

(No Model.)

2 Sheets—Sheet 1.

A. S. MILES.

SMOKE CONDUCTOR AND VENTILATOR FOR CARS.

No. 391,263.

Patented Oct. 16, 1888.

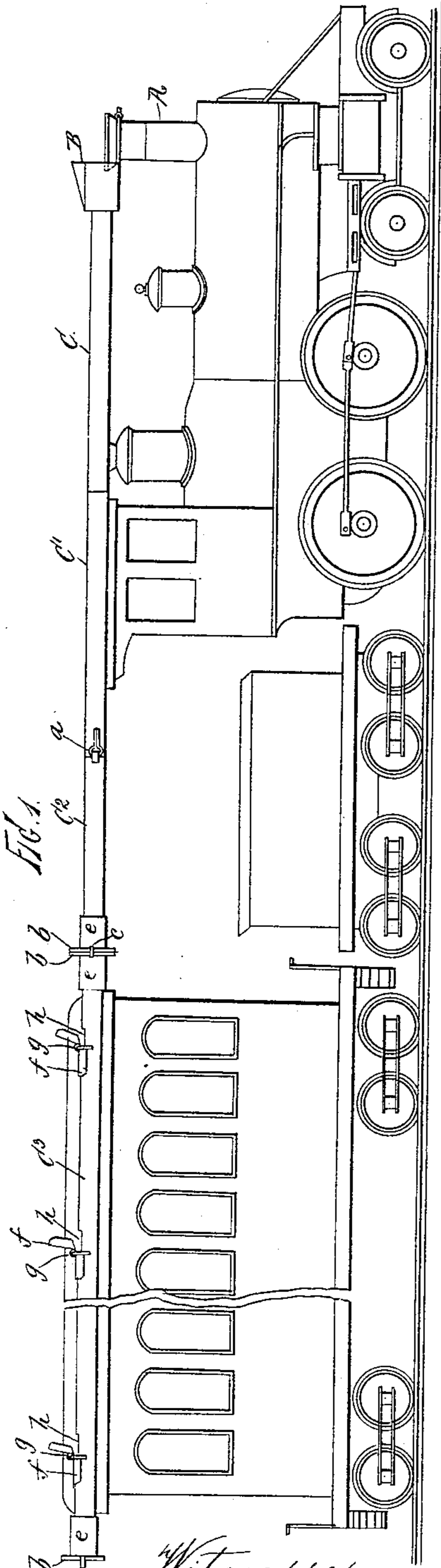


Fig. 1.

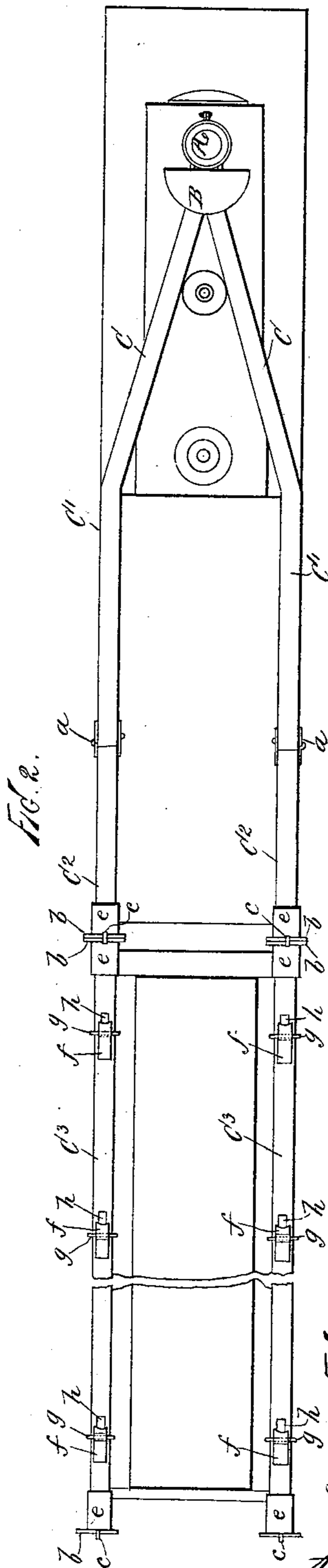


Fig. 2.

