

(No Model.)

A. & A. ISKE.

FIRE ALARM.

No. 287,439.

Patented Oct. 30, 1883.

Fig. 1.

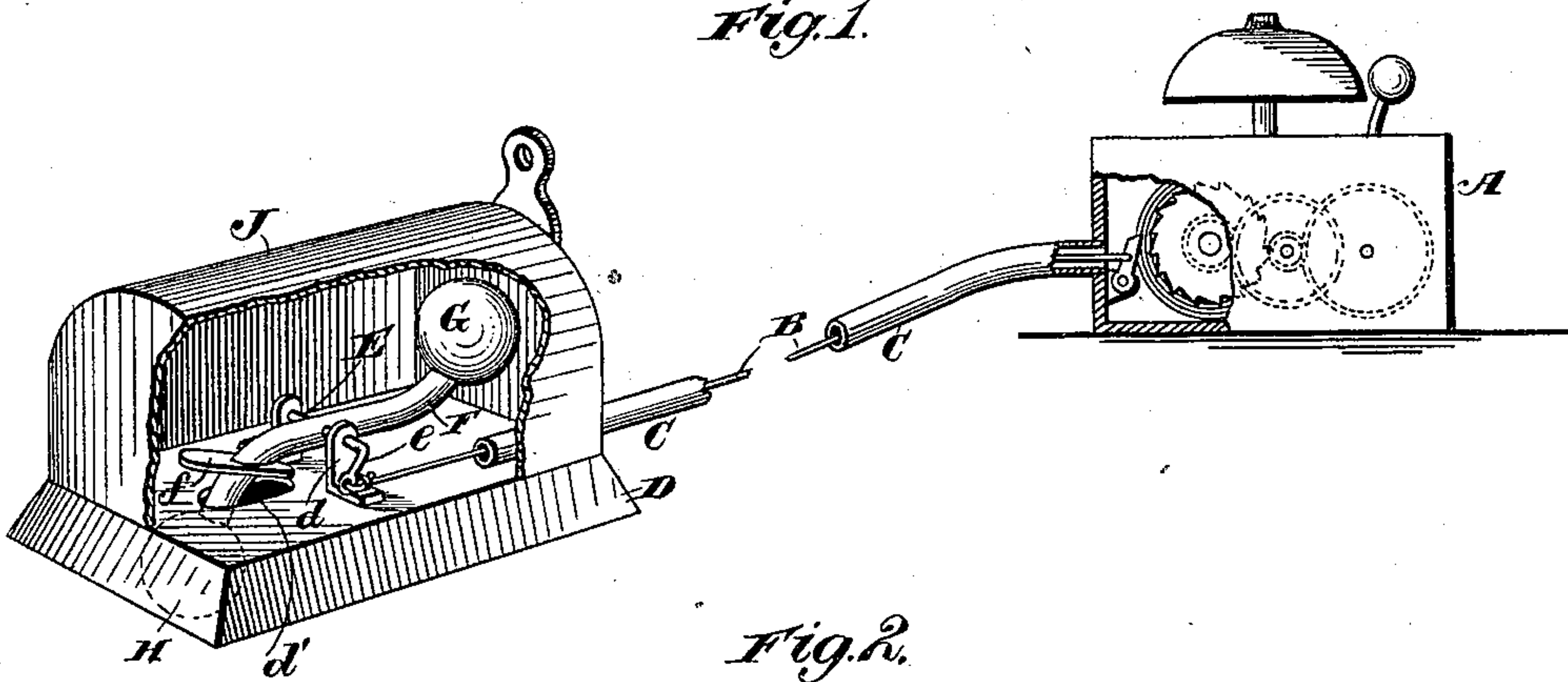


Fig. 2.

