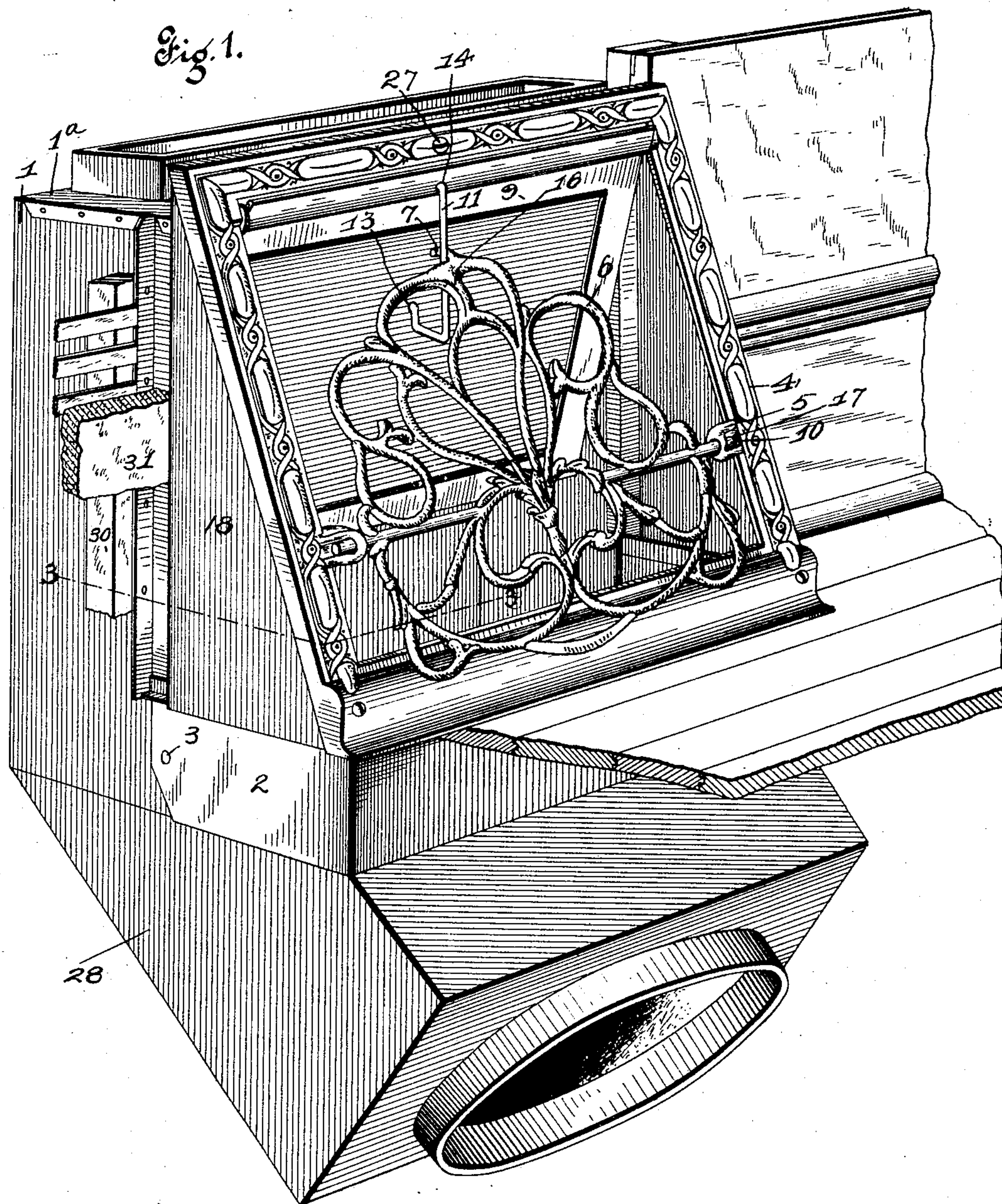


No. 782,708.

PATENTED FEB. 14, 1905.

