

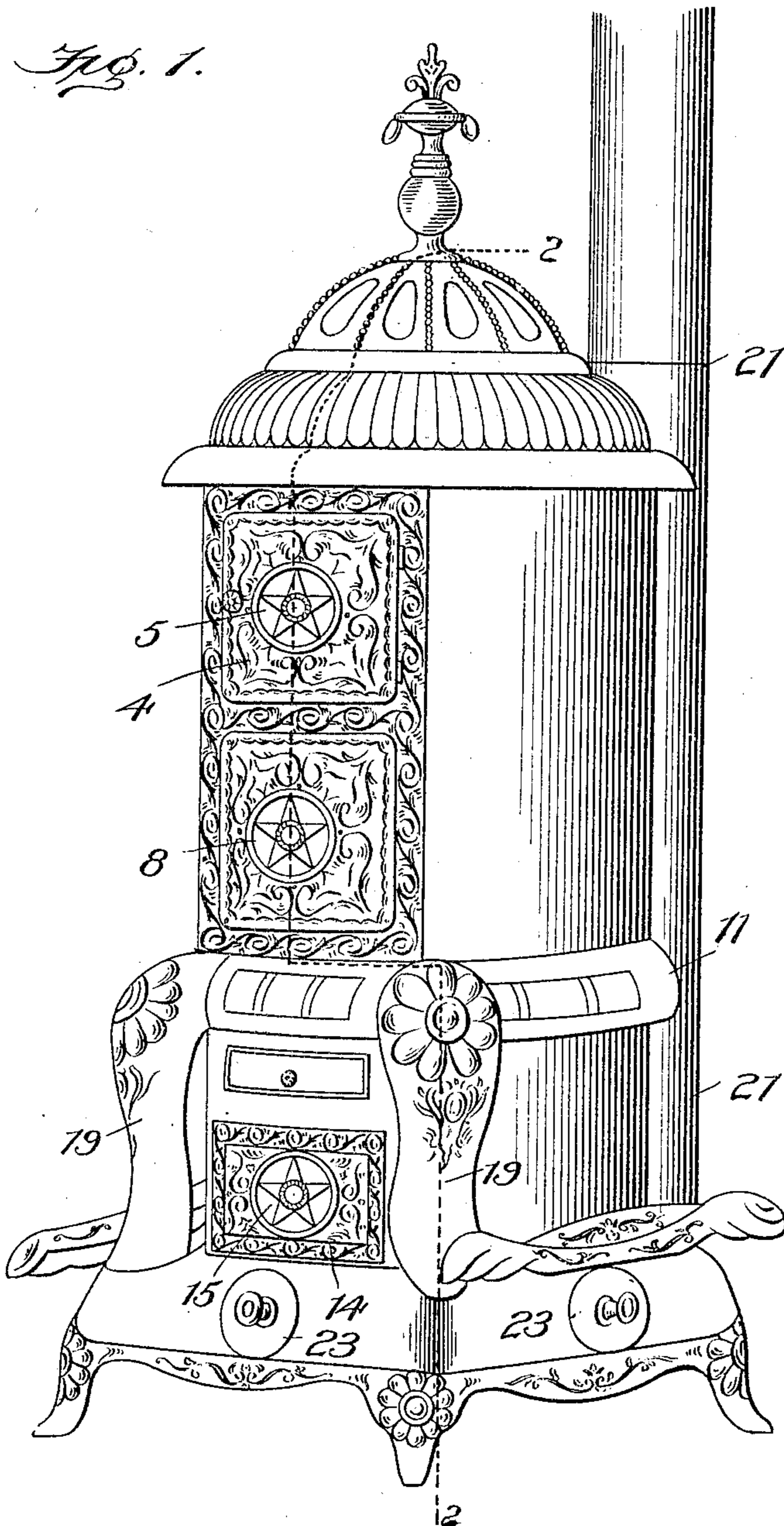
No. 843,103.

PATENTED FEB. 5, 1907.

C. F. A. RÖELL.
HEATING STOVE.

APPLICATION FILED SEPT. 29, 1904. RENEWED DEC. 17, 1906.

