

(No Model.)

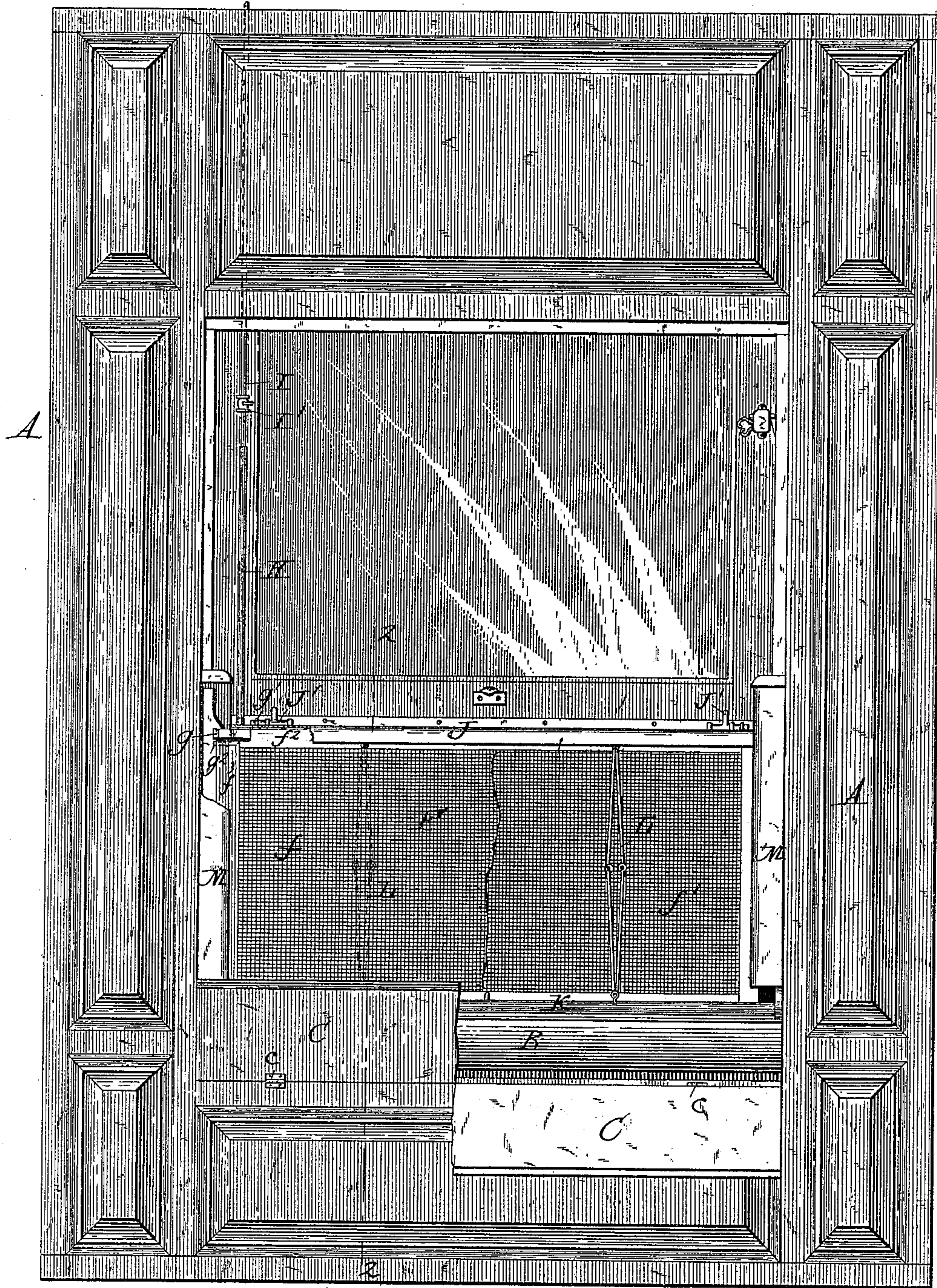
3 Sheets—Sheet 1.