H. SYMONDS.
HOT AIR REGISTER.
APPLICATION FILED SEPT. 22, 1903.

4 SHEETS—SHEET 1.

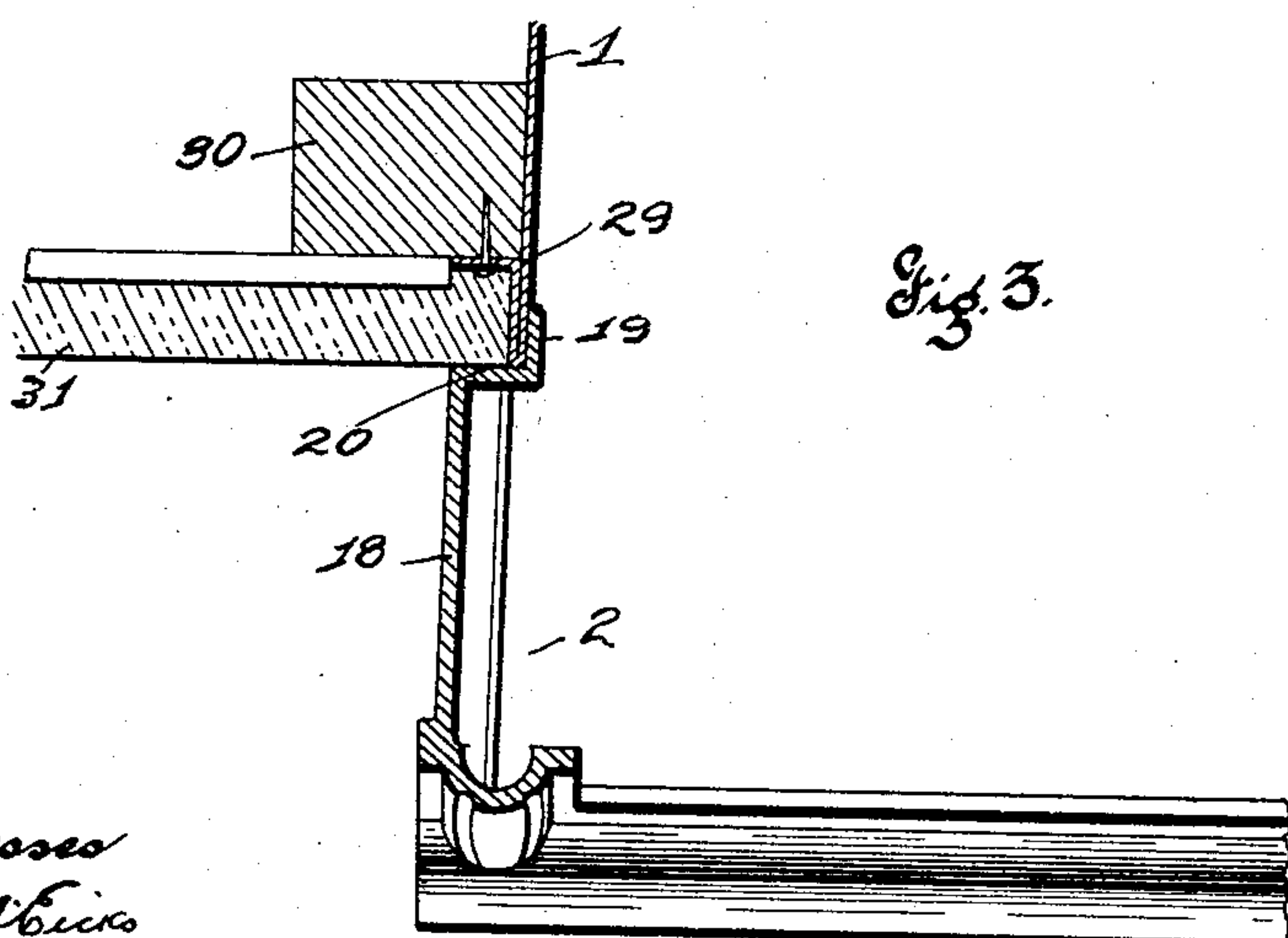
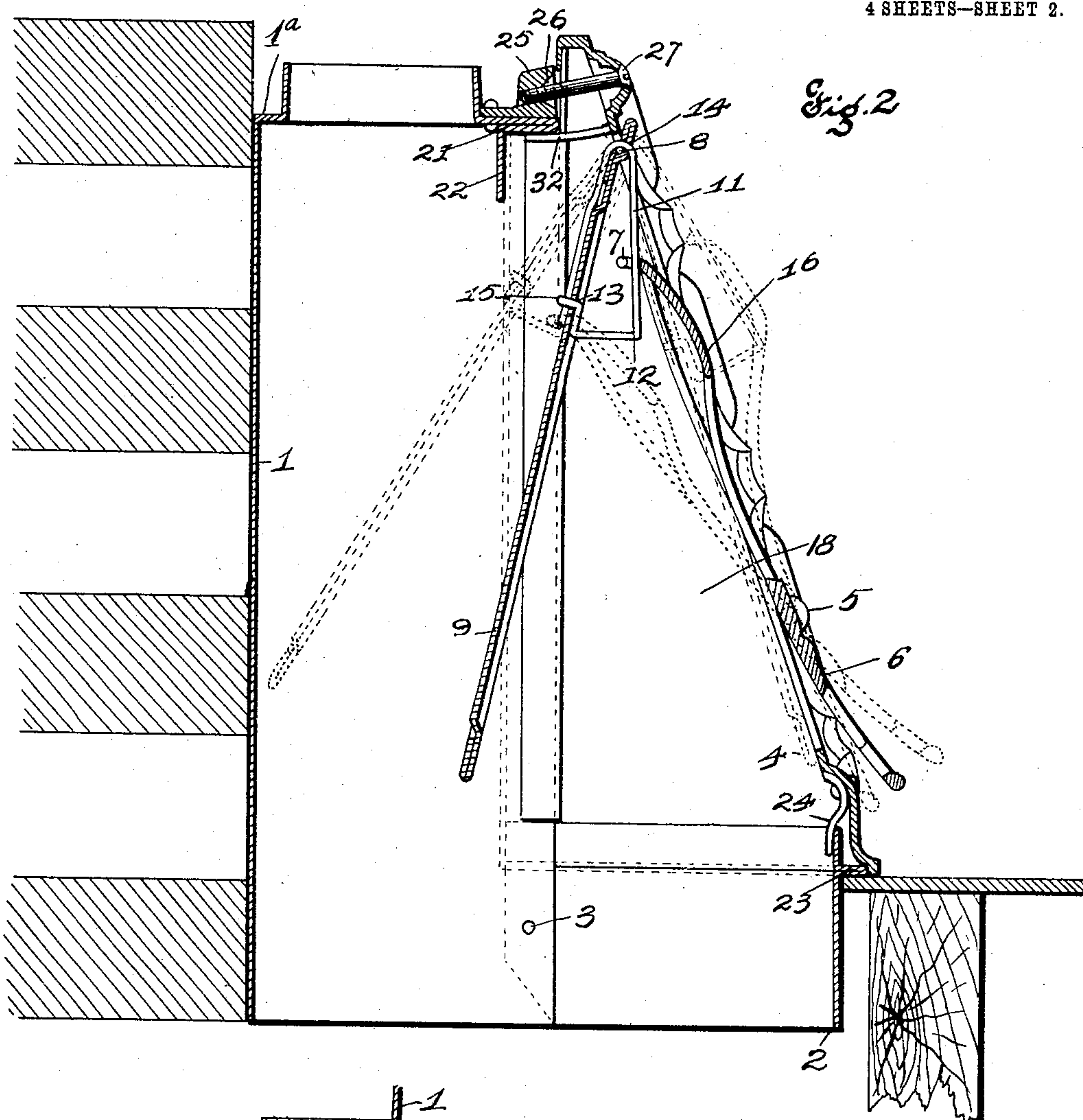