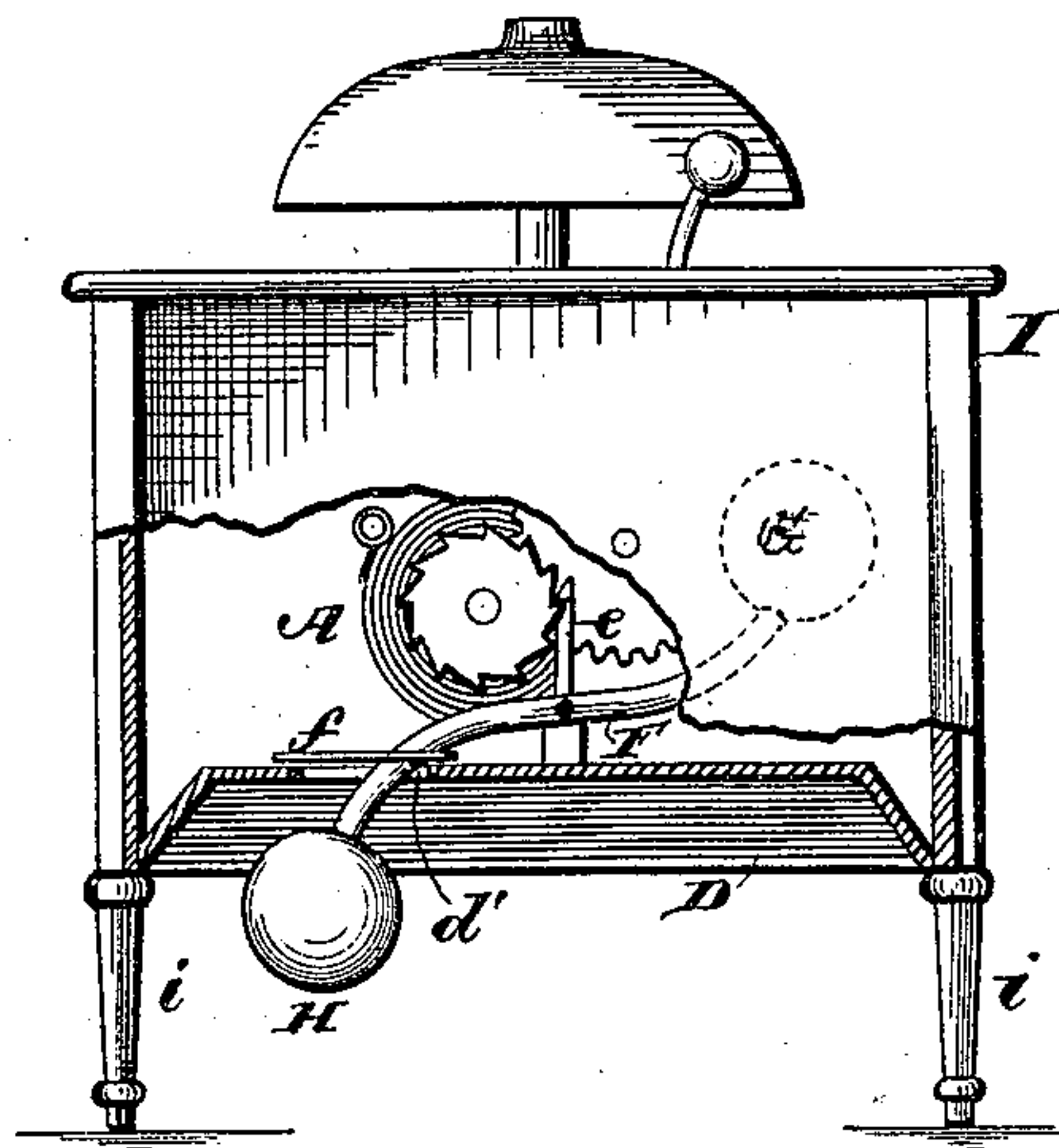


Fig. 3.

