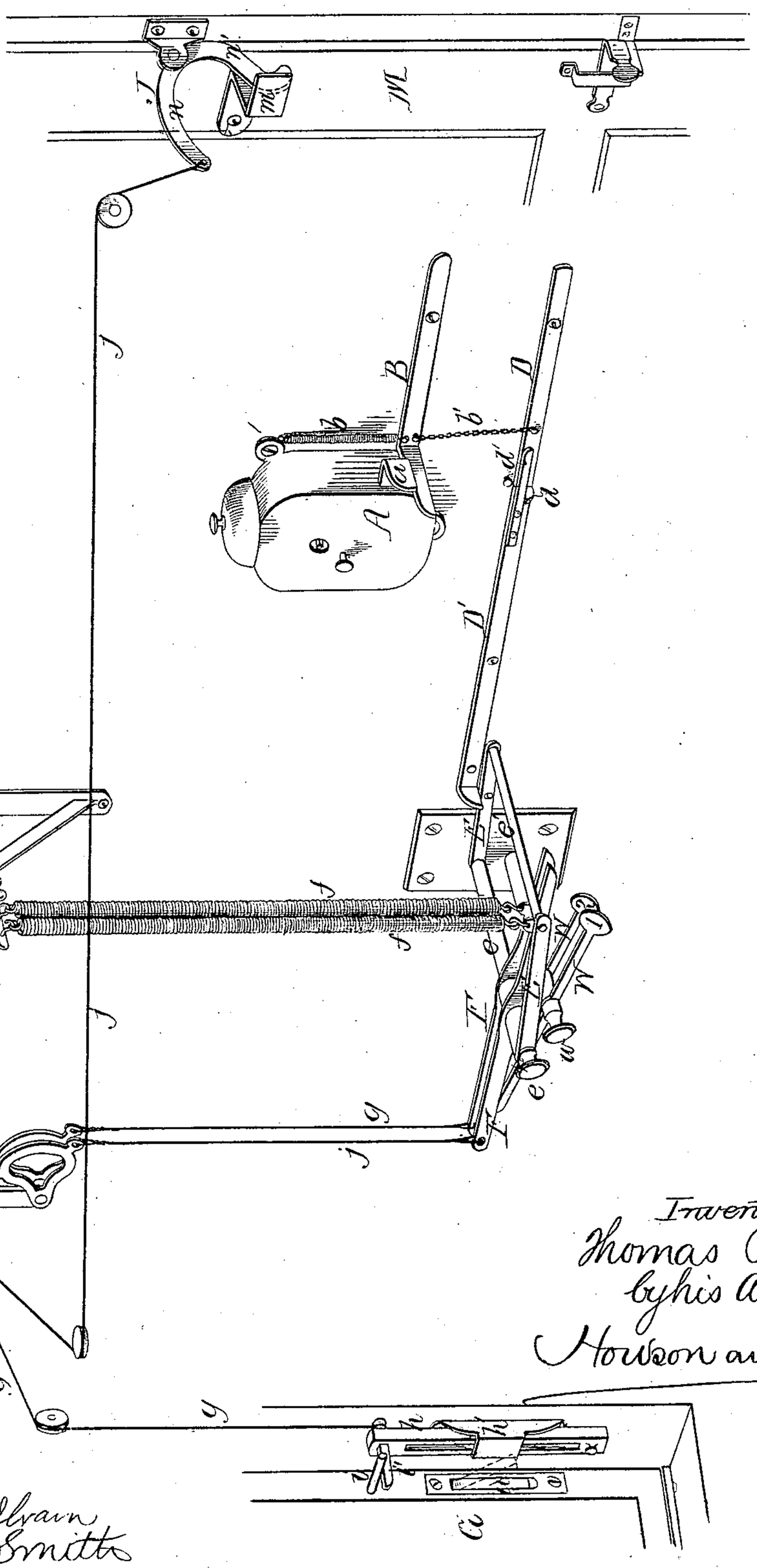
2 Sheets—Sheet 1.

T. POWELL.
Burglar-Alarm.

No. 205,679. Patented July 2, 1878.

