(No Model.) 2 Sheets—Sheet 1.

D. O. BENJAMIN.

FIRE OR BURGLAR ALARM.

No. 583,838. Patented June 1, 1897.

Fig. 1

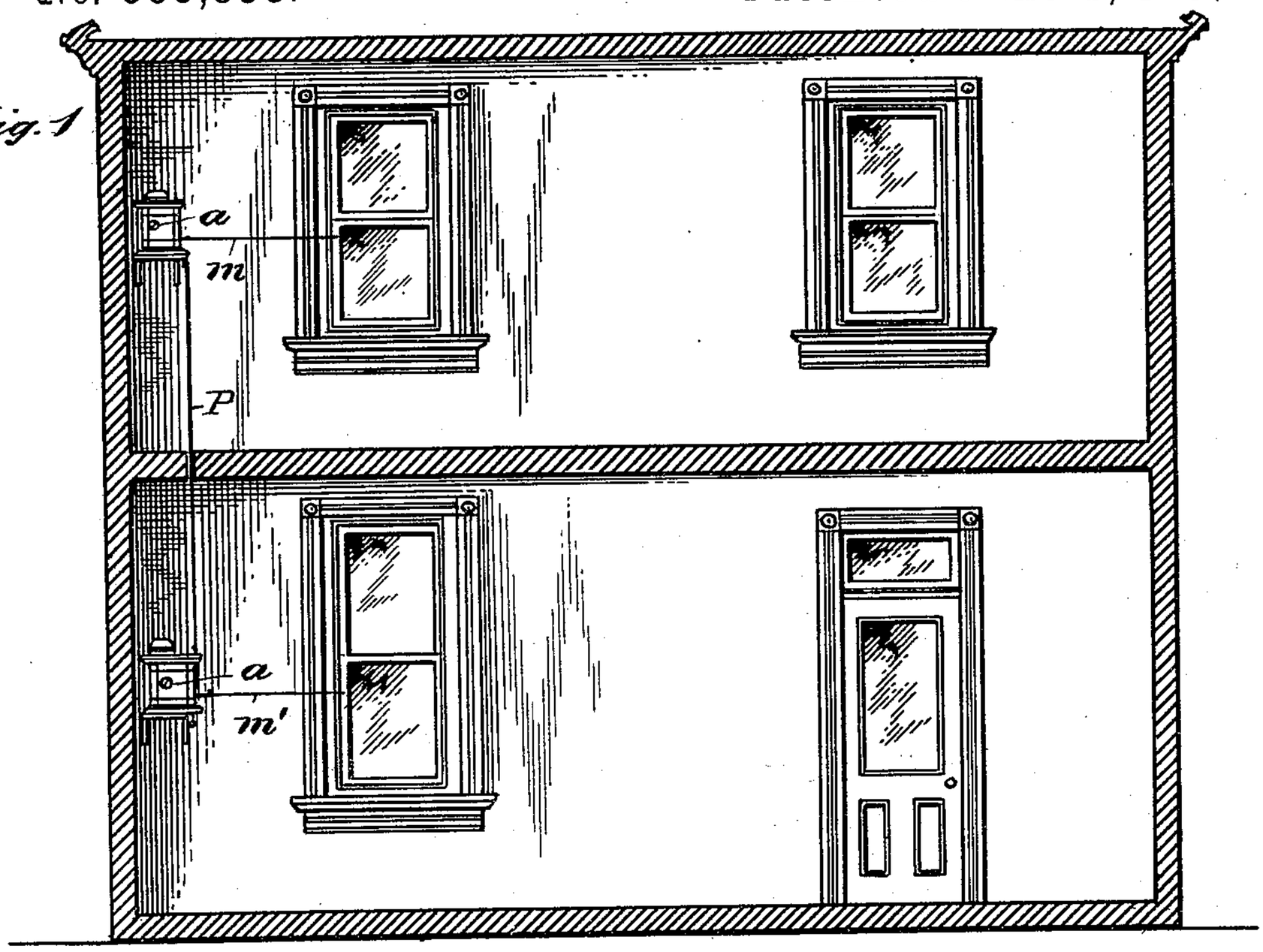
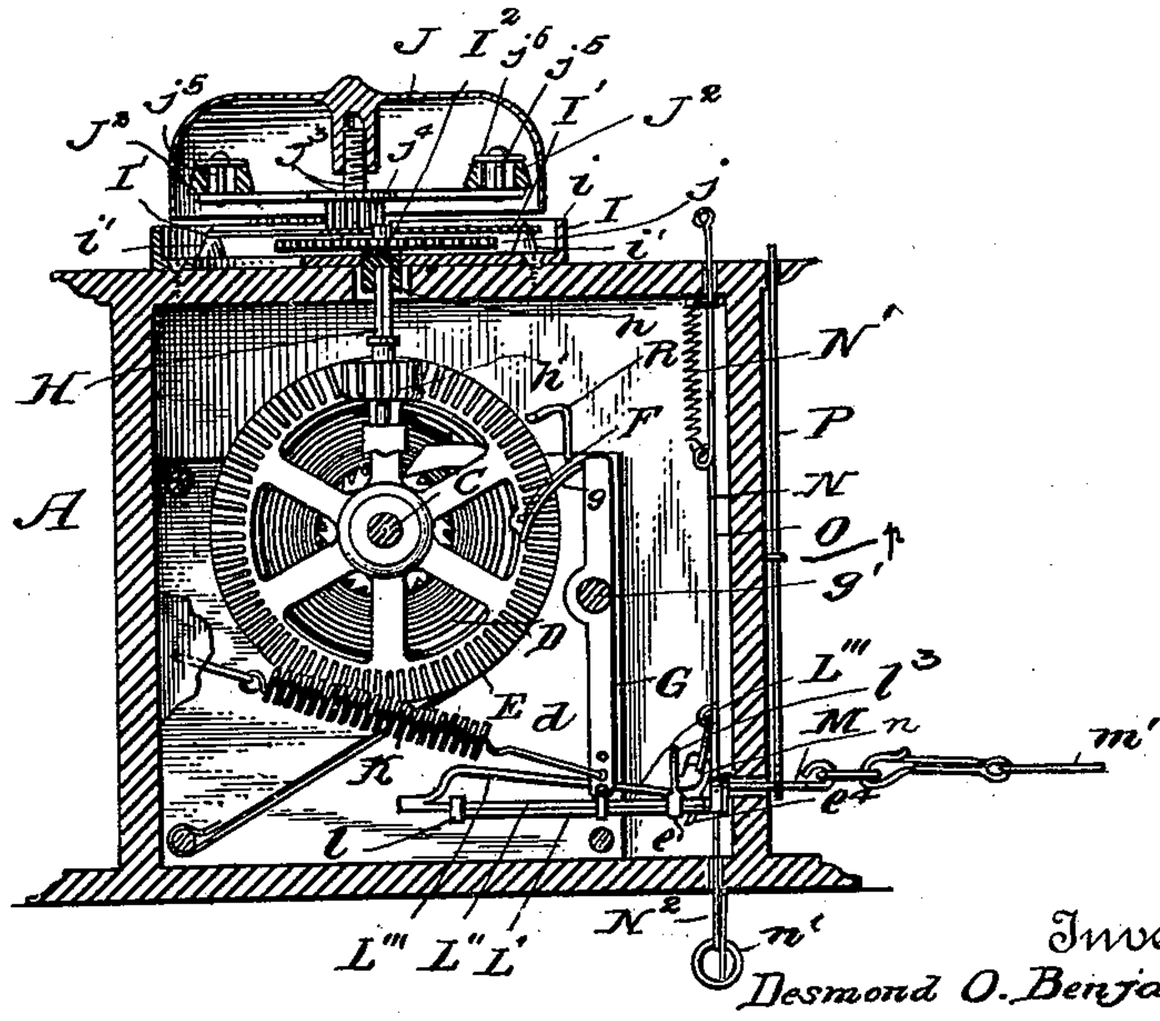