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4 SHEETS—SHEET 2.



Witnesses
Alfred B. Bice
Edw. Harrington

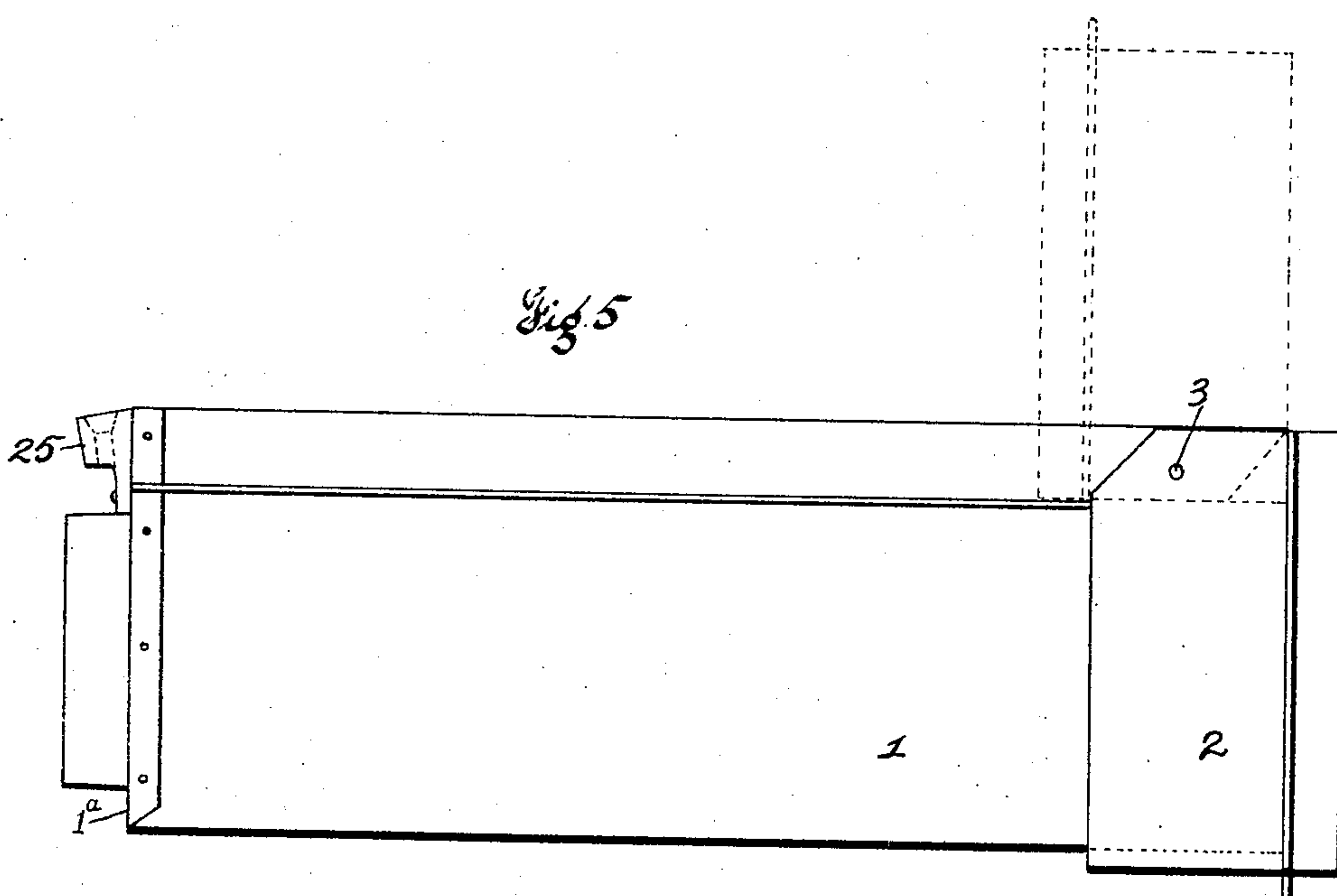
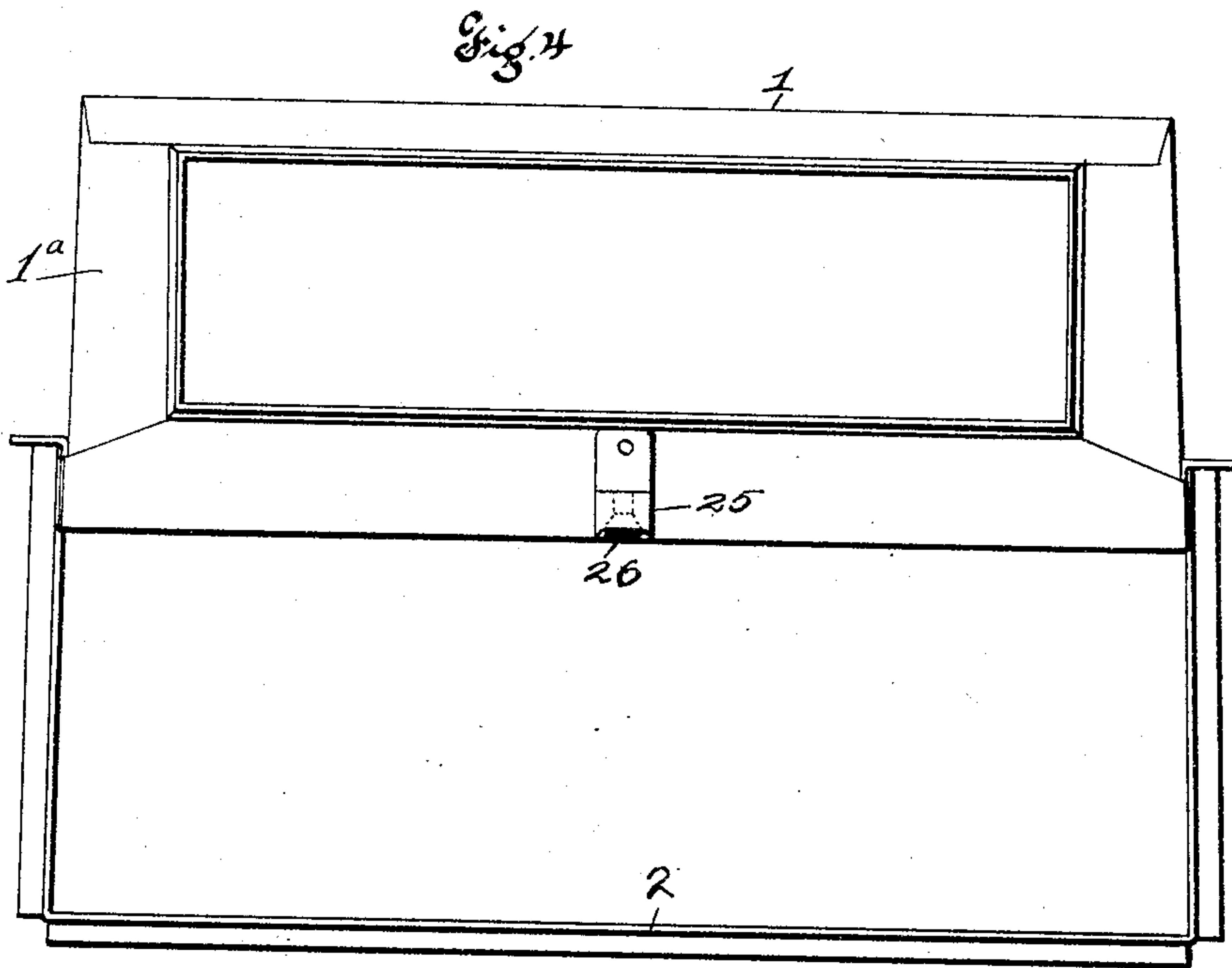
Inventor
Herbert Symonds
by Higdon & Longan & Hopkins Attys.

