

(No Model.)

2 Sheets—Sheet 1.

W. L. WILKINSON.
HEATING STOVE.

No. 562,875.

Patented June 30, 1896.

Fig. 2.

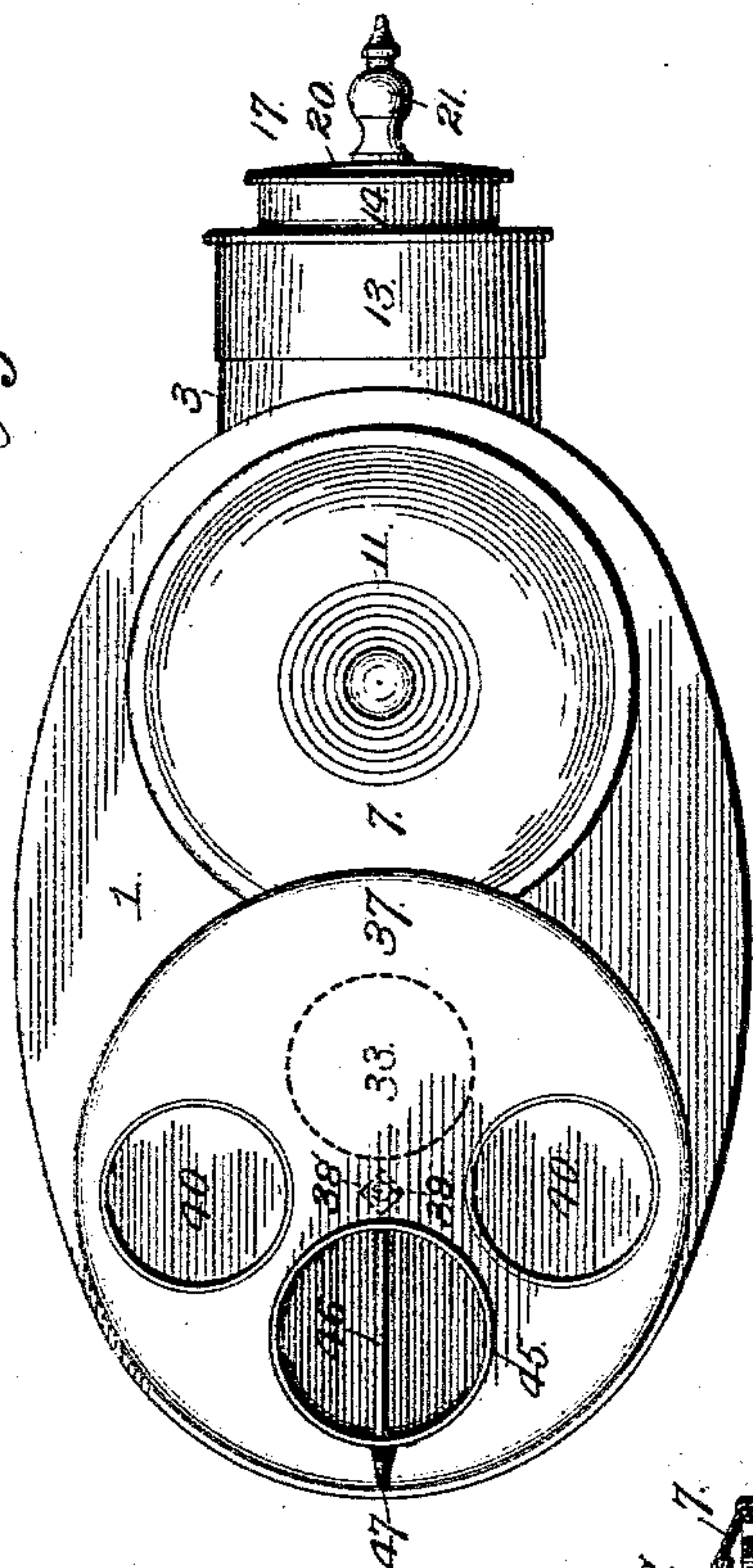


Fig. 5.

