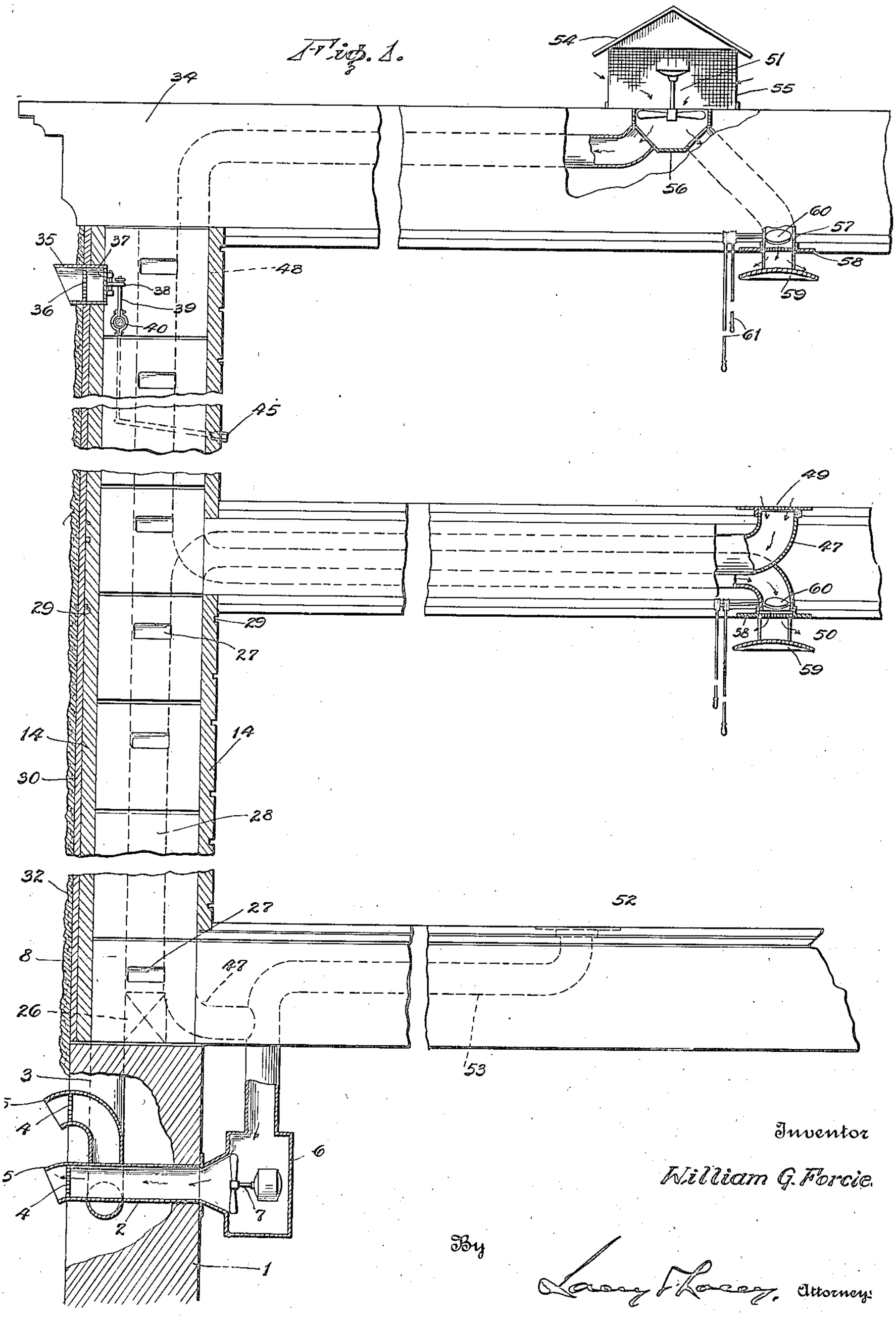
Jan. 2, 1923.