3 SHEETS—SHEET 1.



Witnesses

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Anne B. Johnson.

Inventor

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By *John C. Johnson*

Attorneys

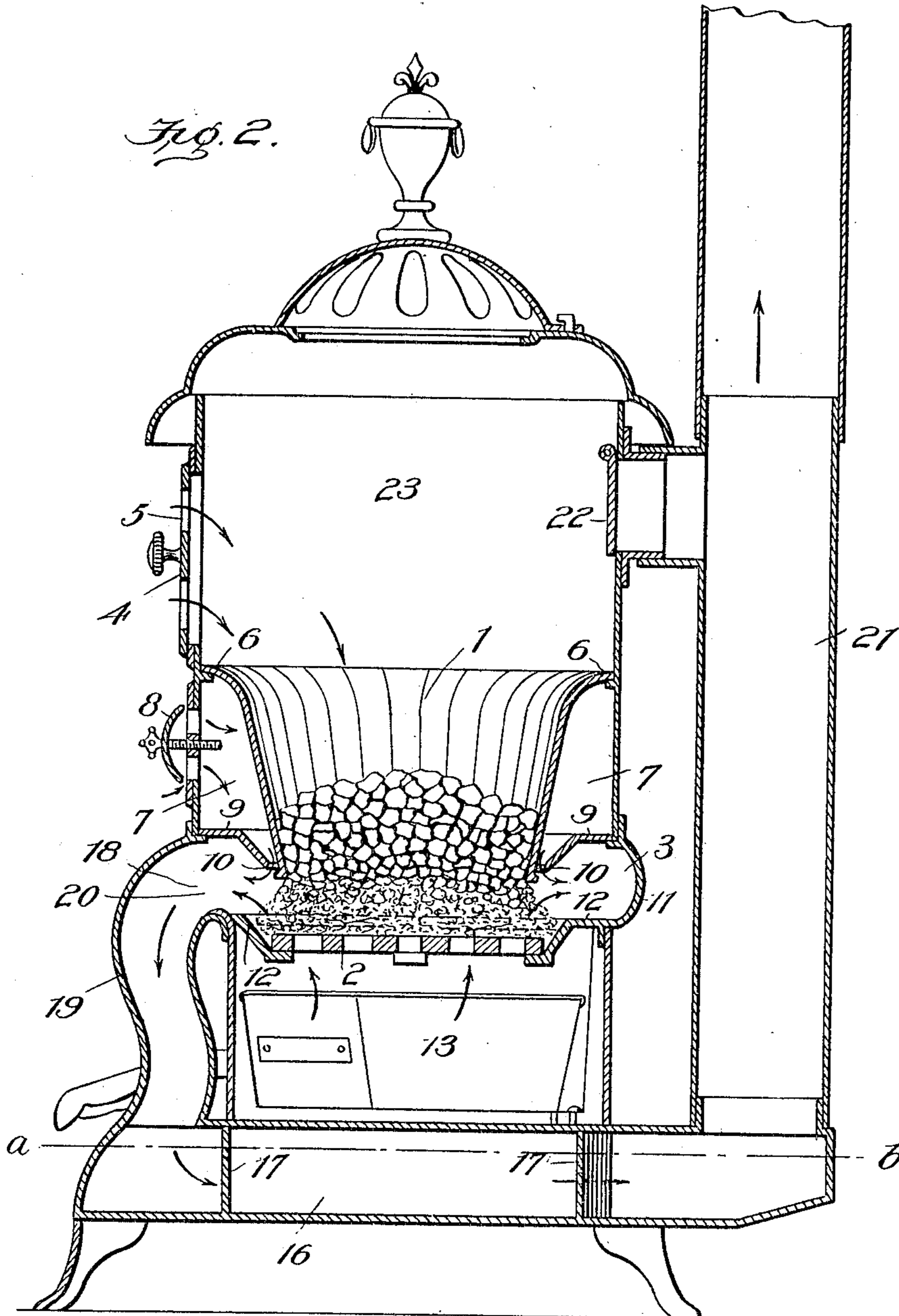