Fig. 2



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(No Model.) 2 Sheets—Sheet 2.

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Fig. 3

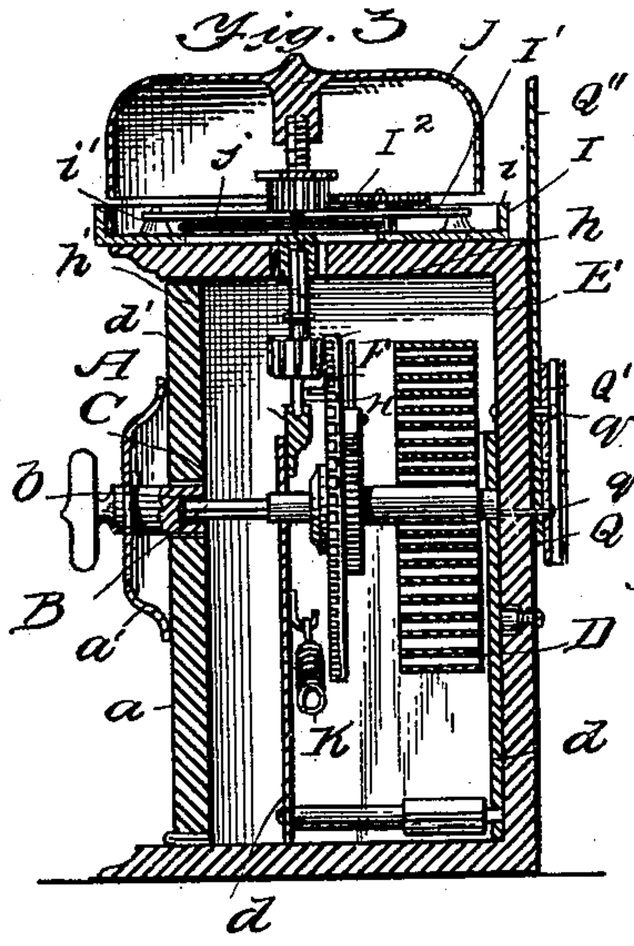

Fig. 4

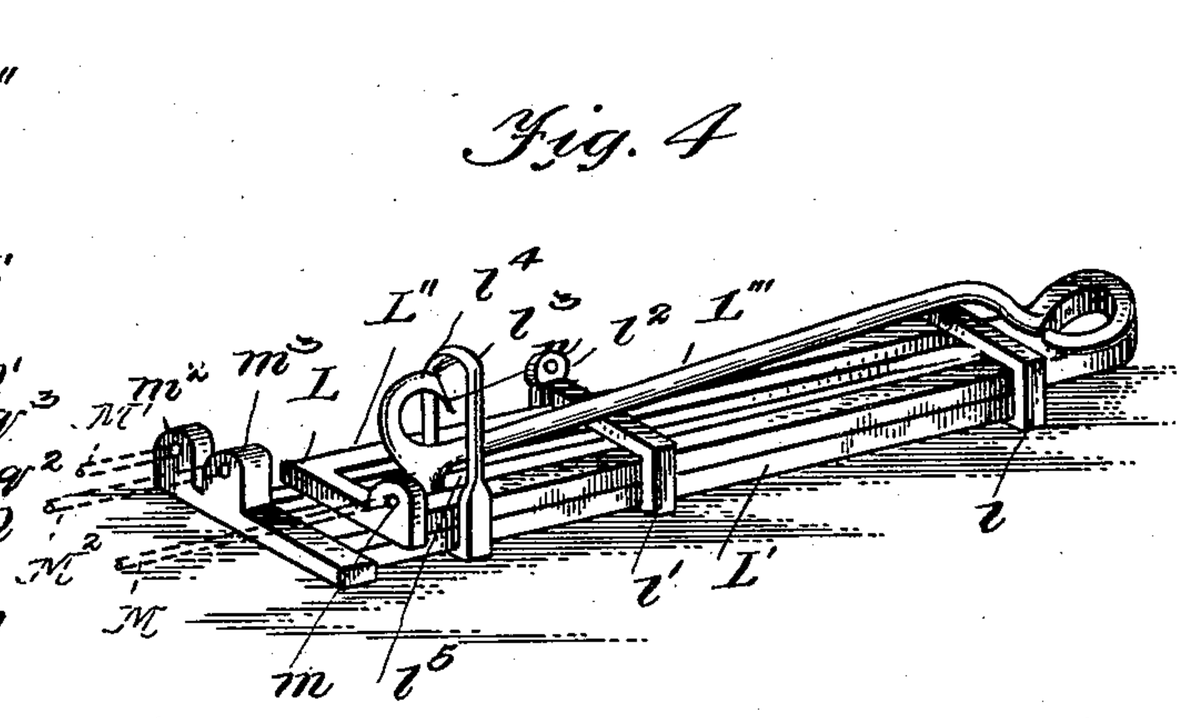

Fig. 5

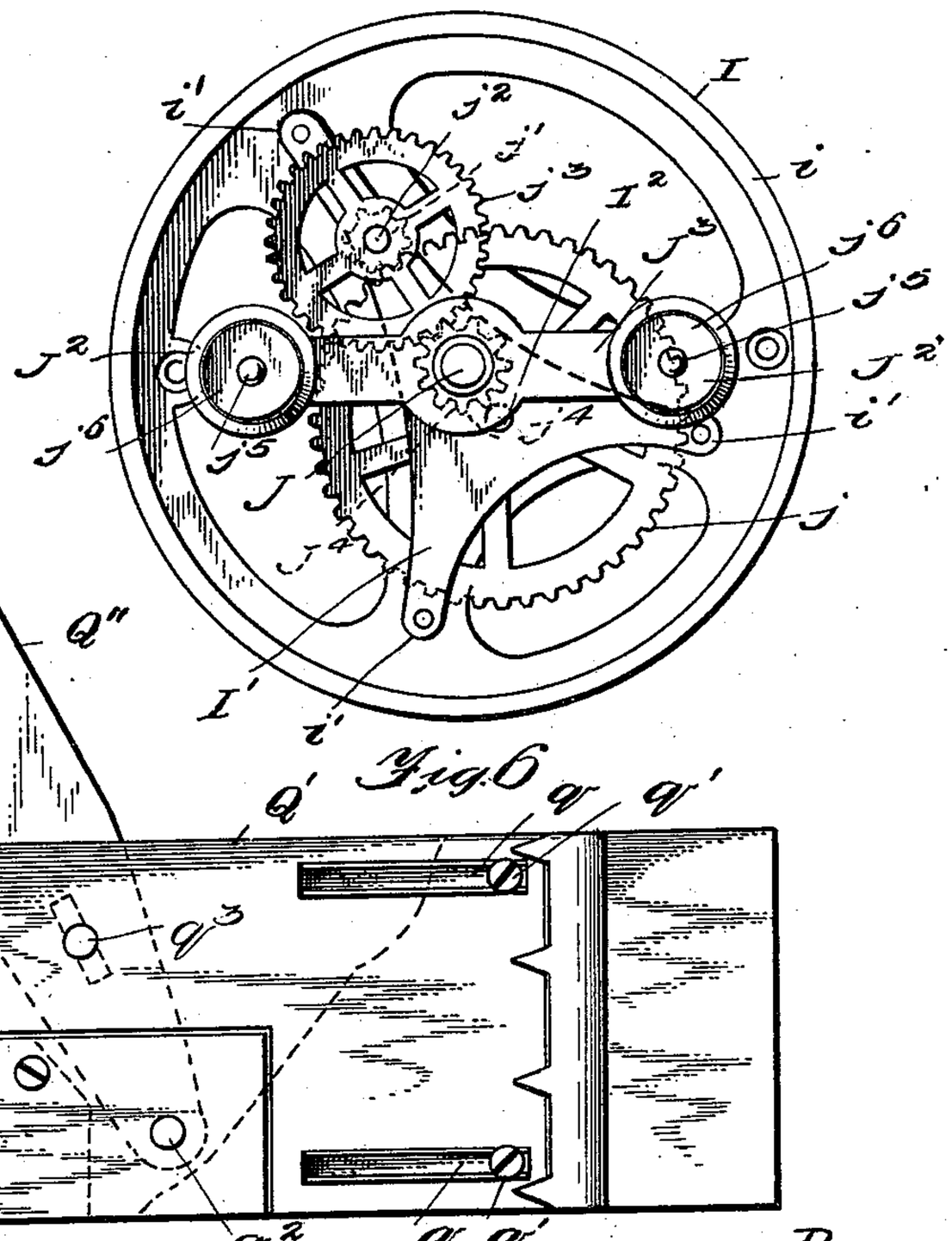

Fig. 6

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UNITED STATES PATENT OFFICE.

DESMOND O. BENJAMIN, OF LAWRENCE, KANSAS.

FIRE OR BURGLAR ALARM.

SPECIFICATION forming part of Letters Patent No. 583,838, dated June 1, 1897.

Application filed January 12, 1897. Serial No. 618,964. (No model.)

To all whom it may concern:

Be it known that I, DESMOND O. BENJAMIN, a citizen of the United States, residing at Lawrence, in the county of Douglas and State of Kansas, have invented certain new and useful Improvements in Burglar-Alarms; and I 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.

My invention relates to improvements in burglar or fire alarms for dwellings and houses or offices generally in which the device is actuated mechanically to ring a bell when one of the operating wires or cords is broken or disturbed by the opening of a door or window, said device being adapted in addition to sounding its own bell to set in operation one or more similar devices situated on another floor or in a distant part of the dwelling, the apparatus being entirely automatic in its operation after it has been properly set or adjusted.

