

No. 614,368.

Patented Nov. 15, 1898.

G. F. CRAMER.  
VENTILATOR.

(Application filed Feb. 26, 1898.)

(No Model.)

Fig. 1.

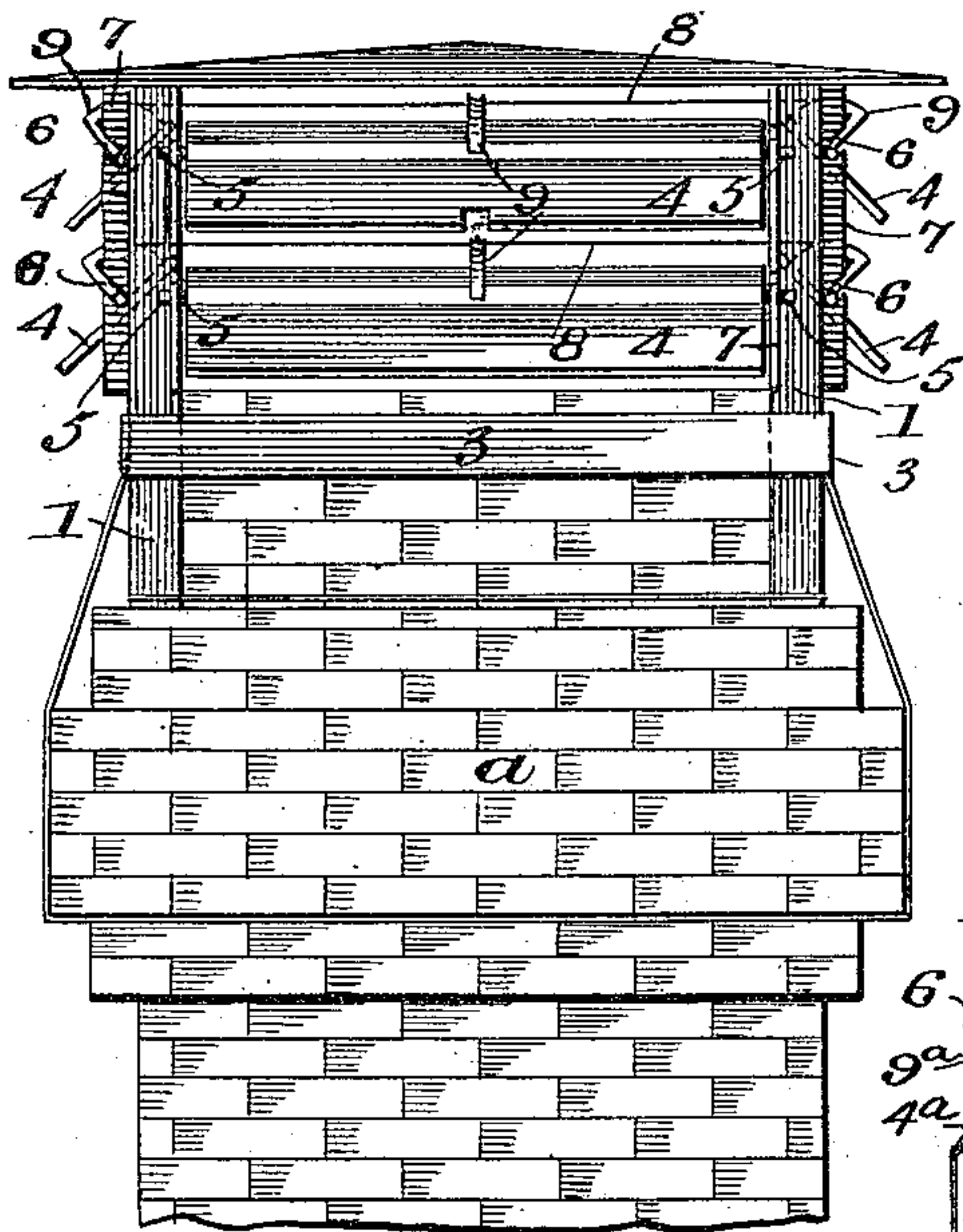


Fig. 3.