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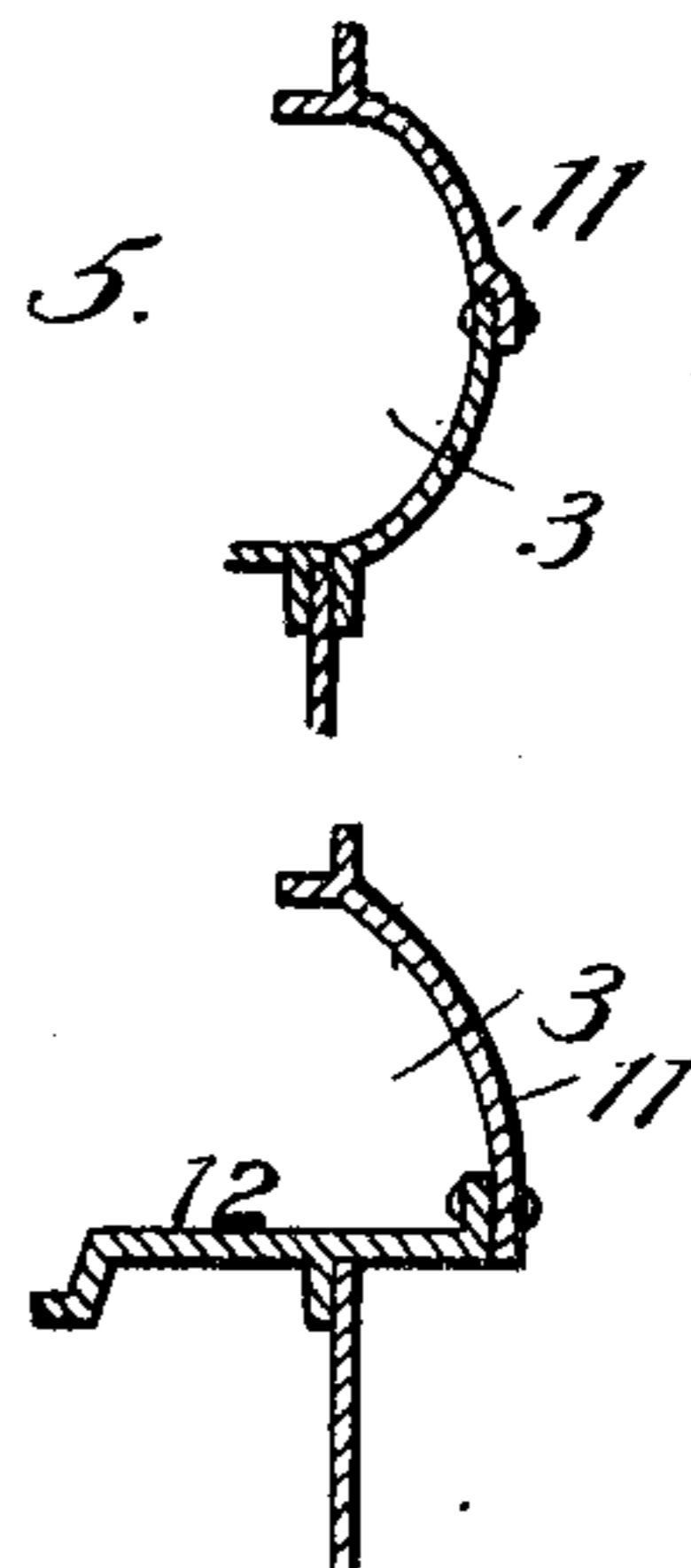
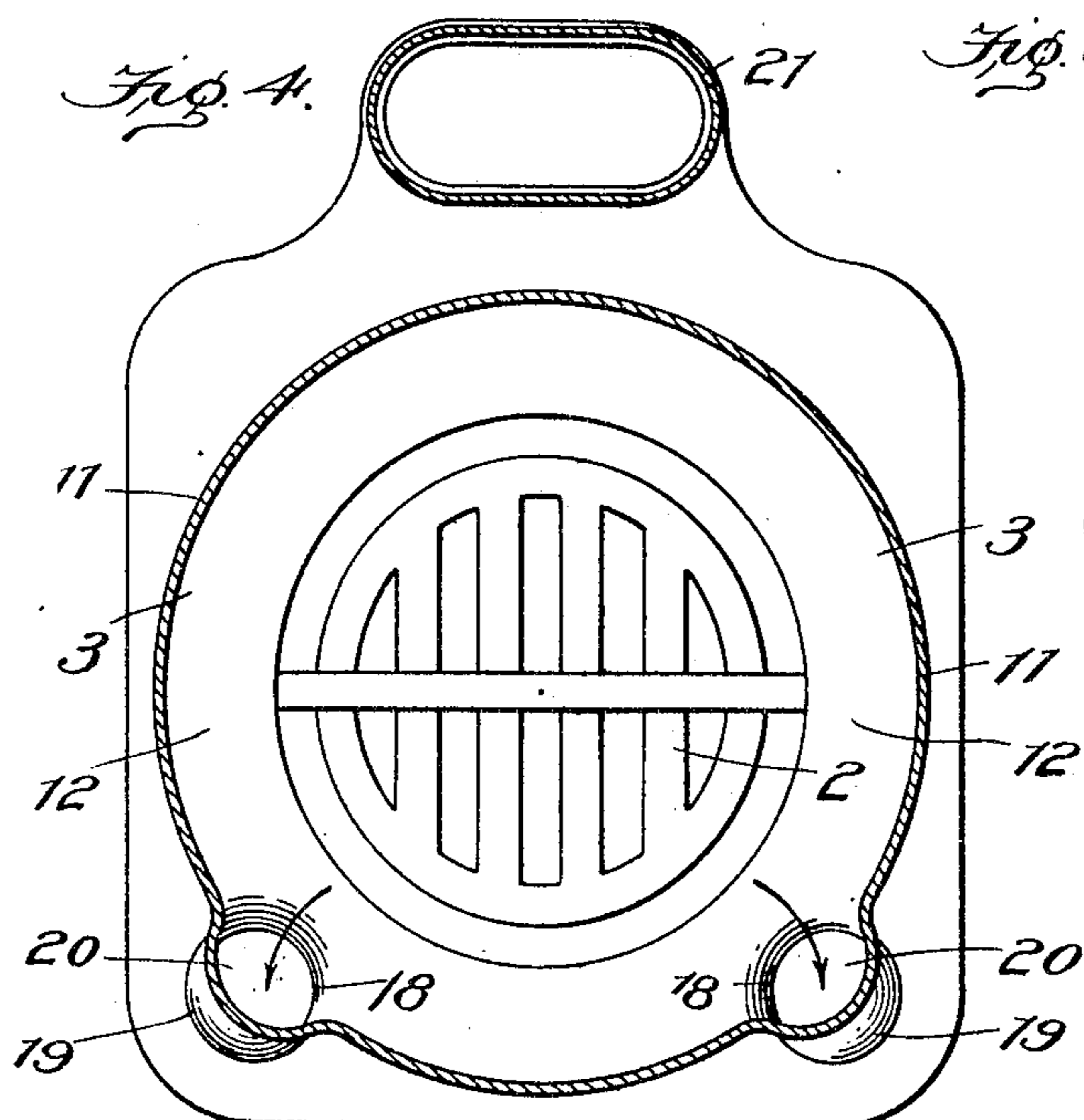