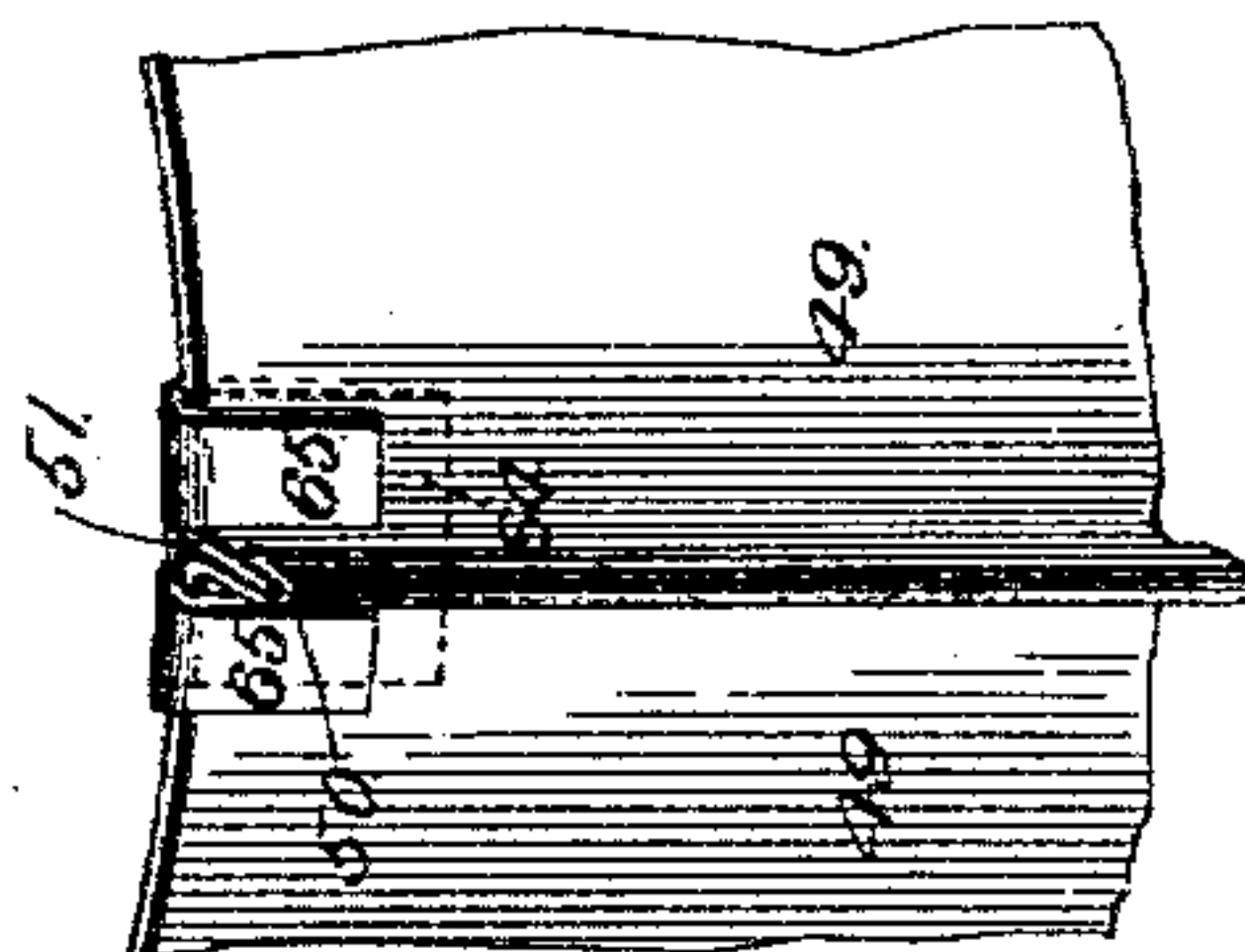


Fig. 4.

