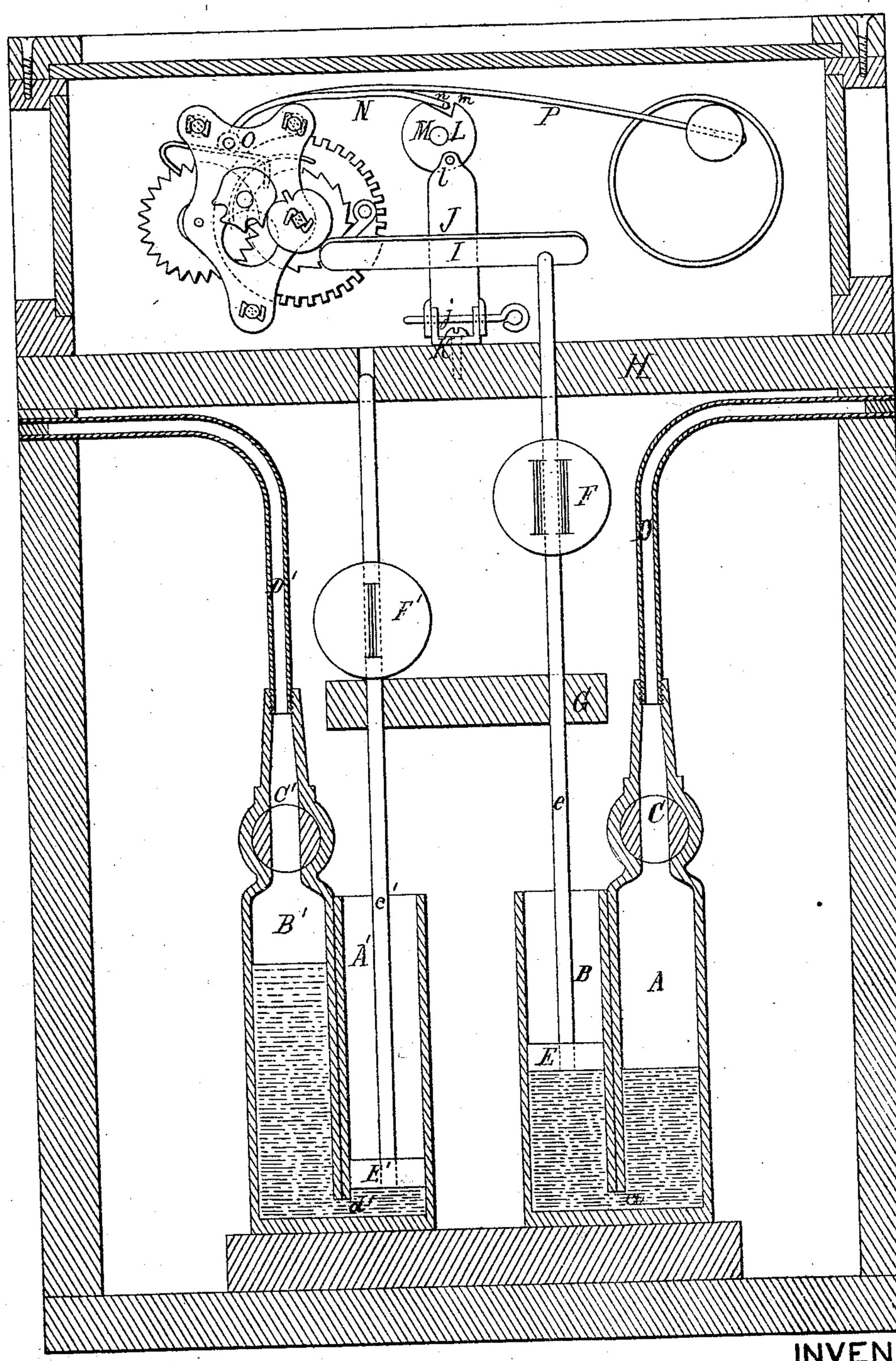
C. H. LEHNIS.

Automatic Fire-Alarms.

No. 144,991. Patented Nov. 25, 1873.



WITNESSES

Villette Anderson.

Chas. B. Steele

INVENTOR.

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UNITED STATES PATENT OFFICE

CHARLES H. LEHNIS, OF PHILADELPHIA, ASSIGNOR OF ONE-HALF HIS RIGHT TO ALEXANDER LESCHORN, OF PITTSBURG, PA.

IMPROVEMENT IN AUTOMATIC FIRE-ALARMS.

