

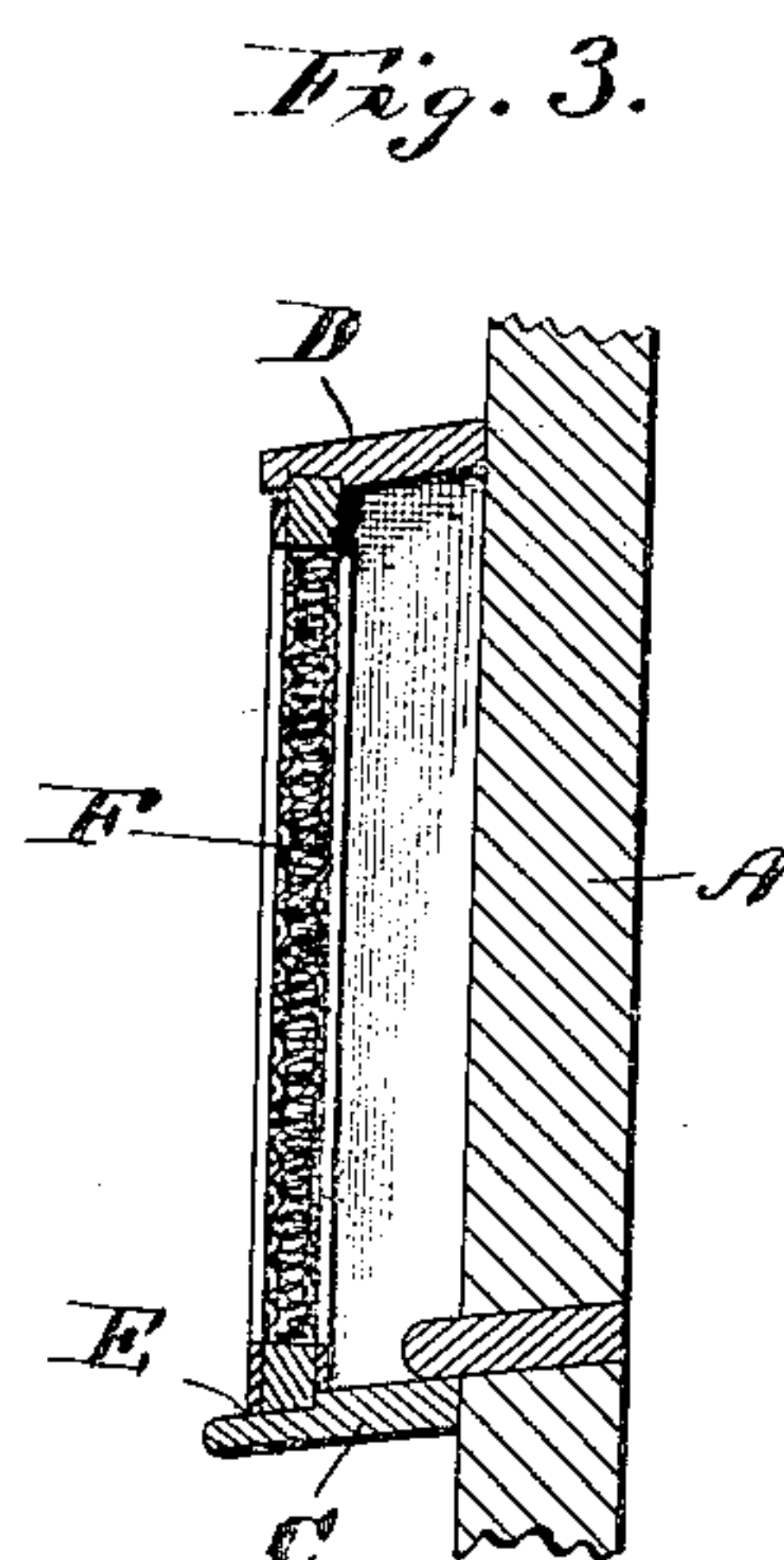
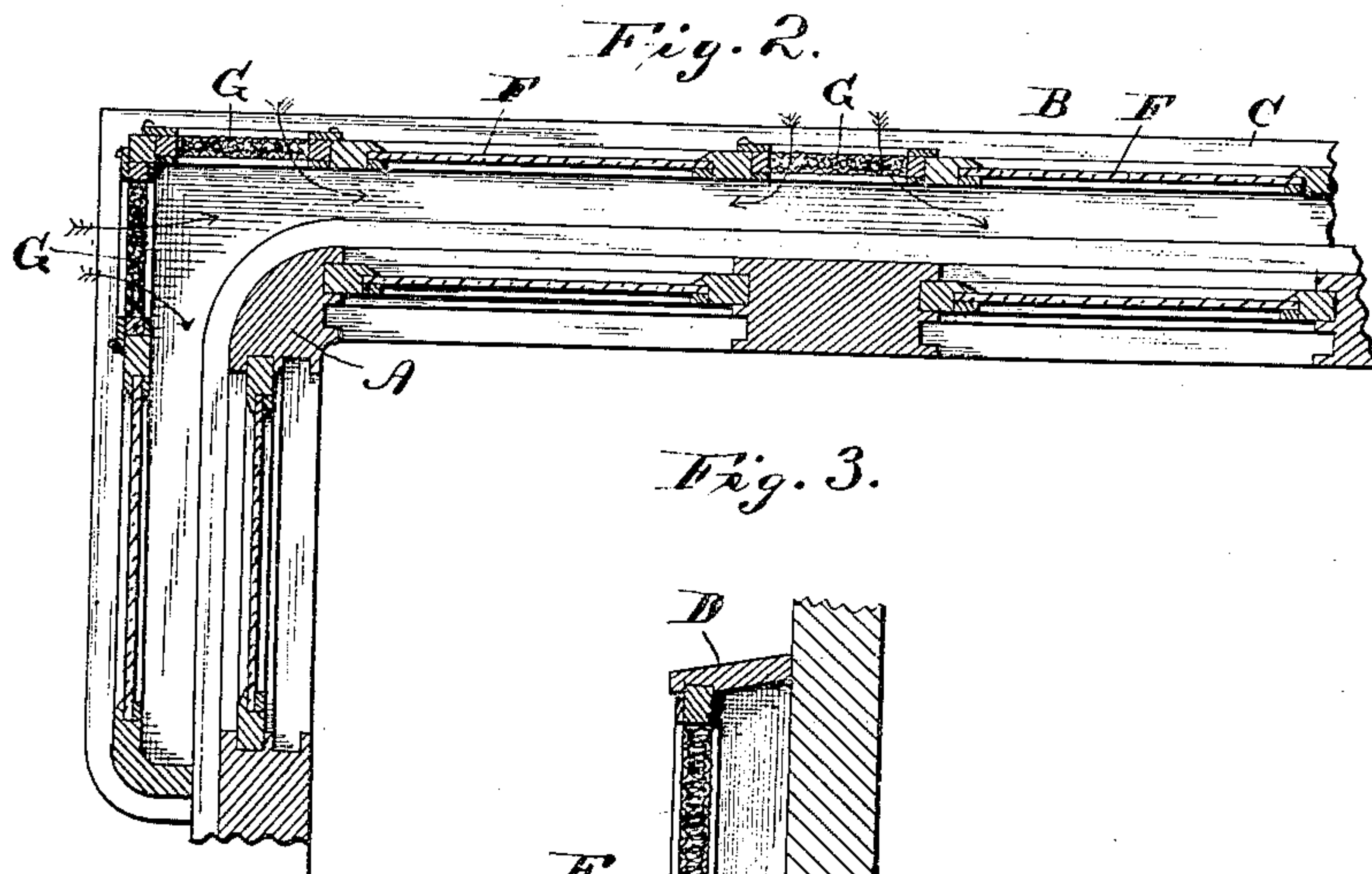