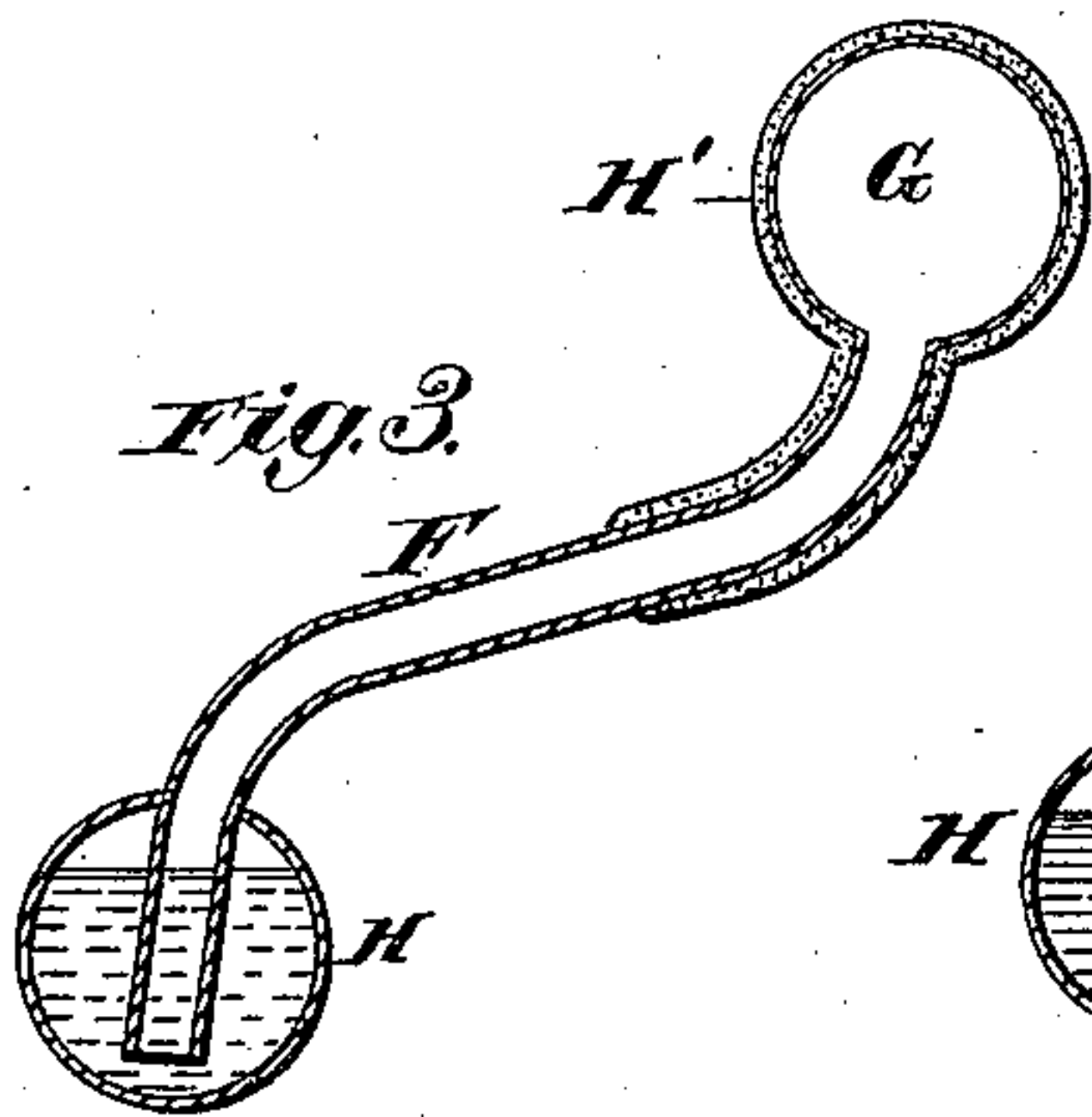


Fig. 4.

