

No. 748,499.

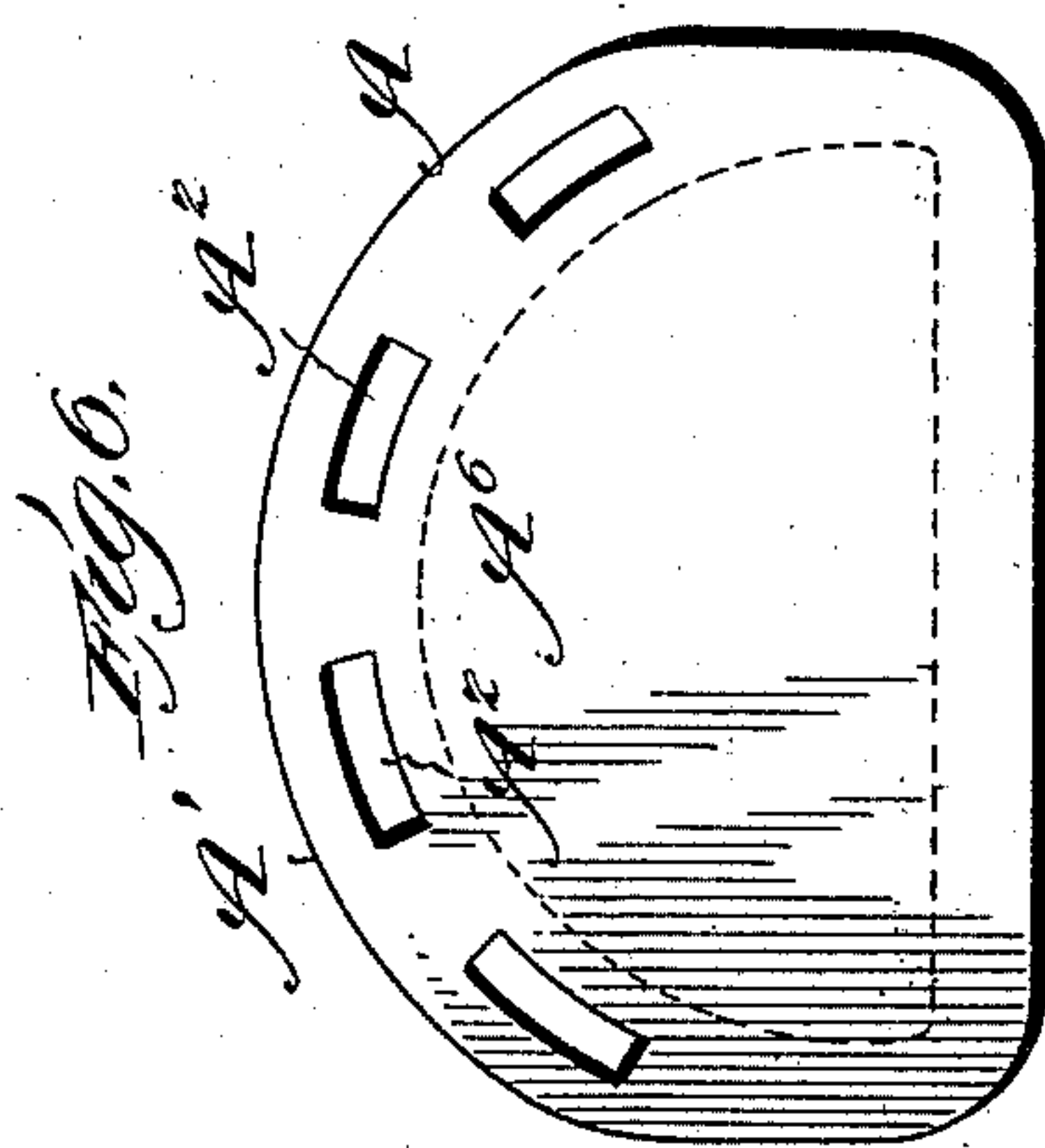