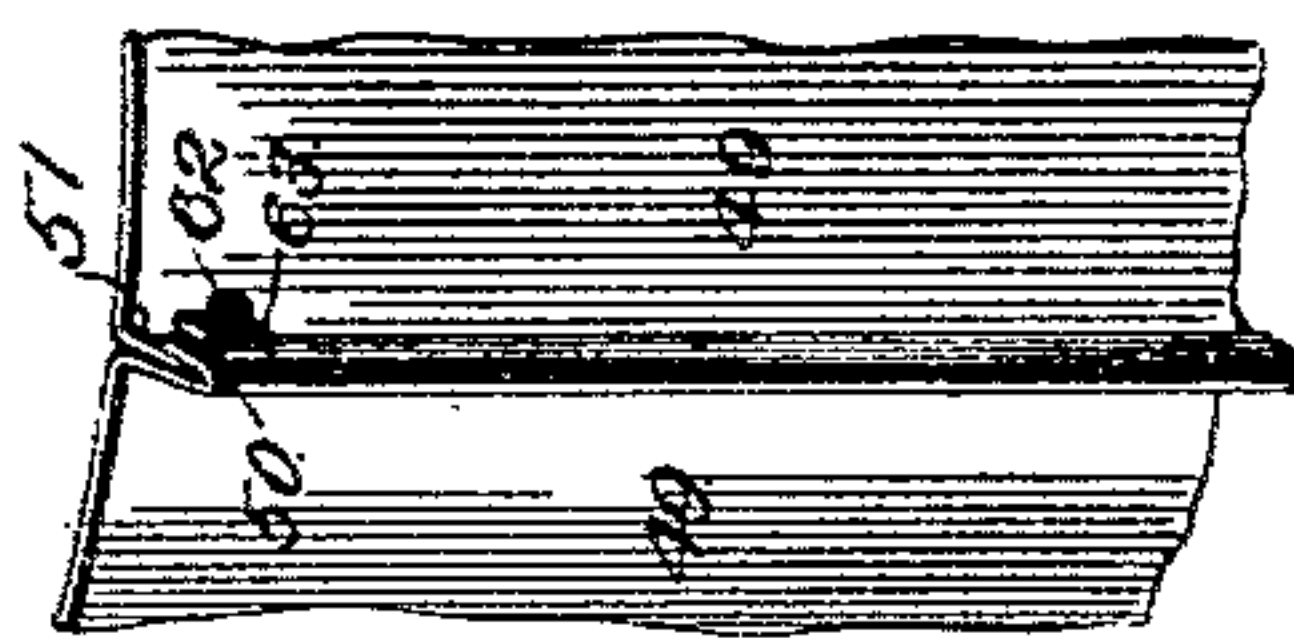
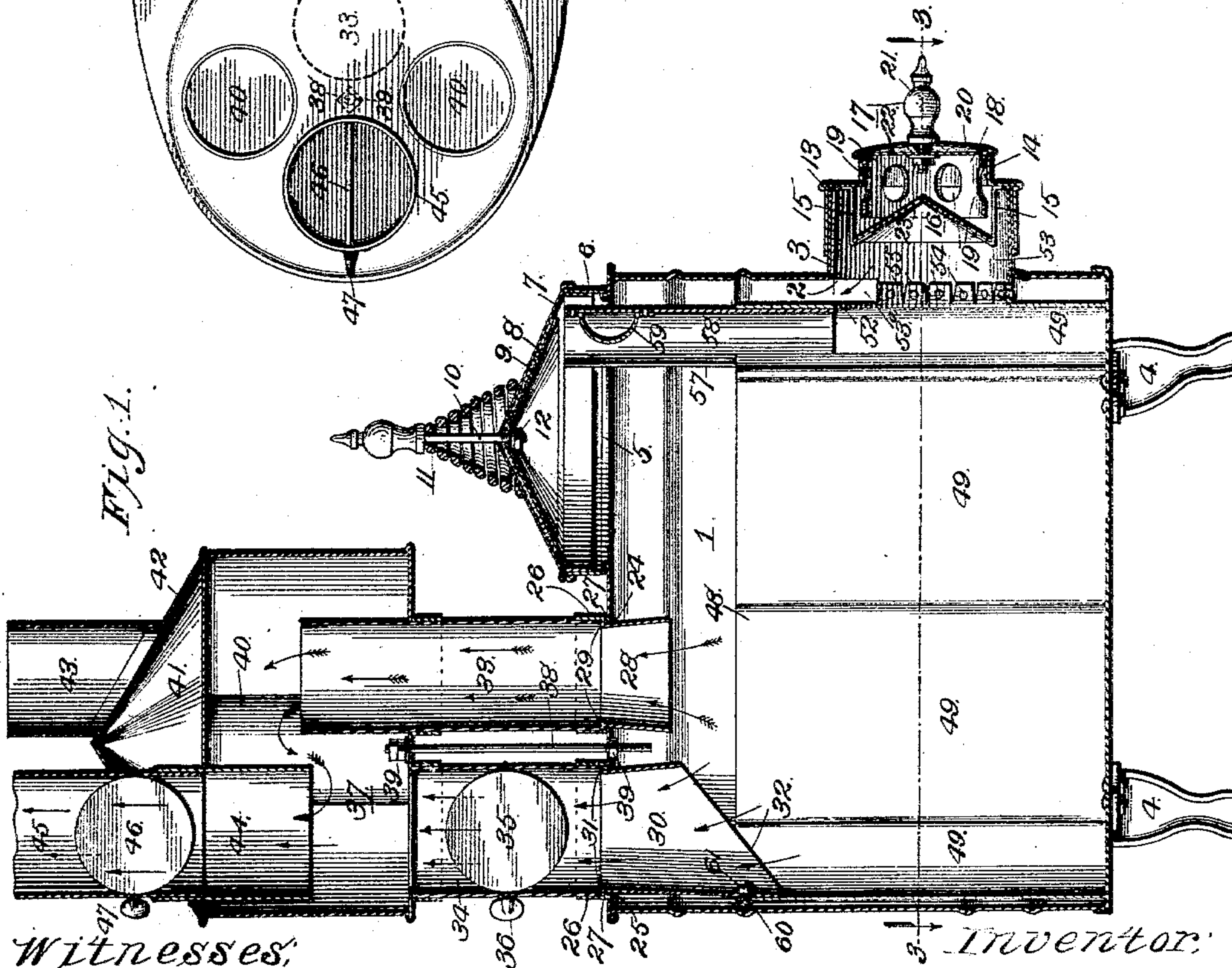


Fig. 1.



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(No Model.)

2 Sheets—Sheet 2.

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HEATING STOVE.

