No. 846,078. PATENTED MAR. 5, 1907.

F. J. WOOD.

SAFETY GAS TRAP.

APPLICATION FILED JULY 1, 1904.

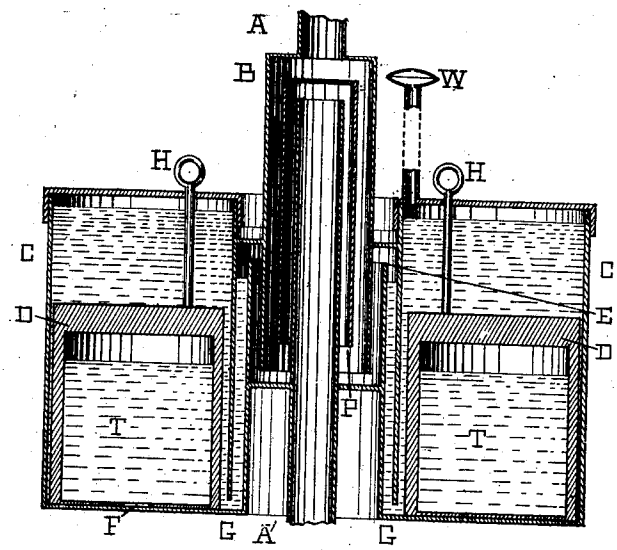


Fig. 1.

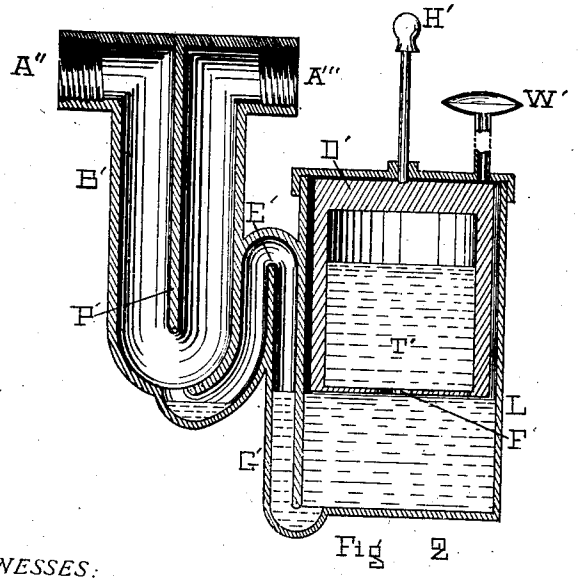


Fig 2

WITNESSES:

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SAFETY GAS-TRAP.

No. 846,078. Specification of Letters Patent. Patented March 5, 1907.

Application filed July 1, 1904. Serial No. 215,033.

To all whom it may concern:

Be it known that I, FRANK J. WOOD, a citizen of the United States, residing at Brooklyn borough, New York, in the county of Kings and State of New York, have invented a new and useful Improvement in Safety Gas-Traps, of which the following is a specification.

My device relates to improvements in automatic safeguards against accidental asphyxiation in sleeping or other apartments by illuminating-gas, and the object is to provide a device of trap that will automatically close a gas-conduit whenever the gas-pressure is temporarily released by the shutting off of street mains, water in the pipes, or by a defective meter and remain closed after the pressure is reëstablished until opened by someone who would probably be cognizant of the condition of the burners throughout the apartments and give any sleeping occupants warning before turning on the gas. This I accomplish by the device illustrated in the accompanying drawing, in which—

Figure 1 represents the device attached to a vertical pipe, such as a chandelier; and Fig. 2 represents the same device arranged to be attached to horizontal pipes.

The principal difference between the two forms shown is that one is circular, or, rather, annular, enabling it to be mounted symmetrically around a vertical pipe or chandelier, while the other is in its simplest form and better adapted to be mounted, say, near the meter; but the principle of operation is identical in both forms.

A, Fig. 1, is the pipe connection through which the gas enters the device.

A′ is the pipe or connection through which the gas leaves on its way to the burners.

B, Fig. 1, is the body, which is an enlargement of the pipe A, in which is the annular or cup-shaped partition P, which is secured to the enlargement B by braces, which are not shown in the drawing. The pipe A′ extends into and almost to the top of this annular partition P. Opening into the bottom of the enlargement B is a passage G, which affords communication between this enlargement and the liquid-containing vessel C.

