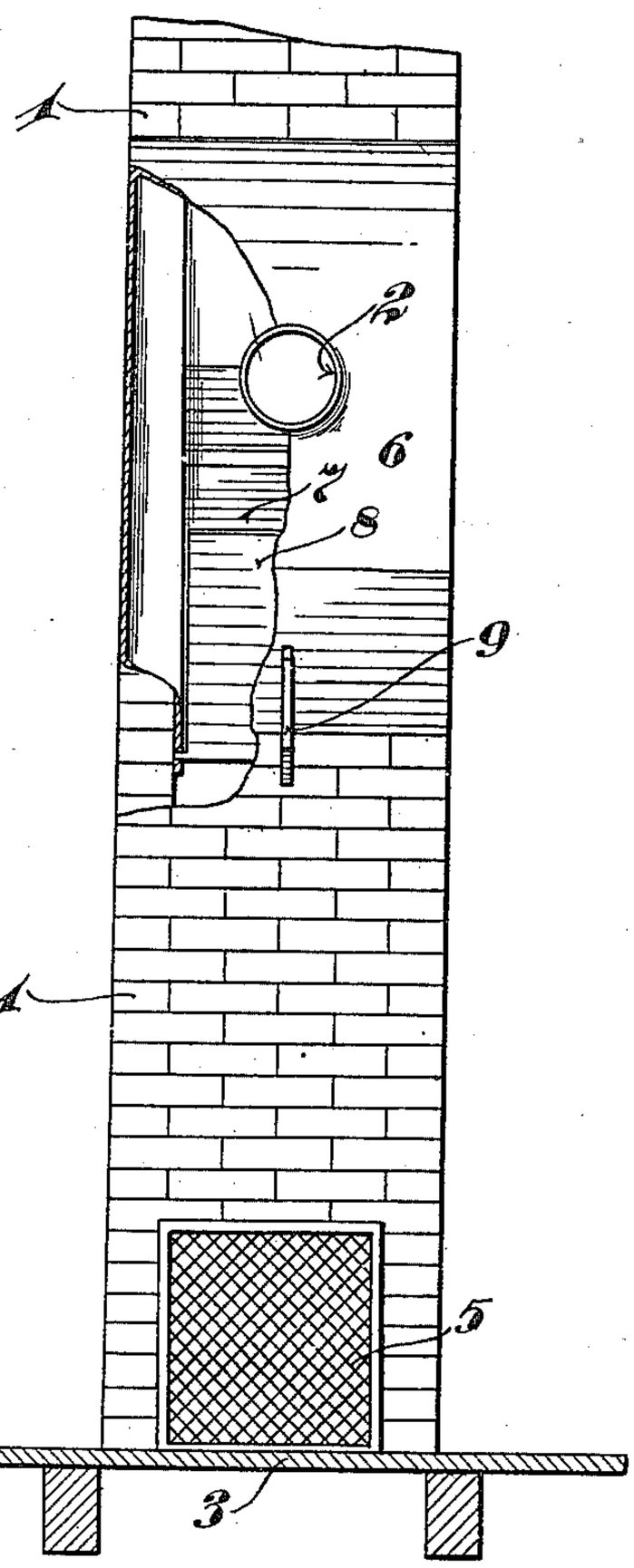


Fig. 1



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UNITED STATES PATENT OFFICE.

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COMBINED HEATING AND VENTILATING SYSTEM.

974,928. Specification of Letters Patent. Patented Nov. 8, 1910.

Application filed October 27, 1909. Serial No. 524,777.

To all whom it may concern:

Be it known that I, LEO C. SMITH, a citizen of the United States, residing at Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain new and useful Improvements in Combined Heating and Ventilating Systems; 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 combined heating and ventilating systems, and is particularly directed to the improvement of such systems wherein a chimney is used as a ventilating flue.

To the above ends, the invention consists of the novel devices and combinations of devices hereinafter described and defined in the claims.

In the accompanying drawings, wherein like characters indicate like parts throughout the several views, Figure 1 is a view in front elevation, showing a chimney constructed for use as a ventilating flue and a smoke pipe extending into the chimney, some parts being broken away; Fig. 2 is a view, partly in side elevation and partly in vertical section, of the parts shown in Fig. 1; and Fig. 3 is a horizontal section taken on the line x^3 x^3 of Fig. 2.