G. E. PROCTOR.

AIR COOLING AND PURIFYING APPARATUS.

No. 488,798.

Patented Dec. 27, 1892.



Witnesses  
*Samuel H. Hollingsworth*  
*Joseph C. Stack.*

Fig. 1.

Inventor  
George E. Proctor  
by his attorneys  
*Baldwin, Davidson & Wright.*



3 Sheets—Sheet 2.

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*Fig. 3.*

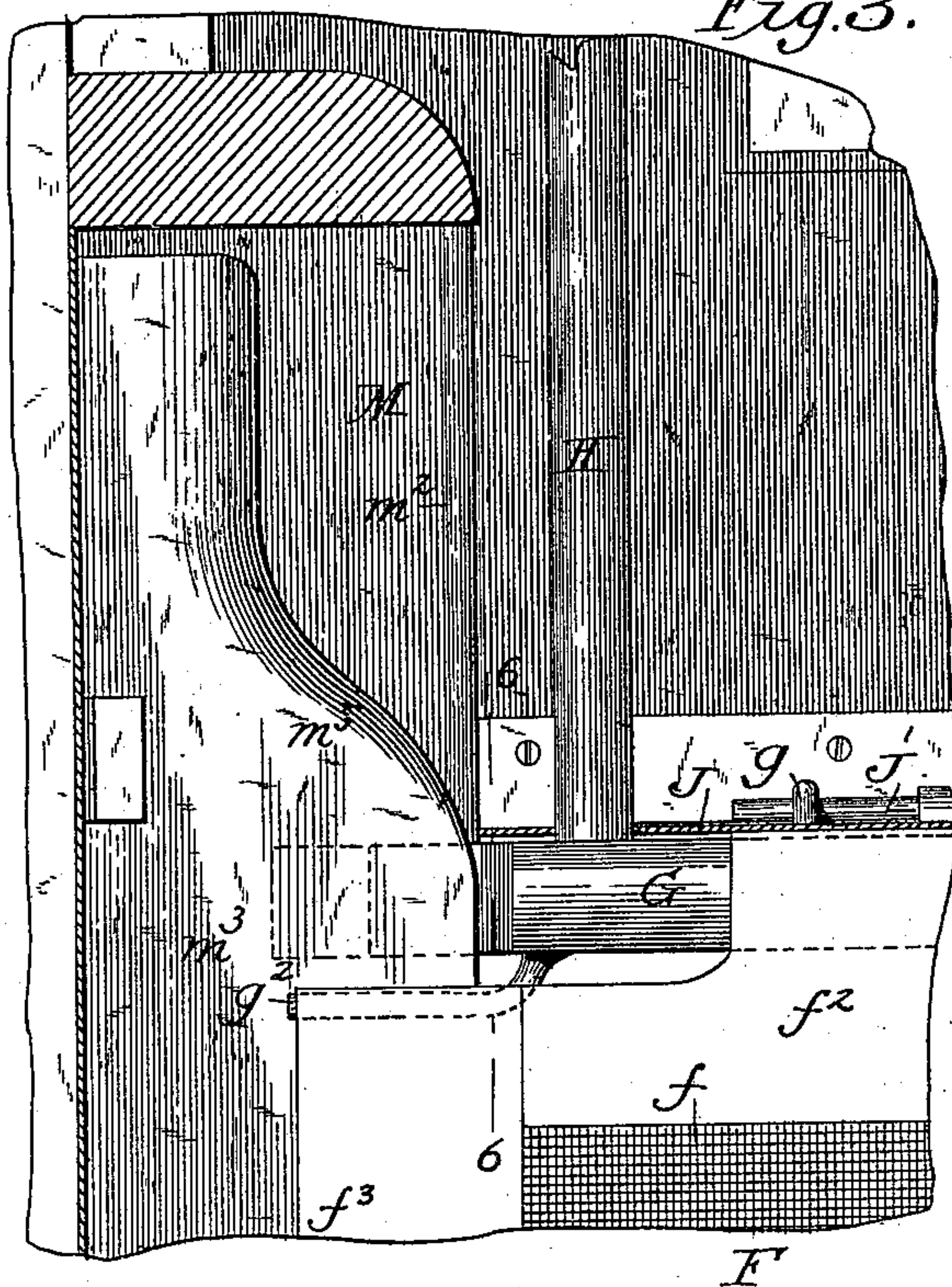


Fig. 4.  
ON LINE 4-4

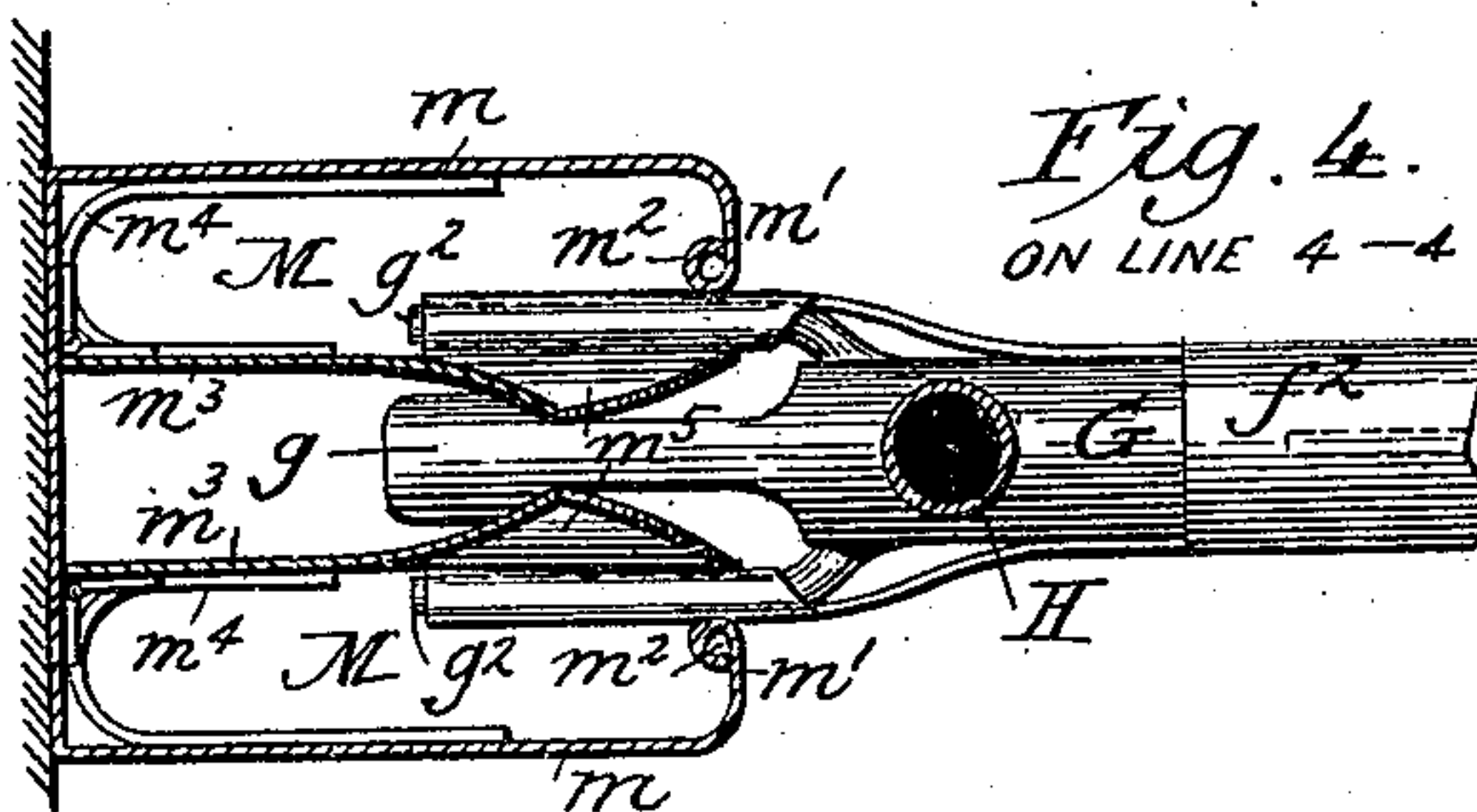
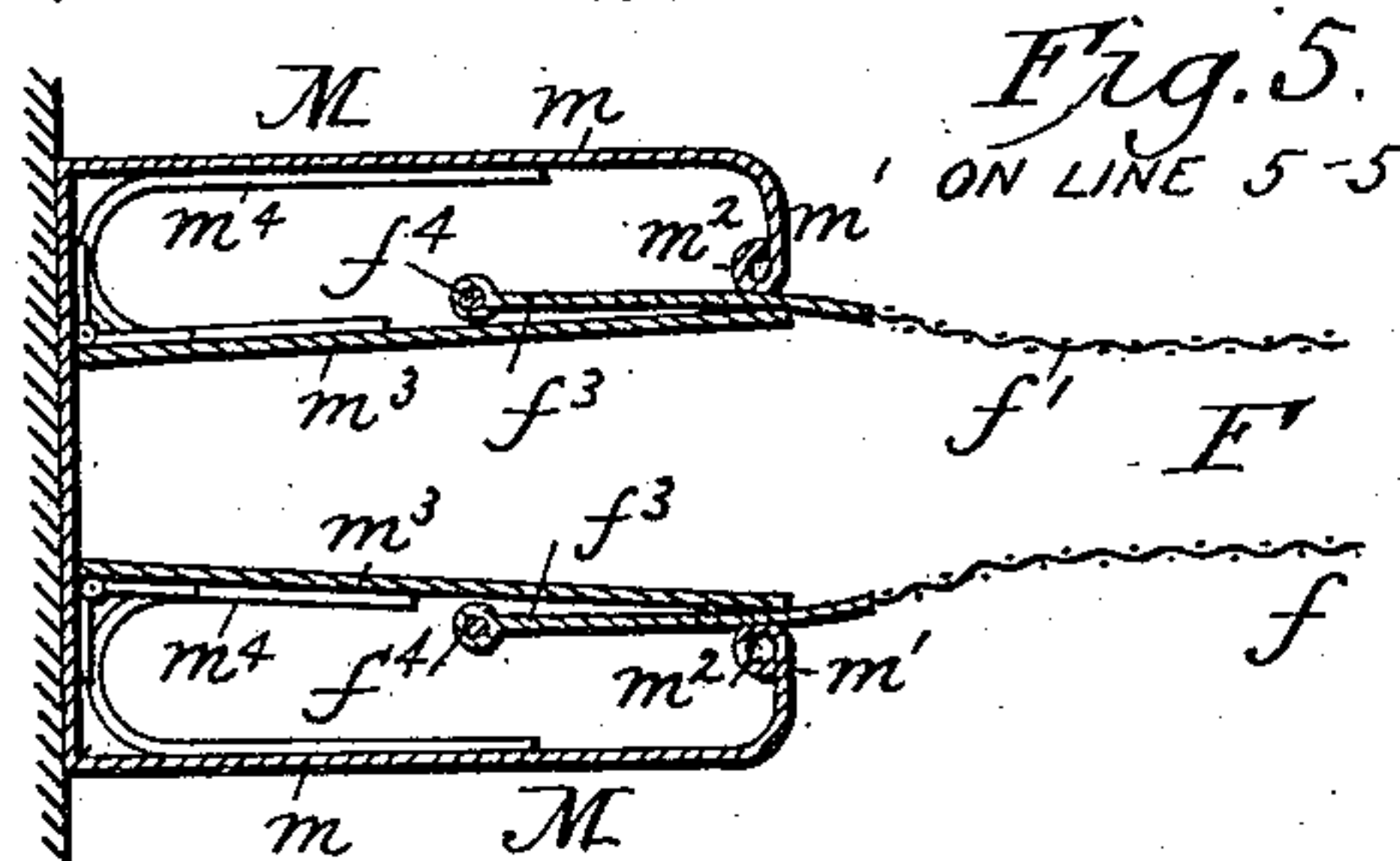


Fig. 5.