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4 SHEETS—SHEET 3.



Witnesses
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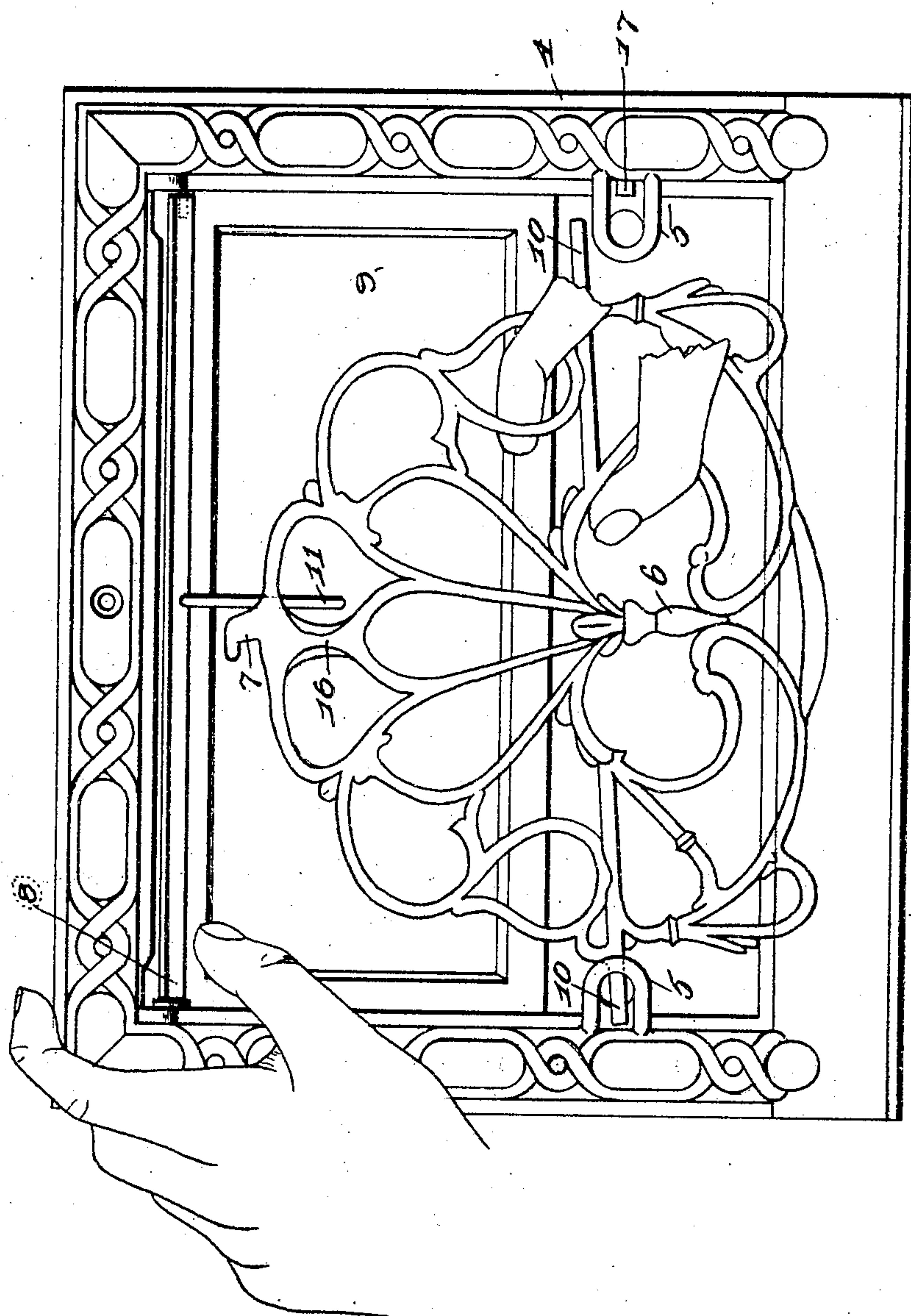
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4 SHEETS—SHEET 4.