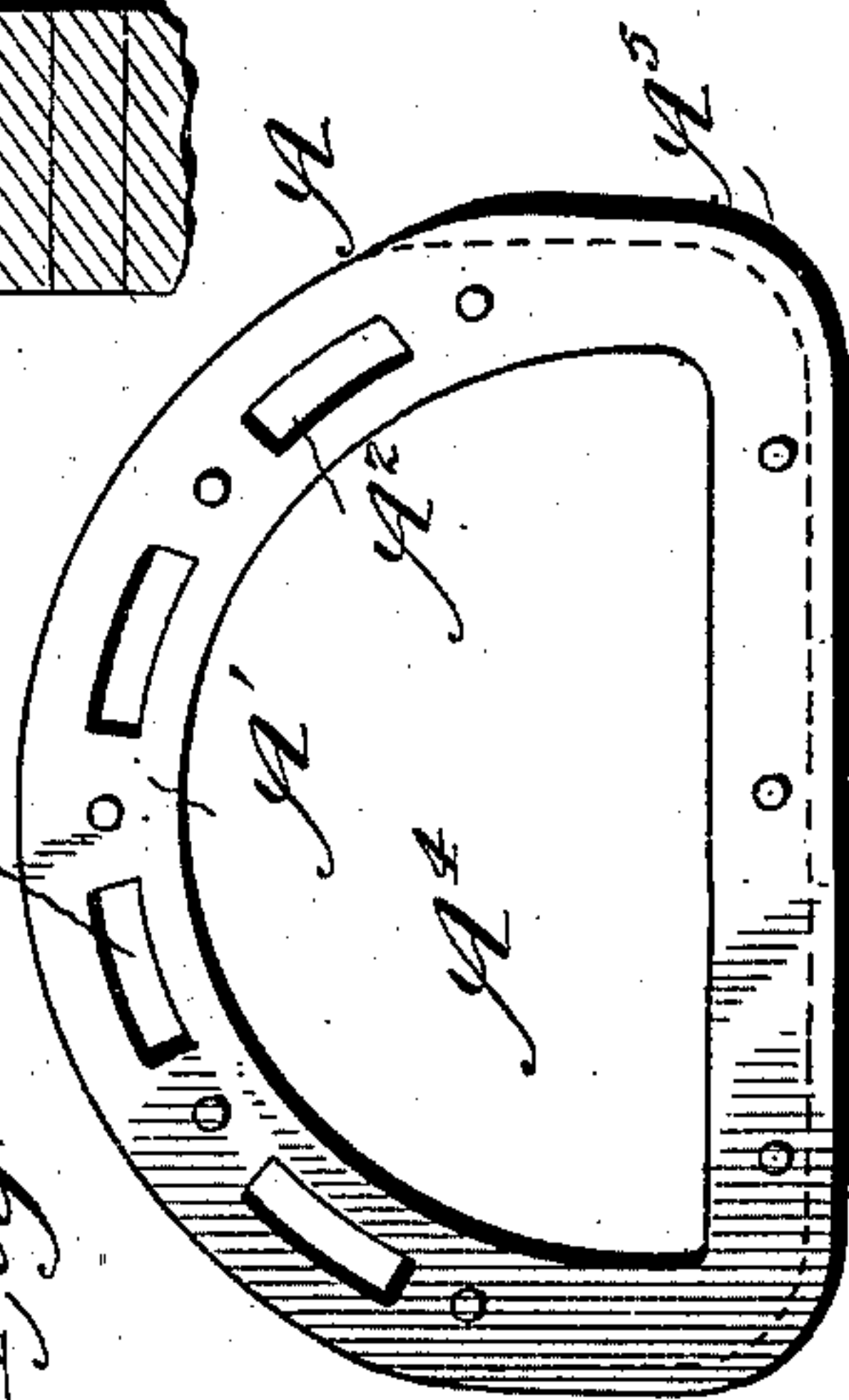
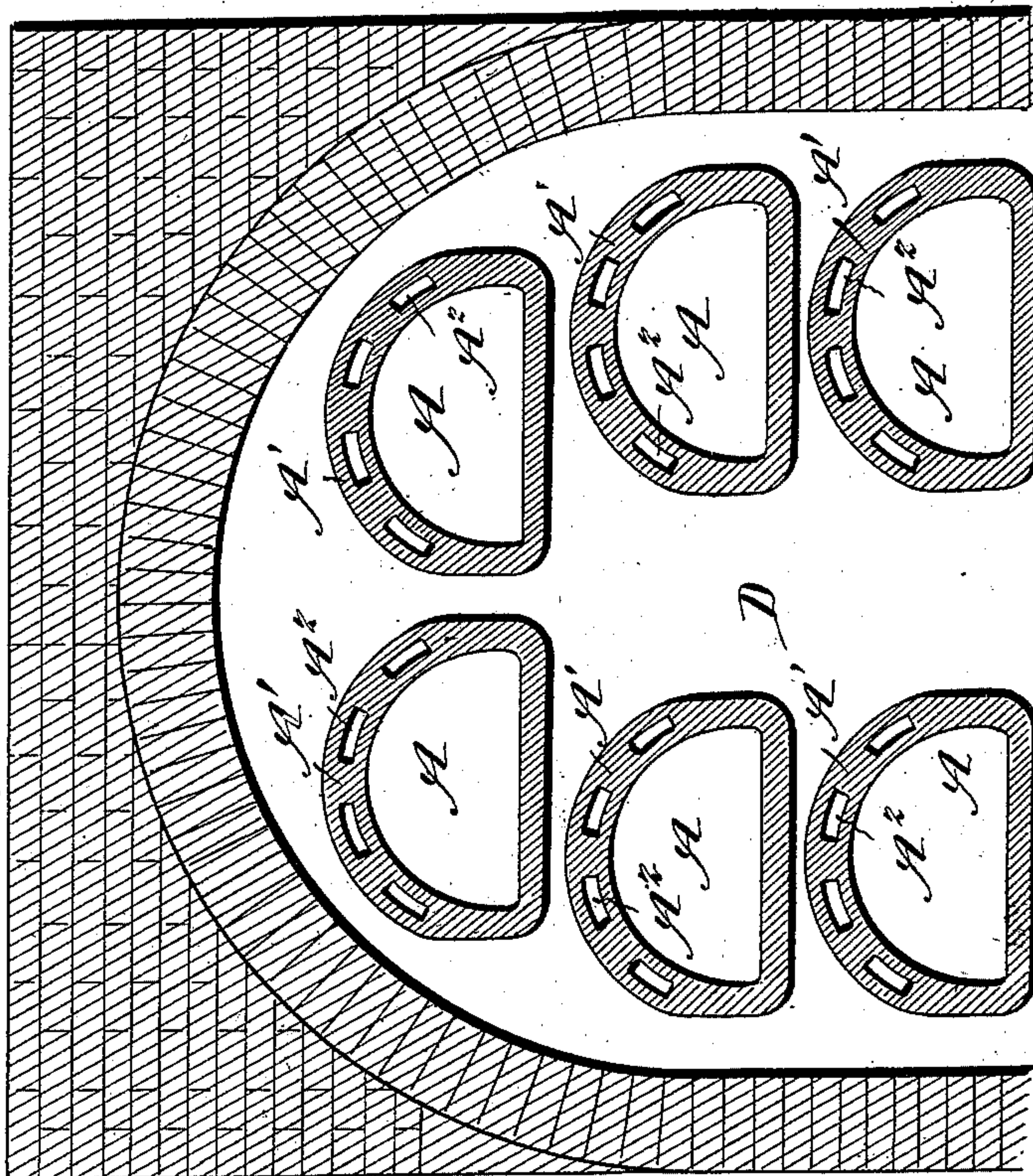