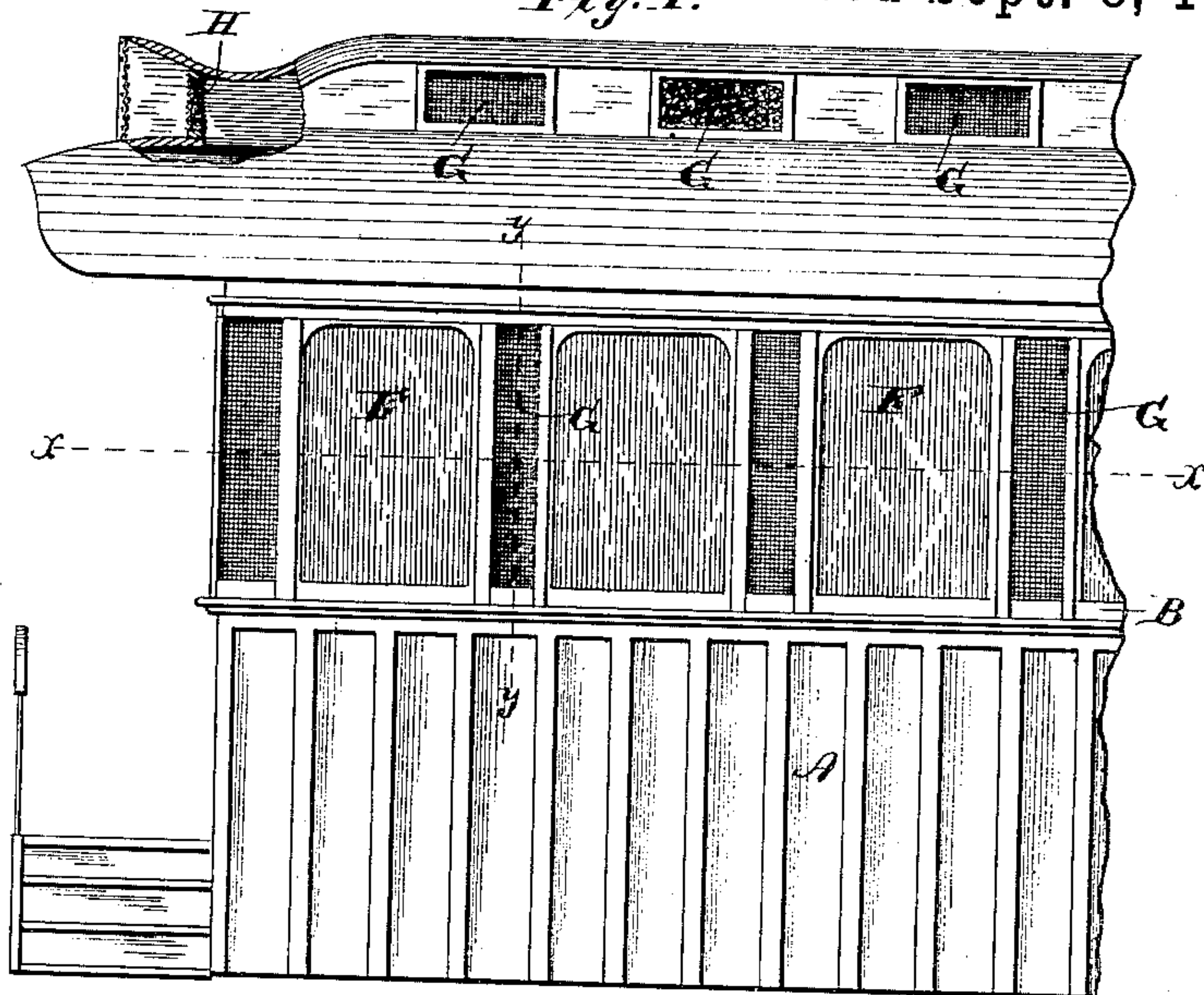
(No Model.)