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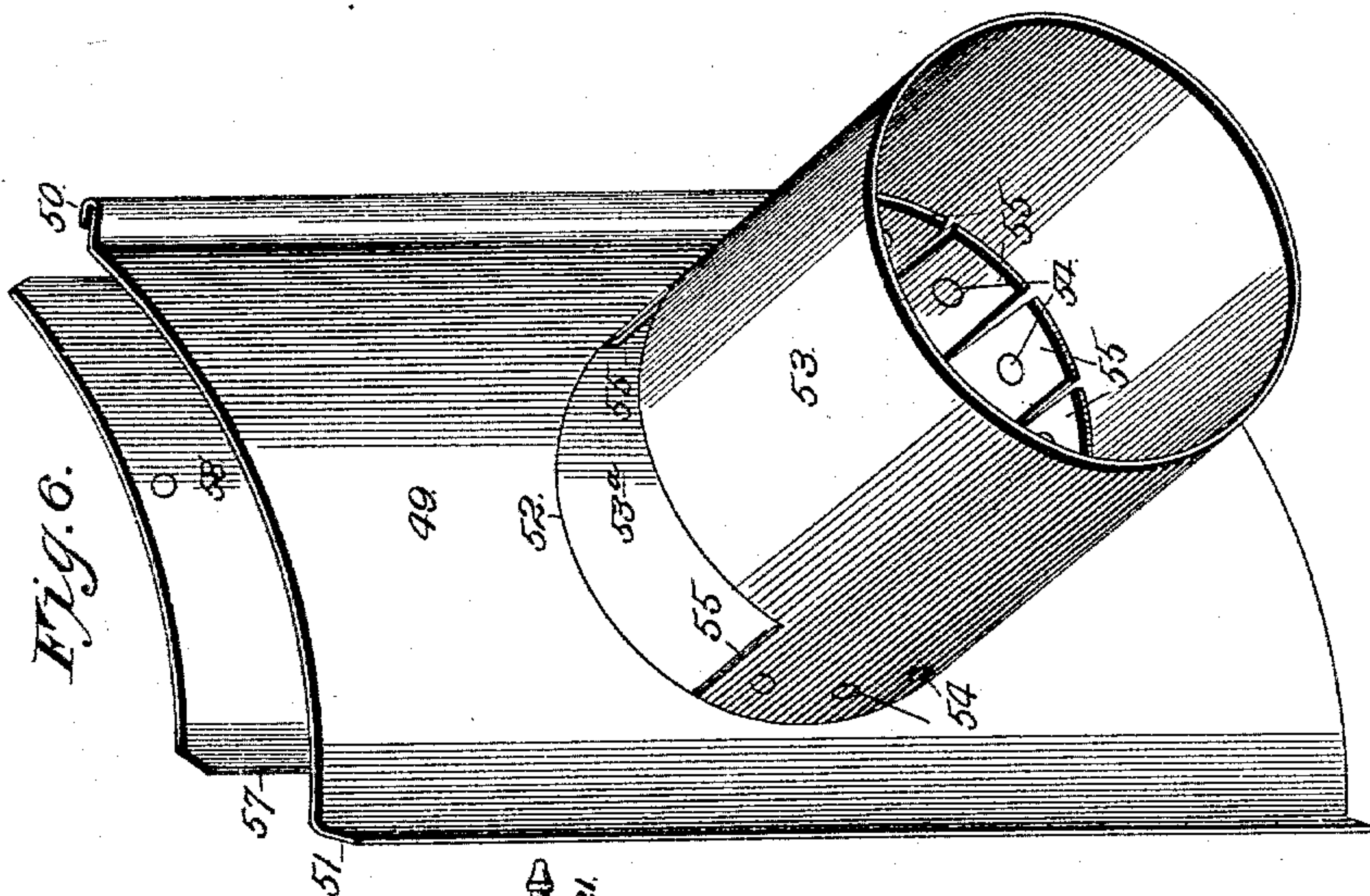


Fig. 3.