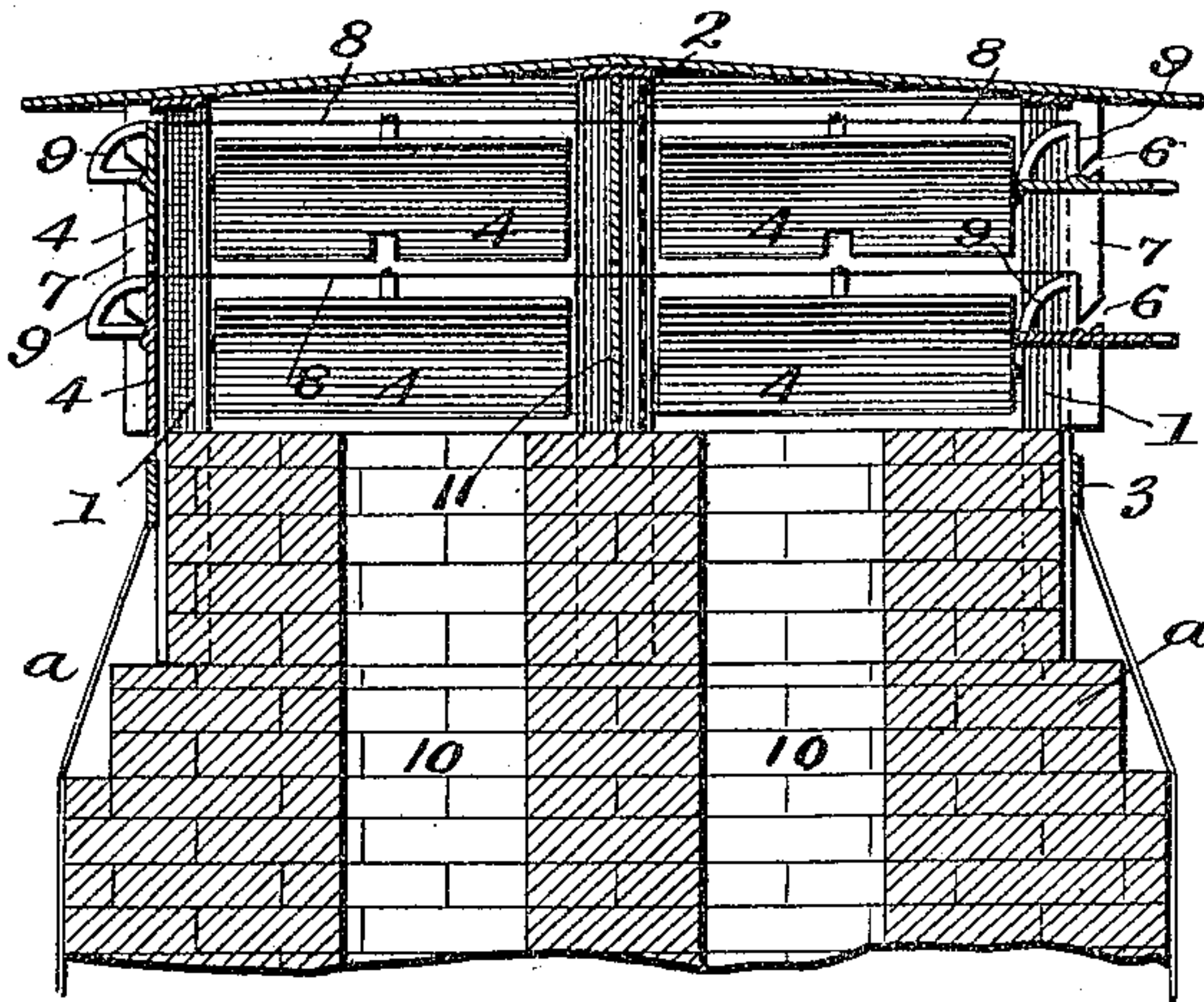


Fig. 6.