D is a displacing-piston, which is very loosely mounted in the vessel C, so loosely that it only acts as a piston when pulled quickly upward by the handles H, the space around the piston being of sufficient opening that the liquid can flow quite freely past the piston into the passage G while the piston is at rest on the bottom of the vessel C. (This piston D is annular in the shape shown in Fig. 1.) There is a cavity T in this displacing-piston D, adapted to hold liquid. An aperture F affords communication between the cavity T and the vessel C. This piston D is made so heavy that it will always sink in the liquid by its own weight.

E is a partition separating sections of the passage G. Under normal conditions the top edge of this partition is lower than the level of the liquid in the vessel C.

W is an alarm-whistle, which is mounted on the end of a tube connected to the top of the vessel C. This tube may be extended so that the whistle may be outside the building in the open air. The object of this whistle W is to give an alarm in case the liquid has leaked or evaporated out of the vessel C, which would permit the gas to escape through the vessel and out of the whistle.

The operation is as follows: Fig. 1 shows the device under normal conditions with the gas-pressure on. I will assume that the liquid in the vessel C (which may be water, but preferably glycerin or an oil that does not freeze or readily evaporate) is filled to about the level shown in Fig. 1 in the drawing. The pressure of gas acting on the surface of the liquid in the passage G prevents the liquid from overflowing the top of the partition E. Now should the pressure of the gas be released the liquid, no longer having any pressure to hold it back, will flow through the passage G over the top of the partition E into the bottom of the enlargement B and up to the annular partition P, thereby effectually closing the gas passage or conduit, (similar to the manner in which the water in a sewer-trap prevents any passage of gas.) There will then be no further flow of gas until the liquid is drawn from the enlargement B. To do this, the piston D is raised. This action draws the liquid from the enlargement B back through the passage G into the vessel C. The piston D is then allowed to drop slowly back to the bottom of the vessel C, and the liquid rises to the original level, and the device is again ready for use. When the piston D is at the extreme top of the vessel C, the proper level of the liquid should be just at the bottom of the piston. If any of the liquid has leaked or evaporated out of the vessel, the level will then be lower than the bottom of the piston. The liquid inside the

cavity T of the piston will then flow out through the aperture F until the level in the vessel just reaches the bottom of the piston, when no more air can get into the cavity T, and consequently no more liquid can flow out. Then when the piston is lowered the liquid will be displaced and rise to the proper working level.

In Fig. 2 the functions of the parts or members of the device designated by the letters A″ A‴ B′ C′ D′ E′ F′ G′ H′ P′ T′ W′ are identically the same as those designated in Fig. 1 by the letters A A′ B C D E F G H P T W, respectively. The piston P′ in Fig. 2 is shown lifted to the top of the vessel C, showing the level L of the liquid at the same level as the bottom of the piston. It is obvious that if the level of the liquid were lower than the aperture F′ air would be drawn into the piston and some of the liquid therein would flow out through this aperture until the liquid in the vessel C rises to the level L, and thereby seal the aperture F′ and prevent the ingress of any more gas, and as a consequence the egress of any more liquid.

What I claim as my invention is:

1. In a safety gas-trap, a connecting-pipe, an enlargement thereof, an open-bottomed bell within said enlargement, a second connecting-pipe leading from the upper portion of the bell and a second enlargement on said second connecting-pipe enveloping the lower portion of the first-named enlargement, an annular vessel surrounding said enlargements and communicating therewith, and a sealing liquid in said vessel whose normal level is higher than the upper edge of the second-named enlargement whereby on cessation of the gas-pressure the liquid overflows into the second enlargement and seals the bell.

2. A safety gas-trap comprising a gas-conduit, a vessel in communication with the gas-conduit, a sealing liquid in said vessel, a displacing-piston loosely fitting said vessel and having a cavity and an aperture connecting said cavity with the interior of the vessel and an operating-handle for said piston.

3. In a safety gas-trap a displacing-piston with its operating-handles and connections mounted in a liquid-containing vessel, a liquid-containing cavity in said displacing-piston, a communicating aperture in the bottom of said displacing-piston for the purpose described.

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