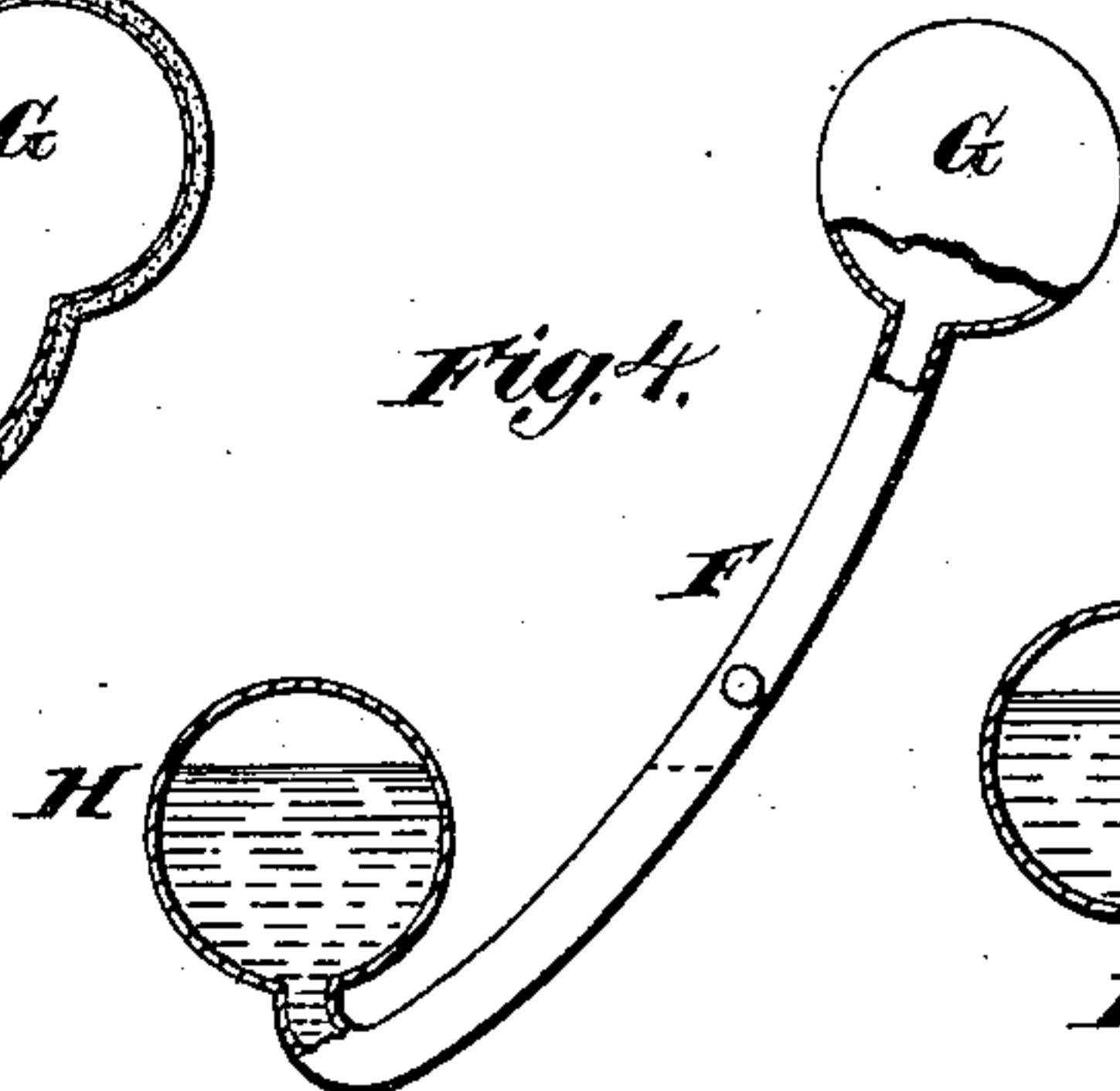