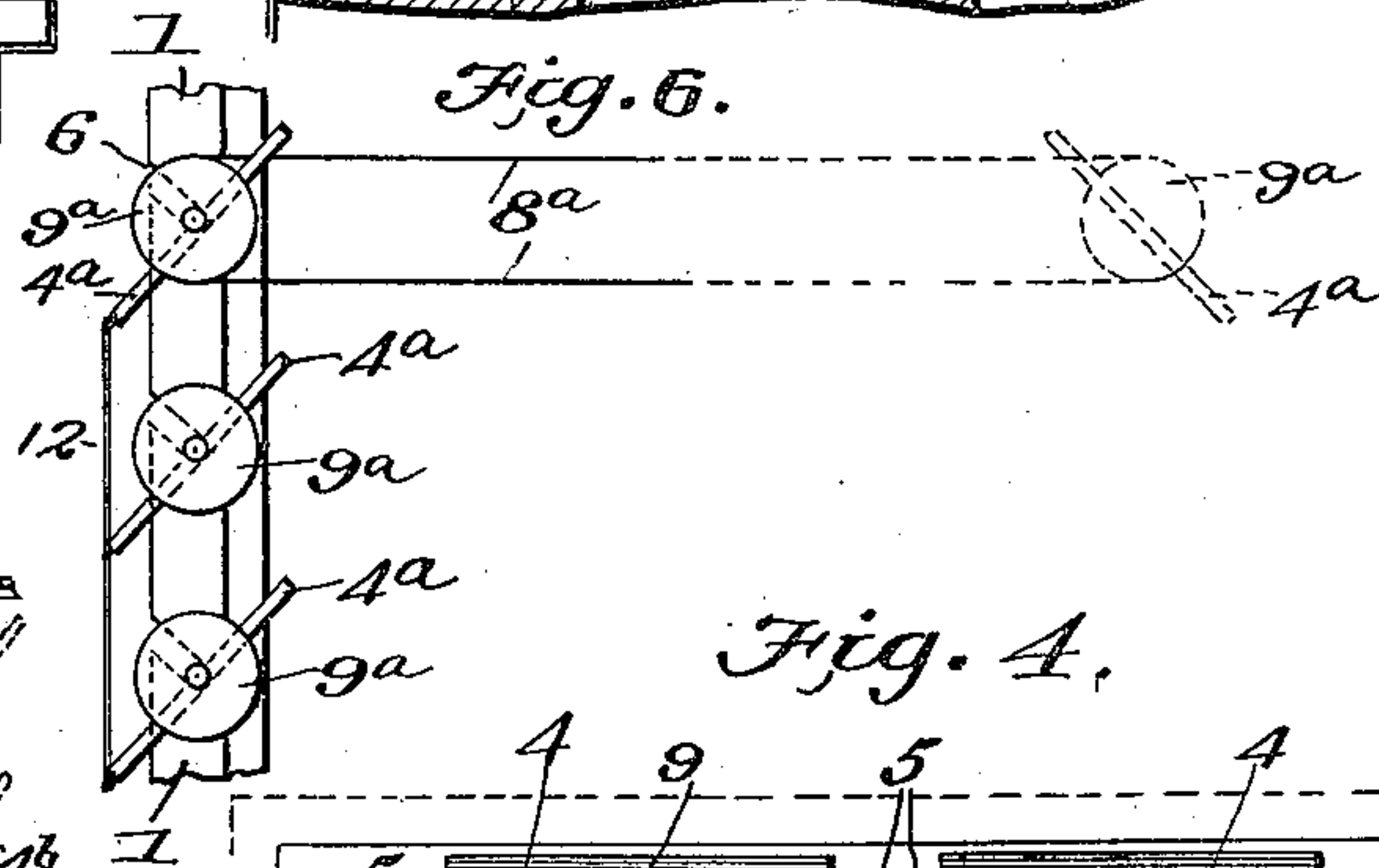


Fig. 7.