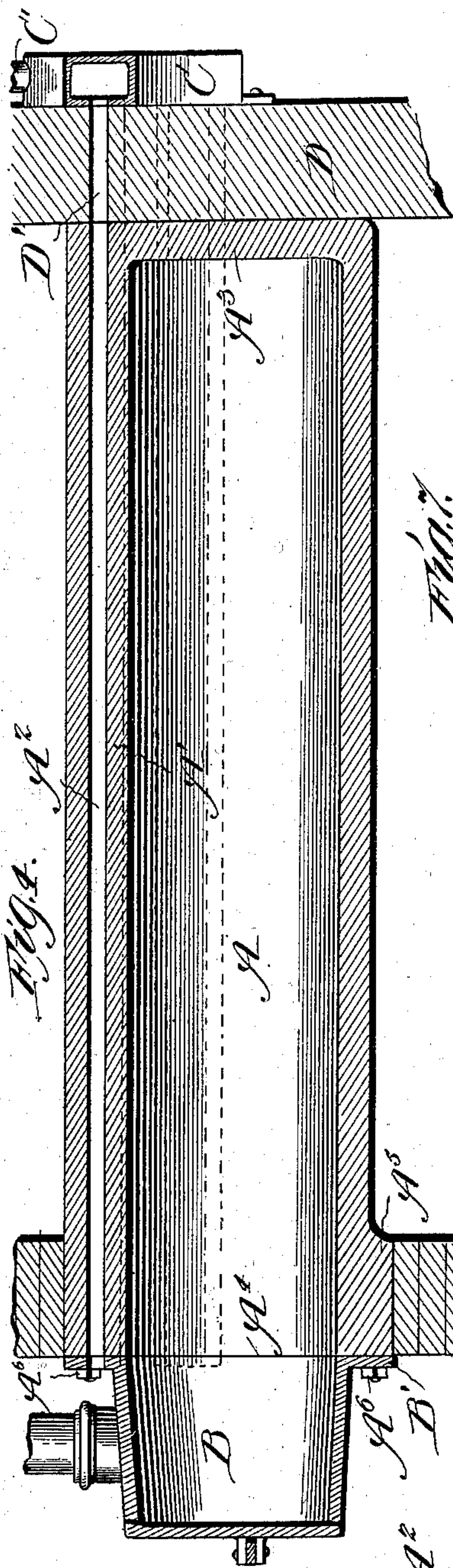
PATENTED DEC. 29, 1903.