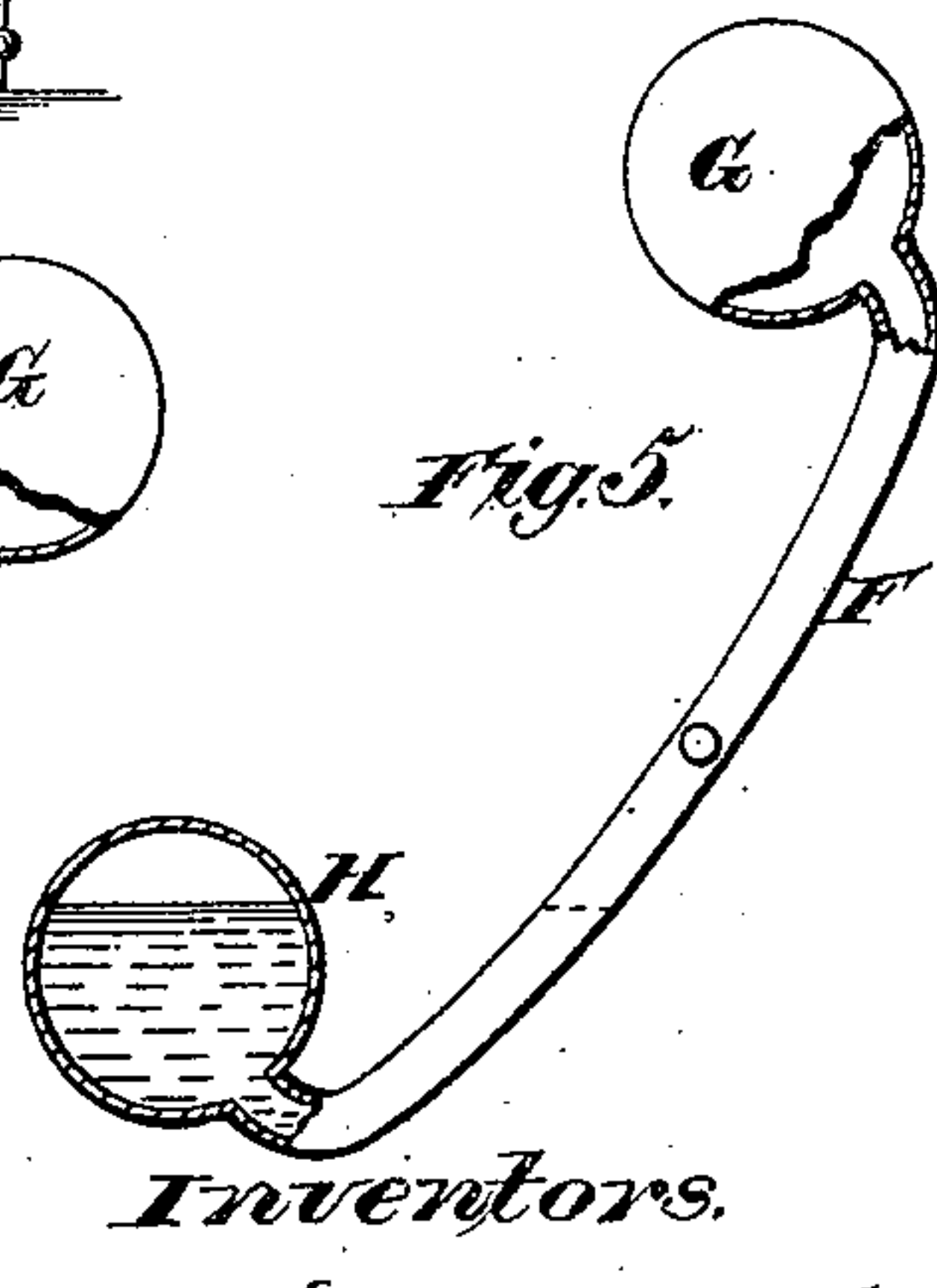


