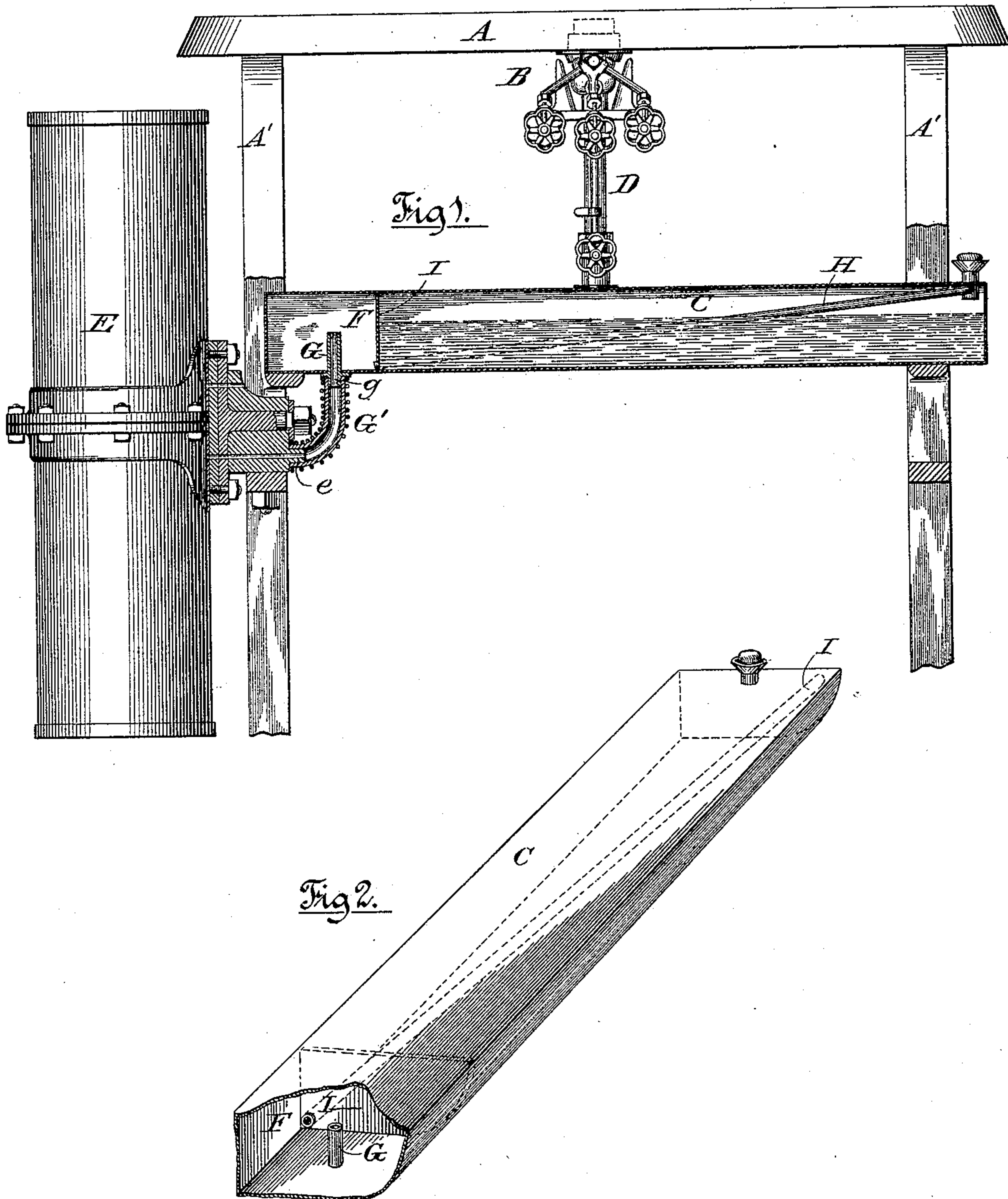


(No Model.)

S. DANIELS.  
VAPOR STOVE.

No. 404,961.

Patented June 11, 1889.



Witnesses  
*Wm. J. Fleming.*  
*Louis H. Whitehead.*

Inventor  
*Samuel Daniels*  
*by Dayton, Poole & Brown*  
Attorneys.



# UNITED STATES PATENT OFFICE.

SAMUEL DANIELS, OF CHICAGO, ILLINOIS, ASSIGNOR TO J. MCGREGOR  
ADAMS, OF SAME PLACE.

## VAPOR-STOVE.

SPECIFICATION forming part of Letters Patent No. 404,961, dated June 11, 1889

Application filed November 17, 1888. Serial No. 291,119. (No model.)

*To all whom it may concern:*

Be it known that I, SAMUEL DANIELS, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Vapor-Stoves; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to that class of vapor-stoves in which the gasoline-tank is located below the vapor-generator or generating-burner, and in which gasoline is elevated to the generator by means of air-pressure applied to the liquid within the tank. In this class of vapor-stoves some form of device is employed to give the necessary air-pressure in the gasoline-tank, and such device may, for the purposes of the present invention, be an ordinary air-pump or a mechanism of the character illustrated in Letters Patent to Daniels, No. 347,161, dated August 10, 1886; or in Letters Patent to Dayton, No. 363,610, dated May 24, 1887, or in the accompanying drawings. In such devices as heretofore constructed the pipe leads from the pump or other pressure device directly into the chamber occupied by the gasoline. A difficulty arising from such construction has occasionally arisen from the entrance of the gasoline into the pressure device when the stove is tipped, as in transportation or moving.