1,440,384

W. G. FORCIER.
VENTILATING SYSTEM.
FILED NOV. 19, 1920.

2 SHEETS-SHEET 1

Fig. 1.



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2 SHEETS-SHEET 2

Fig. 2

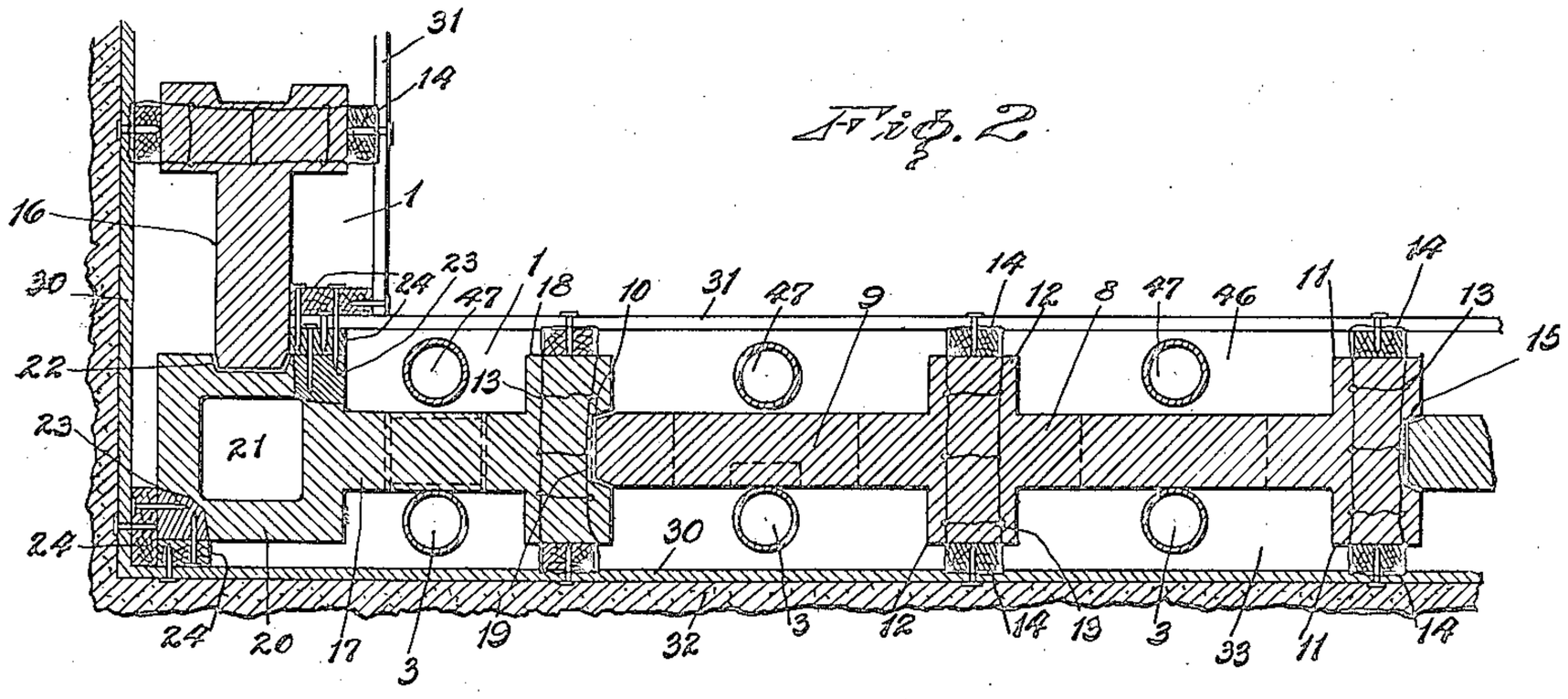
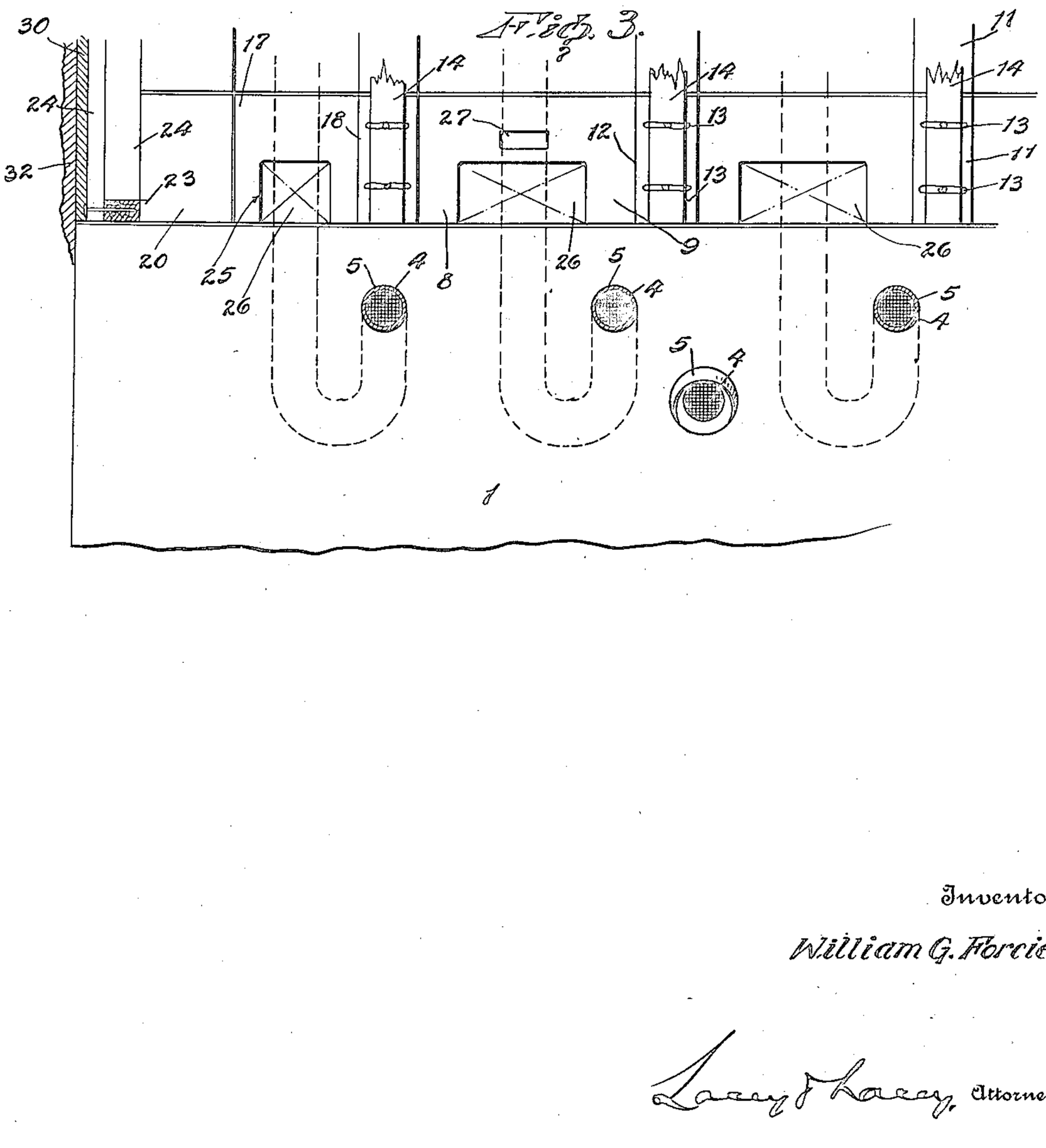


Fig. 3.