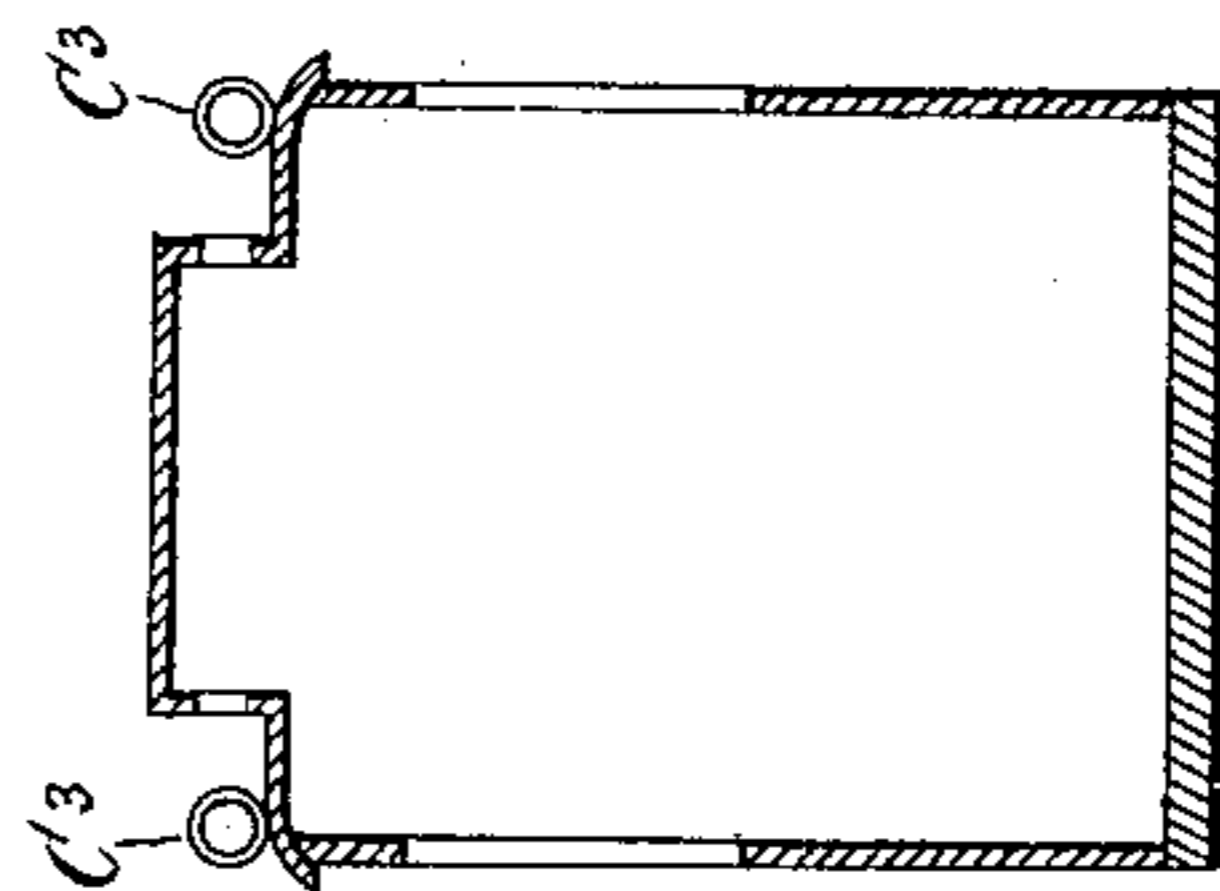


Fig. 3.