Witnesses

Sidney F. Hollingsworth  
Joseph C. Stack.

*Inventor*

George E. Proctor  
by his attorneys

Baldern Davidson Wright



(No Model.)

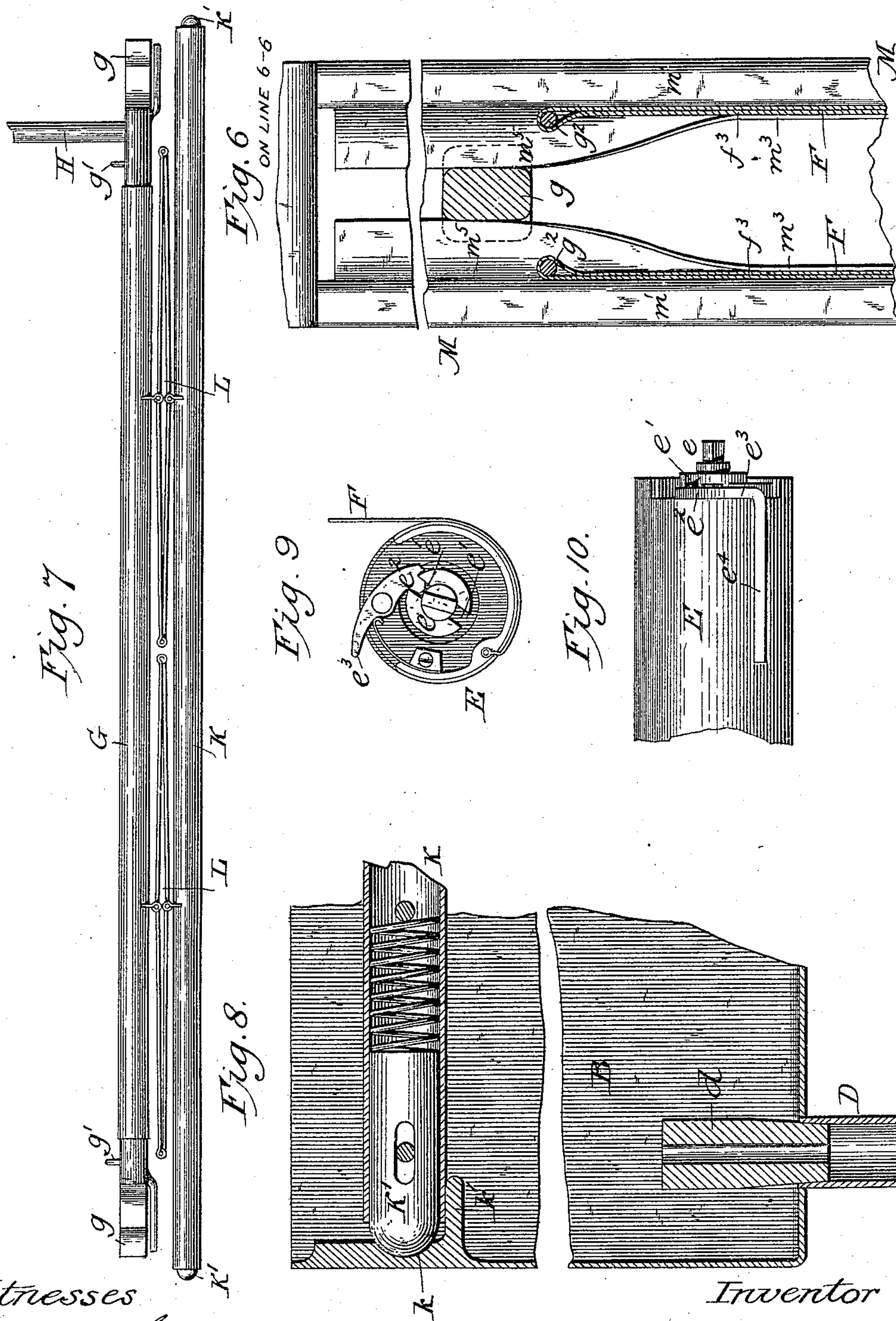
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# UNITED STATES PATENT OFFICE.