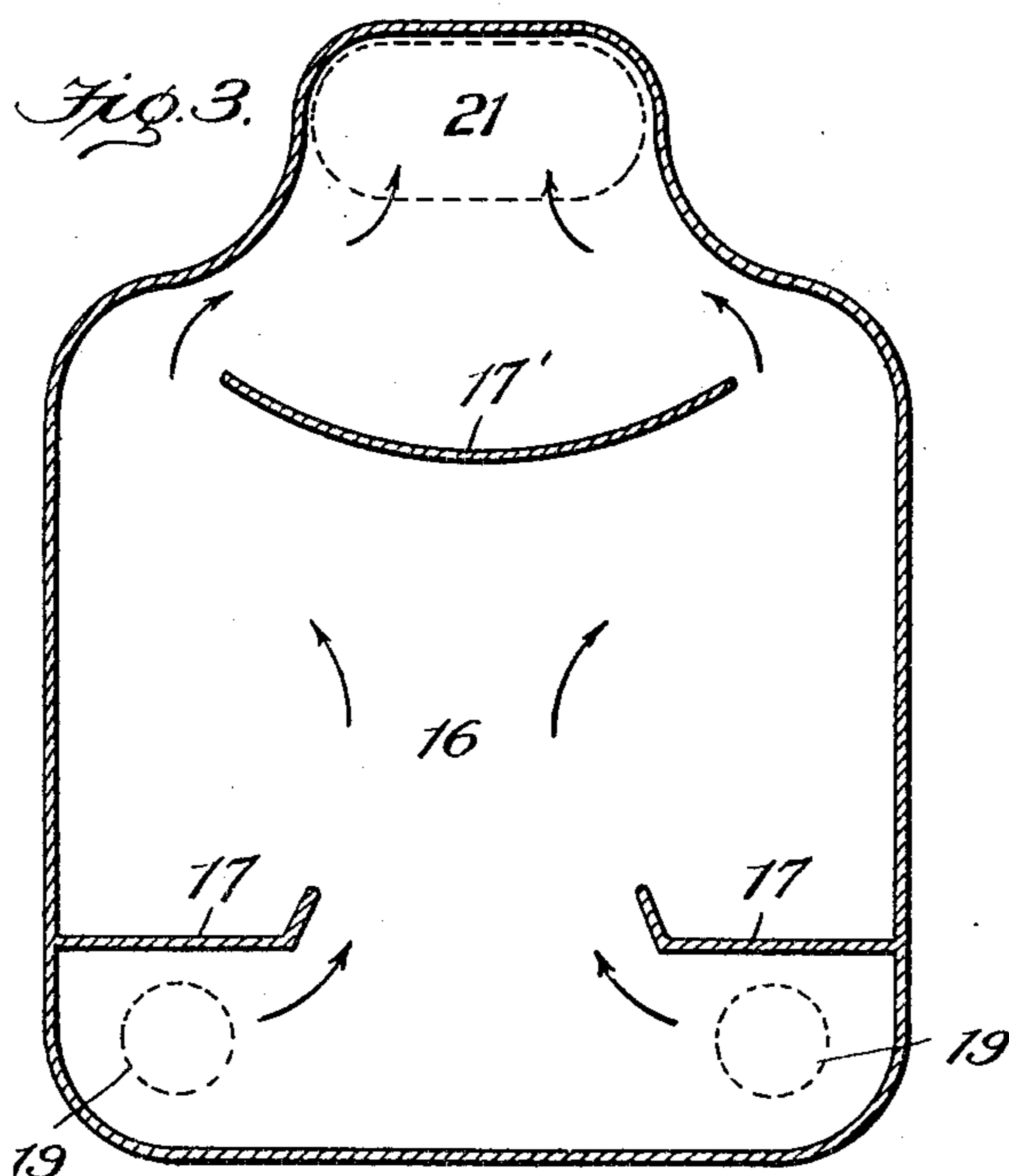
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Inventor