Inventor
William G. Forcier

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Patented Jan. 2, 1923. 1,440,384

UNITED STATES PATENT OFFICE.

WILLIAM G. FORCIER, OF WOLLASTON, MASSACHUSETTS.

VENTILATING SYSTEM.

Application filed November 19, 1920. Serial No. 425,174.

To all whom it may concern:

Be it known that I, WILLIAM G. FORCIER, a citizen of the United States, residing at Wollaston, in the county of Norfolk and State of Massachusetts, have invented certain new and useful Improvements in Ventilating Systems, of which the following is a specification.

This invention has for its object the provision of means whereby a building may be efficiently ventilated and also to provide a construction which will reduce the material necessary without any loss in the strength of the building and also effect an economy in the time and labor needed to erect a building. These stated objects and such other objects as will hereinafter incidentally appear are attained by the use of the construction and arrangement of elements illustrated in the accompanying drawings and hereinafter fully set forth.

In the drawings—

Figure 1 is a view, partly in elevation and partly in section, of a portion of a building embodying one form of my invention;

Fig. 2 is a horizontal section through a portion of the wall of the building taken approximately in the plane of the first floor of the building;

Fig. 3 is an enlarged front elevation of the same.

The foundation 1 of the building may be of any material and dimensions demanded by the owner but the upper portion thereof may be advantageously constructed of poured cement having pipes or tubes embedded therein so as to provide an outlet ventilator tube 2 which extends preferably in a straight line entirely through the wall, as shown, and also to provide a ventilating passage or tube 3 which is disposed vertically within the foundation and is adapted to communicate at its upper end with an outer air space in the wall as will presently appear. The outer end of each of these tubes or passages 2 and 3 is equipped with a screen 4 to prevent the entrance of insects into the building or ventilating spaces and a hood 5 of any preferred form is provided over and around the outlet end of each passage so as to prevent the entrance of water. The foundation may be formed, if preferred, of precast concrete blocks having the ventilating passages formed therein when the block is cast or moulded and such construction will generally be found preferable inasmuch as the blocks may be formed at a central plant and shipped to the point where a building is to be erected, the use of false work or molding at the point of erection being thereby avoided and, consequently, a saving in the time necessary for the completion of the building being effected. At the inner end of the passage 2, a casing 6 is supported in any convenient manner and within the said casing is arranged a blower 7 which, when in operation, will draw into the cellar the foul air from the rooms of the building and expel the same forcibly and positively through the outlet ventilating tube 2, as will be readily understood. By arranging this blower in the cellar of the building it may be conveniently brought into communication with all the different rooms and it will be out of the way where it will not be apt to be put out of order by chance blows and the slight noise which may attend its operation will not disturb the occupants of the building.

Upon the foundation, I lay a course of blocks 8 which are preferably precast concrete and are of the form shown most clearly in Fig. 2. Each block consists of a central web 9 having one end slightly tapered or beveled, as shown at 10, and provided at its opposite end with ribs or lateral projections 11 on each side, the thickness of the webs being one-third the combined thickness of the web and the two projections or ribs, and the outer vertical edges or sides of the ribs being located at equal distances from the side faces of the webs, as will be readily understood and as clearly shown. When the blocks are properly placed in position, therefore, the central longitudinal webs thereof will be disposed in the central vertical plane of the foundation and an air space will be provided at each side of the web between the same and the inner and outer sheathings of the wall presently mentioned. The block is also provided upon its side faces midway its ends with vertical ribs or projections 12 corresponding in all respects to the ribs or projections 11, and metallic reinforcements 13 are embedded in the blocks through the said projections, as clearly shown, the ends of the reinforcements being extended from the outer edge surfaces of the projections so that they may be tied around the studding 14. The blocks are provided at their butt ends, that is to say, the end remote from

the beveled or tapered extremity 10, with recesses 15 which are adapted to be engaged by the tapered or beveled extremities of the respectively adjacent blocks so that the proper alinement of the blocks and the binding of the same together in the wall will be facilitated. It will be understood, of course, that as the blocks are laid the several joints will be filled with mortar or green cement or other plastic binder so that a stable strong wall will be ultimately erected.

