

A. F. ELLS.  
FIRE-ALARM.

No. 181,323.

Patented Aug. 22, 1876.

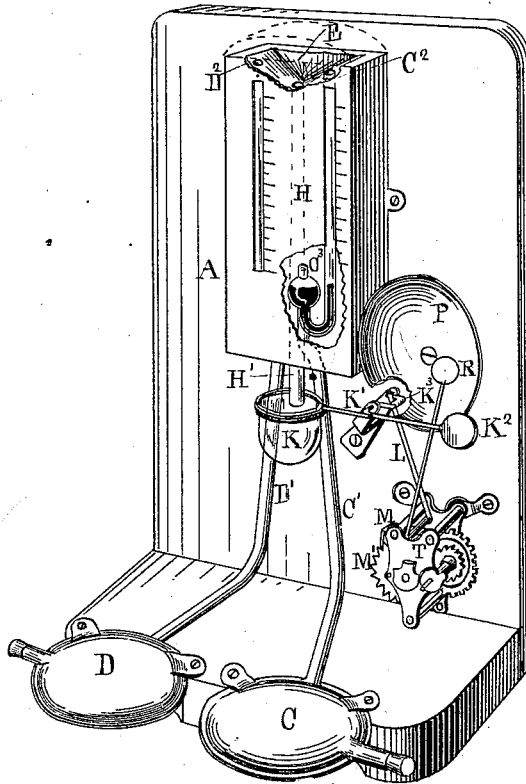


Fig. 1.

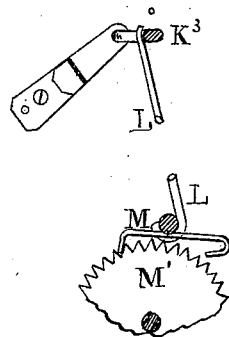


Fig. 2.

WITNESSES  
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# UNITED STATES PATENT OFFICE.

ALBERT F. EELLS, OF BOSTON, MASSACHUSETTS, ASSIGNOR OF ONE-HALF HIS RIGHT TO W. H. DOLE AND F. B. DOLE, OF SAME PLACE.

## IMPROVEMENT IN FIRE-ALARMS.

Specification forming part of Letters Patent No. 181,323, dated August 22, 1876; application filed July 28, 1876.

*To all whom it may concern:*

Be it known that I, ALBERT F. EELLS, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Fire-Alarms, of which the following is a specification:

The nature of my invention consists in placing, in different apartments of a building or ship, a series of air-chambers, each chamber being connected by a suitable tube to a reservoir of mercury so arranged that when the air in any of the chambers becomes dilated by heat, it will force the mercury out of the reservoir, and into a counterpoise-cup attached to a let-off device of an alarm. Thus any excess of heat in any apartment will cause an alarm to be sounded, and thus give warning of danger.

Figure 1 is a perspective view of the invention, showing two air-chambers. Fig. 2 is a detail of a part of the let-off device.

Let A represent a board or wall, to which the alarm device is attached. C and D represent air-chambers, one of which may be located in each of the apartments from which it is desirable to communicate. C<sup>1</sup> and D<sup>1</sup> are tubes connecting the air-chambers with the mercury-reservoirs, one of which is shown at C<sup>2</sup>. Each mercury-reservoir consists of a siphon and bulb, as shown, one arm of the siphon being connected with the pipe or tube from the air-chamber, while the other end C<sup>2</sup> is open, and delivers into a tunnel-shaped receiver, E. H H' is a tube leading from the lower part of the receiver E down to the counterpoise-cup K.

From the above description it may be seen that in case the confined air in the chamber C is dilated by heat it will act, through the tube C<sup>1</sup>, upon the mercury in the bulb C<sup>2</sup>, and, forcing it up through the tube C<sup>2</sup>, will cause it to

overflow into the receiving-tunnel E, from which it will run down the tube H, and into the counterpoise K. The counterpoise K acts upon the let-off device in the following manner: The counterpoise-cup K is attached to a tilting lever, K<sup>1</sup>, and balanced by a weight, K<sup>2</sup>. Intermediate between the parts K<sup>1</sup> and K<sup>2</sup> the lever is pivoted and attached to a crank, K<sup>3</sup>. The object of the crank K<sup>3</sup> is to hold the end of the let-off lever L. (See Figs. 1 and 2.) The lower end of the lever L is connected to the pallet M, and is so arranged, in connection with the escapement-wheel M', that when the lever L is held back by the crank K<sup>3</sup> the wheel M' cannot turn; but when the lever L is released, as it will be when the counterpoise-cup K is full of mercury, by the dropping of that end of the lever K<sup>1</sup>, then the pallet M can freely vibrate, and allow the alarm mechanism T to operate. This mechanism acts through the hammer R upon the bell P, and gives the alarm. The ascending arms D<sup>2</sup> C<sup>2</sup> of the siphons may be marked to show with which apartment it is connected, so that the particular apartment from which the signal comes may be indicated.

I claim as my invention—

1. The combination of the air-chambers C, &c., with the mercury-reservoirs C<sup>2</sup> and the counterpoise-cup K, all operating substantially as described, and for the purpose set forth.

2. The combination of the counterpoise-cup K, the lever K<sup>1</sup>, crank K<sup>3</sup>, and let-off device L M, with the alarm device T, all operating together substantially as described, and for the purpose set forth.

ALBERT F. EELLS.

Witnesses:

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FRANK G. PARKER.