

No. 688,171.

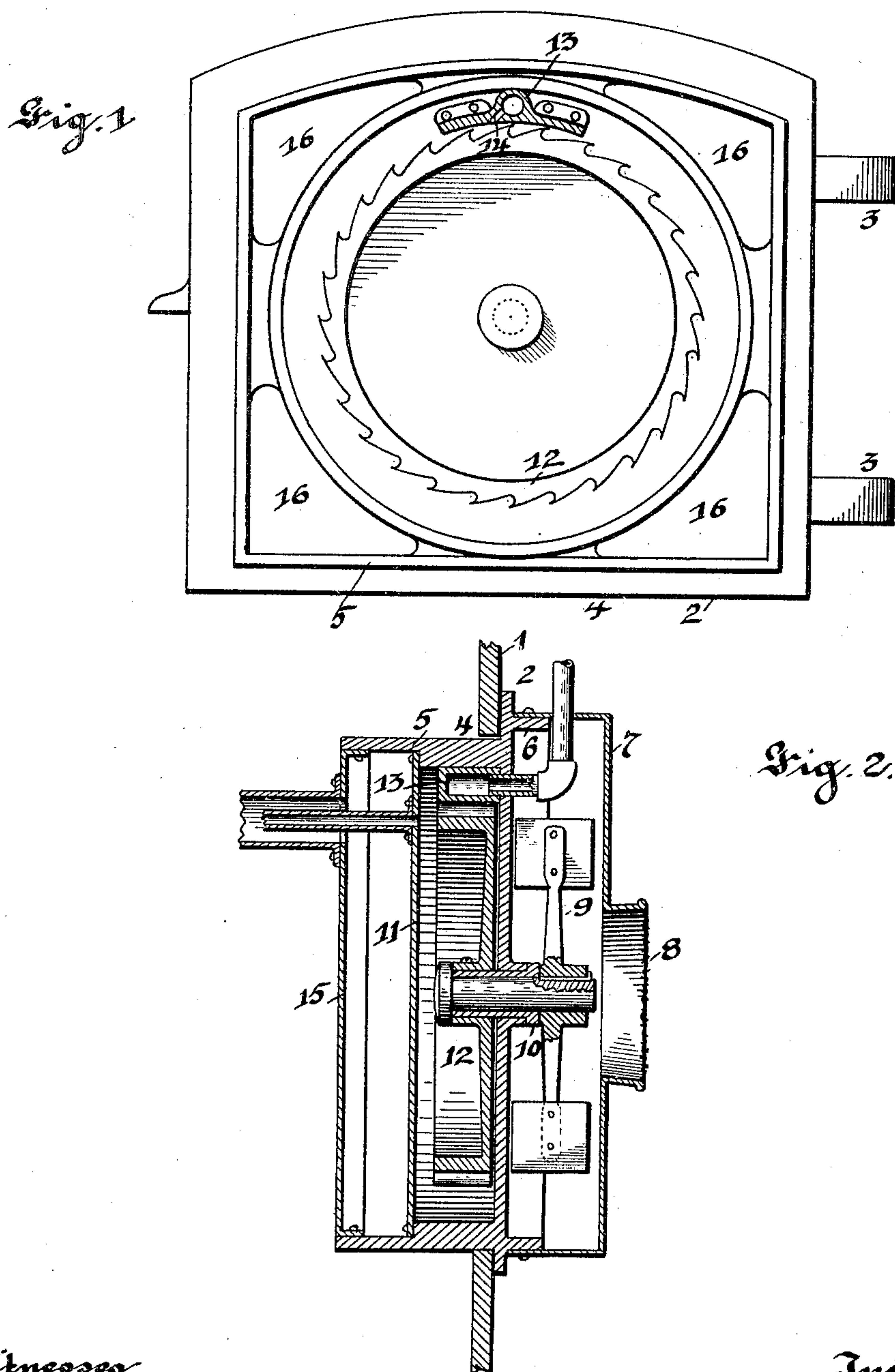
Patented Dec. 3, 1901.

R. W. HAMANN.
SMOKE CONSUMER.

(Application filed July 15, 1901.)

(No Model.)