GEORGE E. PROCTOR, OF WASHINGTON, DISTRICT OF COLUMBIA.

## AIR COOLING AND PURIFYING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 488,798, dated December 27, 1892.

Application filed February 26, 1892. Serial No. 422,878. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE EDWARD PROCTOR, a citizen of the United States, residing in the city of Washington, in the District of Columbia, have invented certain new and useful Improvements in Air Cooling and Purifying Apparatus, of which the following is a specification.

My invention relates more particularly to that class of air cooling and purifying apparatus such as shown, for instance, in Letters Patent of the United States, granted to David G. Proctor, No. 393,924, December 4, 1888, in which an evaporating fluid is fed under pressure to a screen composed of reticulated absorbent material.

The primary object of my invention is to so connect a screen of this kind to a window sash, that it may rise and fall with the sash, be completely folded or wound when the window is closed, and stretched so as to completely fill the opening when the window is raised. In accomplishing this result, I have also devised certain improved devices, and certain novel organizations of instrumentalities, which will be hereinafter fully described and claimed.

In the accompanying drawings,—Figure 1 is an elevation of a window and its frame, with some of the parts broken away, illustrating my invention. The remaining figures are all on an enlarged scale. Fig. 2 is a vertical section on the line 2—2 of Fig. 1. Fig. 3 is a detail view showing particularly how the screen is secured to the feed-pipe, and how the vertical edges of the screen are held. Fig. 4 is a detail view in section on the line 4—4 of Fig. 2. Fig. 5 is a detail view in section on the line 5—5 of Fig. 2. Fig. 6 is another detail view in section, on the line 6—6 of Fig. 3, showing devices for holding the screen at its edges. Fig. 7 is a detail view of the screen frame with the separating devices closed. Fig. 8 is a detail view showing how the lower portion of the screen frame is secured in the drip trough. Figs. 9 and 10 are detail views of the spring roller, showing my improved devices for locking the spring-actuating devices when the screen is unwound.

In the drawings, I have shown a screen composed of two separate curtains, but some

of my improvements may be embodied where only one curtain is used.

The window frame A, may be of usual construction, except as hereinafter indicated. The frame shown is especially designed to represent the frame of a car window. A bottom or drip trough B, is arranged in a recess B', in the window sill, and is provided with a waste pipe D, which may be closed by a stopper *d*. This may be perforated, if preferred, to act as an overflow for the drip trough, so that the trough may always contain some water, but discharges at the proper time. The trough may be of any suitable shape and construction. It is provided with a sliding cover *b*, which is normally closed. The inner side C, of the sash, may be hinged at *c*, so that the drip trough may be readily opened or removed. The trough contains a spring-roller E, mounted in suitable bearings at each end. As shown in Figs. 9 and 10, the hub *e*, is provided with notches *e'*, on opposite sides and a spring-pawl *e*<sup>2</sup>, pivoted to the end of the roller, has a tail *e*<sup>3</sup>, extending laterally from the periphery, and having an arm *e*<sup>4</sup>, extending longitudinally to the axis of the roller for a short distance. The screens or curtains are wound on the roller, and by the construction above described, the roller may be wound up to give it the desired tension without winding the screen thereon, and held by the pawl *e*<sup>2</sup>. As soon, however, as the screen is wound on the roller past the pawl *e*<sup>2</sup>, said pawl is withdrawn from the notched hub, and the spring is free to act, so that as the sash is raised it acts against the force of the spring to withdraw the screen from the roller, and as the sash is lowered, the roller automatically winds the screen thereon. Without some provision of this sort, the spring would entirely unwind, should the roller be removed from the drip trough. But when the screen or curtain is unwound, as shown in Fig. 9, the spring is locked and the roller with the screen may be removed without entirely unwinding the spring, so that the roller has sufficient tension at all times.