Fig. 1



Witnesses,
Thomas McIlvain
Harris Smith

Inventor
Thomas Powell
by his Attorneys
Howson and Son

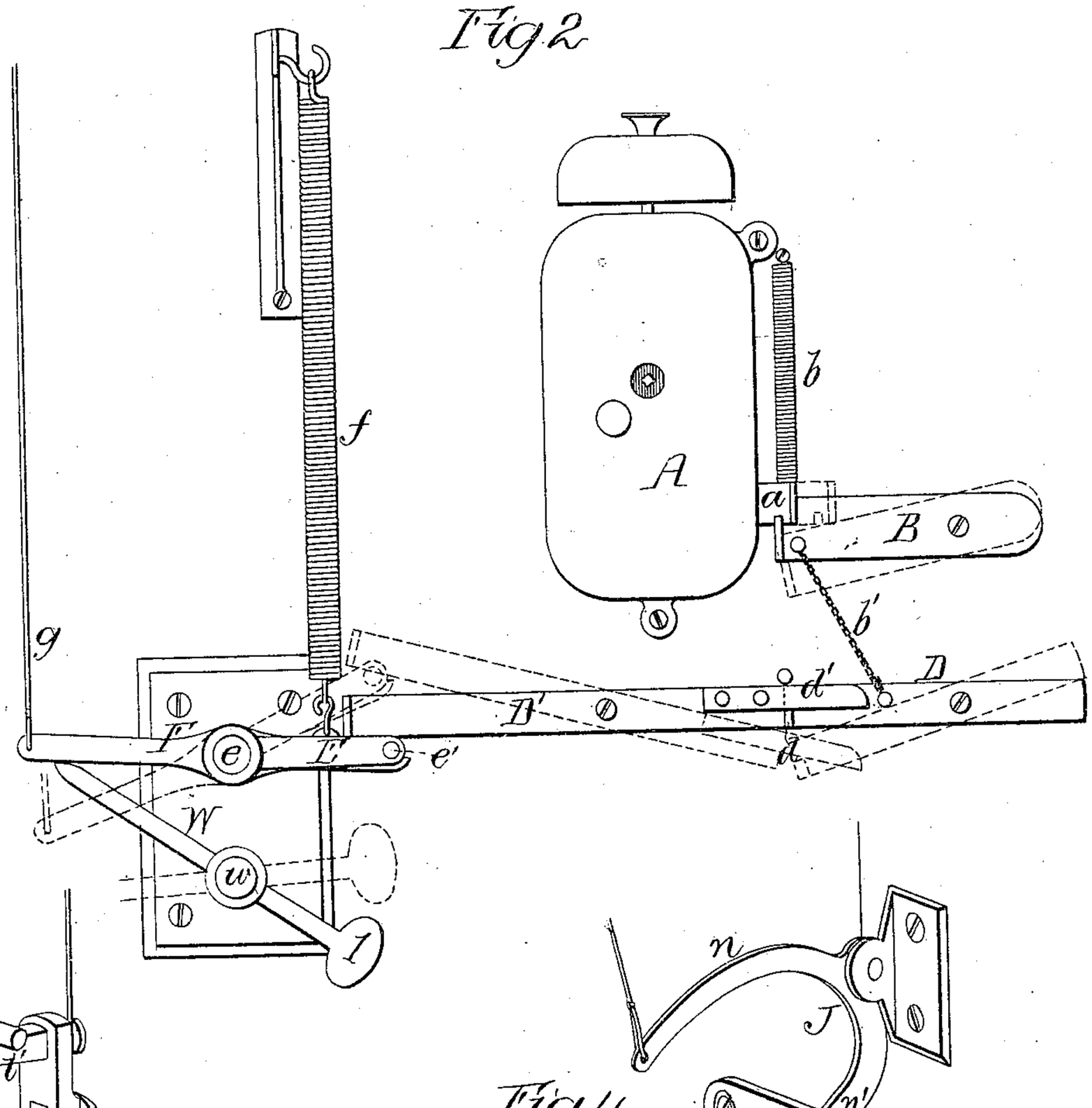
2 Sheets—Sheet 2.

T. POWELL.

Burglar-Alarm.

No. 205,679. Patented July 2, 1878.