Fig. 6.



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UNITED STATES PATENT OFFICE.

HERBERT SYMONDS, OF EAST ST. LOUIS, ILLINOIS.

HOT-AIR REGISTER.

SPECIFICATION forming part of Letters Patent No. 782,708, dated February 14, 1905.

Application filed September 22, 1903. Serial No. 174,234.

To all whom it may concern:

Be it known that I, HERBERT SYMONDS, a citizen of the United States, residing at East St. Louis, St. Clair county, State of Illinois, have invented certain new and useful Improvements in Hot-Air Registers, of which the following is a specification containing a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

My invention relates to an improved hot-air register, and has for its object to provide a wall register of improved construction, as well as a base for the reception and support of said register, the base being made collapsible for the purpose of packing in shipment. Both the register and base possess other advantages, which are hereinafter set forth.

In the drawings, Figure 1 is a perspective view of my improved register in place within a building. Fig. 2 is a transverse vertical mid-sectional view of the same. Fig. 3 is an enlarged horizontal sectional view of the flange of my register, showing the plastering, studing and base-section also in section, said view being taken on the line 3 3 of Fig. 1. Fig. 4 is a top view of the base. Fig. 5 is a side view of the base folded and laid upon its back to illustrate the nesting feature. Fig. 6 is a front elevation of the register, upon an enlarged scale, the wall being omitted, illustrating the operation of putting the grille in position.

My present invention relates to that class of hot-air registers in which there is a single valve controlled by the pivotal motion of a grille and in which the grille not only serves to open, close, and adjust the valve, but also serves as a foot-rest.

In my present invention I have improved upon the construction of the valve, the grille, the frictional contacting means whereby the valve and the grille coöperate, and the frame wherein the valve and the grille are mounted, and I have provided as well a new base of great lightness, strength, and rigidity and which is adapted to be packed for storage or shipment within a small space.

In the drawings the base consists of a back section 1 and front section 2, which are united

by means of the pins 3. The open frame 4 is provided with ears 5, which are adapted to hold the grille 6. The grille 6 at its upper extremity is provided with a hook 7. The frame 4 is also provided with inwardly-projecting lugs 8, which are in alinement with each other and are adapted to engage with the sides of the valve 9 and to serve as pivots therefor.

The back section 1 comprises a rear wall and two side walls, and in plan it is in the form of a rectangle open at the front, and a top 1^a is applied to the three walls, said top 1^a having an opening surrounded by an upwardly-projecting flange, said flange being in the form of a rectangle and the size of the air-shaft leading upwardly from the register. The back section is higher than the face of the register. The front section 2 is short and consists of a front wall and two side walls, forming a rectangular plan slightly larger than the plan of the back section 1, as shown in Fig. 4, so that when the two sections are pivoted together by the pins 3 the front section will swing under the back section and nest or telescope outside of said back section, as shown in Fig. 5. It is obvious that the front section might be constructed to fold inside of the back section instead of on the outside.

When seen in plan, as in Fig. 4, or side-wise, as in Fig. 2, the bottom of the register is substantially twice as large as the top. The frame 4 is inclined and reaches from the front top of the front section to the front top of the back section, said frame serving as a border or casing around the passage leading from the hot-air shaft into the room and also serving as a means of supporting the valve 9 and the grille 6. The flanges 18 unite with the sides of the sections 1 and 2 to complete the inclosure, so that the hot air can only pass through the frame 4 or up the air-shaft. The valve 9 is adapted to completely close the opening through the frame 4.