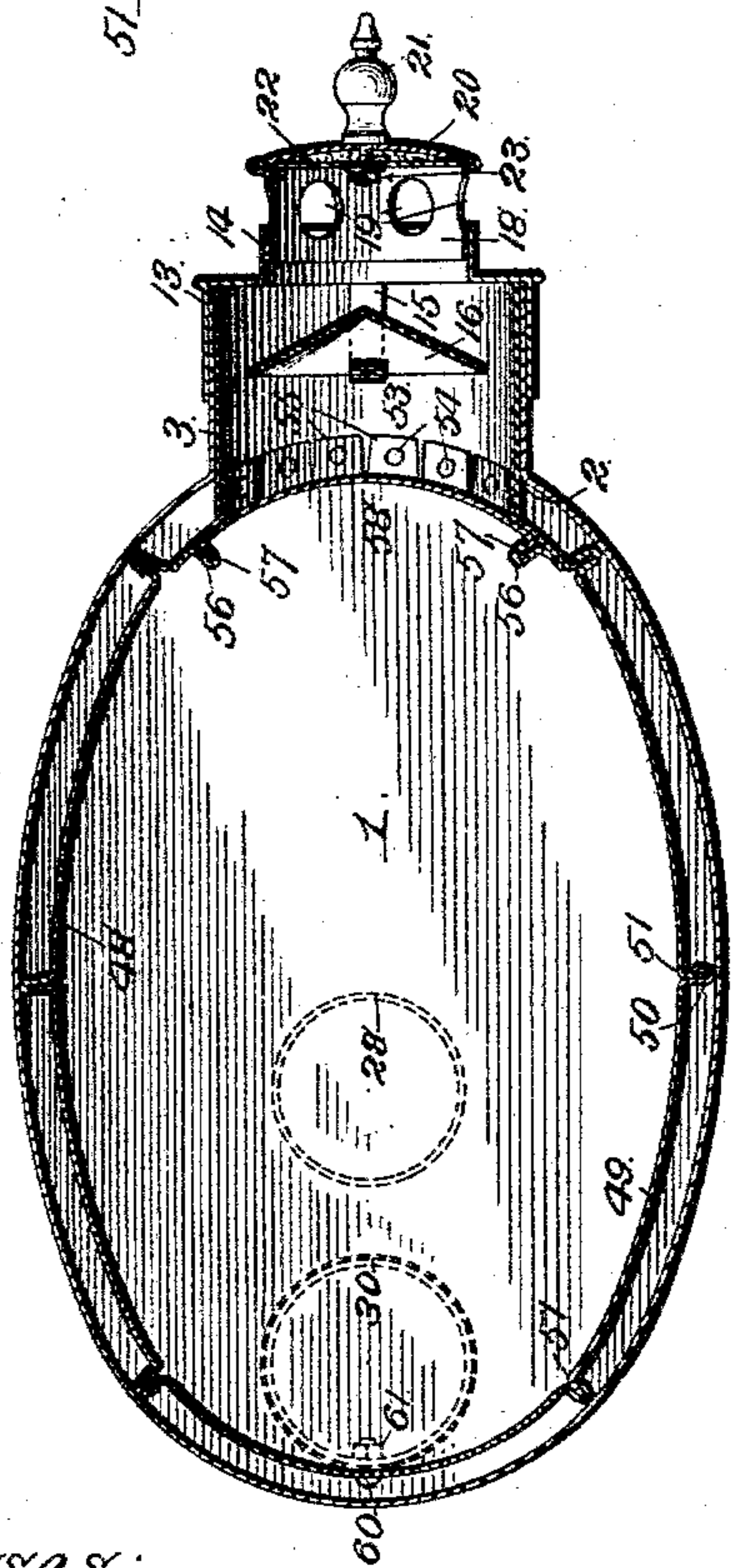


Fig. 8.

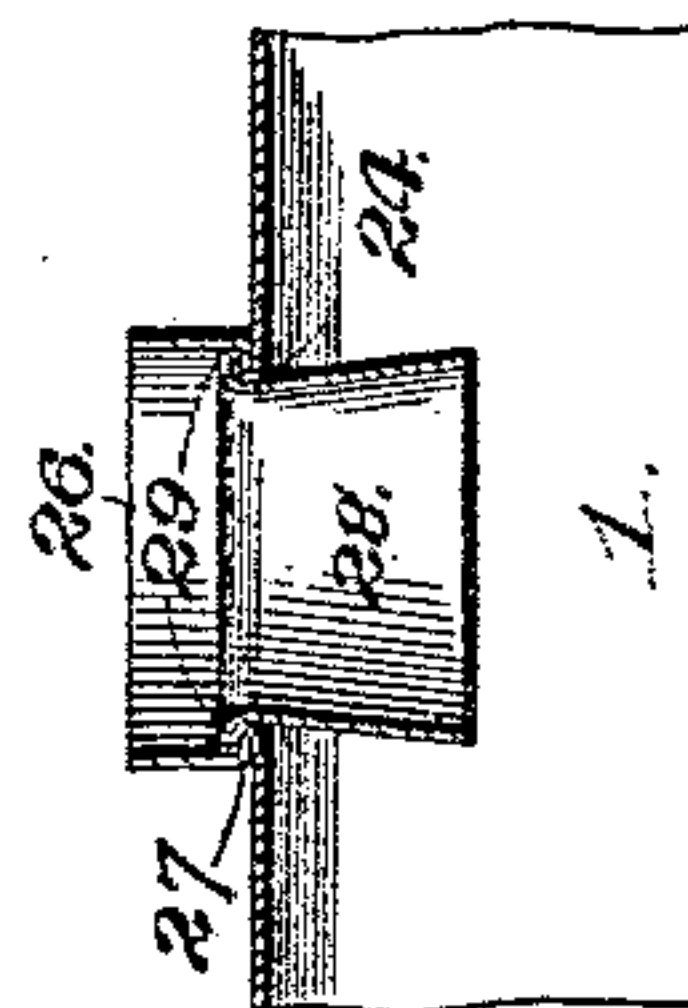
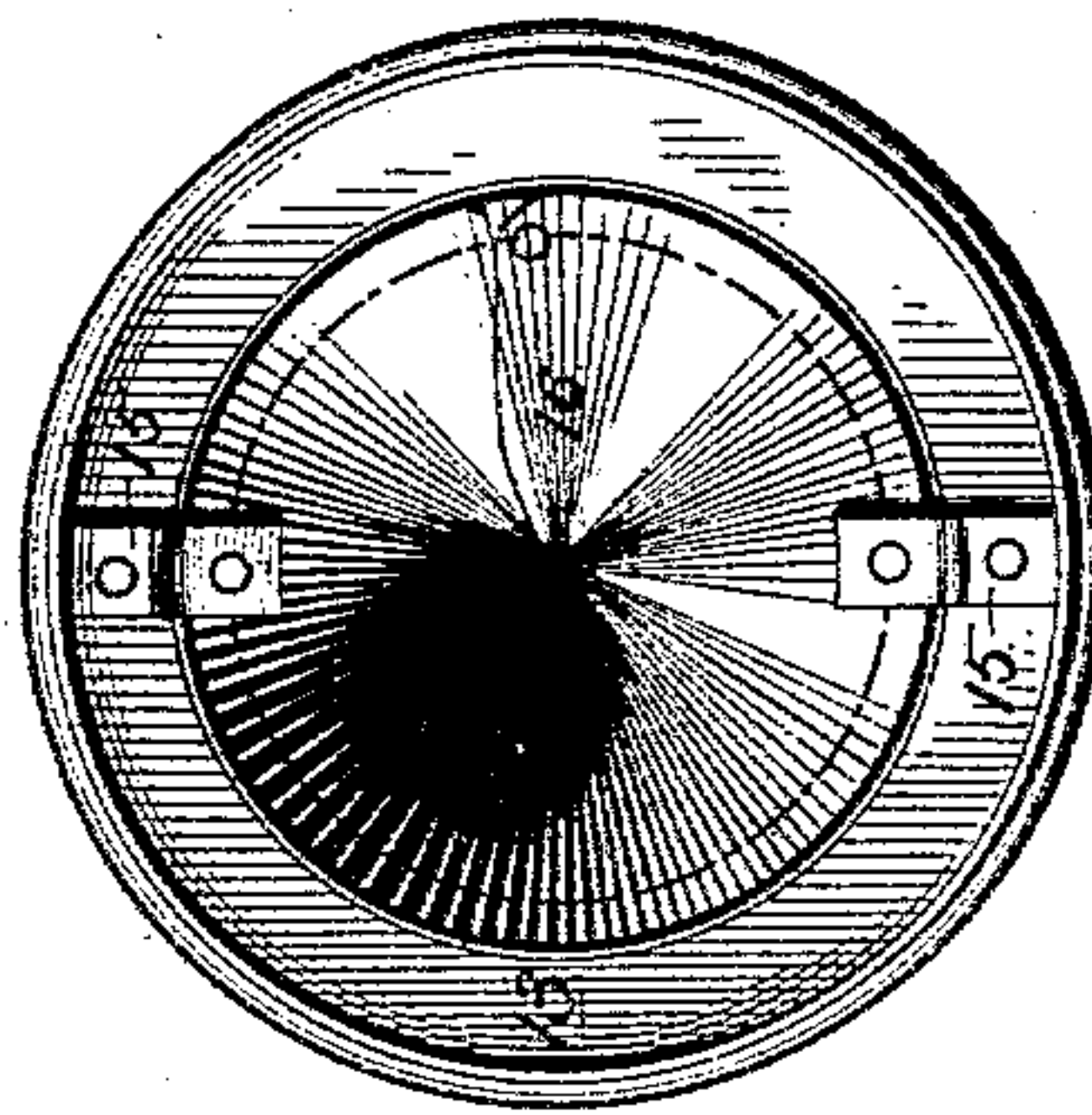