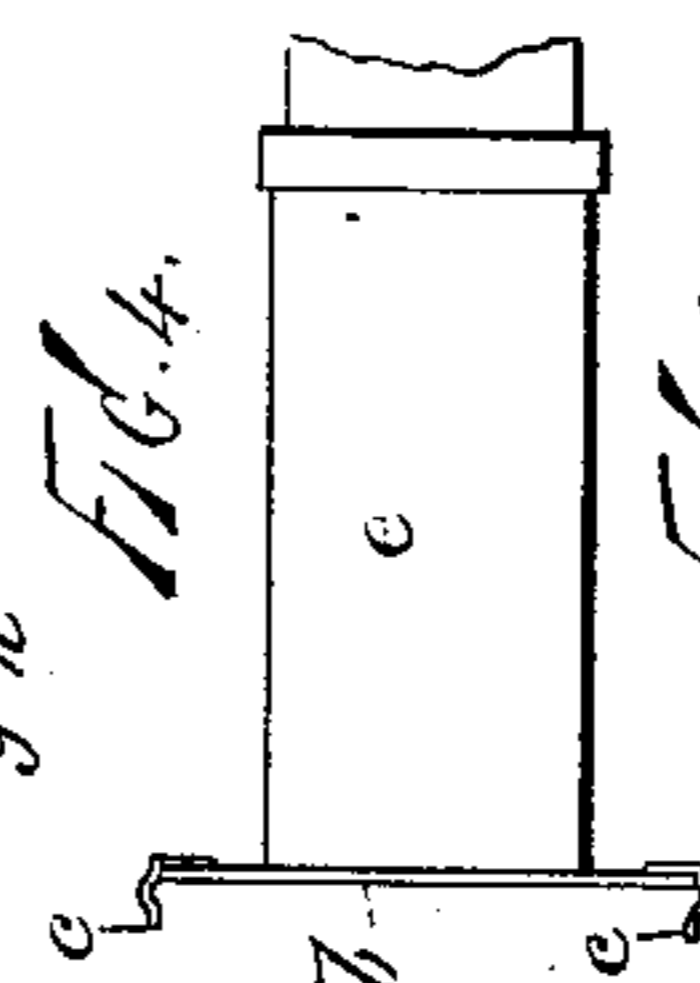


Fig. 4.

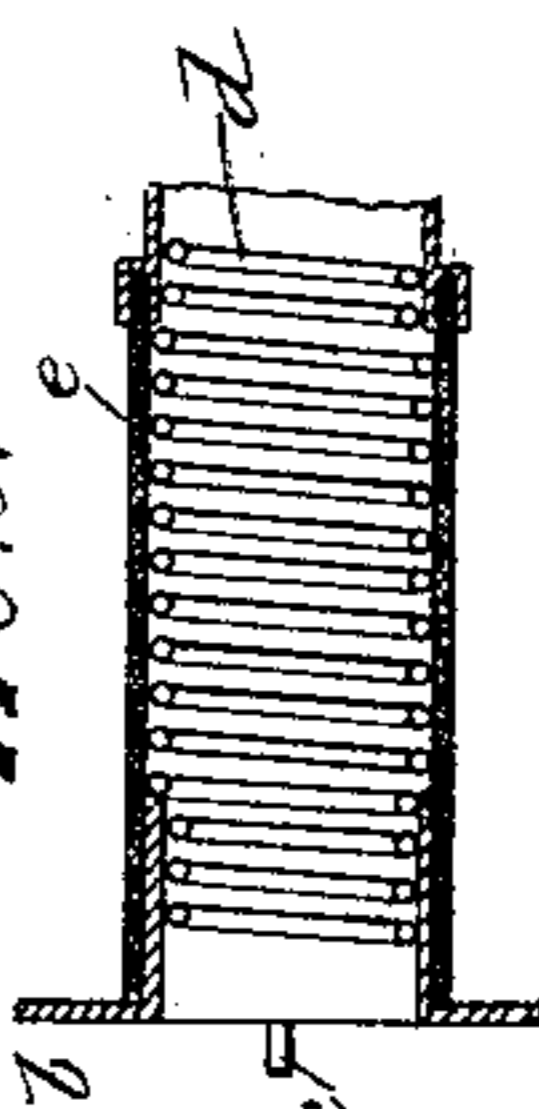


Fig. 5.

Witnesses:  
John Buckle,  
L. H. Osgood

Inventor:  
Alfred S. Miles.  
By North Osgood  
Attorney.

(No Model.)