One of the objects of the present invention is to obviate this difficulty; and to this end it consists, as here embodied, in an air-chamber placed intermediate to the air-induction pipe and gasoline-chamber, and a pipe leading diagonally from the air-chamber to the top and opposite side of the liquid-tank.

Another object of the invention is to avoid defection of the joints between the air-pressure device and the tank, to which end it consists in the provision of a flexible pipe connecting these separate parts.

In the accompanying drawings, Figure 1 is an elevation, in partial section, showing a gasoline-stove of the character described and having a reversible air-pressure device of my invention, the particular construction of which is more fully set forth in another ap-

plication for patent filed by me December 27, 1887, and bearing the Serial No. 259,015. In this figure the gasoline-tank is shown as an oblong horizontal vessel supported on the frame, and at the end thereof is located the intermediate air-chamber above referred to. Fig. 2 is a perspective view of the gasoline-tank and the intermediate air-chamber, having integral lateral walls and separated by a partition. The end of the air-chamber is broken away, so as to bring the air-induction pipe and the end of the diagonal air-pipe into view. The direction of the air-pipe, which leads from the air-chamber into the gasoline-tank proper, is best seen in this perspective figure.

A represents the top plate of a stove-frame, and A' its standards.

B is a generating-burner.

C is the gasoline-tank.

D is the stand-pipe for conveying liquid from the tank to the generator of the burner, and E is an air-pressure device, which, though shown to be of a particular kind—to wit, rotatable or reversible—may, nevertheless, be of any description whatever for the general purposes of this invention.

F is an air-chamber interposed between the pressure device and the gasoline-tank.

G is the terminal of the air-induction pipe leading from the pressure-tank to the interior of the air-chamber F, and H is a diagonal air-pipe leading from the bottom and side of the air-chamber to the top and opposite side and end of the gasoline-tank.

In the present instance the gasoline-tank C and the air-chamber F are integral as to their top, bottom, and sides, and are separated by the inserted partition I; but manifestly they may be made separate from each other, if for any reasons such separate construction is preferred.

It will be observed that the induction air-pipe G terminates at a distance from either wall of the air-chamber F, and it is therefore plain if a small quantity of liquid be introduced into the air-chamber it cannot be made to pass out through the pipe G in any position of the stove—that is to say, the stove may be tilted on its end, or even turned to rest on its top, and the liquid in the chamber



F, if less than, say, half of its capacity, will not flow out through the pipe G, and will therefore be prevented from entering the air-pressure device with which said pipe G connects.

It is further manifest that in the diagonal arrangement of the pipe H it will be impossible by any changing of the position of the stove from its proper upright position to its side or top and back again to discharge from the tank C into the chamber F more than the contents of said pipe H at one time. Now the pipe H will be given an interior capacity so small that if all the liquid it will hold be delivered into the chamber F the latter will not in any position of the stove reach the mouth of the pipe G, and will therefore be prevented from entering said pipe, and when the stove is righted will occupy the bottom of the air-chamber and be forced out of said chamber through the pipe H under the pressure of air upon its surface or taken up by entrainment of its vapor. By means of this intermediate air-chamber and the diagonal pipe, therefore, the escape of the gasoline into the air-pressure device is wholly avoided, and any and all injurious effects which would result from such improper discharge of the gasoline are obviated.

While the pipe G, if terminated, as shown, at a central point of the air-chamber F, is an effective guard against the escape of the gasoline in all positions which may be given the stove, it may not be thought necessary to guard against a completely-reversed or upside down position, which will rarely or never be given to the stove. If so, it will be practicable to carry the pipe G to the very top of the air-chamber or to bring it downward into the air-chamber and to terminate it at the top and still effectively guard against the discharge of gasoline in all other positions of the stove, except when upside down. Such a modification of the construction shown will be within my invention, though not so perfectly adapted for all possible cases. Of course it is immaterial in what direction the pipe G enters the intermediate air-chamber.

Referring next to the other feature of my improvement, it has been found that when the tank and the air-pressure device (which are separate from each other) are secured rigidly to the stove-frame it is sometimes difficult to make a rigid pipe-connection between the two perfectly tight, and particularly it has been found that after a tight connection has been made frequent movements of the stove are very likely to loosen the connection and to allow air or gasoline to escape, according as the pipe connects with the separate air-chamber, as shown in the drawings, or with the gasoline-chamber, as has been heretofore commonly practiced. To obviate this I employ a flexible tube G' as the means of conducting the air from the pressure device to the gasoline-tank or air-chamber, the ends of the flexible tube being fastened over suitable thimbles, as *e g*, formed on the several parts with which it connects, as indicated in the drawings. In order to stiffen this flexible pipe and prevent its displacement or injury, it may be desirably wound with wire, as also indicated in the drawings, and as such tubes have been heretofore wound and used for garden-hose.

I claim as my invention—

1. The combination, with a gasoline-tank and an air-pressure device, of an intermediate air-chamber, a pipe leading from the air-pressure device to a central point of the air-chamber, and a diagonal air-pipe leading from the air-chamber to the top of the gasoline-tank, substantially as described.

2. The combination, with a vapor-stove frame, a gasoline-tank and an air-pressure device, said tank and pressure device being separate from each other and separately secured to the frame, of a flexible air-tube connecting the air-pressure device to the tank structure, substantially as described.

In testimony that I claim the foregoing as my invention I affix my signature in presence of two witnesses.

SAMUEL DANIELS.

Witnesses:

M. E. DAYTON,  
C. CLARENCE POOLE.