

No. 863,059.

PATENTED AUG. 13, 1907.

J. ELMER.

VENT FOR THE ESCAPE OF COMBUSTION GASES IN BURNING BUILDINGS.

APPLICATION FILED NOV. 17, 1906.

2 SHEETS—SHEET 1.

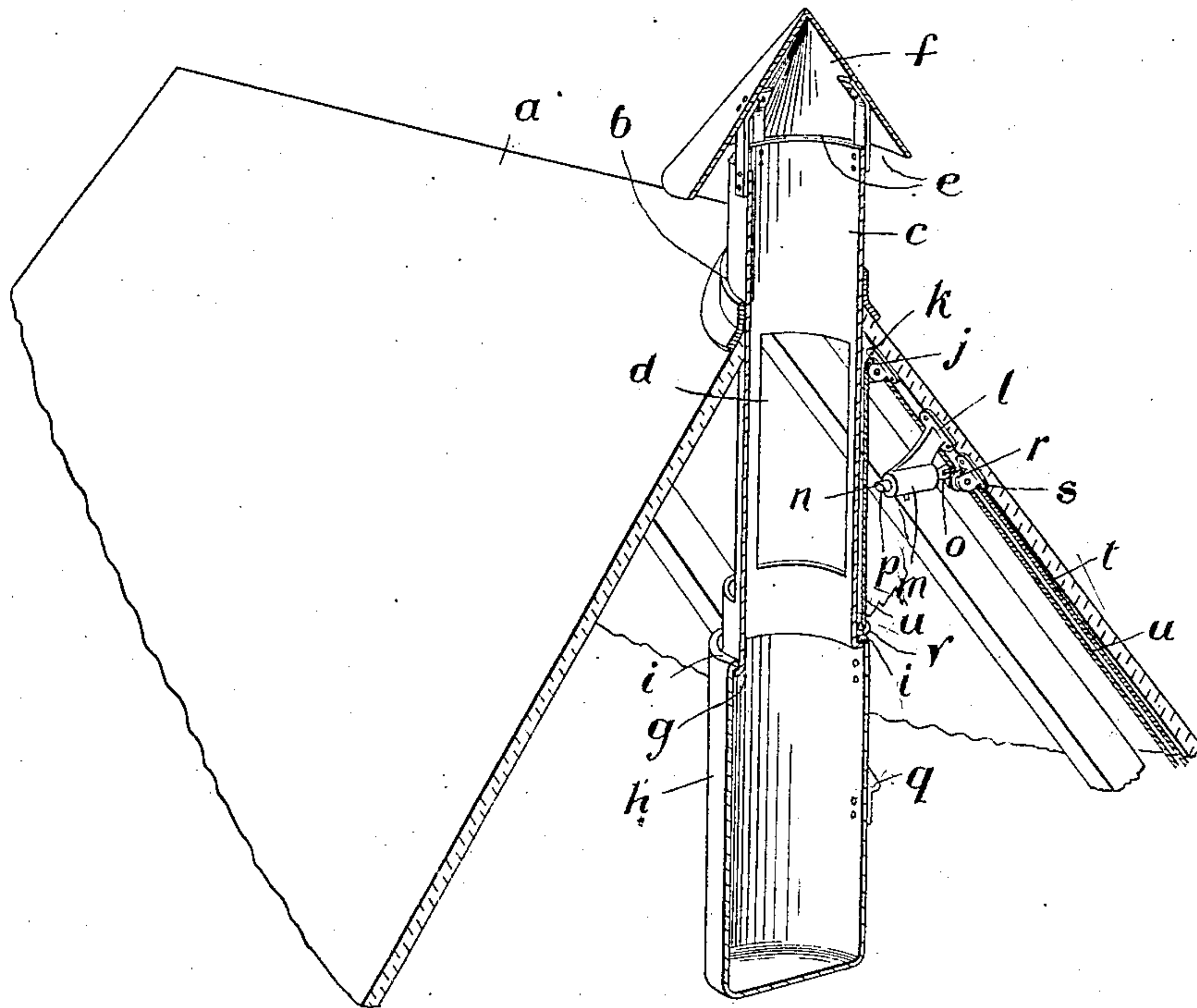
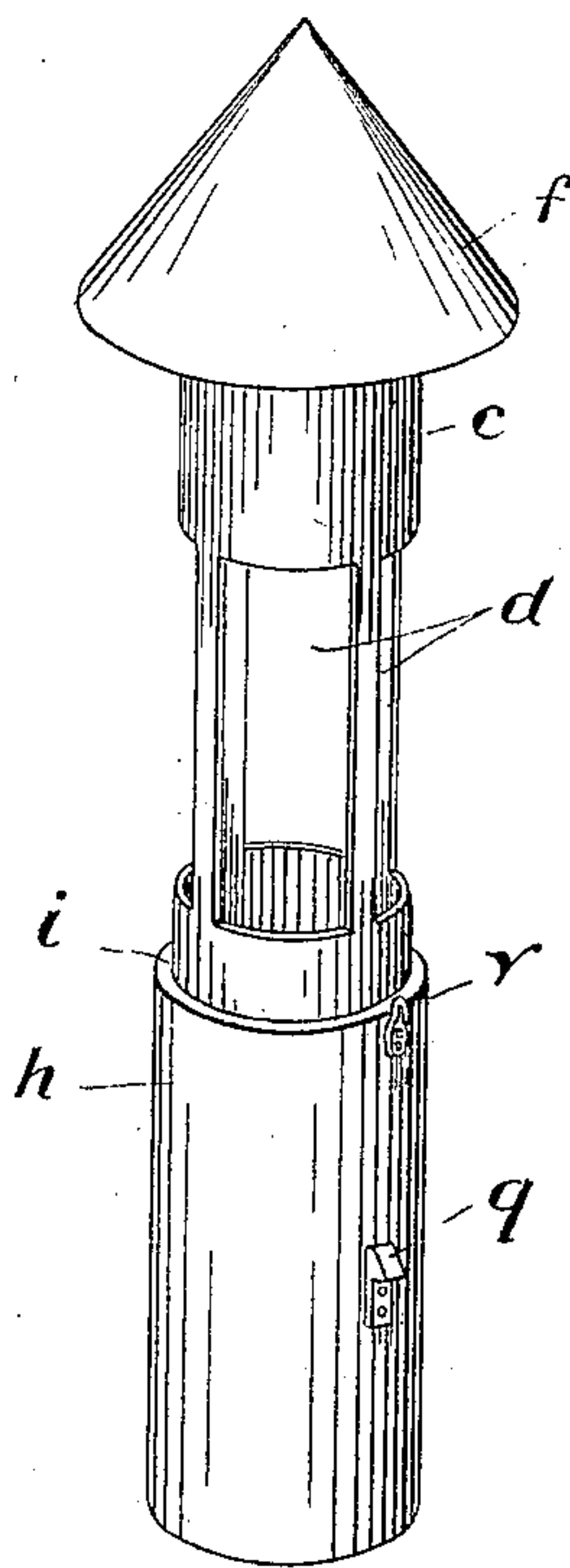