Specification forming part of Letters Patent No. **144,991**, dated November 25, 1873; application filed May 10, 1873.

To all whom it may concern:

Be it known that I, CHARLES H. LEHNIS, of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented a new and valuable Improvement in Fire-Alarms; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings making a part of this specification, and to the letters and figures of reference marked thereon.

The figure of the drawings is a representation of my fire indicator and detecter by a vertical section.

My invention relates to fire-alarms; and it consists of a metal pipe soldered with a composition that melts at a low degree of heat, and a double communicating cylinder partly filled with mercury, which supports and operates a piston for the purpose of setting free the motion of a clock-alarm, and raising within sight a mark indicating the location of the fire. The pipe connecting the exposed locality with the end of the double cylinder contains highly-rarefied air, by the comparative weakness of the pressure which the surface of the mercury in the immediately-connected cylinder is raised, while that in the other cylinder, and with it the piston above mentioned, is lowered. The melting of the solder, and the consequent leak in the pipe, permits the atmospheric air to rush into it and balance the difference of pressure, whereupon the mercury, freed of its one-sided pressure, assumes a level position in the double cylinder, and thereby moves the piston up. The object of my invention is to make a fire alarm and indicator of very simple construction, the working parts of which are not damaged by fire, because they may be placed in a fire-proof part of a building; also to provide an arrangement of feelers, or those parts of the fire-alarm which operate it by being in direct contact with the fire, by which every exposed part of a room or building may be connected with the alarm at a very moderate cost, and without any danger to the safe and sure action of the working parts.

In the drawings, A and B are a pair of cylinders, communicating by an opening, *a*, at the bottom, and partly filled with mercury. The cylinder A communicates, by aid of a stop-cock, C, with the pipe D, which is closed at the end, and ripped open along those parts which are exposed to accidental fires. The gaps caused by the said ripping are filled or closed by soldering with a composition of metals that are fused by a very low degree of heat. The cylinder B contains a piston, E, with a piston-rod, *e*, to which a disk or plate, F, with a number or other mark, is attached, and which passes through a guide, G, and through the bottom H of an alarm-case. The upper end of said piston-rod operates a plate, I, on a lever, J, which is pivoted, by a pin, *j*, to a stand, K, on the bottom H. The lever J operates a cam-wheel, L, by aid of an eccentric-pin, *l*, which turns the said wheel on the stud M, and moves the notch *m* toward the pin *n* on the lever N, thereby giving room for the motion of the pin *n* on the lever N. The lever N is fastened to an oscillating shaft, O, of a common alarm movement, and the same shaft has the arm P with a gong-striker fastened to it.

The alarm, being wound up, begins to operate immediately when the cam *m* has passed the pin *n*.

When the apparatus is set, the air is pumped out of the pipe D′, which raises the surface of the mercury in the cylinder B′, and lowers the same in the cylinder A′, thereby lowering the piston E′, moving the indicator-mark F′ out of sight, and causing the lever J to drop and move the wheel L so that it arrests the motion of the pin *n* and the arm N.

This arrangement of the double cylinders with the clock-alarm may be put in an office, and not only connect through its vacuum-pipes with the different parts of a building, but it may afford security to a number of different buildings at the same time, which is a very valuable accommodation in case of temporary absence of the tenants.

The introduction of my improved fire alarm and indicator into hotels, shops, or private houses is less objectionable on account of unsightliness or waste of room than many other arrangements known, as the vacuum-pipes may be of a very small diameter, and, placed in cor-

ners, along the tops of wash-boards, or between floor-joints, will hardly be noticed; or it may be gilded for ornament.

It is evident that the expense of such an arrangement is very low and the security gained very important, the mechanism very simple and within reach of ordinary capacity; the running expense of the same is insignificant.

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

1. The combination of a clock-alarm cam-wheel, L, a lever, J, piston-rod *e*, indicator-plate F, and piston E, with the cylinders A B communicating at *a*, and being partly filled with mercury, and the fusible vacuum-pipe D, substantially as specified.

2. The combination of a fusible vacuum-pipe, a piston, and a communicating pair of cylinders or pipes charged with mercury or any other liquid, for the purpose of indicating, by the change of elevation of such liquid in either part of the said cylinders or pipes, the action of fire on the fusible vacuum-pipe, substantially as specified.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

CHARLES HERRMANN LEHNIS.

Witnesses:

THOS. DUNLAP,

HENRY E. GERHARD,

W. W. DOUGHERTY.