Fig. 7.



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UNITED STATES PATENT OFFICE.

WILLIAM L. WILKINSON, OF OLATHE, KANSAS.

HEATING-STOVE.

SPECIFICATION forming part of Letters Patent No. 562,875, dated June 30, 1896.

Application filed June 21, 1895. Serial No. 553,537. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM L. WILKINSON, of Olathe, Johnson county, Kansas, have invented certain new and useful Improvements in Heating-Stoves, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part thereof.

My invention relates to heating-stoves, and has for its object, first, to provide a structure whereby only sufficient draft may be supplied to the stove to carry off the smoke and gases rising from a smoldering fire; second, to provide a structure comprising a heating-drum as a component part of the stove structure, whereby the heat and products of combustion may be passed through the drum by either a direct or a tortuous route, that air-currents circulating through the drum may be heated in a low or high degree, respectively, or whereby they may be allowed to pass through said drum in both a direct and tortuous course; third, to provide a construction whereby the puffing or pulsation incident to a wood or corn-cob fire may be obviated and sparks confined within the stove while it is open to admit draft, and, fourth, to provide a lining for the stove which is easily placed in or removed from position.

Other objects of the invention will appear in the following description, and will be pointed out in the appended claims.

Referring to the drawings which accompany and illustrate the invention, Figure 1 represents a vertical central sectional view. Fig. 2 represents a top plan view with the hood of the heating-drum omitted. Fig. 3 is a horizontal section taken on the line 3 3 of Fig. 1 and showing the lining-damper closed and the draft-damper open. Fig. 4 is a perspective view which illustrates a way of securing the damper-sections from independent vertical or lateral movement. Fig. 5 is a perspective view which illustrates particularly a way of preventing independent lateral movement of the damper-sections and also for preventing independent vertical movement. Fig. 6 represents a perspective view of the front section of the lining, the sliding damper carried thereby, and the draft-tube projecting therefrom. Fig. 7 represents, on an enlarged scale, an inner face view of a sleeve and a spark-

arresting and air-heating device. Fig. 8 is a vertical section to illustrate clearly the connection between the flaring mouths of the combustion-flues and the stove-body.

In the said drawings, 1 designates the body or shell of the stove. In this connection it is shown as of elliptical form in plan view; but it is to be understood that it may be of any other suitable or preferred configuration.

2 designates an opening in the front side of the same a suitable distance from its bottom, and 3 designates a sleeve projecting outwardly from said body surrounding said opening 2. Said sleeve preferably converges outward slightly. Said body is bolted as shown, or secured in any other suitable manner upon the legs 4, and is provided in its upper side near its front end with an opening 5, surrounded by a vertical wall 6.

7 designates an approximately conical-shaped cap or cover, which fits upon and within the said wall or frame, and is protected from heat by an asbestos washer 8, which is held in position by the conical plate or washer 9. Said conical plate or washer is in turn held in position by the bolt 10, carrying or provided with a non-conducting handle for heat, 11, and said bolt is engaged by a washer and a clamping-nut 12, which are arranged internally of the cap or cover.

13 designates a sleeve which embraces externally and tightly, owing to its wedge-like construction, the sleeve 3 of the stove body or shell, and outward of the same is diametrically diminished, as at 14. Arms 15, secured to said sleeve, project inwardly of the sleeve 3 of the stove body or shell, and carry concentrically thereof the conical spark-arrester and air-heater 16, the internal surface of said arrester and heater being disposed toward the interior of the stove, and the external surface toward the outer end of the sleeve 13, so that it will contact with the air entering the stove, for a purpose to be hereinafter explained.