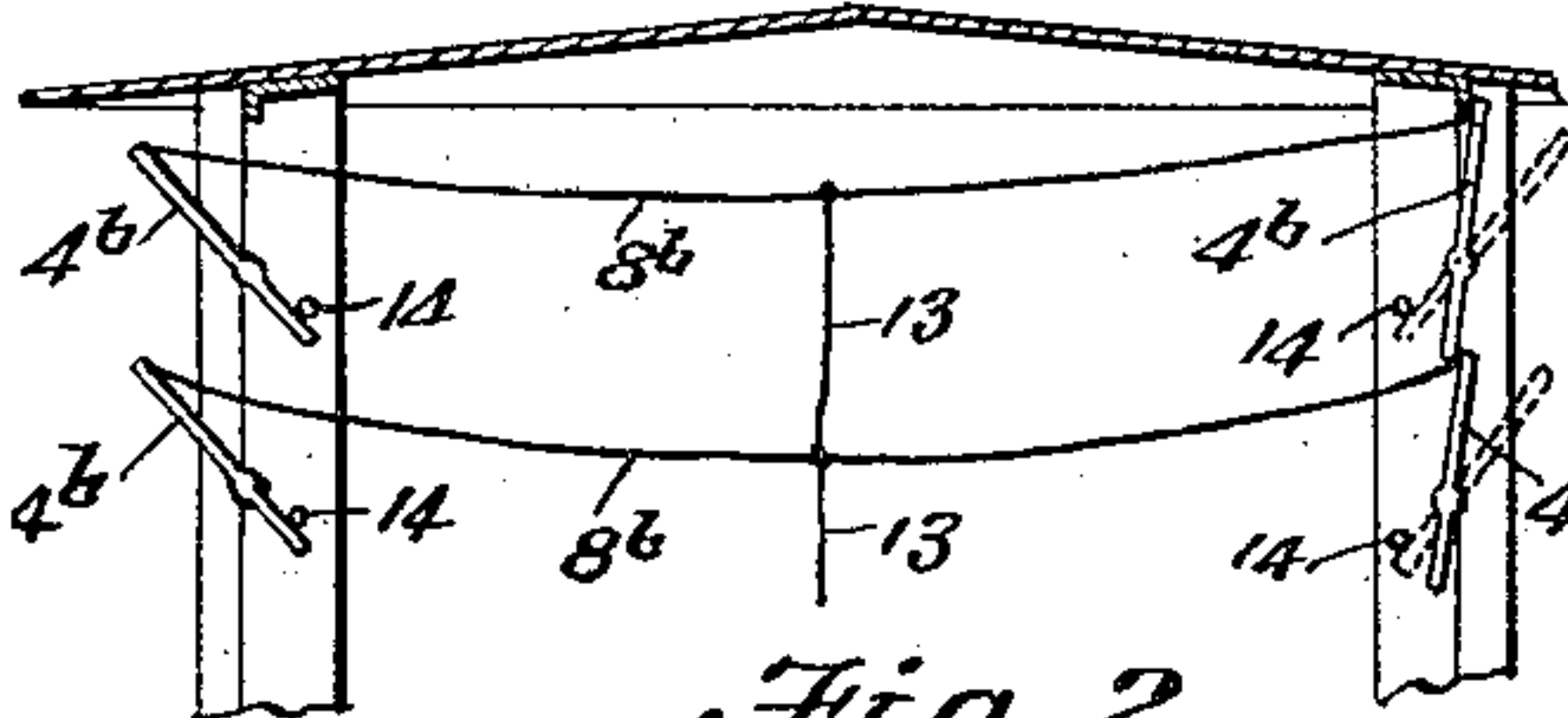


Fig. 2.