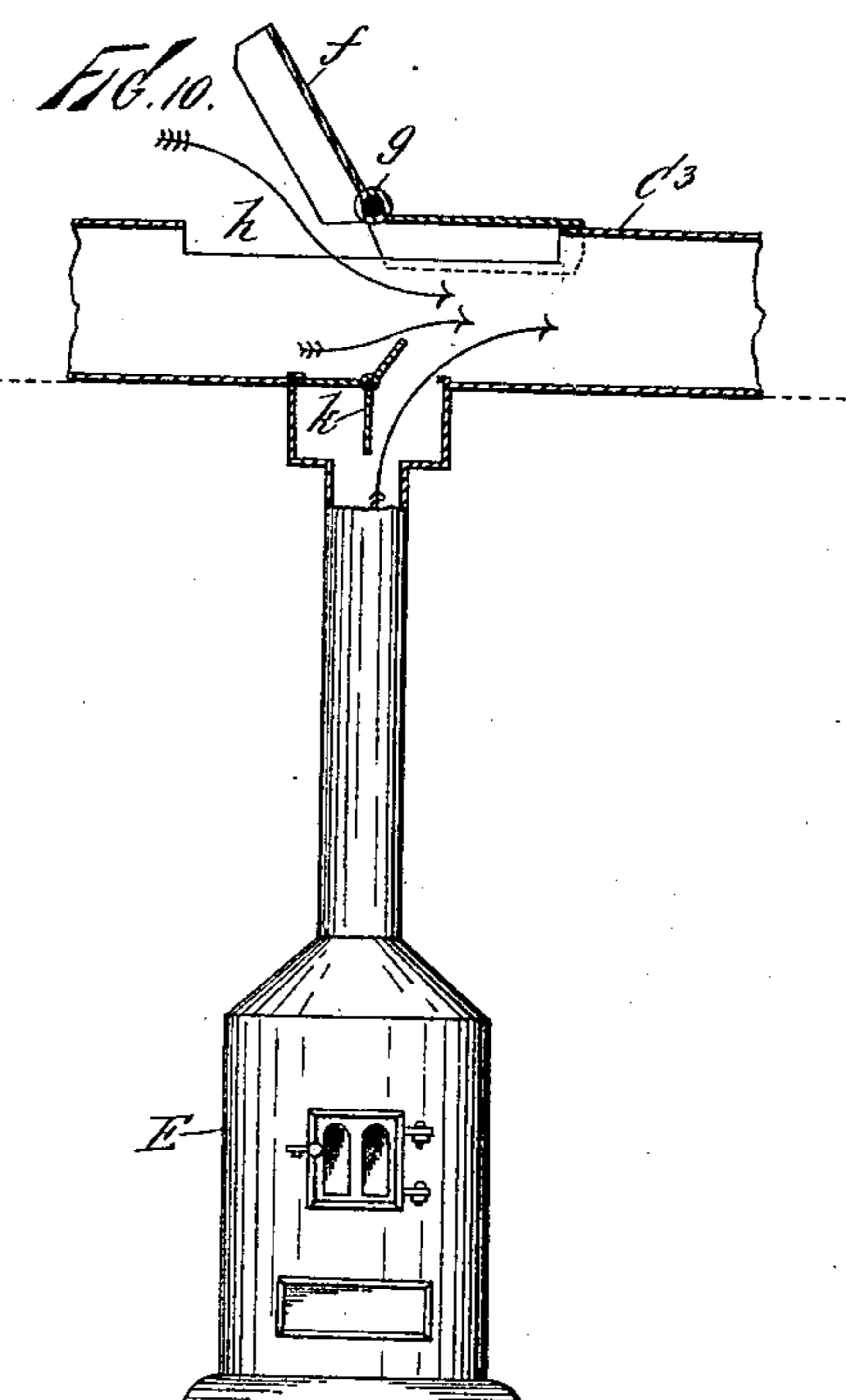
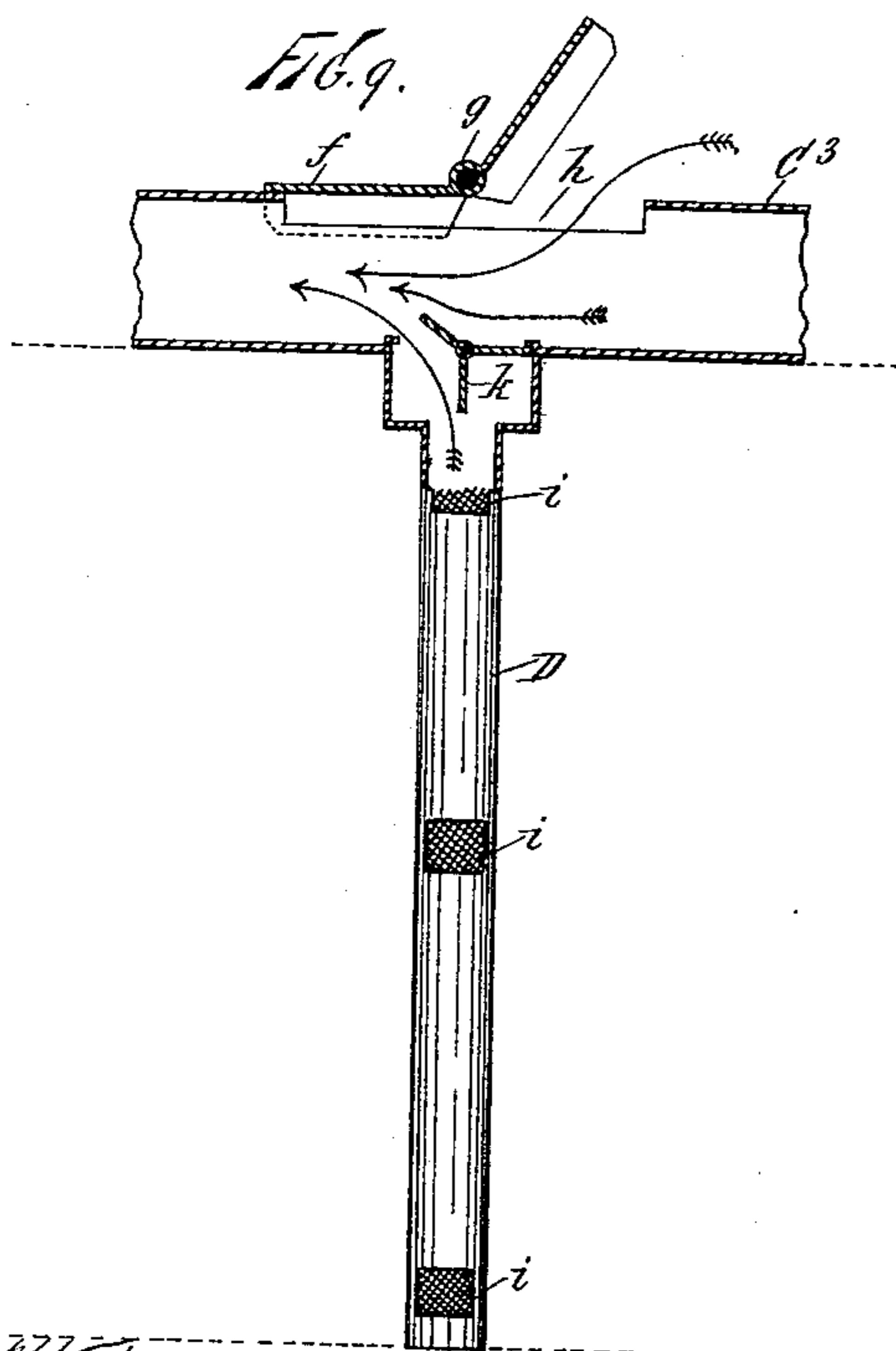