17 designates a damper or device for controlling the entrance of air to the stove, which consists of the cylindrical tube 18, provided with a series of draft holes or apertures, and a head 20, which closes the outer end of said tube. The handle 21 of said damper is protected from heat by means of an asbestos

washer or packing, which is arranged between the head 20 of said damper-tube and a plate 22. Said plate is clamped in position by means of a washer and a nut 23, engaging the threaded end of the stem of the handle. Rearward of the feed hole or opening 5 of the stove is a comparatively small opening 24, and rearward of the same is a similar opening 25. These openings may, if desired, be of the same diameter, and are surrounded by upwardly-projecting collars 26. Said collars are provided at their lower ends with inwardly-projecting flanges 27, which in conjunction with the upturned edges of the stove-holes form annular shoulders.

28 designates a short tube projecting into the stove, which is provided with an outwardly-projecting annular flange 29 at its upper end, which engages the said shoulder of the opening 24, to prevent downward movement thereof. The depending portion of said tube is preferably flared to prevent any upward movement of said tube, so that it is held firmly and securely in position.

30 designates a short tube, which also depends into the stove through the opening 25, and 31 designates an annular outwardly-projecting flange at its upper end, which engages the said annular shoulder of said opening 25. Said tube, which is also flared outwardly, at its lower end is cut obliquely downward to form the downwardly and forwardly disposed mouth 32.

33 designates a vertical tube, which is embraced at its lower end by the collar 26 of the opening 24, and 34 designates a shorter vertical tube, which is embraced at its lower end by the collar 26 of the opening 25. Said tube is provided with the pivoted damper 35, which is operated by a handle 36, of the usual or any preferred construction.

37 designates a heating-drum, which is preferably of circular form in plan view, and said heating-drum is supported upon the pipes 33 and 34, the pipe 33 projecting into the drum for some distance, and the pipe 34 terminating in the plane of the bottom of the drum preferably. Said drum is secured to the stove body or shell proper by the vertical tie-rod 38 and the clamping-nuts 39. The vertical air-conducting tubes 40 of the drum at their upper ends communicate with the chamber 41, formed conjointly by the upper side of the drum and an inclosing hood 42. Said hood is cone-shaped to more effectually concentrate the hot air and radiate it throughout the room by way of the short tube 43.

44 designates a pipe, which depends into the drum to a plane preferably below the upper end of the pipe 33, and is arranged in vertical alinement with the pipe 34, and communicating with said pipe is a pipe 45, leading to the chimney or flue (not shown) of the building wherein the stove is located, or the pipes 44 and 45, which are substantially one, may be formed as a single pipe, which extends through the chamber 41 and into the drum 37.

Said pipe is provided with a pivoted damper 46, and with any suitable handle 47.

The lining 48 of the stove preferably consists of a number of sections, each consisting of a body portion 49, terminating at its opposite vertical margins in a hook 50 and an arm 51, the hook 50 of one section embracing the arm of the adjacent section, as shown clearly in Figs. 3, 4, and 5. The lining as a whole is arranged parallel or approximately parallel to the vertical portion of the stove body or shell, and is held in such position by hooks 50, which project outwardly and bear against said portion of the stove body or shell, thereby forming air spaces or chambers, which surround said lining and protect the vertical portion of the stove body or shell from contact with the fire. To protect the bottom of the stove, I preferably employ a layer of ashes. By constructing the sections with the arms 51 and hooks 50, as shown, they may be placed in operative position relative to each other by simply fitting the arms 51 bodily into said hooks for their entire length; therefore it is obvious that a lining, if found desirable, of any length within the height of the stove body or shell may be placed therein easily and quickly. The hooks embrace the arms so snugly in practice that if the stove be inverted during transportation or at any other time said sections will maintain their proper position relative to each other; in other words, will not slide one upon the other, nor will the tubes 28 and 30, which form flaring mouths, respectively, for the pipes 33 and 34, move from their proper position.

The front section 49 of the stove-lining is provided with a draft hole or opening 52, and communicating with the same is the outwardly-projecting guide-tube 53, which is secured to the lining-section by means of rivets 54, which extend through ears 55, turned outwardly from said section. Said guide-tube, in its upper side, is cut away, as shown at 53^a, to afford communication between the same and the air space or chamber between the front section of the lining and the vertical portion of the stove body or shell. (See Figs. 1 and 6.) Secured to the inner side of said front section 49 are the hooks 56, and engaging the same are the inwardly-projecting flanges 57 of the sliding damper 58, which is adapted to control the quantity of air passing through the opening 52 to the fire, or to cut off the draft entirely if it is desired that the fire should smolder only. Said damper is raised and lowered by means of the handle 59.

The lining is prevented from being elevated bodily at its front end by the guide-tube 53, projecting into the sleeve 3, and at its rear end is held from vertical movement by the bolt 60, which extends through the rear section of the lining and through the short tube 30, forming the flaring mouth to the tube 34. A nut 61 clamps said parts firmly together.