The grille 6 is provided with pintles 10. The valve 9 is perforated to receive the wire 11, which is extended at the front of valve 9 so as to project downwardly and forwardly at an angle to the plane of the face of the valve-line and is bent downwardly and backwardly at a point indicated by the numeral 12. Both

ends of the wire 11 are extended backwardly through the openings 13 and 14 in the valve 9, the lower end of the wire being bent to form the eye 15 and the upper end of the wire being bent downwardly in contact with the back of valve 9 and with its end extending downwardly through the eye 15. By reason of the forward extension of the wire 11 it is necessary to make the adjacent portion of the grille 6 concavo-convex, as indicated by the numeral 16. In order to mount the grille 6 within the frame 4, the grille 6 is placed by the operator in the position indicated in Fig. 6, with the left pintle 10 extending through the ear 5. The right pintle 10 is then pulled downwardly to and into the right ear 5, when the grille 6 is moved toward the right until the end of the pintle 10 contacts with the stop 17. The hook 7 will then have its outer edge in alinement with the wire 11, and the wire 11 is then thrust toward the left side of the frame 4 to permit the hook 7 to engage with the wire 11. The necessary resiliency of the wire 11 is accomplished by making it of the peculiar form heretofore described and as shown in the drawings. The downward and outward extension of the wire is necessary, because my present invention contemplates a hot-air register to be set in an inclined position between the floor and the wall, as shown in Figs. 1 and 2 of the drawings. This necessitates such sliding frictional connection between the valve 9 and the grille 6 as will force the valve 9 backwardly to the full depth of the base, as indicated by the dotted lines in Fig. 2, the grille 6 being concave at the point indicated by the numeral 16 in order to accommodate the forward extension of the wire 11 when the valve is closed, as is also shown by dotted lines in Fig. 2.

The valve 9 is simply a door hinged or pivoted at the top to open, close, and regulate the hot-air passage. The grille is simply a lever pivoted to the frame and connected to the valve or door for controlling the same. The grille also serves as an ornamental open grate in the hot-air passage to serve as a foot-rest and to be operated by the feet.

The frame 4 is provided at its sides with a triangular flange 18 of the form shown in cross-section in Fig. 3, said flange being approximately Z-shaped in section, its back web 19 fitting tightly within the back section 1. The flange 18 is thus provided with a vertical bearing-surface 20, which fits closely upon the plaster which surrounds the outer edges of the back section 1 above the floor-line. The front edge of the top of the back section 1 is bent over upon itself at the point indicated by the numeral 21 and then downwardly to form the transverse strengthening-flange 22. The front section 2 is made of metal bent upon itself to form the flange 23, which when the base is installed for use is in contact with the floor, as shown

in Fig. 2. The frame 4 is provided at the inner side of its body with the downwardly-extending lugs 24, which engage the inner side of the front of the front section 2. The lug 25 is secured to the front and center of the top 1^a and is provided with a threaded opening 26, the forward end of which is countersunk or funnel-shaped to receive the inner end of the screw 27, said screw being inserted through the top of the frame 4. My object in providing the threaded opening 26 with a countersink is that when the frame 4 has been placed in position the building in which it is being installed is then plastered, and the rear of the top edge of the frame 4 is intended to fit closely to the plastering-line.

As will be seen from the foregoing description, the frame holding the grille is held in position relative to the base by means of the screw 27. When the register has been placed in position against the wall and the frame is within the base, the outer end of the opening 26 is not visible, and I have therefore provided it with a countersink.

In addition to the peculiarities of structure of the base which I have heretofore described it is necessary that the back section should be so formed as to permit the nesting of a number of the same for purpose of compactness in shipping. This I have accomplished by constructing the back section with converging walls, its front being sufficiently wider than its back to permit another similar back section to be fitted into it, the front 2 being folded for packing and shipment beneath the back 1, as shown in Fig. 5. When the base is to be installed for use, the front section is swung forwardly into the position shown in Figs. 1 and 2 and is held in this position by means of the entire base being fitted over the mouth of the flue 28.

As shown in the drawings, I have provided the outer sides of the back section near its front with the vertical flanges 29, which are adapted to contact with the studding 30 and to be nailed directly thereto, the flanges 29 being formed integral with the sides of the back section, the front edges thereof being bent over upon themselves to form the flanges 29, as shown in transverse section in Fig. 3. It has been customary in the art hitherto to provide the base with flanges whereby they are secured to the studding; but such flanges have been riveted to the outer sides of such base. By forming the flanges 29 in the manner described I dispense with the use of rivets and have produced a flange which is necessarily in true alinement with the plane of the front of the back section 1. When the flanges 29 have thus been nailed in position on the studding, the plastering 31 is placed in position, the depth of the plastering corresponding to the distance between the plane of the front of the back section 1 and the plane of the flanges 29.

In order to adapt the frame 4 to fit accurately within the opening provided by the base, I have provided a horizontal flange 32 along the upper side of the opening in the frame 4, the flange 32 being adapted to fit beneath the top of the opening in the front side of the back section, as shown in Fig. 2.

In the provision of the triangular Z-shaped flanges 18, which I have heretofore described, I have in addition to attaining the other advantages which I have specified provided my register with a frame which dispenses with the usual inner flange heretofore used, which inner flange formed an obstruction to the passage of the volume of hot air through the register into the room to be heated, in addition to which I have effected a consequent saving of the material which has hitherto been used to form such inner flange.