Fig. 1.

Fig. 2.



Witnesses  
H. C. Morrison  
H. C. Gordon.

Inventor  
John Elmer  
by E. J. Fetherstonhaugh  
Atty

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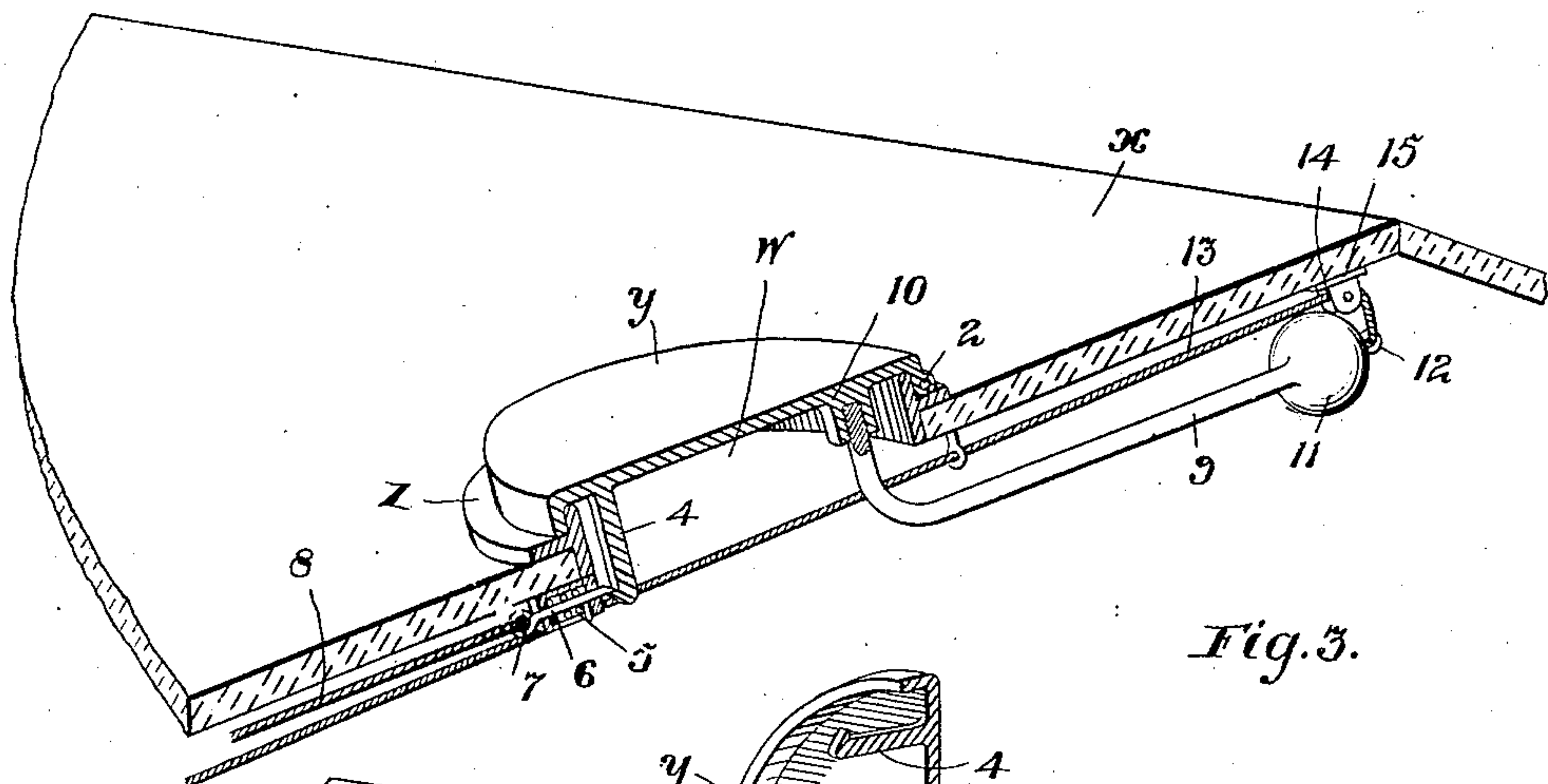


Fig. 3.

