

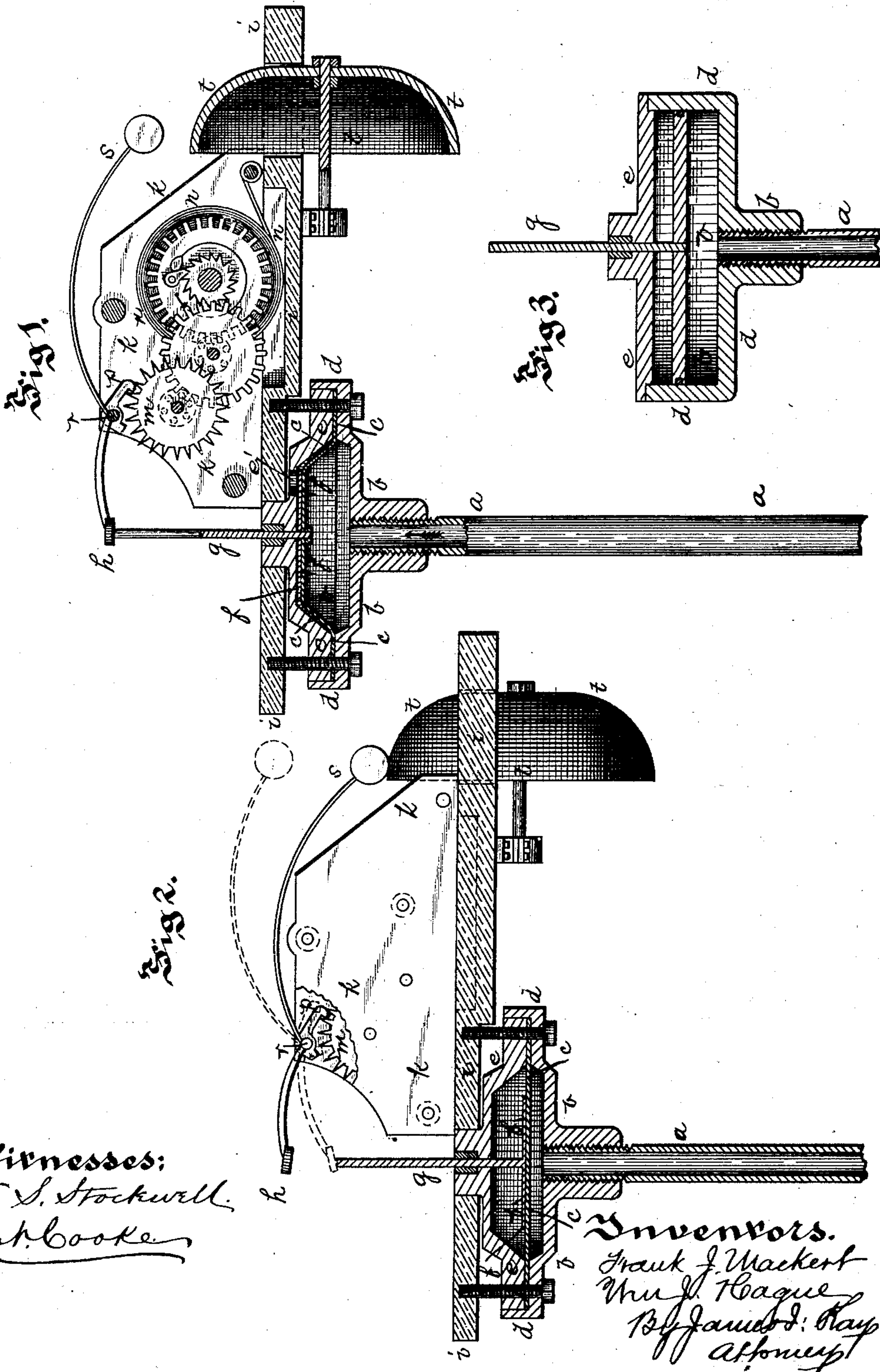
(No Model.)

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GAS STOPPAGE ALARM.

No. 362,222.

Patented May 3, 1887.



Witnesses:

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UNITED STATES PATENT OFFICE.

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GAS-STOPPAGE ALARM.

SPECIFICATION forming part of Letters Patent No. 362,222, dated May 3, 1887.

Application filed January 19, 1887. Serial No. 224,786. (No model.)

To all whom it may concern:

Be it known that we, FRANK J. MACKERT and WILLIAM J. HAGUE, of Allegheny, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Means for Detecting the Stoppage of Gas; and we do hereby declare the following to be a full, clear, and exact description thereof.

Our invention relates to means for detecting the stoppage of the flow of gas through gas-supply pipes. It is well known that in the supply of gas, either for illuminating or heating purposes, and especially with natural gas employed for the latter purpose, there is liability of the supply of the gas through the pipes ceasing from different causes—such as a failure of supply, or some break in the line which requires instant repair before the consumers of the gas can be notified that the gas is turned off, or for other reasons—and if the flow of gas to the grates, stoves, or furnaces should cease for a short period and the pressure of the gas should come on again the fire within the grate, &c., would become extinguished, so that the gas, instead of burning, would be liable to escape into the apartment, and might cause asphyxiation, explosion, or other serious accident; and the object of our invention is to provide a simple means of giving an alarm in any such case.