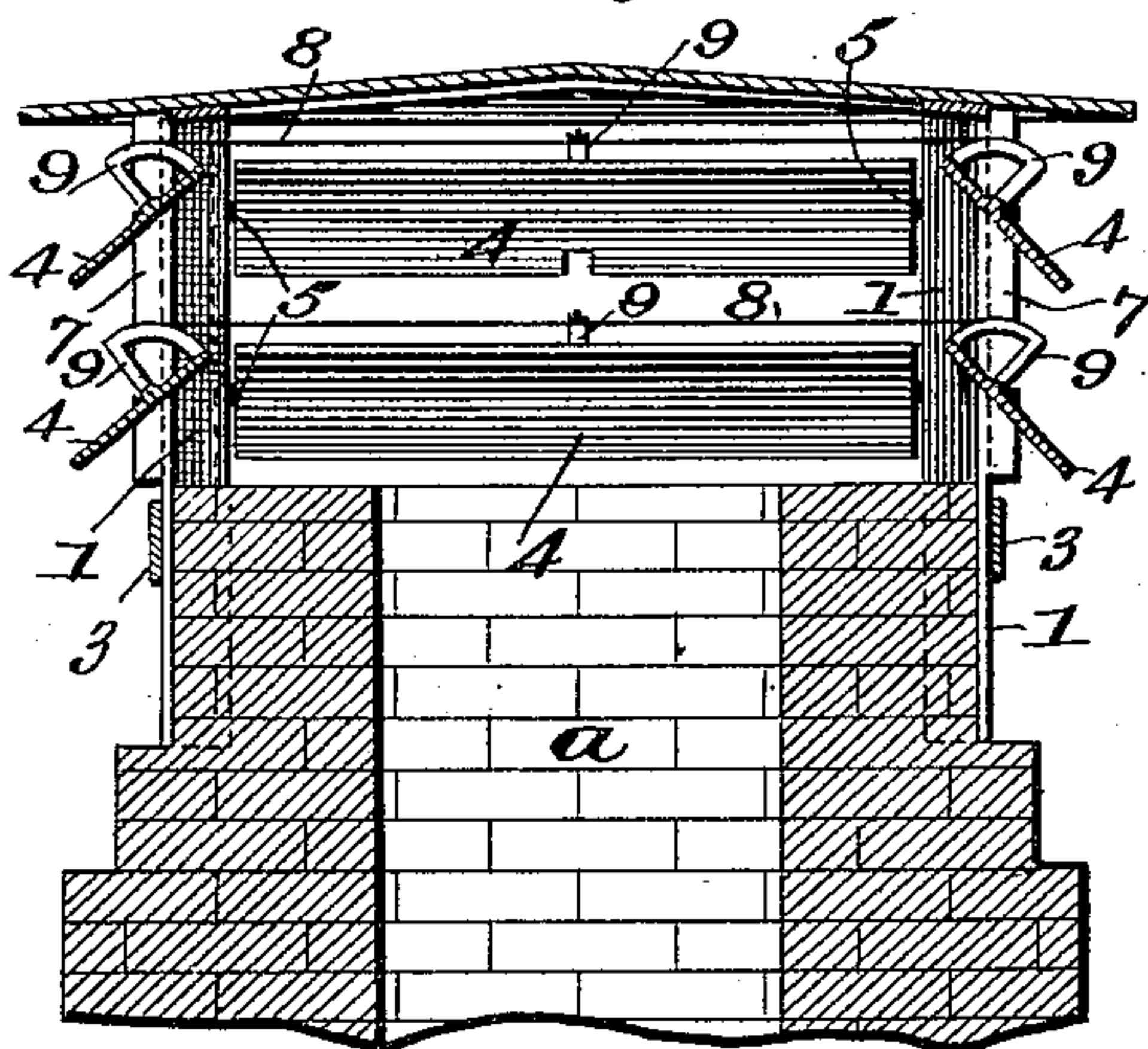


Fig. 4.