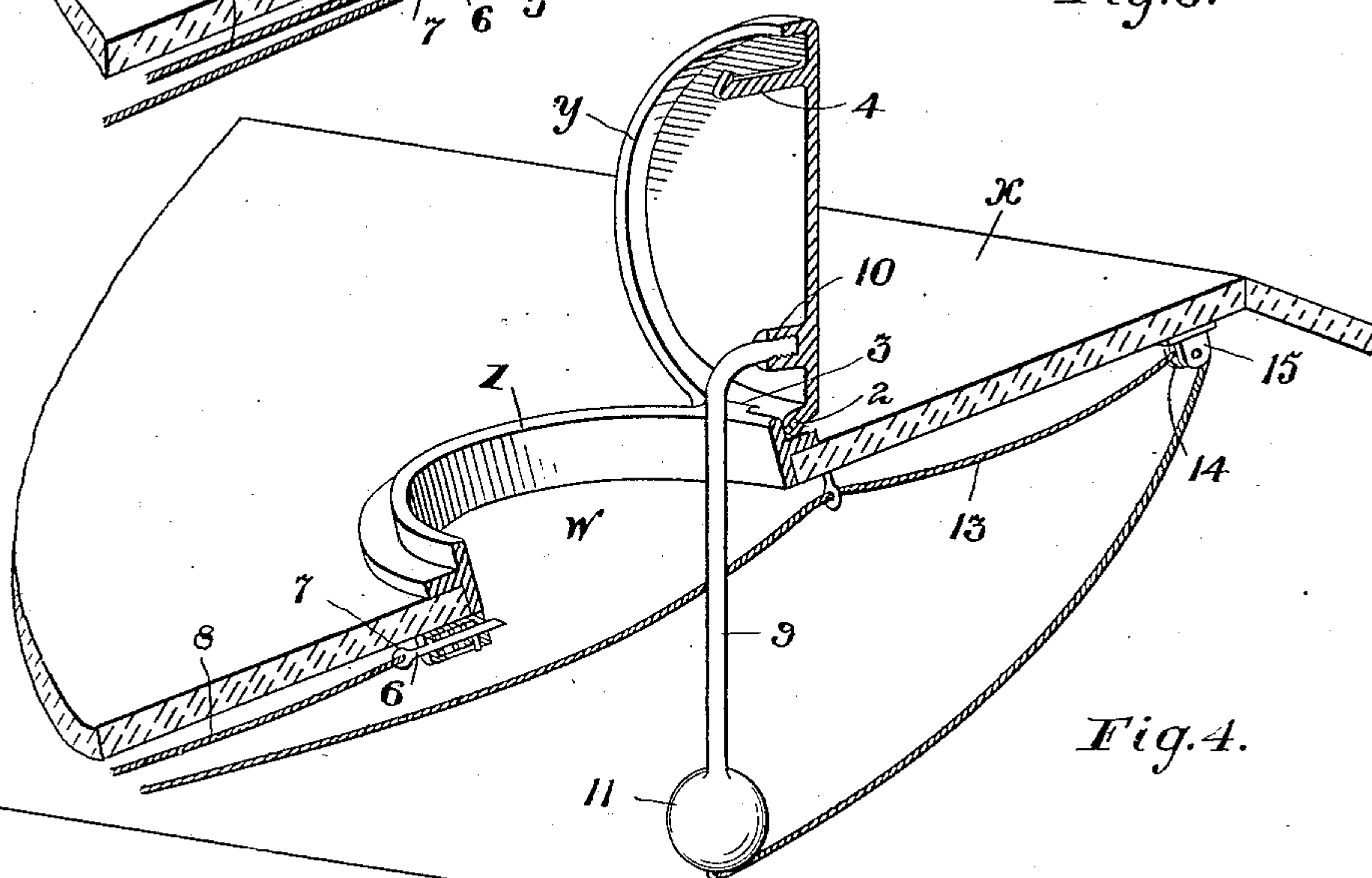


Fig. 4.