To these ends it consists in the combination of a pressure-cylinder and spring-actuated bell apparatus, or other alarm controlled by a cylinder, whereby as long as the pressure is maintained within the pipe the apparatus is held in such position that it cannot operate; but as soon as the pressure within the cylinder diminishes to any great extent, or ceases, the bell apparatus will be released and the bell will give the alarm, so detecting the stoppage of the flow of the gas, so that the gas can be turned off and accident prevented.

To enable others skilled in the art to practice our invention, we will describe the same more fully, referring to the accompanying drawings, in which—

Figure 1 is a vertical central section of our improved apparatus. Fig. 2 is a side view, partly in section, of the same; and Fig. 3 is a view of another form of cylinder and piston suitable for the purpose.

Like letters of reference indicate like parts in each.

The apparatus may be located in any part of the building, a small branch pipe, *a*, leading from the gas-supply pipe to the pressure-cylinder *b*. This cylinder *b* may be of any suitable construction, having therein either a piston or diaphragm, upon which the gas will operate, holding the piston or diaphragm at one end of the cylinder so long as the pressure of the gas is maintained.

The form of apparatus preferred by me is shown in the drawings, the cylinder *b* being provided with a diaphragm, *c*, of rubber or like material, which is clamped between the two parts *d e* of the cylinder, the securing-bolts clamping the outer edges of the diaphragm between the faces of the two parts of the cylinder and holding it firmly in place, while at the same time the diaphragm prevents the escape or leakage of any gas. Resting on this diaphragm *c* is the plate *f*, having the stem *g*, which presses against a lever, *h*, when the pressure of the gas is maintained within the cylinder. As the plate *f* simply rests upon the diaphragm and is not secured thereto, there is no necessity of puncturing the diaphragm, and for this reason escape of gas through the same is precluded. The upper part, *e*, of the cylinder has an opening, *e'*, formed therein, admitting the ordinary atmospheric pressure to one side of the diaphragm, and so leaving the plate *f* free to drop by its own weight in case the pressure of the gas within the pipe *a* ceases or diminishes to such extent as to extinguish the fire within the grate. The pressure-cylinder *b* is secured to the under surface of the plate *i* by suitable bolts, and secured to the upper surface of this plate is the spring-actuated clock-work apparatus *k*, which may be of any suitable construction for giving a continuous bell-alarm, the apparatus shown having the escapement-wheel *m* and suitable gearing connecting the same with the coiled spring *n*, and the escapement *p* being mounted on a suitable shaft, *r*, the shaft carrying the lever *h* and the bell-lever *s*, adapted to strike the bell *t*.

The clock-work apparatus can be wound up by any suitable key after it has given the alarm and run down.

When our improved apparatus is in use, the

pressure of the gas through the pipe *a* upon the diaphragm *c* raises the diaphragm, and with it the plate *f* or a like piston and the stem *g*, the stem *g* pressing against the lever *h*, and so holding the escapement *p* in such position that it blocks the escapement-wheel *m*, and so prevents the sound of the alarm. In case, however, the pressure of the gas within the pipe ceases or diminishes to any great extent, so that there might be danger of the flame at the grate becoming extinguished, the weight of the plate *f* or the ordinary piston within its cylinder drops by its own weight, drawing with it the stem *g*, so leaving the bell apparatus or other alarm free to operate, when the alarm will be sounded by the bell, thus calling attention to the fact that the pressure has ceased, so that the gas may be turned off and any danger either from the filling of the room with gas when the pressure is resumed, and the consequent liability of asphyxiation or explosion, is entirely overcome. As soon as the pressure of the gas resumes, the bell apparatus may be wound up, leaving the alarm device in shape for again giving the signal in case the pressure within the supply-pipe should again cease.

Any suitable form of spring actuated bell apparatus may be employed, that shown in the drawings illustrating a simple form which is well adapted for the purpose. The apparatus is simple in construction and can be employed at but slight cost, requiring only the connection of a small pipe from any part of

the supply-pipe in the building to a suitable point for connection with the pressure-cylinder, and it may be located in any part of the building.

What we claim as our invention, and desire to secure by Letters Patent, is—

1. In apparatus for detecting the stoppage of flow of fluids carried within pipes, the combination of alarm-clock apparatus having an escapement-wheel with a lever which engages said escapement-wheel and holds the same, and a pressure-cylinder having a diaphragm or piston therein carrying a stem or rod which supports at its upper end the said lever, substantially as and for the purpose set forth.

2. In apparatus for detecting the stoppage of the flow of fluid in pipes, the combination of the cylinder *a*, provided with the diaphragm *c*, the plate *f*, resting thereon and having the stem *g*, with a clock mechanism for operating an alarm-bell, and a lever, *h*, connected to the stem *g*, for holding said clock mechanism inoperative until the pressure on the diaphragm falls, substantially as and for the purpose set forth.

In testimony whereof we, the said FRANK J. MACKERT and WILLIAM J. HAGUE, have hereunto set our hands.

FRANK J. MACKERT.
WILLIAM J. HAGUE.

Witnesses:

N. S. STOCKWELL,
J. N. COOKE.