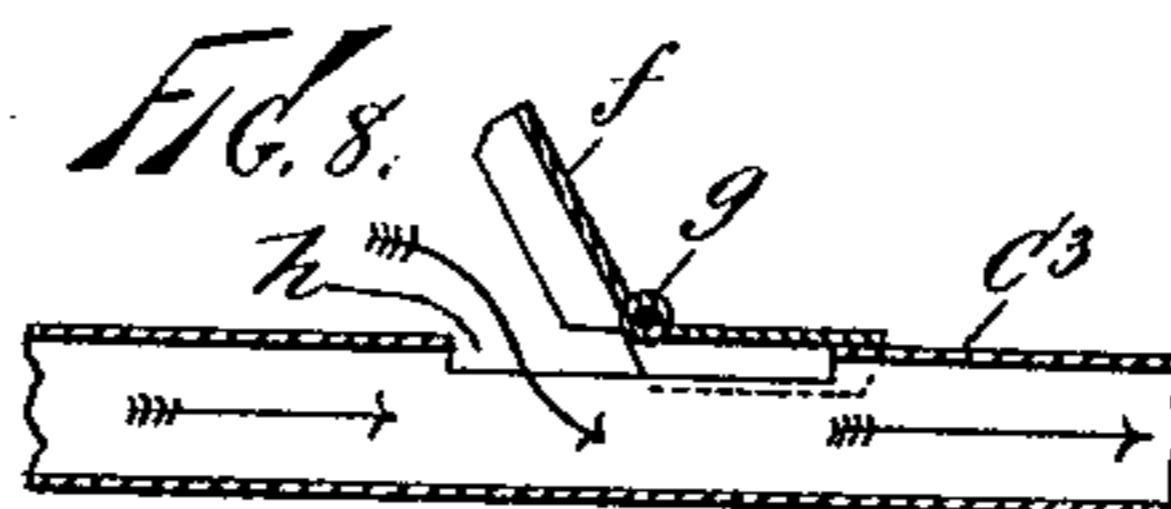
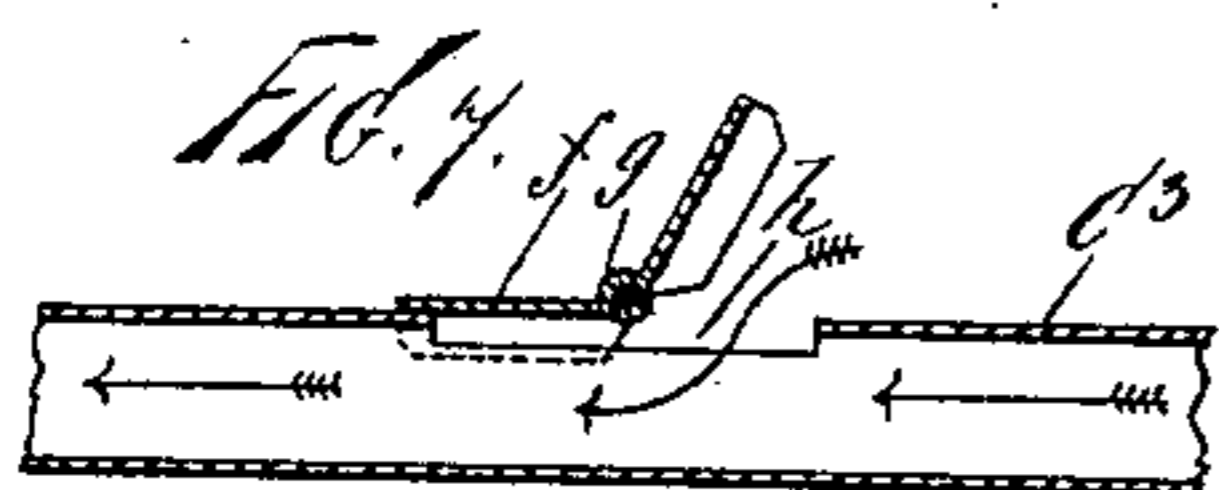