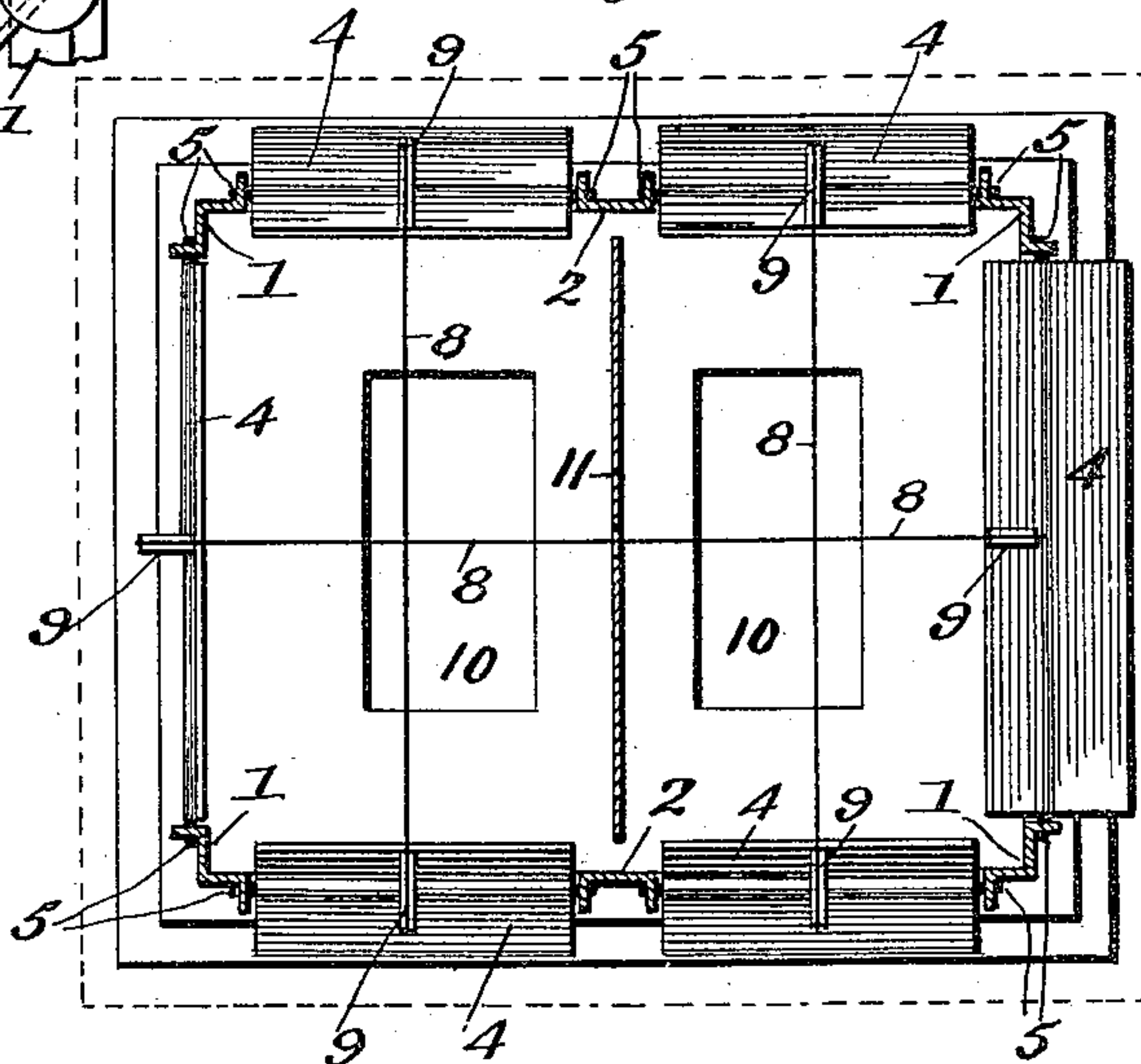
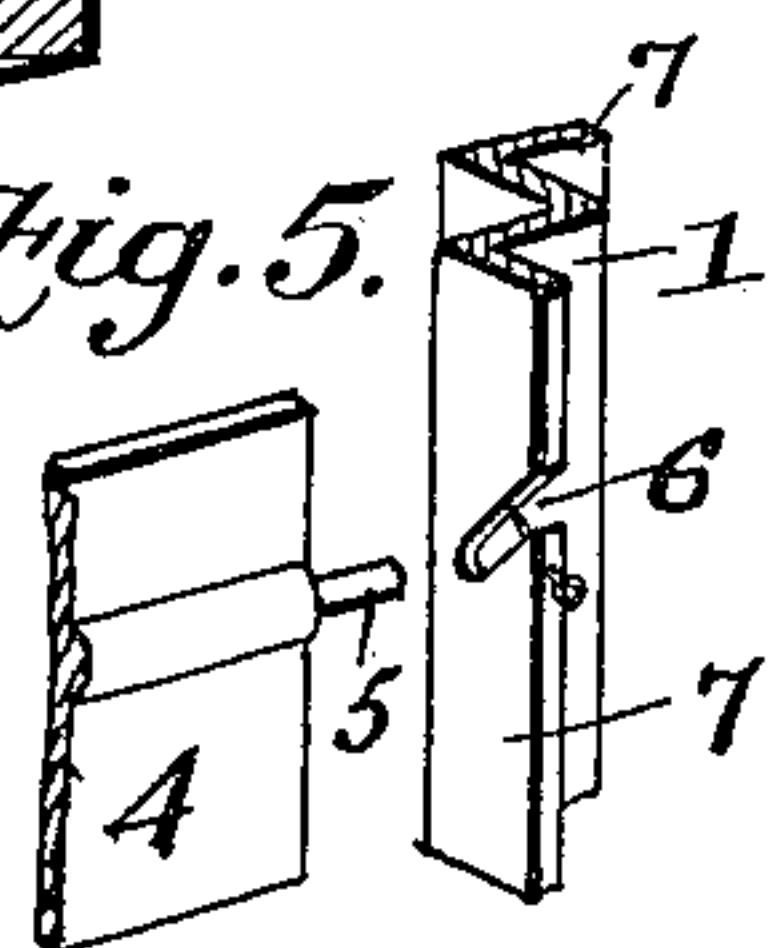