The screen F, which is shown as composed of two curtains, *f f'*, is made of absorbent reticulated fabric, and is of a width sufficient to extend from one side of the window to the



other, and of a length sufficient to reach from the bottom of the sash to the bottom of the window frame, when the sash is elevated. At its upper end the screen connects with a strip  
 5  $f^2$ , of absorbent material of finer mesh, such as muslin, which extends over the slotted feed tube or trough G, arranged horizontally across the screen. This trough at its opposite ends is provided with guide lugs  $g$ , for a  
 10 purpose hereinafter described. The feed tube receives the evaporating fluid through a tube H, connected to it at one end, and which connects preferably by a telescopic joint with a tube I, provided with a valve I'. The tube I, is  
 15 stationary, while the tube H, rises and falls as the sash is raised and lowered. The feed tube G, is secured to the bottom of the window sash in any suitable way. Preferably, it is provided with staples  $g'$ , at opposite  
 20 ends, which project through slots in an overhanging sheet metal bracket J, secured to the bottom of the window sash and carrying sliding bolts J'. When the bolts engage with the staples, the screen may be raised and lowered  
 25 with the window sash. By disengaging the bolts, the sash may be raised and lowered without the screen. I have shown the screen as formed in two parts, both being wound up on the spring roller, as shown in Fig. 2; but when  
 30 the screen is raised, they are separated from each other by the devices now to be described.

Near the upper end of the drip trough, just below the top of the trough, is a rod K, which may be tubular, and which has at each end a  
 35 sliding spring-actuated bolt K', engaging recesses  $k$ , in the ends of the drip trough. These spring bolts are so formed that the rod may be put in place and taken out when forcibly moved by hand; but the engagement of  
 40 the bolts with the sides of the trough is ordinarily sufficiently strong to hold the rod in place when the sash is being raised and lowered. Additional supports  $k'$ , are provided for the ends of the rod to prevent it, by any  
 45 accident, from falling to the bottom of the drip trough. Between the rod K, and the feed tube G, are interposed separating devices preferably consisting as shown of toggle levers L, two sets being preferably employed.  
 50 The toggle levers are hinged together in the usual way, being secured at one end to the drip tube, and at the other to the rod K. When the window is closed, the levers occupy the position shown in Fig. 7, but when the win-  
 55 dow is raised, the levers occupy the position shown in Figs. 1 and 2, and will serve to hold the two portions of the screen apart. The arrangement is such that the toggle levers automatically rise and fall as the window is  
 60 raised and lowered.

The vertical edges of the curtains or screens have secured to them strips of gum tissue  $f^3$ , containing at their extreme edges cords  $f^4$ . The vertical edges of the curtains project into  
 65 vertical boxes or cases M, which act as guides as the screen is raised and lowered, and when the screen is raised to its full height, serve

to clamp the edges of the screen to hold it stretched, and in proper position to make it work most effectively.

Each of the boxes M, is made with an outside casing  $m$ , closed at rear and on each side, and having at front inturned ends  $m'$ , preferably beaded at  $m^2$ , as shown. Within the box or casing, are arranged two vertical,  
 75 hinged plates  $m^3$ , located a suitable distance apart at their rear ends and secured to springs  $m^4$ , which normally tend to force the outer ends of the plates together. The edges of the plates  $m^3$ , are for the most part straight, as  
 80 shown in Fig. 5, but at their upper ends they are curved as shown in Figs. 3, 4 and 6.