Obviously, the requirements of effective building necessitate the use of blocks of different dimensions and of somewhat different shapes so as to carry the wall around corners and accommodate chimneys and other building features, such as doors and windows. I, therefore, provide some blocks, such as that shown at 16 in Fig. 2, from which the intermediate ribs 12 are omitted, the construction otherwise being the same as the block previously described in detail. This block 16 is particularly useful in arranging the blocks so as to break joint where a break joint arrangement is desired. I also contemplate the provision of such a block as that shown at 17 in Fig. 2, which is designed particularly for use at the corner of a wall. This block is provided with lateral ribs 18 at one end or with a beveled extremity corresponding to the beveled extremity 10 as may be necessary in the particular wall in which the block is to be used and when the projections or ribs 18 are provided a recess 19 corresponding in all respects to the recess 15 will be provided as will be readily understood. The opposite end of the block 17 is enlarged laterally so as to produce a head 20 which in the illustration is rectangular but may, of course, be of other configuration according to the design of the particular building in which it is to be laid. This head 20 may be solid but I prefer to form an interior chamber 21 therein to reduce weight and economize material and also to provide an air space in the finished wall which will counteract and neutralize the tendency of moisture to accumulate within the wall. One side of this head is provided with a recess 22 corresponding in all respects to the recesses 15 and 19 to receive the tapered or beveled extremity of an adjacent block. While the head may have embedded therein a reinforcement corresponding to the reinforcement 13, I have illustrated wooden blocks 23 embedded in the head 20 adjacent the top and bottom thereof so that securing nails may be driven through the studding, indicated at 24, to secure the same in place. As shown most clearly in Fig. 3, the course 8 is composed of blocks, each of which has an opening 25 formed through its lower portion and which may be filled by solid blocks 26 of the same dimensions as the said opening. The purpose of this arrangement is to permit the removal of débris from the wall after the wall has been erected and before the outer sheathing has been put in place, the blocks 26 being fitted into the openings 25 after the débris has been removed. Each of the blocks is provided in its side or its end, or both, with recesses or short grooves 27 to facilitate handling.

Upon the course 8, I lay a second course of blocks, indicated at 28, which are the same in all respects as the blocks just described in detail except that the openings 25 therethrough are omitted, the several courses of blocks as well as the blocks in each course being united by mortar or cement in a well-known manner. The wall is carried to the desired height by repeated courses of superposed blocks as will be readily understood and upon the foundation, at the inner and outer sides of the blocks, I erect the studding 14 and 24 at such intervals as may be deemed necessary and as are defined by the several projections 11, 12 or 18. The ends of the metallic reinforcements 13 are carried around the studding and twisted together or otherwise united and to accommodate this application of the reinforcement the studding may be provided with grooves 29 so that the exposed portions of the reinforcements will not interfere with the application of the sheathing 30. The inner sheathing 31 is secured to the inner studding by nails or other fastenings as may be desired and it may be possible at times to utilize the reinforcements 13 for that purpose. This inner sheathing may be cardboard or similar material or may be laths to which plaster is to be subsequently applied. The outer sheathing 30 may also be of any material now commonly employed for that purpose and upon the outer face of this sheathing 30 any desired finish may be applied. In the drawings, I have illustrated stucco 32 as the exterior finish of the building.