Fig. 5.



WITNESSES:

*M. D. Blondel*  
*Amos W. Hart*

INVENTOR

*Gustav F. Cramer.*

BY *Munn & Co.*

ATTORNEYS.



# UNITED STATES PATENT OFFICE.

GUSTAV FRIEDRICH CRAMER, OF PORTLAND, OREGON.

## VENTILATOR.

SPECIFICATION forming part of Letters Patent No. 614,368, dated November 15, 1898.

Application filed February 26, 1898. Serial No. 671,868. (No model.)

*To all whom it may concern:*

Be it known that I, GUSTAV FRIEDRICH CRAMER, a citizen of the United States, residing at Portland, in the county of Multnomah and State of Oregon, have invented certain new and useful Improvements in Ventilators, of which the following is a full, clear, and exact specification.

My invention is an improvement in ventilators for chimneys, buildings, granaries, mines, &c., which are adapted to operate automatically upon the vacuum principle—that is to say, which may be so acted on by the force of the wind as to tend to create a partial vacuum in the shaft or other inclosed space below, whereby an ascending draft is created.

The details of construction, arrangement, and operation are as hereinafter described, and shown in the accompanying drawings, in which—

Figure 1 is a side view of my invention applied to a chimney-top. Fig. 2 is a vertical section of the same. Fig. 3 is another vertical section made at right angles to the section in Fig. 2. Fig. 4 is a horizontal section. Fig. 5 is a detail perspective showing the detachable connection of the rotary slats with the supporting-posts. Fig. 6 shows a modification. Fig. 7 is another modification.

The metal hood or frame of the ventilator is constructed of a conical top plate, four vertical angle-iron uprights or corner-posts 1, two intermediate posts 2, and transverse or horizontal bars 3, which rigidly connect the said posts 1 2, as shown. The lower portions of the several uprights or posts 1 2 are in practice secured to a chimney or other superstructure. In this instance they fit closely to the corners and flat sides of the chimney-top *a*. Between each two of the uprights or posts 1 and 2 is arranged a series of horizontal slats 4, which are so pivoted, one below the other, as to swing easily in the same vertical plane. In this instance, the frame or hood being four-sided, there are four sets of slats. I show but two such slats 4 in a series, but the number may be greater if conditions require. Each slat 4 is provided at its ends with gudgeons or short journals 5, which are arranged above its median longitudinal line, so that the slats are practically weighted on one side and nor-