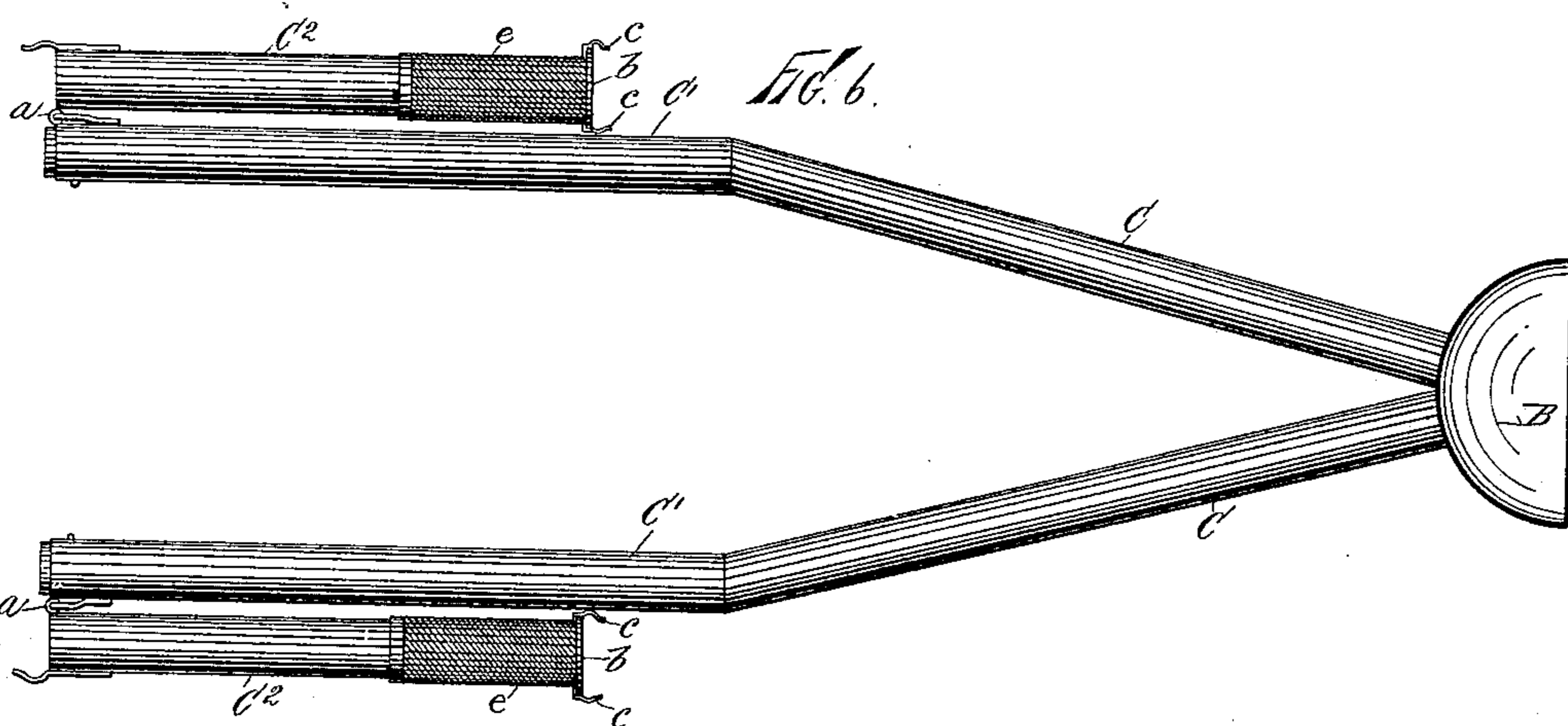
2 Sheets—Sheet 2.