The numeral 1 indicates the chimney and the numeral 2 indicates the smoke pipe of the heater, which latter is not shown but may be of any approved construction. At its extreme lower portion, the chimney 1 is provided, adjacent to the floor 3, with a cold air intake air passage 4, that opens into the room in which the heater is installed. The opening 4 is preferably provided with a screen or reticulate closure 5. The said opening 4 preferably has air conducting capacity equal to that of the chimney.

The smoke pipe 2 opens into the chimney through an outwardly projecting hood 6, which is preferably of sheet metal, but may be cast, when desired. The inner edge of this hood is set into the brick work of the chimney, and the chimney is provided on its back wall with a deflecting abutment 7, the upper and lower walls of which are preferably inclined and the projecting edge of which extends under the inner end of the smoke pipe 2. This relative arrangement of the projecting edge of the abutment or deflector 7, in respect to the inner or delivery end of the smoke pipe, is important, as will hereinafter more clearly appear. The abutment 7 and the hood 6 provide the chimney with a crook or zig-zag portion in the vicinity of the inner end of the smoke pipe. The hood 6, in the horizontal plane of the smoke pipe, is made with an internal dimension that is wider than the internal passage of the chimney proper, and the relative dimensions of the parts are such that the two laterally spaced air passages of the hood have an air conducting capacity equal to that of the chimney. Thus the smoke pipe does not constitute an obstruction in the hood, but the hood, at its smallest cross section, has an air conducting capacity equal to that of the chimney. Furthermore, the current of air, drawn upward from the floor of the room through the chimney and through the hood 6, is not permitted to cut across the delivery end of the smoke pipe, but is first brought in contact with the smoke pipe outward of its inner end, is slightly warmed and then is delivered into the chimney and joined with the products of combustion from the smoke pipe, at a point above the deflector or abutment 7 and above the inner or delivery end of said smoke pipe.

It is important to note that the smoke or products of combustion from the stove are delivered from the pipe 2 into the chimney and the cold air is delivered from the upper portion of the hood 6 into the chimney in the same direction, but that the hot products are delivered below the cold air. This gives a strong draft for drawing the foul air from the vicinity of the floor, without perceptibly interfering with the draft to the stove or heater, first, because the smoke pipe is located below the cold air inlet of the chimney; second, because the relatively hot and cold currents of air join each other while moving approximately in the same direction; and, third, because, as already stated, the cold air is not permitted to cut across the delivery end of the smoke pipe. The smoke pipe forms no obstruction whatever to the cold air passage, and it may be here further stated that the upper and lower portions of the hood 6, at the junction thereof with the chimney, have as great conductive capacity as the main flue in the chimney.

It is frequently desirable to regulate the amount of the cold air which will be drawn up the chimney for ventilating purposes,

and, hence, I place a hinged damper 8 in the cold air passage and this is preferably hinged to the lower edge of the hood and provided with a notched operating bar 9, which works through a small perforation in the lower portion of the hood 6 and is adapted to hold said damper either in a closed position or open to any desired extent.

The device above described, may, at small cost, be applied to an ordinary chimney and, when thus applied, removes the necessity for a cold air ventilating pipe located in the room and extending from the floor to the smoke pipe or to the chimney in the vicinity of a point where the smoke pipe enters the chimney.

What I claim is:

1. The combination with a chimney having a laterally projecting hood and a deflecting abutment coöperating with said hood to form a lateral bend in the chimney, of a smoke pipe extending into said hood and terminating at a point above said abutment, substantially as described.

2. The combination with a chimney having a laterally projecting hood and a deflecting abutment coöperating with said hood to form a lateral bend in the chimney, of a smoke pipe extending into said hood and terminating at a point above said abutment, and a damper at the lower portion of said hood movable toward and from said abutment, substantially as described.

3. The combination with a chimney having a laterally projecting hood and a deflecting abutment coöperating with said hood to form a lateral bend in the chimney, of a smoke pipe extending into said hood and terminating at a point above said abutment, the said hood, in horizontal plane of said smoke pipe and, on opposite sides of said smoke pipe, having air passages the aggregate conducting capacity of which equals that of said chimney, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

LEO C. SMITH.

Witnesses:
ALICE V. SWANSON,
HARRY D. KILGORE.