2 Sheets—Sheet 1.

T. B. HOWE.  
FILTER VENTILATOR.

No. 325,803.

Patented Sept. 8, 1885.



Witnesses.  
Chas. R. Bull  
A. J. Stewart.

Inventor.  
Thomas B. Howe  
by Church & Church,  
His Attorneys.

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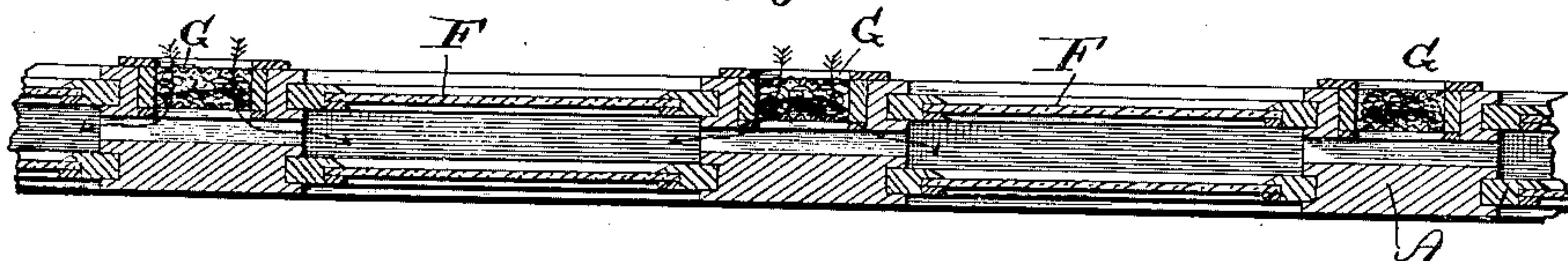
2 Sheets—Sheet 2.