The cams  $g$ , on the feed tube G, are adapted to move vertically between the plates  $m^3$ , and as the window is raised, the cams force the  
 85 plates apart by riding along the inclined portions  $m^5$ , and as the edges of the screen project between the inturned ends  $m'$ , of the casing, and the outer ends of the plate  $m^3$ , the screen will be clamped, as shown in Fig. 5,  
 90 and thus the curtains will be held sufficiently taut to prevent sagging or bagging. The cords  $f^4$ , in the edges of the curtains, prevent them from being withdrawn from the clamping devices. The feed tube is also shown as  
 95 provided with arms  $g^2$ , which project between the plates  $m^3$ , and the inturned ends  $m'$  of the casing, while the sash is being raised, and these serve to hold the plates away from the edges  $m'$ , while the screen is being raised, but  
 100 as soon as the sash has been raised to its full height, the arms come opposite the inclined portions of the plates, and the plates are free to move into the position shown in Fig. 5, to securely hold the edges of the screens.

My apparatus works efficiently. Water may be supplied from a tank, or from the water service pipes of a building. It may be readily applied to any window, with but a  
 110 slight modification of the window frame, and when in position, and at work cools and purifies the atmosphere entering a room or compartment, without danger of wetting the window frame, or contiguous parts of the building or car.

A germicide or disinfectant to free the air from disease, and other impurities may be incorporated in the evaporating fluid, if desired.

The connection of the slotted feed tube with  
 120 the water supply, by means of the telescopic joint between the tubes H and I, is advantageous in many ways, as it enables the window to be raised to any point desired without interfering with the flow of water, and as the  
 125 water descends through these tubes, by gravity in drops, no packing of the joint is required, as no pressure is exerted thereon. Should the valve I', be left open, even with the window shut, no harm would ensue, as the  
 130 water would simply escape through the feed tube and waste pipe.

I claim as my invention,—

1. The combination of a window sash, a



screen of reticulated fabric secured to the sash, a roller for automatically winding up the screen as the sash descends, a water supply pipe at the top of the screen, and a drip trough at the bottom.

2. The combination of a window sash, a screen composed of two curtains and connected to the bottom of the sash, a roller on which both curtains are wound, and means for separating the curtains when the sash is raised.

3. The combination of a window sash, a screen composed of two curtains, a roller on which the curtains are wound, and supporting devices interposed between the curtains and automatically raised and lowered as the sash is raised and lowered.

4. The combination of a rising and falling screen composed of two curtains, a roller on which both curtains are wound, toggle levers interposed between the curtains for separating them, and means for raising the curtains and toggle levers, substantially as described.

5. The combination of a window sash, a screen of reticulated fabric secured thereto, means for supplying an evaporating fluid to the sash, a roller on which the screen is wound, vertical guides for the edges of the screen, and means for clamping the screen at its edges, when the sash is raised.

6. The combination of a window sash, a screen of reticulated absorbent material secured thereto, a feed tube through which an evaporating fluid is fed to the screen, a drip trough, a roller therein on which the screen is wound, vertical guides for the edges of the screen having the hinged plates, and cam lugs

or arms carried by the screen frame for operating the plates.

7. The combination of a window sash, a screen of reticulated absorbent material, a feed tube, to which the upper end of the screen is secured, means for supplying an evaporating fluid to the screen through the tube, a drip trough, a horizontal rod secured thereto, toggle levers interposed between the feed tube and the rod, and a roller in the drip trough, on which the screen is wound.

8. The combination of a window sash, a screen of reticulated absorbent material, a slotted feed tube to which the screen is secured and which is attached to the sash, a water supply pipe provided with a telescopic or sliding joint connected with the feed tube, and a drip trough into which the lower end of the screen projects.

9. The combination of a window sash, a screen of reticulated absorbent material secured thereto, means for supplying an evaporating fluid to the screen, a drip trough into which the lower end of the screen projects, a spring roller to which the lower end of the screen is attached, and the spring pawl pivoted to the roller and engaging the hub thereof to prevent the spring from unwinding when the roller is removed from the trough, as set forth.

In testimony whereof I have hereunto subscribed my name.

GEO. E. PROCTOR.

Witnesses:

LLOYD B. WIGHT,  
C. M. BROOKE.