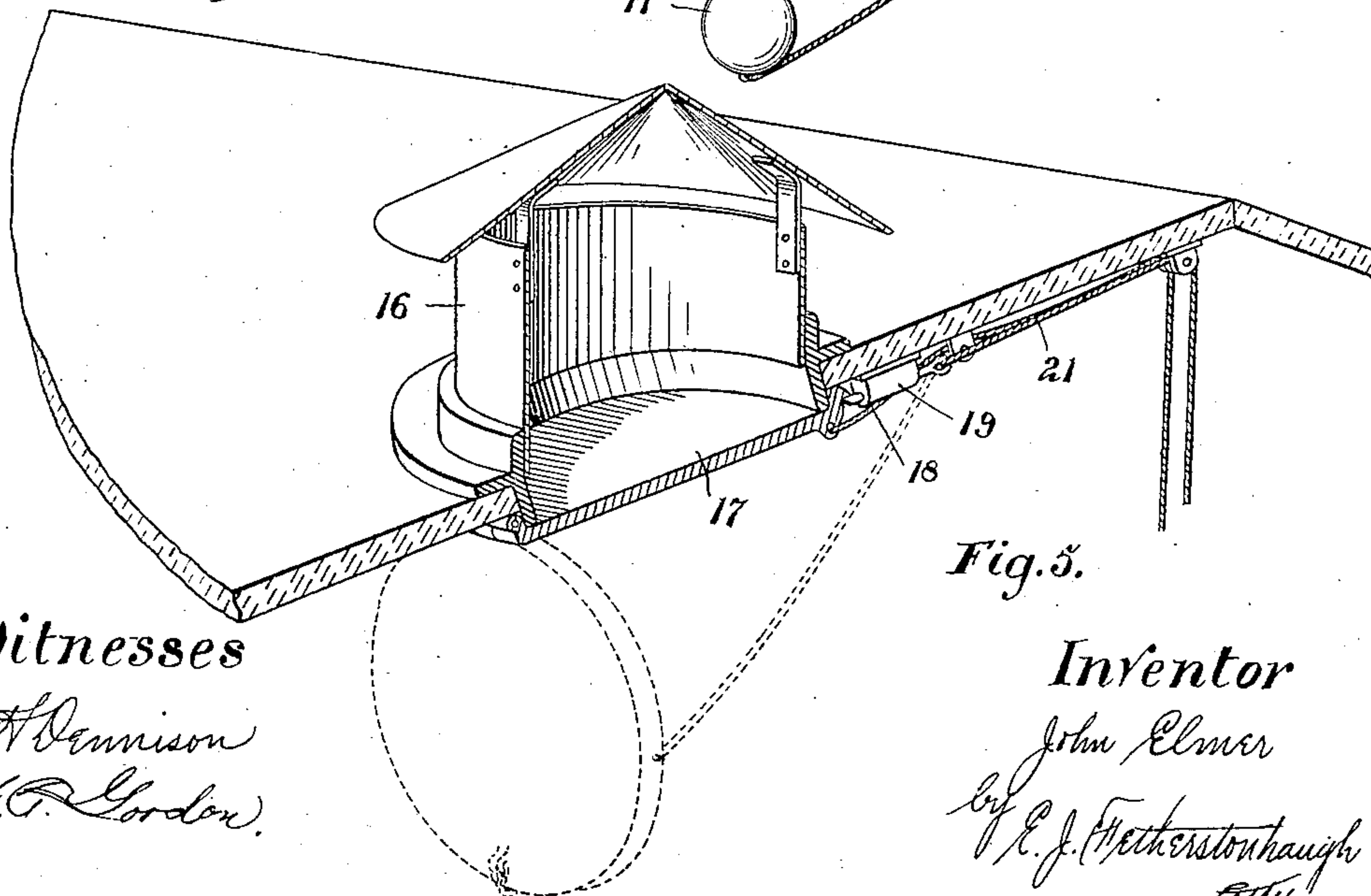


Fig. 5.

Witnesses

H. Dennison  
J. B. Gordon.

Inventor

John Elmer  
By E. J. Hetherington  
Att'y.



# UNITED STATES PATENT OFFICE.

JOHN ELMER, OF KINGSTON, ONTARIO, CANADA.

## VENT FOR THE ESCAPE OF COMBUSTION-GASES IN BURNING BUILDINGS.

No. 863,059.

Specification of Letters Patent.

Patented Aug. 13, 1907.

Application filed November 17, 1906. Serial No. 343 928.

*To all whom it may concern:*

Be it known that I, JOHN ELMER, a subject of the King of Great Britain, residing at No. 306 Brock street, in the city of Kingston, county of Frontenac, Province  
5 of Ontario, in the Dominion of Canada, have invented certain new and useful Improvements for Vents for the Escape of Combustion-Gases in Burning Buildings, of which the following is a specification.

This invention relates to improvements in vents for  
10 the escape of combustion gases in burning buildings, as described in the present specification and set forth in the accompanying drawings that form part of the same.

The invention consists essentially in a roof having an opening therethrough, a valve closing said opening  
15 and means for operating said valve.

The object of the invention is to insure the escape of combustion gases generated in a burning building and consequently obviate the danger of the spread of the conflagration and the loss of life within the building  
20 through the rapid travel of the said gases throughout the building where a proper vent is not provided and besides, lessening the difficulties of the firemen in fighting the fire by providing a flue at the proper point and thus localizing the fire, the detailed description being explained more particularly in the present specification and illustrated in the accompanying drawings.