Fig 2



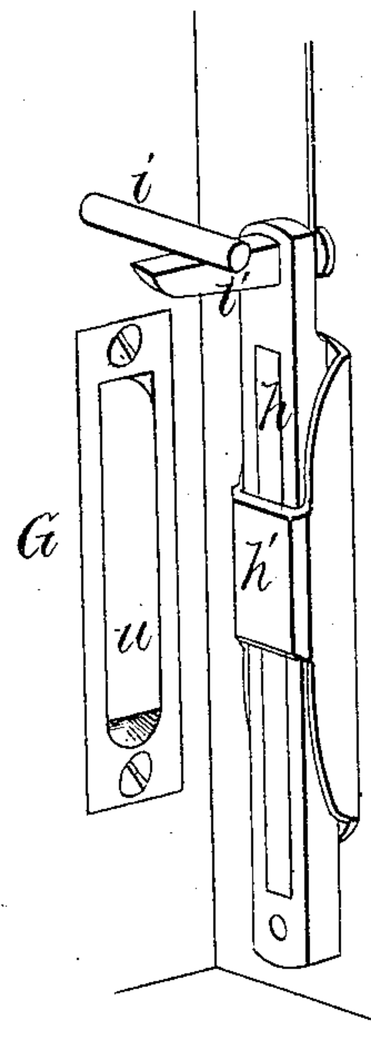
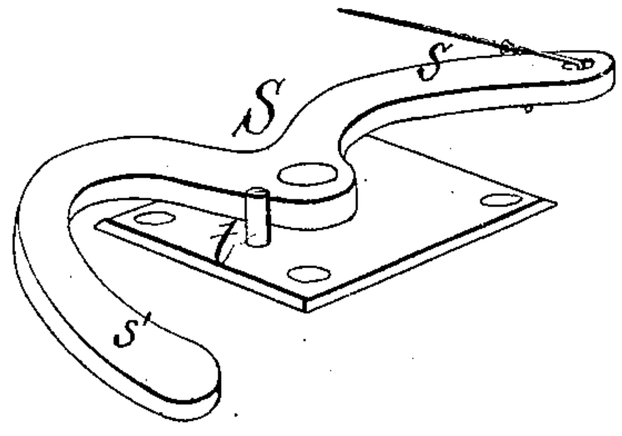


Fig 3

Fig 4

Fig 5



Witnesses,
Thomas McElwain
Harry Smith

Inventor;
Thomas Powell
by his Attorneys
Howson and Sons

UNITED STATES PATENT OFFICE.

THOMAS POWELL, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR OF ONE-HALF HIS RIGHT TO LEWIS LADOMUS, OF SAME PLACE.

IMPROVEMENT IN BURGLAR-ALARMS.

Specification forming part of Letters Patent No. **205,679,** dated July 2, 1878; application filed April 6, 1878.

To all whom it may concern:

Be it known that I, THOMAS POWELL, of Philadelphia, Pennsylvania, have invented a new and useful Improvement in Burglar and Fire Alarm Apparatus, of which the following is a specification:

The main object of my invention is to so construct an alarm apparatus, and to so combine it with the various doors and windows of a house, that the opening of any of said doors or windows will cause an alarm to be sounded and an indication to be given as to which of the doors or windows has been opened.

This object I attain in the following manner, reference being had to the accompanying drawings, in which—

Figure 1 is a perspective diagram, illustrating my invention; Fig. 2, a front view of the alarm mechanism and devices connected therewith; Fig. 3, an enlarged perspective view of a window attachment to be used in connection with my improved alarm apparatus; and Figs. 4 and 5, enlarged perspective views of door attachments to be used in the same connection.

A is an ordinary gong and clock-work alarm, which is operated by the release of an arm, *a*, projecting from one side of the box in which the clock-work is arranged. To a notch in the under side of this arm is adapted the bent end of a lever, B, to which is connected a spring, *b*, the latter tending to keep the bent end of the lever within the notch in the arm *a*.

The lever B is connected, by a chain, *b'*, to a lever, D, and on the end of the latter lever is formed a lug, *d*, against the upper edge of which bears a projection, *d'*, on one end of a lever, D', the opposite end of the latter being bent and resting upon an arm, E, which is hung to a shaft, *e*, and has at its outer end a transverse bar, *e'*, the opposite end of which is connected to a similar arm, E, also hung to the shaft *e*.

In addition to the arms E E, the shaft *e* carries two levers, F F, the outer ends of which bear upon the under side of the rod or bar *e'*, and are acted upon by springs *f*, the tendency of which is to raise said outer ends.

The inner end of one of the levers F is connected, by means of a wire, *g*, and a system of bell-crank levers and pulleys similar to those employed by bell-hangers, to a sliding bolt, *h*, adapted to a casing, *h'*, secured to the frame of a window, G. The sash of the latter is provided with a pin, *i*, so arranged that when the said sash is closed it will bear upon a projection, *i'*, at the top of the bolt *h*, and depress the latter, so as to impart tension to the wire *g* and elevate the inner end of the lever F.