It will be very readily understood that when the several courses of blocks have been laid to the desired height and the studding and sheathing connected therewith spaces will be provided, as shown at 33 in Fig. 2, which will extend the entire height of the wall and which may be continued into the roof 34, if desired. These spaces 33 will communicate directly with the several ventilating tubes or passages 3 as will be readily understood upon reference to Figs. 2 and 3, and a ventilating air space will be thus formed which will tend to maintain the temperature of the interior of the building at a uniform degree and which will counteract any tendency of moisture to accumulate within the wall. It is desirable at times to permit a circulation of air through this space or plurality of spaces and to this end I

provide near the roof of the building through the outer sheathing or wall, a ventilator tube 35 which may be suitably screened, as at 36, to prevent the entrance of insects and the inner end of which may be covered by a damper 37. This damper 37 is a swinging plate or door, as shown clearly in Fig. 1, and is connected by a link 38 with an arm 39 secured to and rising from an operating rod 40 which is slidably mounted in any convenient manner within the air space below the damper. A cable 41 is secured to one end of this operating rod 40 and extends therefrom to a quadrant or segment 42 which is mounted for rocking movement upon the wall as will be readily understood. A cable 43 depends from said segment or from an arm 44 thereon to be attached to a lever 45 which is fulcrumed within the inner wall and may be operated from an upper room of the building in an obvious manner. The link 38 has a pin and slot connection with the door 37 so that when sliding movement is imparted to the rod 40 the door will be caused to swing about its hinges so as to open or close. It will be understood, of course, that the quadrant 42 and its connections are duplicated at the opposite end of the rod 40 so that movement of one segment or quadrant will effect opening of the damper while movement of the other quadrant will close the same.

It will also be readily noted that air spaces, designated 46 in Fig. 2, are provided between the several blocks and the inner sheathing 31 and through these spaces I extend flues, indicated at 47 and 48, which establish communication, respectively, between ventilator openings 49 and the outlet blower 7, and between fresh air inlet ventilators 50 and a blower 51 mounted upon the roof of the building. The ventilators 49 may conveniently be gratings provided with suitable closures of any well-known type and the flues 47 which lead from said ventilators in the upper rooms of the building may conveniently be carried between the several joists or floor supports to the air spaces 46, as will be readily understood on reference to Fig. 1. The ventilators 52 in the floors of the lower rooms of the building may be connected with the blower 7 through conduits or tubes 53 disposed in the upper portion of the cellar, as will be readily understood. The fan or blower 51 will be protected from the weather by a housing 54 of any convenient or preferred design, the only essential being the provision of a screen or similar device 55 which will permit the free access of outside air to the blower while preventing access of birds, insects or rodents. The fan is arranged to deliver air directly into a casing 56 arranged within the roof of the building and the flues 48 are connected directly to the said casing, similar flues 57 leading therefrom to and through the ceilings of the upper rooms of the building. At the ends of the several flues 48 and 57, I provide ventilators which consist of grids or reticulated plates 58 from which are suspended domes or arcuate deflectors 59 upon which the fresh air strikes and by which it is diverted and spread so as to enter the room in a widely diffused state and strong drafts will be thereby eliminated. To further regulate the flow or to entirely cut it off as may be deemed desirable, I provide dampers 60 immediately above the grids 58 and these dampers are controlled through rock shafts and operating cords 61 depending from said rock shafts.

From the foregoing description, it will be readily seen that I have provided a building construction which will readily conform to the needs of a highly efficient ventilating system and have also devised means which will reduce the cost of buildings without any loss in the strength thereof and will expedite the erection of the same.

Having thus described the invention, what is claimed as new is:

In a ventilating system for a building having a foundation, a hollow wall, floors, ceilings and a roof, the combination of an inlet in the roof, conduits leading from said inlet to inlets in the ceilings, some of said conduits passing downwardly within the hollow wall and through spaces between the floors and subjacent ceilings, valves in the inlets in the ceilings, deflectors suspended from and across said inlets, outlets in the floors, an outlet extending through the foundation, and conduits leading from the outlets in the floors to the outlet through the foundation, some of said conduits passing downwardly within the hollow wall.

In testimony whereof I affix my signature.

WILLIAM G. FORCIER. [L. S.]