3 Sheets—Sheet 1.



Witnesses
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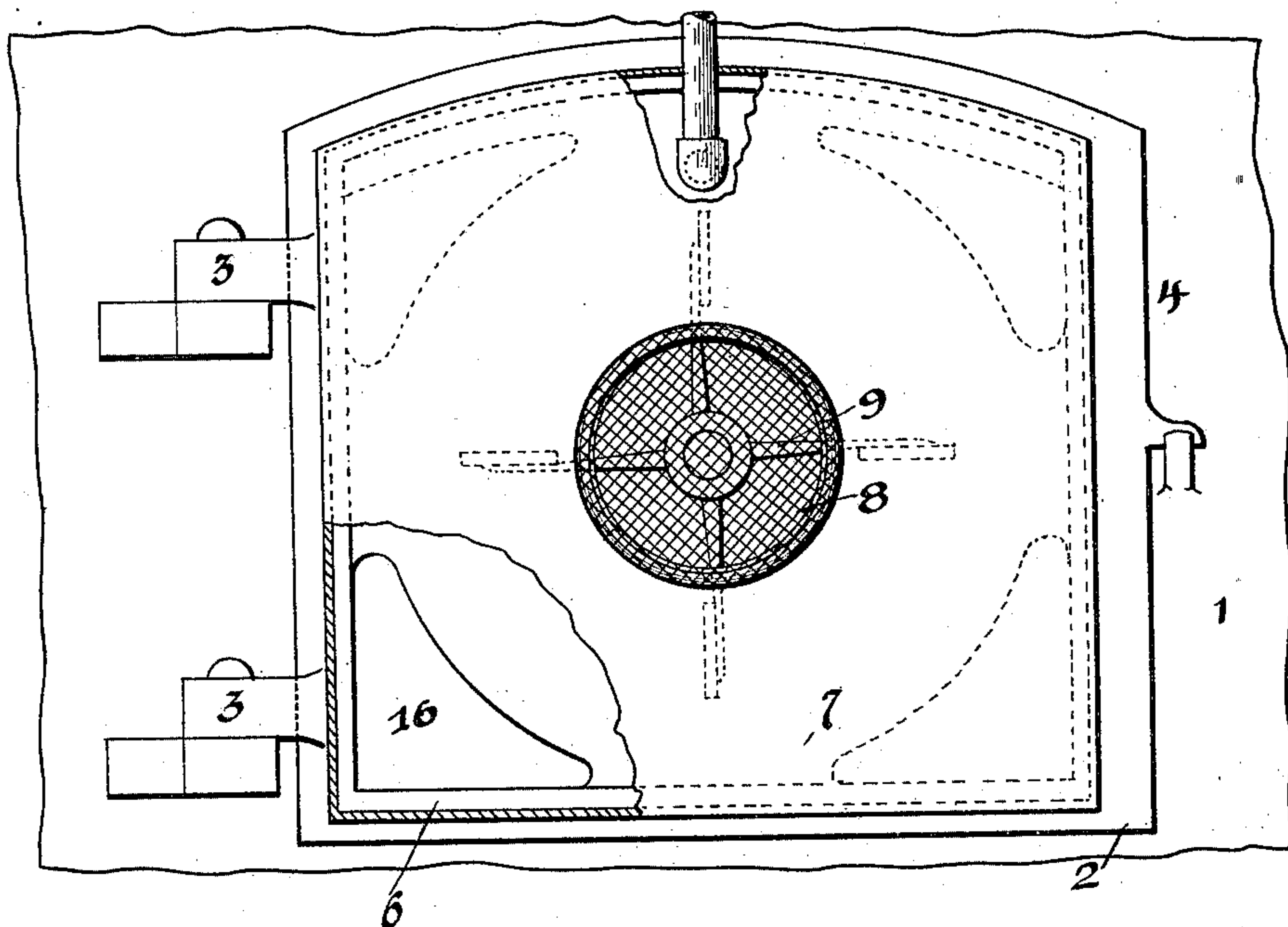
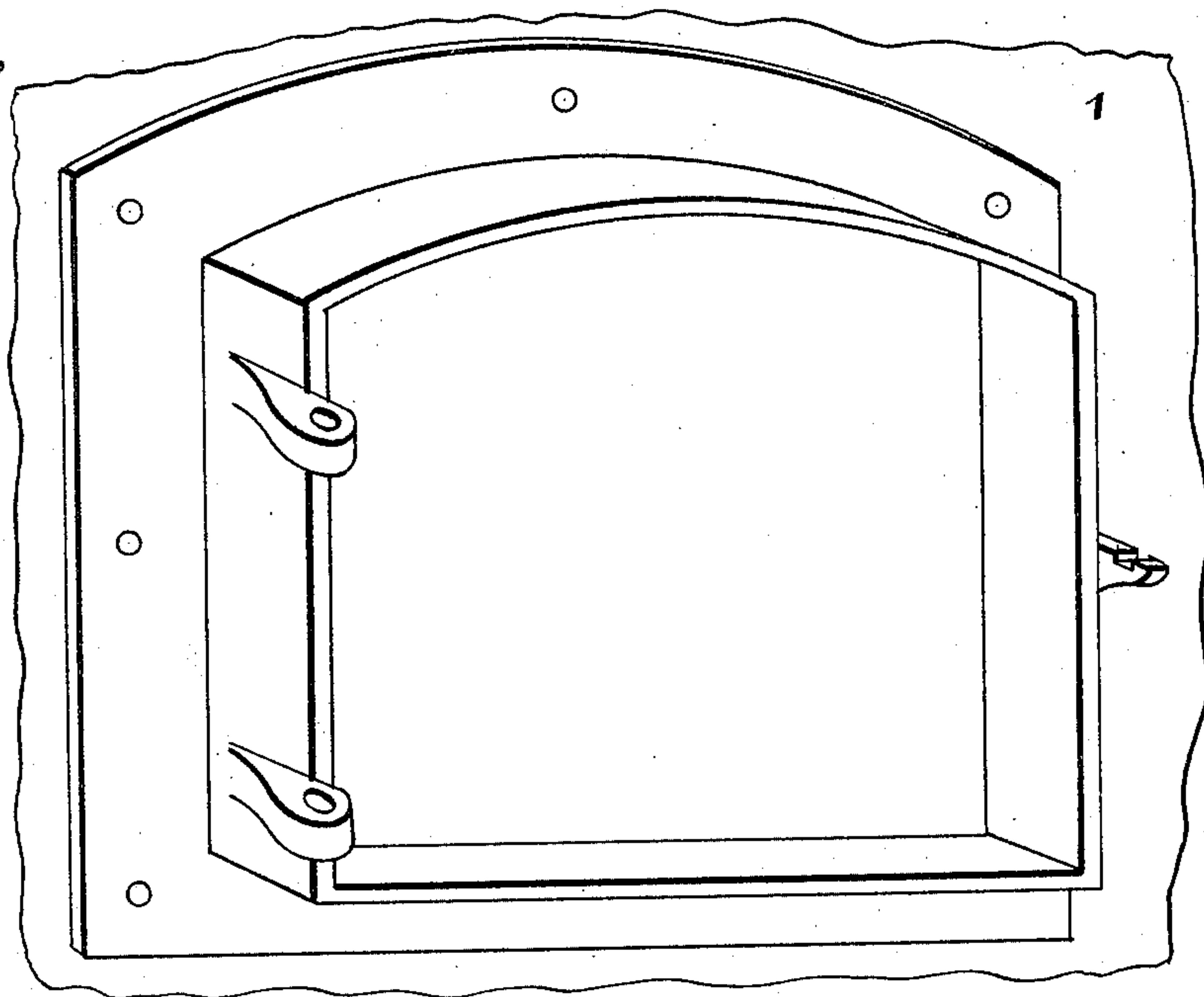