W. E. HARTMAN.
GAS RETORT.

APPLICATION FILED MAR. 25, 1903.

2 SHEETS—SHEET 2.

NO MODEL.



WITNESSES:

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GAS-RETORT.

SPECIFICATION forming part of Letters Patent No. 748,499, dated December 29, 1903.

Application filed March 25, 1903. Serial No. 149,497. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM E. HARTMAN, a citizen of the United States, and a resident of Norfolk, in the county of Norfolk and State of Virginia, have made certain new and useful Improvements in Coal-Gas Retorts, of which the following is a specification.

This invention has for its object to provide a retort of the character stated involving peculiar details of construction, whereby overheating of its upper-wall portion is obviated.

The invention also comprehends novel means forming a part of the retort-furnace, whereby drafts of air through an air-passage within the retort's wall may be regulated.

The invention consists of the peculiar retort and draft-regulating means, which will be hereinafter fully described and the novel features thereof pointed out in the subjoined claims.

In order to enable others to make and use my invention, I will now proceed to describe it in detail with reference to the accompanying drawings, which form a part of this specification.

In the drawings, Figure 1 is a view showing my improved retort in use. Fig. 2 is a detail view of a portion of a gas-furnace, showing my invention in front elevation. Fig. 3 is a similar view looking at the rear of a gas-furnace, with my retort shown in dotted lines. Fig. 4 is a longitudinal sectional view taken on line X X, Fig. 2. Fig. 5 is a view looking at the front or open end of my retort. Fig. 6 is a similar view looking at the rear or closed end of my retort; and Fig. 7 is a transverse sectional view through a portion of a coal-gas furnace, showing a series of my improved retorts in transverse section.

My invention in its broad sense involves peculiar means whereby the upper part of a coal-gas retort is rendered less conductive of heat than its lower part.

In carrying out my invention I employ a retort A, having its upper wall A' thickened from end to end, as shown. In the upper wall A', I provide a series of air-passages A², which may extend part way or entirely through the whole length of the said upper wall A'. It will be noticed that the rear end of the retort is closed by a wall A³ and that its forward

or open end A⁴ is reinforced by a projecting flange portion A⁵, whereby the front edge of the retort is strengthened, adapted to withstand strain on the embedded bolts A⁶, by which the mouthpiece B is fixedly secured to the open end of the retort. In adapting the mouthpiece B to be secured in place a flange B' may be formed thereon, having openings through it conforming to the air-passage openings A² in the upper wall of the retort A. Perforations are also provided in the flange B', adapted to receive the securing-bolts A⁶.

In one form of my invention I employ a closed hood C, located on the rear wall D of the furnace, which covers extensions D' of the air-passages A² in the retort A. I also utilize a stack C' in open communication with the hood C. Within the stack C' a damper may be arranged adapted for regulating the induced air-drafts through the passages A². If found desirable, dampers may be arranged at either end of the said air-passages.