As hereinbefore explained, the frictional contact between the various sections is sup-

posed to prevent their sliding one upon the other, but as an additional security against such movement, and also against lateral displacement due to jolting or rough handling of the stove, or to the expansion of the lining under the action of the heat generated, I may secure them together in two simple and inexpensive ways, one by passing a bolt 62 through each hook and its embraced arm, and engaging the same with a clamping-nut 63, and the other by a plate 64, which is bifurcated to form two downwardly-disposed hooks 65, which embrace said sections at opposite sides of said hooks and arms. (See Figs. 4 and 5, respectively.)

After a fire is started in the stove and is burning freely, with the several dampers open, 17, as shown in Fig. 3, and 35, 46, and 58, as shown in Fig. 1, it is apparent that the smoke and other products of combustion pass by a direct route—viz., from the pipe 34 to the pipe 44, through the heating-drum, which therefore receives only a small quantity, comparatively, of the heat generated. If it be desired now to utilize the drum as a heating medium for the room in which it is located, the damper 35 is closed. This deflects the products of combustion from the path indicated by the featherless arrows through the path indicated by the feathered arrows, which is up through the tube 33 into the drum 37, wherein it circulates, and from which it finally escapes by way of the pipe 44, as before. The circulation of the products of combustion within the drum and around the tubes 40 heats the same and causes a circulation of air throughout the room to gradually warm the same, the cold air entering the lower end of the tubes 40, and the hot air escaping from the chamber 41 by way of the tube 43.

From the foregoing it is obvious that the damper 35 controls the direction of flow of the draft, and the damper 46 the volume or quantity which passes up through the stove. It is also obvious that the volume or quantity of air allowed to enter the stove is controlled by the position of the damper 17 and the position of the lining-damper 58.

If it be desired to maintain the fire over night, or for any length of time without attention, the damper 58 is operated to entirely close the opening 52 of the lining. The dampers 17 and 46 are then positioned to provide only sufficient draft to carry off the smoke and other products of combustion, said draft entering, by way of the holes or apertures 19, into the guide-tube 53, and escaping thence, by way of the opening 53^a, as indicated by the arrow, Fig. 1, and the air-chamber between the front section of the lining and the stove body or shell, to the interior of the stove body or shell above said lining and above the fire, and escaping by way of either or both the routes previously traced and indicated by arrows.

When the fire is burning briskly and the

dampers 17 and 58 are open, the sparks are prevented from escaping through the diminished portion 14 of the sleeve 13 by the interposed arrester 16, and at the same time the cold air entering through the damper 17 comes in contact with and is heated by said spark-arrester, to obviate the puffing or pulsation of the fire, which is principally due to cold air entering the stove and coming into direct contact with the fire.

From the above description, it will be apparent that I have produced a stove which embodies the desirable features of construction enumerated in the statement of invention, and at the same time, as it is constructed throughout substantially of sheet metal, is strong, durable, and inexpensive of construction.

While I have confined the description to the configuration of the parts as illustrated, it is to be understood, of course, that changes in the form, proportion, and arrangement of parts may be resorted to without departing from the spirit and scope or sacrificing any of the advantages of my invention.

Having thus described the invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a heating-stove, the combination with a body or shell having an opening surrounded by a sleeve, an annular lining within and upon the bottom of the stove but terminating short of the upper end of the stove, and provided with an opening near its lower end and opposite said sleeve, a guide-tube communicating with the said opening and projecting into said sleeve, and provided with an opening which communicates with the space between the stove body or shell and the lining, and a damper controlling the opening of the lining, whereby more or less of the air entering the stove-sleeve may be compelled to pass through said opening or all of it be compelled to pass upwardly through the opening in the lining and into the space between the body or shell and the lining of the stove, substantially as and for the purpose set forth.

2. In a heating-stove, the combination with a body or shell having an opening surrounded by a sleeve, of an annular lining within and resting upon the stove and formed in removable sections, and provided with an opening in one of said sections and opposite the sleeve, a guide-tube surrounding the opening of said section and projecting into said sleeve, and provided with an opening communicating with the space between the said body or shell and the lining, and a sliding damper carried by said section of the lining, and controlling its opening, substantially as and for the purpose set forth.

3. In a heating-stove, the combination of a body or shell, a heating-drum, a valve-controlled pipe connecting the drum and the body or shell, a second pipe connecting the body or shell and the drum, and projecting upward into the latter some distance, and a

valve-controlled pipe leading from said drum and depending into the same some distance, substantially as and for the purposes set forth.

4. In a heating-stove, the combination of
5 a body or shell, a heating-drum comprising two superimposed chambers, air-tubes communicating at their upper ends with the upper chamber and at their lower ends with the external air and extending through the lower
10 chamber, an escape-tube for hot air communicating with the upper chamber, a pipe connecting the lower chamber with the body or shell, and a valve-controlled pipe leading from said lower chamber to carry off the
15 products of combustion, substantially as set forth.

5. In a heating-stove, the combination of a body or shell, provided with holes or aper-

tures in its top, collars surrounding said apertures and formed with inwardly-project- 20 ing shoulders marginally of said holes or apertures, flaring tubes depending within the body or shell and provided at their upper ends with outwardly-projecting shoulders which engage the first-mentioned shoulders, 25 pipes resting upon said shoulders, a heating-drum communicating with said pipes, and a valve-controlled escape-pipe for the products of combustion communicating with said drum, substantially as set forth. 30

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

WILLIAM L. WILKINSON.

Witnesses:

G. Y. THORPE,

M. R. REMLEY.