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UNITED STATES PATENT OFFICE.

CORNELIS F. A. RÖELL, OF INDEPENDENCE, MISSOURI, ASSIGNOR TO
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HEATING-STOVE.

No. 843,103.

Specification of Letters Patent.

Patented Feb. 5, 1907.

Application filed September 29, 1904. Renewed December 17, 1906. Serial No. 348,290.

To all whom it may concern:

Be it known that I, CORNELIS F. A. RÖELL, a citizen of the United States, residing at Independence, in the county of Jackson and State of Missouri, have invented certain new and useful Improvements in Heating-Stoves; 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 is directed to improvements in heating-stoves of the type known as "base-burners" with revertible draft; and the objects of my improvements are to produce a high degree of heat in the lower part of the stove and to cause such combustion of the gases as to prevent black smoke.

The following description, read in connection with the accompanying drawings, will enable any one skilled in the art to which my invention relates to understand and construct it in the form in which I prefer to employ it; but it will be understood that my invention is not limited to the precise form and details of construction herein illustrated and described, as various modifications and changes may be made without exceeding the scope of the invention or the claims in which it is set out.

Referring to the drawings, Figure 1 represents a view in perspective of a stove embodying my improvements. Fig. 2 is a vertical section of the same, taken through one of the external revertible flues, taken on the line 2 of Fig. 1. Fig. 3 is a horizontal section taken through the line *a b* of Fig. 2, showing the direction of the base-draft. Fig. 4 is a horizontal section taken through the fire-zone space, showing the pair of external revertible flues at the front. Fig. 5 shows modifications of the fire-zone ring.

1 is the fire-pot, which contains and feeds the coal to the grate 2, and between these is an annular space 3, into which all the drafts lead and from which the revertible draft takes its course to the base of the stove. The feed-door opens into the fire-pot, and a register 5 in this door supplies air for the combustion above the grate and for the descending draft through fire-pot and the fire. The fire-pot flares upward and terminates in

an overhanging edge 6, by which it is supported and suspended upon the inner walls of the casing.

Surrounding the fire-pot is a chamber 7, and below the feed-door is a register 8, which supplies air to said chamber, wherein it is highly heated by contact with the fire-pot walls. The fire-zone space 3, wherein all the drafts meet, is formed by upper, lower, and intermediate ring-plates, the upper member 9 of which is supported above the lower end of the fire-pot and has the form of an inverted frustum of a cone and forming an annular space 10 between it and the lower edge of the fire-pot, thereby having the function of a funnel to direct the hot air from the hot-air chamber 7 into the fire-zone space, where it contributes to the perfect combustion of the gases. The lower member 12 of these ring-plates serves to support the grate, while the third member 11 forms a section of the casing and incloses the fire-zone space, so that there shall be only an exit, as a direct draft, from this fire-zone space to the revertible flues into the base-flue, for it is important not to interrupt the direction of the draft in its revertible course from the fire-zone space, which is continuous around the lower edge of the fire-pot. This grate-supporting member is itself supported upon the walls of the casing and has the form of an inverted frustum of a cone, forming thereby a sunken seat for the grate, so that the latter forms the bottom of the fire-zone space directly beneath the fire-pot.

Referring to the upper, lower, and intermediate ring-plates, it will be noted that either the upper or the lower ring-plate may be formed separate from the intermediate ring-plate or both may be formed integral therewith, in which case the intermediate ring-plate is made in sections, the upper and the lower ring-plates in either case being separable and all the ring-plates when assembled forming a fire-zone space.

The ash-pit 13 has the usual door 14 and register 15 for the updraft for the grate, and below the ash-pit is a base-draft flue 16, provided with deflecting-plates 17 to distribute the hot draft over the whole lower part to insure the largest radiation. The lower edge of the fire-zone space extends around the fire-

pot, and that part of its wall which forms a continuation of the wall of the casing has openings 18, preferably a pair, at its front, with which reversible flues 19 connect and stand off or set out from the stove-casing and open into the base-draft flue. The wall-openings 18 are between the ring-plate 9 of the fire-zone space and the grate-supporting ring-plate, so as to give a free and unobstructed exit 20 from the fire-zone space into the reversible flues.

The smoke-exit pipe 21 leads from the base at the rear of the stove and has the usual damper 22 opening into the combustion-chamber to give a direct-draft entrance into the smoke-exit pipe. When this damper is closed, the products of combustion are caused to pass down through the fire. The walls of the base have doors 23 for access to clean the base-draft flues. The upward draft through the grate will cause the fuel in the grate and in the lower part of the fire-pot to remain ignited, while the upward air-currents and the downward air-currents will meet in the fire-zone space between the grate and the lower end of the fire-pot to effect a total combustion of the fuel on the grate. I prefer that the grate and the lower end of the fire-pot be of the same area, so that the ring-plate on which the grate is seated will prevent the draft from passing outside of the grate into the fire-zone space, which would hinder the reversible draft. This is important because the draft within and through the fire-zone space is laterally from the rear side of the stove directly to the reversible flues at the front and an ascending cold-air draft at the point where the draft descends would interfere very much with the function of the fire-zone space in delivering a large volume of intensely-heated air directly to the base of the stove, where it is most effective.