By the words "countersink" or "countersunk" as heretofore used in the description and as used hereinafter in the claims I mean the funnel-shaped opening with which I have provided the threaded opening 26, its object being to enable the threaded end of the screw 27 to find its place within the threaded opening 26 when the said opening 26 is not visible by reason of the frame 4 being in place.

Having thus described my invention, what I claim as new, and desire to have secured to me by grant of Letters Patent, is—

1. In a hot-air register, the combination of a frame, a single valve pivotally mounted in the frame, a rod extending forwardly and downwardly from the outer face of the valve, the grille provided at its top with a hook adapted to engage with the rod, the grille also being provided at its sides with outwardly-projecting pintles, and the frame being provided with inwardly-projecting eyes to receive the pintles, the pintles being removably held in position within the eyes by means of the engagement of the hook with the rod, substantially as described.

2. In a hot-air register, the combination of a frame, a single valve pivotally mounted in the frame, a rod extending forwardly and outwardly from the outer face of the valve, the grille provided at its top with a hook adapted to engage with the rod, the grille also being provided at its sides with outwardly-projecting pintles, and the frame being provided with inwardly-projecting eyes adapted to receive the pintles, the pintles being held in position within the eyes by means of the engagement of the hook with the rod, the eye upon the side of the frame from which the hook is turned being provided with a stop to limit the lateral movement of the pintle, substantially as described.

3. In a hot-air register: a base comprising a high back section and having a back and two side walls; and a low front section having a front and two side walls; the side walls of the front section being pivoted to the side walls

of the back section; the front section and back section being of different sizes, so that they will turn upon their pivots and nest one within the other; substantially as specified.

4. In a hot-air register: a base comprising a high back section and having a back and two side walls; and a low front section having a front and two side walls; the side walls of the front section being pivoted to the side walls of the back section; the front section and back section being of different sizes, so that they will turn upon their pivots and nest one within the other; the back and front sections being flaring and widest at the pivot, so that the nested base will be flaring and widest at its open side, so that one base will nest within another; substantially as specified.

5. In a hot-air register, an open frame; a valve pivotally mounted in the frame; a rod mounted at the central upper part of the valve, the ends of said rod being passed through the valve, one end being formed into an eye, and the other end of the rod being inserted through said eye; the central portion of said rod extending forwardly and downwardly from the face of said valve; a grille provided at its top with a hook adapted to engage with the rod, the grille also being provided at its sides with outwardly-projecting pintles, and the frame being provided with inwardly-projecting eyes to receive the pintles, the pintles being removably held in position within the eyes by means of the engagement of the hook with the rod, substantially as described.

6. In a hot-air register: a base comprising a high back section having a back and two side walls; a top for said back section and having a depending strengthening-flange at its front; a low front section having a front and two side walls; the side walls of the front section being pivoted to the side walls of the back section; the front and back sections being of different sizes, so that when they are turned upon the pivots, one will nest within the other; substantially as specified.

7. In a hot-air register: a suitable base consisting of a high back section and a low front section; a suitable top for the back section; an open frame mounted upon the base and extending from the top of the front section to the front of the top of the back section, said frame having triangular Z-shaped flanges extending backwardly inside of the side walls of the back section; a lug secured to the top of the back section and having a flaring screw-threaded opening; lugs extending from the lower part of the frame inside of the front section; and a bolt passing through the frame and screw-seated in said flaring opening; substantially as specified.

8. In a hot-air register: a base comprising a high back section and a low front section pivoted together and adapted to nest one section inside of the other; a suitable top; a lug mounted upon the top and having a flaring

screw-threaded opening; an open frame extending from the top of the front section to the front of the top of the back section, and having triangular Z-shaped flanges extending
5 inside of the walls of the back section; lugs extending from the front lower part of said frame inside of the front wall of the front section; and a bolt inserted through the upper
10 part of the frame into said flaring screw-threaded opening; substantially as specified.

9. In a hot-air register: a base comprising a high back section; a top for said back section having a strengthening-flange depending from its front; a lug mounted upon the top
15 and having a flaring screw-threaded opening; an open frame extending from the top of the

front section to the front of the top of the back section and having triangular Z-shaped flanges extending inside of the side walls of the back section; lugs extending from the
20 frame inside of the front wall of the front section; and a bolt inserted through the frame into said flaring opening; substantially as specified.

In testimony whereof I have signed my name
25 to this specification in presence of two subscribing witnesses.

HERBERT SYMONDS.

Witnesses:

ALFRED A. EICKS,
M. G. IRION.