W. Spear.

Burglar Alarm.

No. 104,073. Patented June 7. 1870.

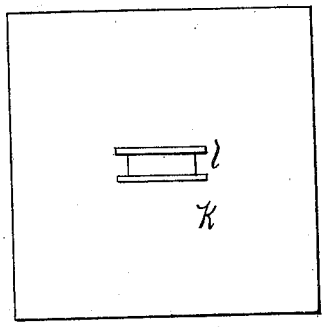


fig 3

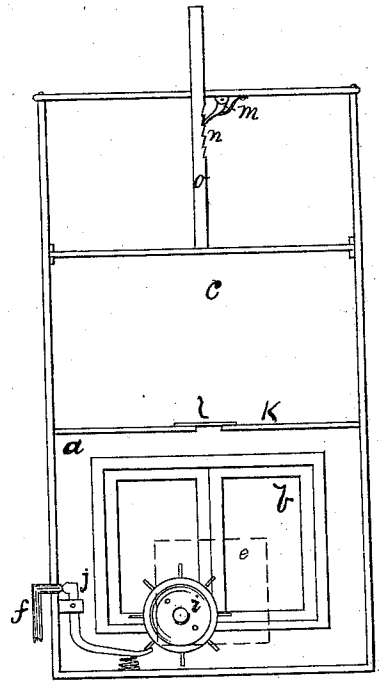
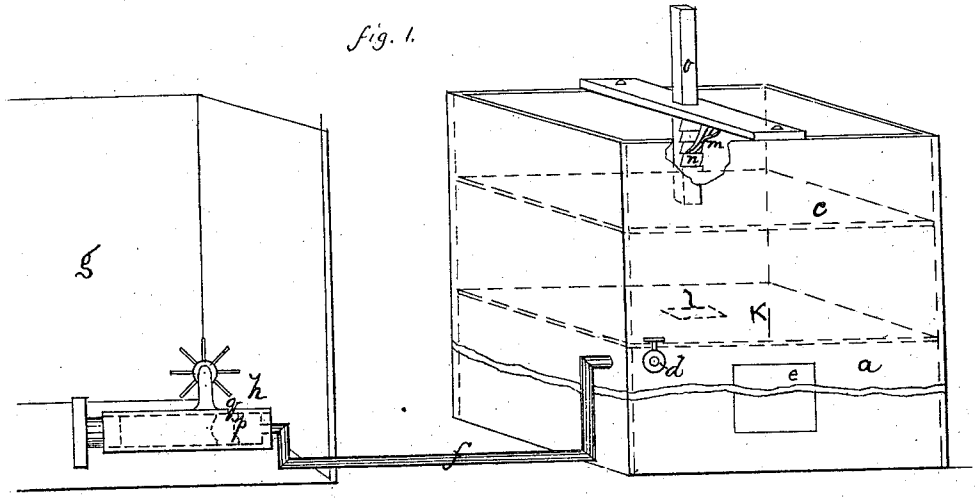


fig 2

fig. 1.



Witness
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WILLIAM SPEAR, OF CAPE ELIZABETH, MAINE.

Letters Patent No. 104,073, *dated June* 7, 1870.

IMPROVEMENT IN ALARMS FOR SAFES.

The Schedule referred to in these Letters Patent and making part of the same

To all whom it may concern:

Be it known that I, WILLIAM SPEAR, of Cape Elizabeth, in the county of Cumberland and State of Maine, have invented a new and useful Improved Safe; and I hereby declare the following to be a full, clear, and exact description thereof, which will enable others to make and use my invention, reference being had to the accompanying drawing forming part of this specification, in which—

Figure 1 is a side elevation of the apartment, showing the tube and watch-room.

Figure 2 is a sectional elevation of the apartment, with safe inclosed.

Figure 3 is a top view of the diaphragm of the safe-apartment.

The purpose of my invention is to provide a method of protecting safes and other vaults and apartments from intrusion and burglary, by means of a method of communicating intelligence to any desired or arranged point, if the conditions under which my invention places the same are disturbed or deranged, and also to indicate if fire is affecting the said conditions. The purpose is, also, to provide a system or series of regularly or irregularly recurring signals or indications, by which the safety of the vault, &c., is from time to time made known.

My invention consists of an air-tight chamber or compartment, with an air-tube or tubes leading away therefrom to some watch-room, where a watchman is to be placed. In this chamber the safe is placed, or the chamber itself may constitute the safe. The air in the chamber is condensed by an air-forcer, or by any known process.

The principle of communicating is that, by opening or forcing the chamber when thus charged with air, and the consequent change and movement of the air to restore equilibrium with the atmosphere, an effect is produced in, and communicated through the tubes to the room or place, where, by means of a gauge or signal of any kind, the fact is made known to the watchman.

When affected by fire, the expansion of the air in the chamber consequent thereupon, by its increase of pressure in the tubes and chamber, will also convey intelligence the same as when the condensed air is permitted to escape.

My method of communicating intelligence to head or watch office, may thus be explained.

The safe or chamber is first charged with air at a density greater than that of the natural atmosphere. The same, or nearly the same conditions, exist in the tube leading away from said chamber.

Where the tube terminates, or at the watch-room or office, the undisturbed condition of the safe is shown by an air-gauge standing continually at a given degree, but, when the safe is opened, and the pressure is reduced, a corresponding change in the gauge will show the change in the pressure. The fact may be communicated by some device to produce sound, placed at the end of the tube, or in any other convenient way.

The method of producing regularly recurring signals to indicate the safety of the chamber is by means of certain mechanical devices, as, for instance, a clock-work, which, at regular intervals opens the ends of the tubes entering the chambers, (the same being first closed,) and thus allows a signal to be made through the tube, and heard or seen in the watch-room.