A. S. MILES.

SMOKE CONDUCTOR AND VENTILATOR FOR CARS.

No. 391,263.

Patented Oct. 16, 1888.



Witnesses:  
John Buckler,  
L. H. Osgood,

Inventor:  
Alfred S. Miles,  
By Wm. H. Osgood,  
Attorney.

# UNITED STATES PATENT OFFICE.

ALFRED S. MILES, OF BROOKLYN, NEW YORK.

## SMOKE-CONDUCTOR AND VENTILATOR FOR CARS.

SPECIFICATION forming part of Letters Patent No. 391,263, dated October 16, 1888.

Application filed December 28, 1887. Serial No. 259,232. (No model.)

*To all whom it may concern:*

Be it known that I, ALFRED S. MILES, of Brooklyn, county of Kings, and State of New York, have invented certain new and useful

5 Improvements in Smoke-Conductors and Ventilators for Cars, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

10 My invention has relation to means or apparatus for conducting the smoke and products of combustion from a locomotive rearward over the cars in a train and for ventilating the cars or stoves or closets therein, which apparatus I

15 call a "smoke-conductor and ventilator."

The object of my invention is to provide a train of cars with a compact, simple, and efficient smoke-conductor, which, when the train is moving, will carry the smoke and other products of combustion from the locomotive rearward to be discharged at the end of the train, which conductor will not interfere with the draft from the smoke-stack while the locomotive is standing or backing, or while the fire

20 is being accelerated, and to utilize this conductor as part of a system for ventilating the cars or accessories therein, thus obviating the disagreeable effects of smoke, &c., from the smoke-stack, and insuring a proper circulation of air through the cars or parts thereof without admitting smoke or gases from one car into another.

To accomplish all of this my improvements involve certain new and useful arrangements

35 or combinations of parts and principles of operation, as will be herein first fully described, and then pointed out in the claims.

In the accompanying drawings, forming part of this specification, Figure 1 is a side view, and Fig. 2 a plan, of a train composed of a locomotive, tender, and one car having my improved device or apparatus applied in accordance with my invention, and indicating the manner in which it may be adopted on a train

40 of any length. Fig. 3 is a cross-section showing the branches of the conductor on each side of the roof. Fig. 4 is a view in elevation, and Fig. 5 a view in section, showing the ends of the conductor made flexible in order to yield

45 to the movements of the cars and yet preserve the desired union with the parts to which coupled. Fig. 6 is a plan showing the hinged

sections as mounted on the locomotive and turned back out of the way. Figs. 7 and 8 are sectional views of fragments of the conductor, 55 showing different positions which the air-injector will automatically assume as the car moves. Fig. 9 is a sectional elevation indicating the connection between the conductor on the exterior of the car and a ventilator-pipe 60 communicating with various points on the interior. Fig. 10 is a similar view showing the smoke-pipe from the car-stove discharging into the exterior conductor.

In all the figures like letters of reference 65 wherever they occur indicate corresponding parts.

A is the smoke-stack of the locomotive. It is desirable that this should be left free at top, so that smoke, &c., may be discharged there- 70 from without hinderance, so that whether moving forward or backward or standing still the draft will not be obstructed, but may be accelerated at any time, (as by any of the forms of blowers.) 75

B is the mouth or funnel of my apparatus, open toward the front, extending to the discharge end of the smoke-stack, located a little above it, but not projecting over it. This mouth or funnel is of ample size to receive 80 all the products of combustion which may leave the smoke-stack, and it communicates with two open pipes or conduits leading rearward, the two together being of size sufficient to freely carry all that may be injected into 85 them. These conductors spread, as at C C, toward the cab, so as to escape the whistle, the bell, and other adjuncts which may be mounted on the locomotive. The sections C' C' are supported on the cab, and are supplied with 90 sections C<sup>2</sup> C<sup>2</sup>, which are hinged, as at a, and intended to reach about the length of the tender to the first car of the train. By hinging the sections C<sup>2</sup> C<sup>2</sup> as shown, either or both may be swung forward, as in Fig. 6, to clear 95 the space over the tender, so the latter may be loaded at any time. Sections of the conductor, as C<sup>3</sup> C<sup>3</sup>, extend over the cars. These are mounted on the roofs near the edges, so as not to add to the width of the cars, and below the 100 main central parts of the roofs, so as not to add to the height of the cars. In this position they are in no danger of being damaged or displaced. The several sections constitute the

conductors, and when connected or coupled up they serve to carry the smoke, &c., rearward to the end of the train, discharging at the rear.