The advantage of having the reversible flues set out from the stove-casing is that the downdraft, laden with the highest heat, is delivered in a large volume direct from the fire-zone space through the wall-openings into the set-out reversible flues and delivered therefrom into the base-flue.

While I have shown and described the reversible flues as at the front of the stove, obviously they may be placed at the rear or at the side, so long as they cause the draft through the fire-zone space from one side only of the stove to the other and from a fire-zone space practically closed at all points around the grate and the fire-pot except at the reversible flue-openings.

An important matter of my invention is that the supply to the air-chamber is controlled by a single register and its location just above and between the reversible flues, so that the cold-air inlet is in immediate proximity to the entrance of the highest heat volume into the reversible flues. The base-

draft has the full area of the bottom flue, and the reversible flues open into it, as in Fig. 3, and from thence the draft is deflected to the middle of the flue by the plates 17, projecting transversely from each side of the stove, while a middle transverse plate 17' at the rear of the flue diverts the draft around it to the smoke-pipe. It is important to note that the overhanging top of the fire-pot serves to give it a firm bracing in its suspended relation to the fire-zone space and to the annular exit-space 10 of the air-chamber and allows the convenient removal of the fire-pot to remove and replace the upper plate of the fire-zone space. The overhanging walls of the fire-pot, while serving to close the top of the hot-air chamber, also serves to close the bottom of the combustion-chamber at the top of the fire-pot.

Referring to Fig. 5, the provision of the separate ring-plates assembled upon each other for forming the fire-zone space gives the advantage of convenient removal and replacement in repairing the stove, as all the parts can be separately fitted directly to the top and bottom sections of the stove-casing, which for this purpose is made of two separate and distinct parts joined at the grate.

I claim—

1. In a heating-stove, an inclosing casing, a fire-pot, a grate, upper, lower and intermediate ring-plates assembled and forming a fire-zone space surrounding the lower end of the fire-pot, reversible flues into which said fire-zone space opens, and an air-chamber having an air-inlet in the casing and an outlet opening into said fire-zone space.

2. In a heating-stove, an inclosing casing, a fire-pot, an upper ring-plate above the lower edge of the fire-pot, a lower ring-plate supporting the grate and means for closing the space between said ring-plates forming a fire-zone space, reversible flues set out from the wall-casing and into which the fire-zone space opens, and an air-chamber having an air-inlet in the casing and an outlet-opening formed by the fire-pot and said upper ring-plate.

3. In a heating-stove, an inclosing casing, a fire-pot, a grate, upper, lower and intermediate ring-plates assembled and forming a fire-zone space surrounding the lower end of the fire-pot, the fire-pot wall and said upper ring-plate and the said casing forming an air-chamber having an air-inlet and opening into the fire-zone space, a base-draft flue, a pair of reversible flues set out from the casing and opening into the fire-zone space and into the base-draft flue, the air-inlet to said chamber being immediately above the upper ring and between the pair of reversible flues.

4. In a heating-stove, the inclosing casing, a grate, upper, lower and intermediate ring-plates assembled and forming a fire-zone space, and a fire-pot freely suspended by its

upper flaring edge upon the inner walls of said casing and terminating below and within the inner edge of said upper ring-plate.

5 5. In a heating-stove, a casing, a grate, a fire-pot, upper, lower and intermediate ring-plates assembled and forming a fire-zone space surrounding the lower edge of the fire-pot, a base-draft flue and a pair of revertible flues the latter opening directly into the fire-
10 zone space and into said base-draft flue.

6. In a heating-stove, a casing, a grate, a fire-pot, a base-draft, upper, lower and inter-

mediate ring-plates assembled and forming a fire-zone space surrounding the lower edge of the fire-pot, and revertible flues connecting 15 said fire-zone space with the base-draft.

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

CORNELIS F. A. RÖELL.

Witnesses:

J. E. HAINES,
HARRY ROSS.