While I have described and shown in my drawings one form of retort and connected furnace details, I would have it understood that I do not desire to be limited thereto, since the construction shown and described may be materially modified without departing from the spirit of my invention, which comprehends, first, making the upper part of the retort thicker than its lower part; second, rendering the upper part of the retort less conductive of heat than its lower part; third, employing any number and shape of air-passages in the upper-wall portion of the retort, which passages may extend part way or through the whole length of the retort, the air-passages A² opening to outside air and may be closed by a simple form of regulating-damper.

With my invention gas evolved from coal lying on the bottom of the retort is heated sufficiently to properly fix its hydrocarbon constituents without unduly overheating and decomposing them into their elements.

Among the advantages accruing from my invention may be mentioned the prevention of carbon deposits on the inner top and side walls of the retort. These deposits are formed by excessive heat at the upper part of gas-retorts as they have heretofore been construct-

ed, with the excessive heat decomposing the valuable illuminating constituents of the crude coal-gas.

With my invention the formation of lamp-
 5 black is prevented or materially reduced. It is well known that lampblack is the cause of stoppage in the stand-pipes and in hydraulic mains and also that it is the cause of deterioration in the quality of coal-tar. With
 10 the old form of retort lampblack is formed by the action of excessive heat in its upper part upon the hydrocarbon constituents of the crude coal-gas, decomposing the compounds into their constituent elements—car-
 15 bon and hydrogen. Part of the carbon, in the form of lampblack, is carried along with the gas and deposited, with tar, in the stand-pipes, and some is carried farther along and into the hydraulic main, where it becomes
 20 mechanically mixed with the tar and here producing stoppage because of the non-fluidity of the resulting mixture.

Naphthalene is an unwelcomed by-product of coal-gas manufacture, and to prevent or
 25 reduce the formation thereof is a further object of my invention.

Further advantages and results are attained with my improved retort in the increased yield of ammonia and of a gas of
 30 higher illuminating nature from a given raw material than is possible with the old form of retort, in which much ammonia and a large part of the illuminants are decomposed by excessive heat in the unprotected upper
 35 part of the retort.

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

1. A retort of the character stated having
 40 an upper cellulated wall, through which outer air is circulated, without entrance into the retort or the combustion-chamber of the furnace substantially as described.

2. A retort of the character stated having
 45 a series of air-passages through its upper wall substantially as described.

3. A retort of the character stated having an upper thickened wall with a series of air-passages therethrough closed from the interior of the retort and the combustion-chamber
 50 of the furnace, substantially as described.

4. A retort of the character stated having an air-passage through its upper wall and which passage is closed against communication
 55 with the interior of the retort and also

the furnace combustion-chamber substantially as described.

5. A retort of the character stated having an air-passage through its upper walls and means whereby air-draft through the said pas-
 60 sages may be regulated substantially as described.

6. The combination with a retort of the character stated having a series of air-passages through its upper wall, and with the
 65 said passages communicating with the outer air, of dampers at the ends of the said air-passages substantially as described.

7. The combination in a coal-gas furnace, of a retort having air-passages through its upper wall, means whereby air-draft through the said passages may be regulated, and means whereby increased drafts of air through the said upper-wall portion is effected, substantially as described.
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8. The combination in a coal-gas furnace, of a retort, or retorts, having air-passages through the upper-wall portion thereof and with the said passages in communication with the outer air, dampers at the ends of the said
 80 air-passages, and a stack communicating with the exit end of all the said air-passages, substantially as described.

9. The combination in a coal-gas furnace, of a retort or retorts, having an air-passage
 85 through the upper-wall portion thereof and with the said passage in communication with openings through the furnace-walls, a damper at the end of the said air-passage outlet, substantially as described.
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10. The combination in a coal-gas furnace, of a retort, or retorts, having an air-passage through the upper-wall portion thereof and with the said passage in communication with openings through the furnace-walls, a stack
 95 in communication with the exit end of the said air-passage, substantially as described.

11. The combination in a coal-gas furnace of a retort, or retorts, having air-passages through the upper wall portion thereof and
 100 with the said passages in communication with openings through the furnace-walls, a stack in communication with the exit ends of the said air-passages, and means whereby draft of air through the said passages may be regulated, substantially as described.
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Witnesses:

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