Fig. 5.



Witnesses.

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FIRE-ALARM.

SPECIFICATION forming part of Letters Patent No. 287,439, dated October 30, 1883.

Application filed March 2, 1883. (No model.)

To all whom it may concern:

Be it known that we, ANTHONY ISKE and ALBERT ISKE, citizens of the United States, residing at Lancaster, in the county of Lancaster and State of Pennsylvania, have invented certain new and useful Improvements in Fire-Alarms; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

This invention relates to fire-alarms; and it consists in combining with the alarm apparatus proper a tripping or actuating device, which is operated by the transfer *in vacuo* of volatile inclosed liquid from a lower receptacle to a higher under the influence of heat and its own consequent gaseous expansion, and the subsequent falling of said higher receptacle under the influence of gravity.

In the accompanying drawings, Figure 1 represents a perspective view of our entire apparatus, partly broken away, when arranged to give the alarm at a distance from the fire. Fig. 2 represents a front elevation of the apparatus, all arranged within the same case, the latter being partly broken away to show it. Fig. 3 represents a detail view of the bulbs and tube. Figs. 4 and 5 represent modified constructions of the same.

A designates fire-alarm mechanism, which may be ordinary clock-work arranged to act on the hammer of a bell when tripped; B, a wire or other connection inclosed in a tube, C, which protects it against injury or interference, and extending from the detent of said alarm mechanism to the outside of a small casing, D, on the top of which are raised two lugs or small standards, *d d*. A short shaft, E, has its bearings in these standards, and carries an arm, *e*, which is, as shown in Fig. 1, attached to the proximate end of wire B. A bent tube, F, is rigidly attached at or near its middle to this shaft, and is provided at its upper end with a bulb or receptacle, G, above the top of said casing D, and at its lower end with a bulb or receptacle, H, below said cas-

ing, the tube itself passing through an opening, *d'*, in the top of the latter, and being provided with a cover, *f*, therefor. The lower end of tube F is extended down into bulb or receptacle H, nearly to the bottom thereof. Both of the bulbs and said connecting-tube are made air-tight after being partly filled with alcohol or some other volatile liquid, and then exhausted of air. Under ordinary circumstances the weight of the liquid is in bulb H and the proximate end of the tube, or in the former only, and the shaft E is then in such a position that its arm *e* does not draw on wire B; but whenever said lower bulb is subjected to heat, a portion of the liquid therein is converted into gas and rises to the top of said bulb. As its only outlet therefrom is through the tube F, it forces the remainder of the liquid before it through said tube by the force of its gaseous expansion. Said liquid thus driven through the tube into upper receptacle, G, gives the preponderance to said receptacle and causes it to descend, thereby rocking shaft E and drawing upon the wire B, as stated. This of course trips the detent of the alarm mechanism. When, as in Fig. 2, the bulbs, tube, and shaft are in the immediate neighborhood of the alarm mechanism, the arm *e* may become a tappet, acting directly on said detent. Under such circumstances the entire apparatus may be inclosed within a single exterior casing, I, which may be raised on legs *i* and arranged as an article of furniture. Even when the bulbs and tube are at a distance from the alarm mechanism, as in Fig. 1, it is advisable to use an exterior casing, J, for protective purposes. The under side of the metallic casing D collects the heat of the fire and reflects the same upon lower bulb, H, the sides of said casing being preferably inclined to increase this effect by focusing the heat-rays on said lower bulb. The cover *f* prevents their escape through the top of said casing until the liquid has shifted to bulb or receptacle G. This latter receptacle and the upper part of the connecting-tube are covered with a coating, H', of asbestos, to prevent the action of the heat thereon.

As shown in Fig. 4, the lower bulb may be attached to the upwardly-bent lower end of

the tube F, so as to be above the same, the tube not being extended into said lower bulb; or, as shown in Fig. 5, the bulbs may be bent obliquely. In these, as in many other modified applications of the principle of our invention, the operation is substantially as hereinbefore described.

Of course, instead of operating mechanically, as stated, the arm or tappet on the shaft may be arranged to close or open an electric circuit when the upper receptacle or bulb descends, thereby actuating the alarm; or pneumatic connections may be acted upon for the same purpose.

The bottom of the exterior casing may be protected by wire-netting. The asbestos around the upper bulb, G, and the construction of the casing D and its door *f* add greatly to the sensitiveness of the apparatus. Any additional protective devices may be employed as circumstances require.

If properly made, this fire-alarm will continue in condition for use for a very great length of time. It needs no attention whatever. The bulbs and tube constituting the thermostat should be located in places exposed to danger from fire. No further directions are necessary.

Having thus described our invention, what we claim is—

1. In combination with alarm mechanism, a pair of bulbs and a connecting-tube, which are hermetically sealed, partly filled with vol-

atile liquid *in vacuo*, and free to oscillate when the liquid in one bulb passes to the other and causes the latter to preponderate for the purpose of operating said alarm mechanism, substantially as set forth.

2. In combination with alarm mechanism, the bulbs or receptacles G H, their pivoted connecting-tube F, and a plate or casing, D, arranged above the lower receptacle, H, said tube having its lower end extended below a part or the whole of the volatile liquid in the latter receptacle, and the alarm mechanism being tripped or actuated by the shifting of said volatile liquid from the lower receptacle to the higher, and the consequent descent of the latter, substantially as set forth.

3. In combination with alarm mechanism, a pair of bulbs and their connecting-tube, partly filled with volatile liquid *in vacuo*, and adapted to oscillate when said liquid shifts from the lower bulb to the higher, the latter bulb being externally coated with material which does not readily conduct heat, and its descent serving to trip or actuate the alarm mechanism, substantially as set forth.

In testimony whereof we affix our signatures in presence of two witnesses.

ANTHONY ISKE.
ALBERT ISKE.

Witnesses:

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GEORGE SHAY.