Fig. 3.

Fig. 4.



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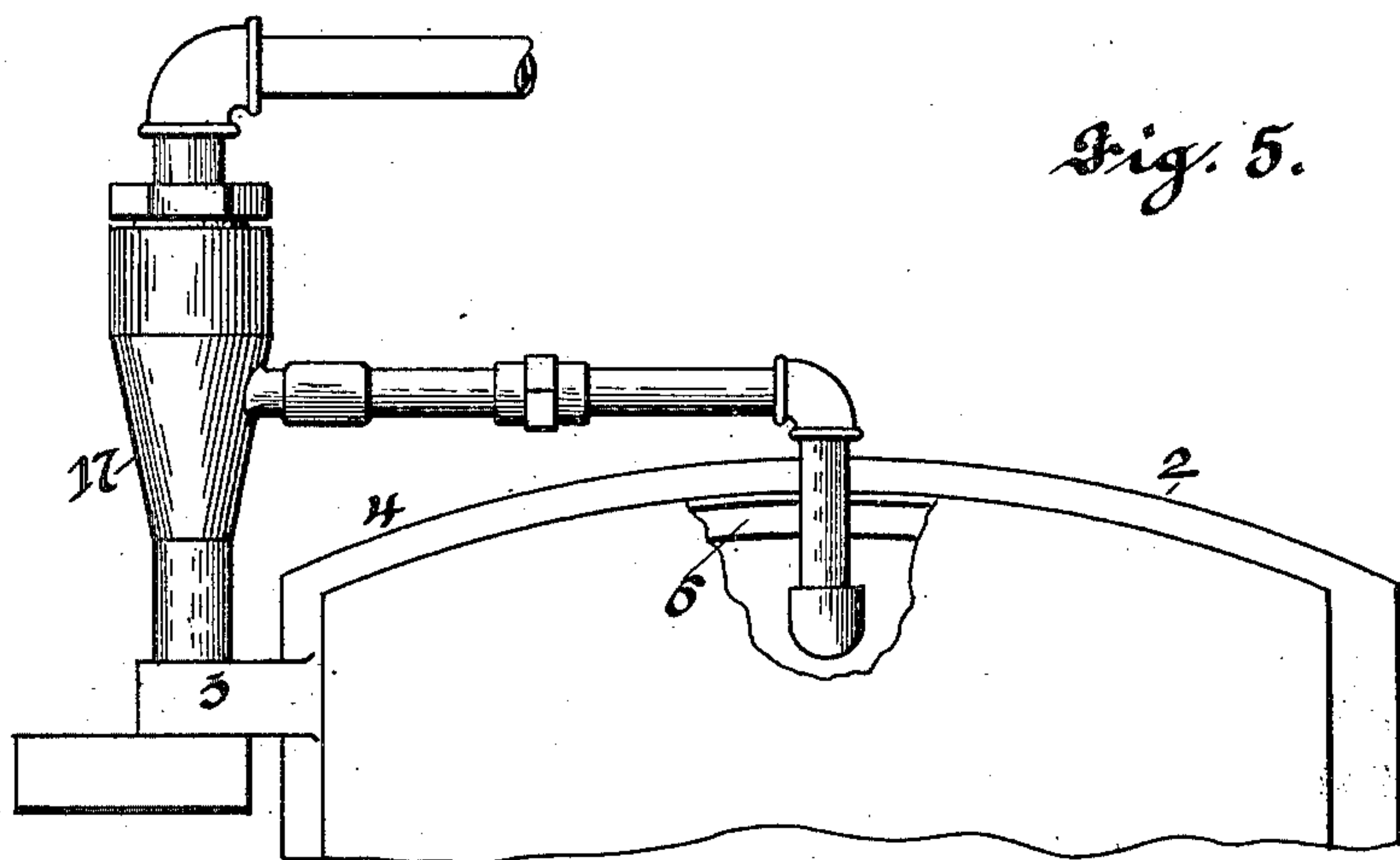
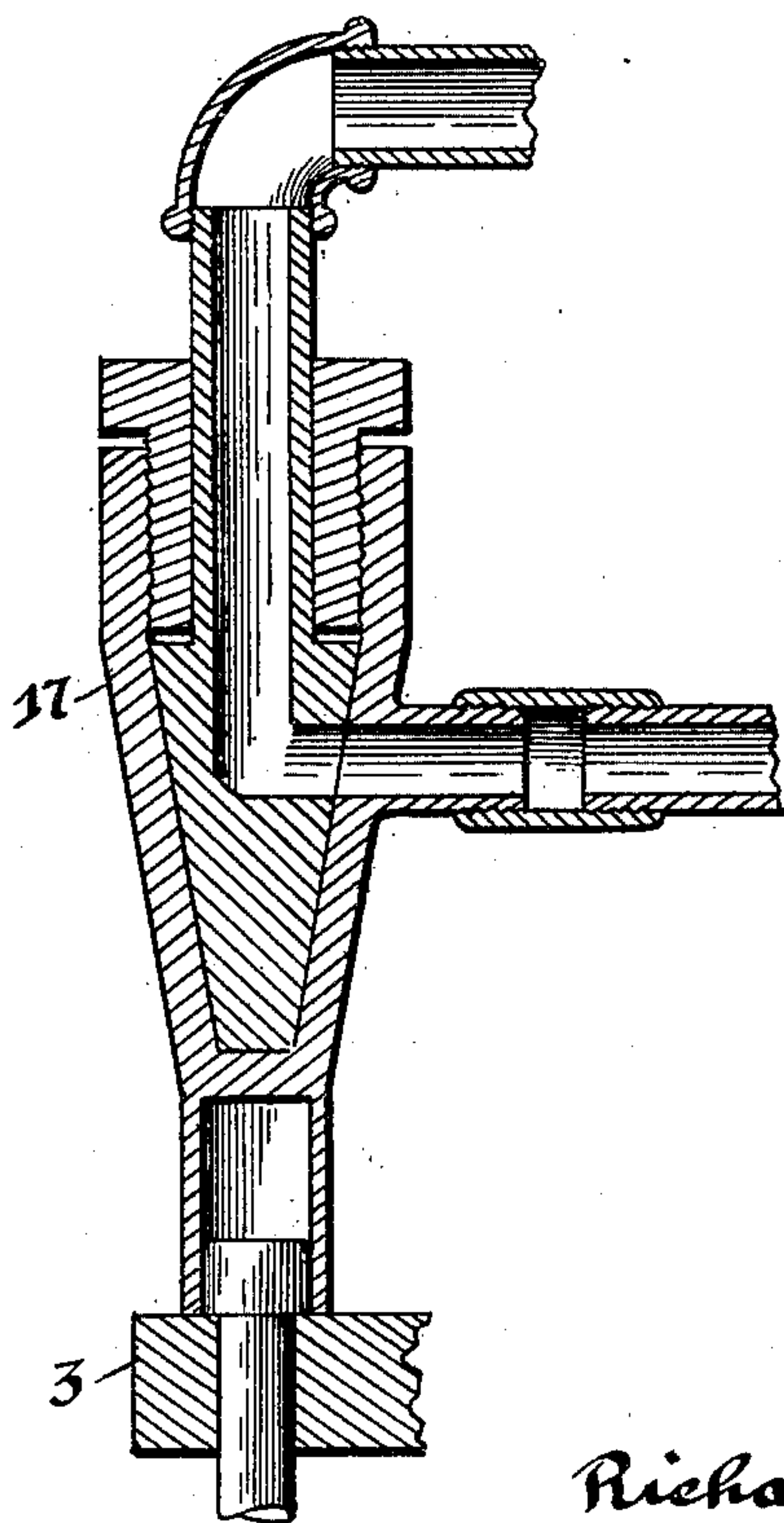