To the sash G, some distance below the pin *i*, is pivoted an arm, *u*, which is intended for use in warm weather when it is desirable to have the window raised for ventilation. In this case the arm is depressed, as shown by full lines in Fig. 3, until the sash is raised to such an extent as to bring the lower end of the arm somewhat above the projection *i'* on the bolt *h*. The arm is then drawn out, as shown by dotted lines, and the sash then lowered slightly, so as to bring the arm in contact with the projection *i'*, and thereby depress the bolt *h* to the desired extent. The inner end of the other lever F is connected, by a wire, *j*, and system of bell-crank levers and pulleys, to one arm, *n*, of a bent lever, J, hung to the frame of a door, M, the latter carrying near the edge a bent plate, *m*, which, when the door is closed, presses upon the other arm, *n'*, of the lever J, and causes such a tension to be imparted to the wire *j* as to elevate the inner end of the lever F.

The arrangement just described is intended for use in connection with a door opening inward; but when a door opens outward the device shown in Fig. 5 should be used. In this case the wire *j* is connected to one arm, *s*, of a lever, S, the other arm, *s'*, of which is bent forward, so as to extend some distance beyond the pivot in the direction of the open door, a stop, *t*, serving to limit the movement of the arm *s'* in this direction. When the door is closed it presses the arm *s'* inward, thereby moving the arm *s* forward and imparting the proper tension to the wire *j*.

To a shaft, *w*, directly beneath the shaft *e*, are hung two levers, W, one of which is directly beneath each of the levers F. Each of these levers W is enlarged at the outer end, and marked with a number or letter indicating the door or window corresponding with that lever F beneath which the lever W is located.

The levers W are fitted so tightly to the shaft *w* that, although they can be readily moved to different positions, they will after adjustment retain the position to which they have been adjusted.

The operation of the apparatus is as follows: When both the door and window are closed the parts are in the position shown in Fig. 1 and in full lines, Fig. 2—that is to say, the arm *a* is pushed in and retained by the bent end of the lever B, the chain *b'* is slack, the levers D D' are in line, the wires *g* and *j* are under tension, and the inner ends of the levers W are elevated and in contact with the levers F F.

Should either the door or window be opened, the wire connecting the same with the lever F would be slackened and the parts would be moved to the position shown by dotted lines, Fig. 2—that is to say, the front end of said lever F would be elevated by its spring, so as to lift the bar *e'* and arm E, move the levers D D', tighten the chain *b'*, and pull the bent end of the lever B out of the notch in the arm *a*, so as to permit the outward movement of the said arm and the sounding of the alarm. At the same time the lever W beneath the lever F which was operated would be shifted so as to lift its lettered or numbered end, and thus indicate to a person examining the apparatus the exact door or window which has been opened.

It will be evident that, although I have illustrated and described my invention as applied to but one door and one window, it can be applied to as many doors and windows as desired by simply increasing the number of spring-levers F to correspond with the increased number of doors and windows.

The devices by which the movement of the levers F is caused to effect the release of the arm *a* may be modified without departing from the main feature of the invention. For instance, plain spring-arms may be substituted for spring-levers, and the bar *e'* may be attached to the lever D', and the latter may have an arm or extension for retaining the arm *a* in position. The arrangement shown, however, is preferred, it being very sensitive in its action.

The device is available as a fire-alarm as well as a burglar-alarm, owing to the fact that any undue heat in the vicinity of any of the connecting-wires will cause such an expansion of the latter as will effect a result similar to that caused by the opening of a door or window.

I do not desire to claim, broadly, levers governing an alarm apparatus and arranged to be operated by the opening of the doors or windows of a house, as many such arrangements have been patented; but

I claim as my invention—

1. The combination of the spring arms or levers F, adapted to be controlled by the doors or windows, the arm *e'*, resting upon the ends of said arms or levers, the alarm apparatus A and its notched arm *a*, and devices, substantially as described, whereby the movement of the arm *e'* is caused to effect the release of the arm *a*, as set forth.

2. The combination of the shaft *e* and the levers F hung thereto with the shaft *w*, arranged beneath the shaft *e*, and carrying levers W in line vertically with the levers F, as set forth.

3. The combination of the operating arm or lever F, the sliding bolt *h*, and connecting devices with the window-sash G, having a pin, *i*, as specified.

4. The combination of the operating-lever F, the sliding bolt *h*, and connecting devices with the window-sash G, having an adjustable arm, *u*, as specified.

5. The combination of the actuating-lever F, the lever S, having a projecting arm, *s'*, devices for connecting the two levers, and the stop *t*, as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

THOMAS POWELL.

Witnesses:
HARRY A. CRAWFORD,
HARRY SMITH.