T. B. HOWE.  
FILTER VENTILATOR.

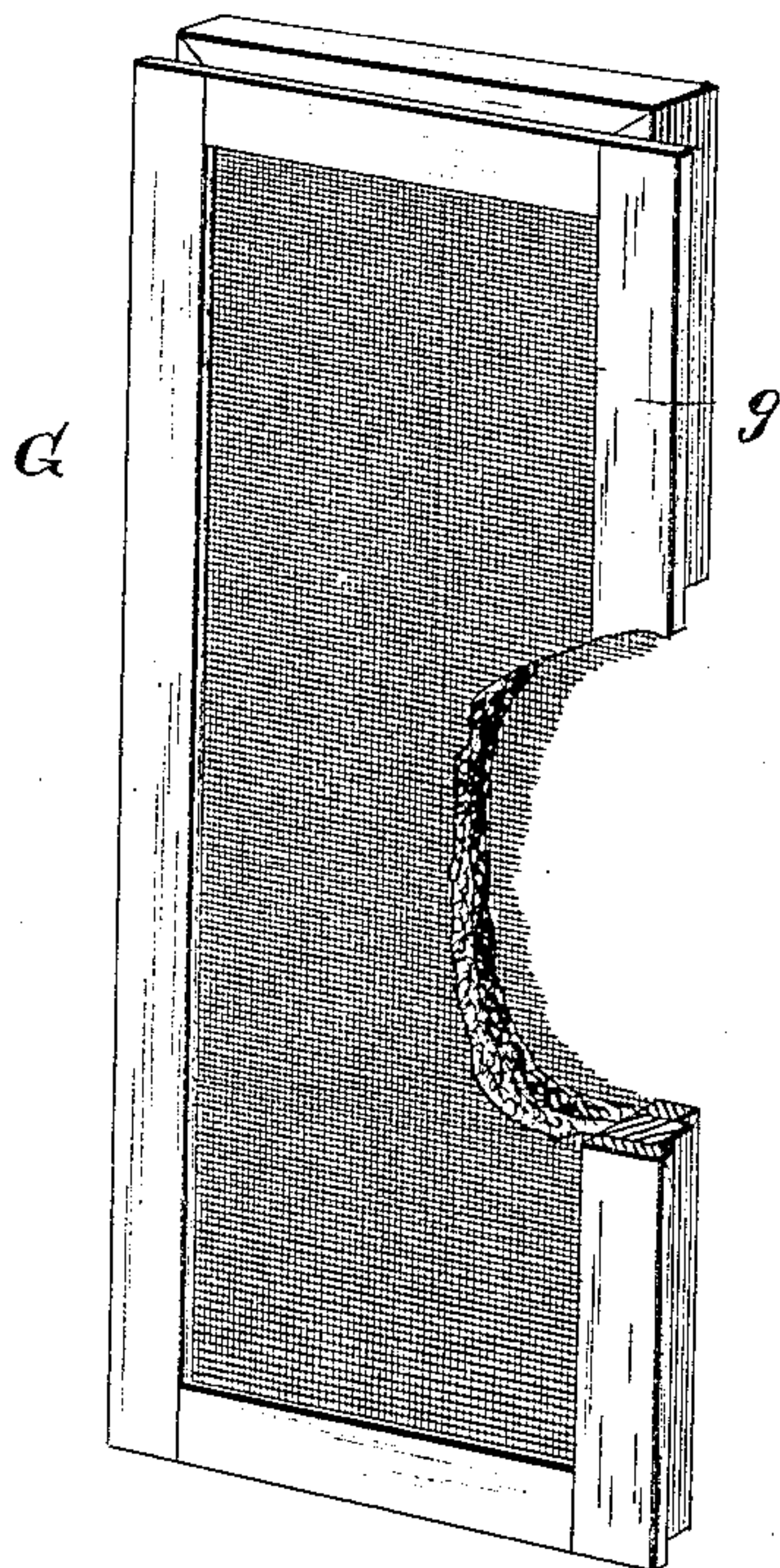
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*Fig. 4.*



*Fig. 5.*



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# UNITED STATES PATENT OFFICE.

THOMAS B. HOWE, OF SCRANTON, PENNSYLVANIA.

## FILTER-VENTILATOR.

SPECIFICATION forming part of Letters Patent No. 325,803, dated September 8, 1885.