5 The couplings should be made automatic and should be flexible, so as to permit movements of one section with respect to the other without destroying the continuity of the pipe. I therefore construct the couplings as indicated  
10 in Figs. 4 and 5, wherein *b b* are flanges adapted to abut against each other. *c c* are springs which, when one flange is brought against the other, will snap over the margins and hold them with sufficient firmness, but  
15 not so as to prevent them from being drawn asunder, (as when the cars are uncoupled.)

*d* is a spiral spring united with flange *b* and with the end of the conductor-section, and *e* is a cloth or other flexible covering for the spring  
20 *d*. One of these couplings is mounted on each end of each section of the conductor.

As the train moves forward, the smoke, &c., are projected into the funnel *B* and through the branches of the conductor. To facilitate its  
25 rearward passage and to keep the conductor free of dust and ashes, (as well as to serve other purposes,) I mount air-injectors, as *f f*, on the conductor. These each consist of two parts, and are hinged, as at *g*, over openings  
30 *h*, in such manner that they will direct currents of air into and through the openings *h*, no matter in which direction the car may be moving, and these air-currents eject the contents of the conductors in a manner which  
35 will be readily understood. As many of these injectors may be supplied as may be desired. There being thus a constant current maintained through the conductors, I employ them to advantage in ventilating the cars and various  
40 parts thereof. For instance, in the region of one of the openings *h*, I unite a ventilator-pipe, *D*, with the conductor. This pipe may have any number of registers, as *i i*, at various heights in the car. One of the registers being  
45 open and the car in motion, foul air is drawn out of the car on principles readily understood. If the car remains stationary, any naturally-ascending currents will find their way through opening *h* to the exterior air. Under  
50 no circumstances will they be discharged from one car to pass into the next.

To prevent cinders, &c., from lodging in the ventilator-pipe, I supply it with an automatically-operating half-damper, as at *k*. This  
55 is turned by the passing current, so that said current will be deflected up and past the orifice governed by the damper. In like manner I connect the smoke-pipe of the car-stove *E* with the exterior conductor, and am thus enabled to facilitate the draft of the stove and  
60 deliver its products of combustion at the rear of the train instead, as heretofore, partly in an adjacent car. When at rest, the draft is directly out through opening *h*. These ex-  
65 amples will suffice to show the manner of utiliz-

ing the apparatus in connection with any part of the car. I especially intend to provide in a similar manner for the ventilation of the various closets in the car.

By the means described I am enabled to  
70 thoroughly ventilate all parts of the car or train without in any way interfering with the usual operations of the various adjuncts of the train and accomplishing the purpose or object of the invention, as previously set  
75 forth.

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

1. The open mouth or funnel located in  
80 rear of and above the discharge end of the smoke-stack, combined with a smoke-conductor leading rearward, divided into two branches, each having a hinged section, substantially as and for the purposes set forth. 85

2. The combination, with the funnel, of the two sections of the conductor spread and extending rearward on the sides of the train, each section being provided with a hinged portion and with automatic couplings, sub-  
90 stantially as shown and described.

3. The hinged sections of the smoke-conductor, each carrying one portion of an automatic coupling, combined with the other sections of the smoke-conductor, and arranged to  
95 be swung forward to clear the tender, substantially as shown and described.

4. In a smoke-conductor of the character herein set forth, the various sections each provided with flexible and automatic end  
100 couplings, and with automatically-operating air-injectors, for the purposes and objects explained.

5. The smoke-conductor extending on both sides of the roof of the car and provided with  
105 automatic air-injectors, and ventilator-pipes leading from the interior of the car, the whole arranged and operating substantially as and for the purposes set forth.

6. In combination with the smoke-con-  
110 ductor extending along the top of the car, a ventilator or equivalent pipe leading from the interior of the car and communicating with said conductor, substantially as shown and described. 115

7. In combination with the smoke-conductor provided with air-injectors, a ventilator or smoke pipe leading from the interior of the car and communicating with the  
120 smoke-conductor in the region of the opening governed by one of the air-injectors, substantially as and for the purposes set forth.

In testimony that I claim the foregoing I have hereunto set my hand in the presence of two witnesses.

ALF. S. MILES.

Witnesses:

W. J. MORGAN,  
WORTH OSGOOD.