In the drawings Figure 1 is a sectional perspective view of a house top showing the vent therethrough for the combustion gases and a valve inserted in said vent  
30 hole. Fig. 2 is a perspective detail of the valve shown in Fig. 1 apart from the roof. Fig. 3 is a sectional perspective view of a house-top showing another form of valve. Fig. 4 is a sectional perspective view of the valve shown in Fig. 3 showing the valve open. Fig.  
35 5 is a perspective view of still another form of valve and vent hole.

Like letters of reference indicate corresponding parts in each figure.

In the present specification there are three forms of  
40 valves shown and described but it must be understood that any arrangement of swing or sliding valve may be used, operated either by a fusible plug or by cables, levers, steam, electric, or other suitable means. The main features of the invention being the means for  
45 assisting the firemen in preventing the spread of the conflagration.

Referring to the drawings and to Figs. 1 and 2, *a* is the roof of the building having the centrally arranged vent hole *b* in the ridge thereof, *c* is a cylindrical vent  
50 pipe extending through the vent hole *b* and rigidly secured to the roof therearound and having the openings *d* therethrough beneath said roof and the openings *e* therethrough above said roof.

*f* is a hood secured on the top of the vent pipe *c* pro-

tecting the openings *e* from the weather conditions. 55  
Said vent pipe *c* has an annular flange *g* at the lower end thereof.

*h* is a sleeve closed at the lower end and having the inturned flange *i* at the upper end and sliding up and  
down over the lower portion of the vent pipe *c* and in  
60 its upper position completely covering in the openings *d* in the said vent pipe.

*j* is a pulley turning in suitable bearings in the bracket *k* secured to the under side of the roof of the  
building close to the vent pipe *c*. 65

*l* is a bracket secured to the under side of the roof of the building and extending downwardly therefrom and having a hollow cylindrical boss *m* at the lower end thereof.

*n* is a latch bolt slidably arranged in the boss *m* and  
70 is spring held in its forward position by a suitable spring ensconced within the said cylindrical boss and having an eye lug *o* at the outer end thereof. The inner end *p* of the latch *n* is beveled to the under side and the said latch adapted to co-act with a lug or bracket *q*  
75 secured to the sleeve *h* preferably mid-way of its length.

*r* is a pulley journaled in suitable bearings in the bracket *s* secured to the under side of the roof of the  
building and preferably in line with the eye lug *o* of  
80 the latch *n*.

*t* is a wire cable secured to the eye lug *o* and extending over the pulley *r* and continued downwardly along the roof and walls of the building through suitable pulleys or guides, as the case may be, to a convenient point and may be readily reached on the occasion of a fire,  
85 from any height in the building. Thus it will be seen that the latch *n* may be operated, say from the ground floor of a building, and as the normal position of the latch is beneath the bracket *q* for supporting the sleeve *h* in its upward position covering the vent holes *d*, any  
90 pull on the cable *t* will release the latch from engagement with the bracket *q* and allow the sleeve *h* to drop and uncover the openings *d* and allow free passage for the air or gas in the building through the vent pipe *c*.

The lifting of the sleeve *h* into its upward position to  
95 cover the openings *d* is accomplished by pulling on a cable *u* extending through suitable guides and pulleys say to the ground floor of the building, or any suitable point. The said cable extending over the pulley *j* and being securely attached to the sleeve *h* at *v*. When  
100 the sleeve *h* is lifted to its upward position the latch *n* will spring over the beveled surface of the bracket *q* into its place beneath said bracket and the cable *u* is then loosened so as to allow the said sleeve *h* to be dropped by pulling on the cable *t*. This style of vent  
105 valve is considered the most suitable as it is situated at the peak of the roof of the building and therefore at the most suitable point for a flue to be, particularly in



buildings having gable roofs. Of course this is not so essential in many classes of buildings and therefore it is advisable to have different forms of valves for the vent holes.

5 In Fig. 3, I have shown an opening *w* through the stretch of roof *x*. This opening is covered by a flap valve *y* finding its seat on the ring *z* encircling the opening *w*. The valve *y* is hinged at 2 in the brackets 3 immediately adjacent to the ring *z*. The valve *y* has  
10 depending from its under surface in proximity to the outer edge thereof, the hook shaped lug 4.