In order that the execution of a number of these signals may be provided for, as, for instance, during the course of an entire night, without so reducing the pressure in the chamber that it would finally have no effect on the indicator in the watch-room, I furnish two additional features to my invention. I first provide my chamber with an air-tight, but movable top, which may be so weighted as to keep up a pressure of any desired amount, by its weight on the contained air of the chamber. Thus, as the air is slightly reduced in density by one of the clock signals, the slight descent of the top will maintain or restore the original density.

The other feature is, charging the communicating tubes with air to a point nearly up to the condition of the air in the chamber, and thus requiring a less expenditure of air from the chamber to make the signal, or, in other words, arranging at the watch-room end of the tube a valve, which will be of sufficient stiffness to remain closed at a pressure little less than the pressure of the safe or chamber, but which will be opened when that pressure is let on to it.

The manner in which the tube is opened by the clock-work, is as follows:

The movement of the clock slowly moves a rotating disk with sprockets or teeth projecting from its periphery.

The safe-end of the tube is closed by a valve having an arm, which is reached and moved by the said sprockets.

When this arm is thus moved, the valve is opened and the signal made, and the tooth then dropping off from the arm, the valve is closed, and the wheel revolves without reference to the valve till the next tooth reaches the arm.

These regularly, or irregularly recurring signals show that the safe is undisturbed, and they may be changed from night to night, by altering the relative positions of the sprockets, which are, for this end, made removable by the hand.

By this arrangement, a number of safes, banks, or other depositaries of valuables and property, may communicate with one head room or office, to be occupied by a watchman who is continually informed of

the safety of the depositaries, by the tubes and signals before described, and of the fact of their insecurity or danger, as also hereinbefore set forth.

A communication can be kept up with police, or other officers of a city or town, by means of signals at given periods, to be made by the watchman, which signals would serve the double purpose of showing that the said watchman is not remiss in his duty, nor incapacitated from the same, and of conveying intelligence of the safety or otherwise of any of such depositaries, to the said police or other officers.

In case of an attempted burglary at any point, the locality of the same is made known to the police, either by the character of the signals themselves, or by inquiry at the watch-office.

In the accompanying drawing—

a shows the safe, or the apartment to contain the same.

b shows a safe placed therein.

c shows the movable top.

d, the tube for forcing in the air.

e, the entrance, or door.

f, the connecting-tube.

g, the watch-room.

h, an illustration of the signal, which is to be hereafter described.

i, the sprocket-wheel.

j, the lever and valve which closes the connecting-tube.

k is a fixed diaphragm, having a valve, *l*, which is to be more particularly described.

m n is a pawl and teeth on the post *o*, rising from the top of the movable top *c*, which will also be hereafter described.

p shows a valve which is used to open and close the aperture *q*, by which the signal in the watch-room is operated. When the sprocket-wheel in the safe apartment opens the valve, the pressure of the air in the safe apartment, being communicated through the tube *f*, forces the valve *p* by the aperture, which, being thus opened, operates the signal.

The movement of the valve, however, compresses the air in the cylinder in which it is, and the pressure from the safe being withdrawn, this compressed air in the cylinder forces back the valve, closes the aperture, and the signal ceases to operate.

In order that but little loss of the compressed air may be made at the time of opening the safe, it may be connected at the bottom, sides, and top, of the front side thereof, with the interior surface of the air-chamber, by air-tight divisions.

In some most convenient part of said divisions, I make an opening, so constructed that it shall be opened and closed at such periods as may be desired, by clock-work, so that only the small amount of air contained between the door of the air-chamber and the door of the safe will have to be exhausted on opening the vault and safe. The valve *l* is intended to illustrate this, though, in the drawing, it is placed in the center of the fixed diaphragm; but in case of the use of the divisions above described, the division that extends from the top edge of the front side of the safe, will take the place of the diaphragm, rendering the use of the diaphragm, as a whole, unnecessary.

The use of the ratchet and pawl *m n* is more particularly applicable in case of fire, when, by reason of the heat, the air contained in the chamber will have a tendency to expand.

If the movable top were left free to rise, no signal of danger would be given at the watch-room; but, by the arrangement shown, it is prevented from rising, and the increased pressure will be shown by the fixed gauge.

The clock-work that moves the sprocket-wheel is not shown, it being as common.

The use of atmospheric air alone is not intended to be claimed, but it is evident that any other gas or fluid thought desirable may be used. I do not claim broadly the use of compressed air for giving alarm-signals.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The use of compressed air, or other gases or fluids, in a compartment having a movable top, which is capable of being held at any point by a ratchet and pawl, to regulate, by its weight, the density of the air within said chamber, the said chamber being intended to contain a safe, or articles of value, as described.

2. The sprocket-wheel *i*, the valve *j*, the communicating tube *f*, and the signalizing device at the watch-room to produce the regularly or irregularly recurring signals, as described.

3. The diaphragm *k*, with the valve *l*, or the described equivalent therefor, to prevent the escape of condensed air when the chamber is open, as described.

4. The movable top *c*, and the pawl and teeth *m n*, in combination with the tubes *f* and valve *p*, as a fire-alarm, substantially as described.

5. The improved safe, or safe-containing apartment, as described, having the top *c*, the sprocket-wheel *i*, the valve *j*, and the communicating tube *f*, and the signalizing device at the watch-room, by means of which one or more safe or safes are placed in communication with a head office or watch-room, to which place intelligence is intermittingly conveyed of their safety, and information to the contrary, the moment that any or all are in danger, substantially as herein described.

WILLIAM SPEAR.

Witnesses:

WM. HENRY CLIFFORD,

HENRY C. HOUSTON.