Fig. 5.

Fig. 6.



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UNITED STATES PATENT OFFICE.

RICHARD WILLIAM HAMANN, OF ST. LOUIS, MISSOURI, ASSIGNOR TO
EUGENE J. FEINER, OF ST. LOUIS, MISSOURI.

SMOKE-CONSUMER.

SPECIFICATION forming part of Letters Patent No. 688,171, dated December 3, 1901.

Application filed July 15, 1901. Serial No. 68,301. (No model.)

To all whom it may concern:

Be it known that I, RICHARD WILLIAM HAMANN, of the city of St. Louis, State of Missouri, have invented certain new and useful Improvements in Smoke-Consumers, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

This invention relates to smoke-consumers; and it consists of the novel construction, combination, and arrangement of parts hereinafter shown, described, and claimed.

One object of this invention is to provide a furnace-door with a blast apparatus which will force a blast of air over the fire within the furnace and will greatly facilitate the draft in said furnace, and also combine with the elements to create a perfect combustion of the smoke which arises from the fuel which is applied to the fire.

Another object is to provide means whereby the propelling power of the blast apparatus will be automatically cut off when the furnace-door is opened and again applied when the door is closed, the air in the latter case being admitted through the furnace-door.

Figure 1 is an interior view of my invention with the turbine casing removed. Fig. 2 is a vertical longitudinal section of the same. Fig. 3 is a front view. Fig. 4 is a detail perspective view of a frame made use of in connection with my invention. Fig. 5 is a detail view of the automatic cut-off with its application to the door. Fig. 6 is a detail vertical sectional view of the same.

1 indicates the front section of the furnace-wall, and 2 the furnace-door, which is suitably connected to the furnace-wall by the usual hinges 3. The furnace-door consists of a casting 4, having an internal integral flange 5 and an integral flange 6. Upon the flange 6 is secured in any suitable manner a housing 7, having in its front surface an opening 8, covered with a suitable network. Within this housing I provide a fan 9, mounted upon a shaft having bearing in the center wall of the casting 4 and is held in close running order by a bushing 10, the purpose of which is to prevent the rotation of the shaft from wearing the journal of the center cast-

ing. The inner surface of the flange 5 is provided with a recess wherein a plate 11 is secured having a plurality of exhaust-outlets through which the steam which operates the turbine, as hereinafter described, passes therefrom into the casing formed beyond the said plate 11. Within the space formed by the casting and the plate 11 and mounted upon the bushing and shaft is a turbine 12, which is preferably operated by a steam-jet entering through a casting 13, located in the casing above the turbine, allowing the steam to be admitted through an inclined opening 14. (See Fig. 1.) On the extreme inner end of the flange 5 is a second plate 15, provided with an opening through which the air and exhaust are admitted to pass over the furnace-fire. At each corner of the central wall of the casting 4 is provided an opening 16, leading into the housing 7, the purpose of which is to allow the current of air created by the fan to pass on the outside of the turbine and through the opening previously described. Connected to the upper hinge of the door is an automatic cut-off valve 17, provided with suitable connections through which the steam or other motive power is conveyed to the jet from the source of generation.

In cases where my invention is to be applied to furnaces wherein the furnace-door openings are of smaller or larger diameter I place upon the outer casing of the furnace-wall the frame, as shown in Fig. 4. By this device a uniform size of door may be applied to any opening.

In the use of the automatic cut-off the motive power is regulated by the manipulation of the door, as it is necessary when the door is open to stop the rotation of the fan.

In operation when the fire is started within the furnace the steam-jet is admitted through the automatic cut-off valve 17, passing through the inclined opening 14 to impinge upon the turbine and rotate the same and the fan which is contained within the housing 7. By the admission of the motive power the fan will be very rapidly rotated, creating a current through the opening in the front of the housing 7, and from the said housing it will be driven by the fan through the opening 16

into the space between the plates 11 and 15, from which it passes through the opening hereinbefore referred to over the furnace-fire. The steam is also admitted through this opening and may assist in the perfect combustion of the smoke and gases created by the burning of the coal within the furnace.

This invention is in the nature of an improvement over the invention shown in Letters Patent No. 619,171, which were issued to myself, Richard Williams, and Daniel Boone on the 7th day of February, 1899.

I claim—

A furnace-door, consisting of a wall, an internal flange 5 integral therewith and an external flange 6, a shaft extending through the said wall, a fan 9 mounted on the outer end of said shaft within the flange 6, a turbine 12 on the inner end of the shaft within the flange 5, a housing 7 connected to the external flange and inclosing the said fan and provided with a central opening and there being

a series of openings extending through the wall of the door, a plate 11 secured within the flange 5 and inclosing the turbine, a steam-jet casing 13 supported within the flange 5 adjacent to the turbine and provided with an inclined opening 14 through which the steam passes onto the turbine, a plate 15 supported by the inner end of the flange 5 and forming a housing and there being an opening formed through said plate through which the air can pass over the furnace-door, and a connection leading to said opening from the plate 11 through which the steam can pass over the turbine to the furnace-door, substantially as specified.

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

RICHARD WILLIAM HAMANN.

Witnesses:

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JOHN C. HIGDON.