Application filed July 6, 1885. (No model.)

*To all whom it may concern:*

Be it known that I, THOMAS B. HOWE, of Scranton, in the county of Lackawanna, State of Pennsylvania, have invented certain new and useful Improvements in Filter-Ventilators; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, and to the figures and letters of reference marked thereon.

Heretofore numerous attempts have been made to prevent the entrance into railway-cars of dust, cinders, &c., which at present render traveling disagreeable, and at the same time ventilate the car thoroughly; and nearly all such attempts have resulted in the invention of some sort of shield or guard to be placed in front of a car-window, so that dust, &c., would not enter when the window was open; but, so far as I am aware, none of these devices will accomplish the purpose in a satisfactory manner, because an eddy will form behind the guard and draw in, as it were, the dust, cinders, &c. Screens have also been applied to car-windows, but with indifferent success, as only the larger cinders could be kept out and the fine dust would pass through and enter the car.

Having the object in view of providing the passenger-car with the means for preventing the ingress of dust, &c., not only through open windows, but around their frames, through ventilators and doors, I have made the invention shown and described herein.

Figure 1 is a side view of a car provided with my invention. Fig. 2 is a sectional view on the line *xx* of Fig. 1. Fig. 3 is a sectional view on the line *yy* of Fig. 1. Fig. 4 is a view of modification. Fig. 5 is a perspective view, partly in section, of one of the air-filters removed.

Similar letters of reference in the several figures denote the same parts.

A represents the body of an ordinary passenger-car; B, a casing extending from end to end of the car and on a line with the windows thereof, consisting of a lower sill, C, secured just beneath the bottoms of the car-windows, an upper molding or top, D, just above the tops of the windows, and the side E, composed

of a series of glass windows, F, in line with and corresponding in number to the car-windows, and between each of these panes of glass an air-filter, G, constructed as shown in Fig. 5—that is, of a frame, *g*, having in either side a piece of wire cloth or gauze, and between these two pieces of gauze is a layer of wool or felt and a layer of curled hair, the wool being on the inside and the hair on the outside, or either or both of these may be employed.

A filter thus constructed will effectually prevent the passage through it of any dust or cinders, but will not prevent the passage of air. The curled hair will arrest the larger particles of dust, cinders, &c., and the wool the finer, thus thoroughly purifying the air before it enters the space between the casing and car.

Air will enter the space between the casing B and car only through the air-filters, so that the windows may be opened or removed entirely without subjecting the passenger to a deluge of dust or to a direct draft, as would be the case were the panes F, which I term “storm-glasses,” removed, and as the filters are between the windows the air entering is obliged to take the course indicated by the arrows in Fig. 2.

This casing can be used in winter for the purpose of keeping the car warm by replacing the filters by solid panels, thus forming an air-space between the casing and car and answering the purpose of double windows generally employed.

In Fig. 4 I have shown a modified arrangement, in which I dispense with the entire outside casing, place the filters in the body of the car between the windows, and locate the glass frames F in the same or a supplemental frame near the ordinary windows, and recess the side of the car somewhat, so that the air entering through the filters can come into the space between the windows, or, if the inner window is open, into the car.

At the ends of the car, on top, are also employed filters H; but in this instance I place a piece of wire-netting at some distance in front of the filter, so that it will not take fire from sparks from the engine, and I also place the filters over the openings for the ventilators in the top of the car.

The filters can be cleaned when necessary

or desirable by passing a current of air or water through them from the inner or wool side.

My invention, while especially adapted for use on railway-cars, can as well be applied to  
5 houses or steamboats, and in short to any place where air is to be filtered—for instance, to the cold-air pipe of an ordinary house-furnace.

I claim as my invention—

10 1. The combination, with a car, of a supplemental frame or casing inclosing the windows thereof and provided with the storm-windows corresponding to the windows of the car, and  
15 one or more air-filters located in said casing, substantially as described.

2. The combination, with a car, of a supplemental frame or casing inclosing the windows

thereof and provided with the storm-windows corresponding to the car-windows, and a series of air-filters located between the storm- 20 windows, substantially as described.

3. The combination, with a car, of a supplemental frame or casing inclosing the windows thereof, provided with the storm-windows corresponding with the car-windows, and a series 25 of removable filters located between the storm-windows, whereby said filters can be removed when desired and be replaced by solid panels, substantially as described.

THOMAS B. HOWE.

Witnesses:

A. S. STEUART,  
FRED F. CHURCH.