mally tend to hang vertical. The surface area of the slats below the pivots is also obviously greater than the portion above the latter. The journals 5 have their bearings in open upwardly-inclined slots 6, formed in parallel flanges 7 of the uprights 1 and 2, so that the slats may be readily inserted in or removed from their places. Each slat 4 is connected with the diametrically opposite one by means of a wire cord 8 or equivalent, so that they will swing and are adjustable together and in opposite directions. For this purpose the wires 8 are connected with the upper portions of the slats 4, and to allow due range of movement of the latter the wires 8 are attached to and work on the arcs of quadrants 9, that are secured to the upper portion and outer sides of the slats, as shown.

The wires 8 are of such length that the two slats 4 which they connect cannot both be closed at the same time, one being always open when the other is closed, and when one is at an angle of forty-five degrees the opposite one hangs at the same angle, as shown in Fig. 2.

It is apparent from the construction and arrangement of parts above described that the wind blowing upon the slats 4 on one side of the hood or frame will close or tend to close them in consequence of the greater surface area of the portion of the slats being below their pivots 5, and also that such movement will necessarily cause the opposite slats to open correspondingly, as shown by full lines in Fig. 3, so that an upward draft in the chimney is induced by the partial vacuum produced on the open side of the hood.

From whatever direction the wind blows it will obviously cause the slats on that side to close more or less and those connected with it on the opposite side to open to the same extent automatically, thus insuring a draft and effecting ventilation whenever there is a wind or breeze of due force.

I propose to employ any suitable means for connecting the slats 4, whereby opposite ones will be caused to turn together, but with different effects.

The wires 8 employed as shown in this instance are duly flexible, but chains or cords may be used instead.

The slat-pivots 5 may be held in the slots 6



by means of a pin inserted as shown in Fig. 5. For this function, however, I propose to employ any suitable device.

In Fig. 6 I illustrate a modification. In place of the quadrants before described I secure grooved pulleys 9<sup>a</sup> to opposite slats 4<sup>a</sup>, preferably at one end of the same, and apply an endless wire or chain 8<sup>a</sup> thereto. The said wire is fastened to the pulleys 9<sup>a</sup> at *x*, and hence the slats are balanced and caused to rotate together and their pivots held in place, so that the slats 4<sup>a</sup> cannot be dislodged by a violent wind. I also connect a series of slats 4<sup>a</sup>, which are hung in the same vertical plane, by means of a rod 12, so that all the slats will move in unison. By this combination of parts one wire or chain suffices for two opposite series of slats.

In Fig. 7 I illustrate another modification, in which the slats 4<sup>b</sup> are pivoted below their middle, so that their upper portions, which are connected by a wire 8<sup>b</sup>, overbalance the lower portions, and the slats being held at a slight inclination when closed those on one side will open automatically when the slats on the other side are closed by the force of the wind. A pull-cord 13 is attached to the wires, so that both sets of opposite slats may be closed and held closed when desired. A

stop-pin 14 limits the outward movement or swing of the slats.

When there are adjacent flues 10 in the same chimney, as shown in Fig. 3, partition-plates 11 may be placed vertically between their mouths to prevent smoke from one flue passing into the next one.

What I claim, and desire to secure by Letters Patent, is—

1. A ventilator comprising a frame or open-sided hood, slats pivoted horizontally and eccentrically thereon, devices having a curved rim and secured to said slats, and wires or equivalents attached to and connecting said devices, substantially as shown and described.

2. A ventilator comprising a frame or open-sided hood, slats pivoted horizontally on the same, at points above their transverse middle, quadrants applied to the upper portions of the slats, exteriorly, and wires, or equivalents, attached and connecting the quadrants of diametrically opposite slats, said wires being of such length as to hold both the connected slats normally open at an angle to each other, as shown and described.

GUSTAV FRIEDRICH CRAMER.

Witnesses:

H. W. FRIES,  
Mrs. M. AUGERSTEIN.