5 is a bracket secured to the under side of the roof and 6 is a spring latch supported in the bracket 5 and having an eye lug 7 at its outer end and a beveled shaped  
15 catch at its inner end engaging the hook shaped lug 4.

8 is a cable secured to the eye lug 7 and extending through suitable guides to any point in the building where it is desirable to operate the device from, preferably the ground floor.

20 9 is an arm having a curved inner end and rigidly secured in a lug 10 on the inner face of the valve *y* and extending outwardly therefrom and terminating in the weight 11 adjacent to the inner surface of the roof of the building, said weight having the eye 12 rigid  
25 therewith.

13 is a cable secured to the eye 12 and extending over the pulley 14 journaled in the bracket 15 secured to the under surface of the roof of the building and continuing through suitable guides to the ground floor or  
30 other desirable part of the building.

It will be thus seen that on the release of the latch 6 from engagement with the lug 4 by pulling on the cable 8, the weight 11 on the arm 9 will drop the said arm downwardly and as the said arm is rigid with the  
35 valve *y* the effect of the dropping of the said arm is to throw the valve outwardly, that is, swing the said valve on its hinges. This will have the effect of opening the vent hole and providing a flue for the escape of the combustion and other poisonous gases. The cable  
40 13 is of course left loose so that the arm 9 will be free to swing downwardly. In order to close the valve *y* the cable 13 is pulled from any desired place which brings the weight back into its upward position. The beveled portion of the hook lug 4 will push the spring  
45 latch back as it drops downwardly and the said latch will spring over the hooked portion of the said lug and hold the valve securely in position. The cable 13 may then be loosened and the device left in readiness for use.

50 The form of valve shown in Figs. 3 and 4 is only one of many forms of flap valves which may be used, as in Fig. 5, a hooded pipe 16 is shown projecting from the vent hole and a flap valve 17, hinged in proximity to said pipe on the under portion of the roof. The valve

17 is simply pulled to its seat by the cable 18 and held 55 in place by the spring latch 19 which engages a lug 20 on the edge of said valve and the said latch operated to release the said valve by pulling on the cable 21. Of course this simple form of valve would only do under certain conditions, as well finished buildings of a per- 60 manent nature would require a more positive operation in the opening and closing of the emergency flue.

In fire fighting the greatest difficulty is experienced in getting at a fire where it works its way between the strapping and the plaster and the cause of this invari- 65 ably is the spread of the combustion gases which are generated in all fires throughout wall and other spaces. The distribution of these gases within the building, no matter whether in the floors or the walls or any other spaces, is the means of extending a conflagration and 70 seriously interfering with the efforts of the firemen. In order to find the proper and natural vent for these gases a flue is opened at a point where they naturally would collect, that is, in the top of the building. In any event the draft created by the flue or flues, as de- 75 scribed in the present specification, draws the explosive and combustion gases from any part of the building thus, as before explained, localizing the fire and rendering the work of the fire fighters comparatively easy and preventing them from being overcome with 80 poisonous gases which is such a common occurrence.

It need hardly be mentioned that the dense smoke so dangerous to the fire fighters and making it so difficult to locate the fire is almost entirely eliminated by opening up the vent hole or holes in the roof of the 85 building.

What I claim as my invention is:—

1. In a vent for the escape of combustion gases in burning buildings, a gravity operating member normally in an upper position and closing the opening leading to and 90 through the roof, a spring latch retaining said member in its upper position, a cable attached to said latch for releasing the aforesaid member and opening the vent, and a cable attached to said member for hauling the same to its upper and locked position, substantially as described. 95

2. In a vent for the escape of combustion gases in burning buildings, the combination with a cylindrical casing projecting through the roof of the building, of a weighted valve closing the opening through said casing and roof, a spring held latch bolt having a beveled lip facing down- 100 wardly, a latch member rigid with said valve and co-acting with said beveled lip, means for hauling said valve upwardly and bringing said latch member into engagement with said beveled lip, and instantaneous means for releasing said latch bolt and dropping said valve unretarded, 105 substantially as described.

Signed at the city of Kingston, in the county of Frontenac, Province of Ontario, in the Dominion of Canada, this 23rd day of October, 1906.

JOHN ELMER.

Witnesses:

MABELLE GAUDREAU,  
INA L. MILLER.