One of the objects of my invention is to provide a simple and inexpensive construction of the alarm mechanism and its controlling devices.

A further object is to provide simple means for connecting the mechanical alarm in circuit with one or more similar devices so that when one alarm is set in motion it will actuate the other or others automatically.

A further object of the invention is to provide a simple and efficient means for clamping the box-like inclosure on a door or window jamb, as may be convenient.

With these ends in view the first part of my invention consists in the combination of a spring-controlled arbor or shaft carrying a master-gear which is provided with a suitable detent, a counter-shaft geared to said master-gear, a rotary striker-arm adjacent to a bell and arranged to be rotated by multiplying-gearing driven by said counter-shaft, and a mechanism for setting and controlling the master-gear through its detent, which controlling mechanism comprises a spring-actuated trigger arranged to engage with said detent of the master-gear and a slidable bar or rod connected with said trigger and adapted to have an operating cord or wire connected therewith, the tension of which is sufficient to hold the draw-bar or wire in position for the trigger to hold the detent or master-gear stationary until the wire or rod is broken or disturbed, whereupon the trigger is released and the spring impels the shaft, counter-shaft, and gearing to rotate the striker which sounds the alarm on the bell.

My invention further consists in a peculiar controlling mechanism for the trigger, which mechanism contemplates the provision of a two-part draw bar or rod having a slidable engagement between its members and a spring-like latch carried by one member and engaging with the other member to normally hold the two members locked together and insure simultaneous movement thereof, means for connecting the latch-carrying member to said trigger, and a vertical operating wire or rod passing through the box or case and connected with said latch, said wire or rod being normally held down against the tension of a lifting-spring and adapted to be connected with a pin on a slidable draw bar or rod of an alarm device set up on the next floor of a dwelling, the arrangement being such that the vertical rod or wire will be released from the pin of the alarm on the second floor when the operating-cord is released or disturbed which leads to the draw-bar of the alarm on the ground-floor, so that the springs of the trigger pull the triggers free from the detents on the master-gears and thus permit the springs to rotate the arbors and drive the strikers in order to sound the alarms; and the invention further consists in the novel combination of devices and in the construction and arrangement of parts which will be hereinafter fully described and claimed.

To enable others to understand my invention, I have illustrated the preferred embodiment thereof in the accompanying drawings, forming a part of this specification, and in which—

Figure 1 is a diagrammatic elevation showing my alarm mechanism applied to a building or dwelling. Fig. 2 is a vertical cross-sectional view through the alarm. Fig. 3 is a vertical sectional elevation on a plane at right angles to Fig. 2, indicated by the dotted line 3 3 of Fig. 2. Fig. 4 is a detail per-

spective view of the slidable draw bar or rod detached from the alarm. Fig. 5 is a detail plan view with the bell removed, showing the striker mechanism. Fig. 6 is a detail view of the clamp for fastening the alarm to a door or window jamb.

Like letters of reference denote corresponding parts in all the figures of the drawings, referring to which—

A designates the box-like inclosure in which the operative parts of the alarm are housed. This box or casing has a hinged front door *a*, to which is fastened a wear-plate *a'*, having a central hole or bearing to receive the winding-shaft B. This shaft has a suitable handle or knob at its outer end for readily turning it in order to put the spring under tension, and the inner end of this shaft has a square or polygonal socket *b* to receive the square or polygonal outer end of a mainspring-arbor C. Said arbor is journaled in the front and back plates of a suitable framework *d*, within which is arranged the mainspring D and the master-gear E. One end of this mainspring is attached to a post of the framework *d*, and the other end of the spring is fastened to the arbor C. The master-gear is fitted on and made fast to the mainspring-arbor, and on this master-gear is a detent F, which extends beyond the face of the master-gear and is arranged to strike or impinge against an arm *g* on the trigger G, said trigger being hung or pivoted at an intermediate point of its length on the framework *d* by means of a pin or screw *g'*, which passes through the trigger and is fastened in the framework. This trigger is arranged to rock or turn on its pivot *g'* to throw its arm *g* into and out of the path of the detent on the master-gear, whereby the trigger is adapted to arrest the master-gear and the arbor against the impelling power of the mainspring in order to hold the alarm in a state of rest. On a vertical post *d'* of the framework is stepped the lower end of a vertical counter-shaft H, the upper end of which fits in or passes through an aperture *h* in the top of inclosing box or casing A, and on this counter-shaft is a beveled gear-pinion *h'*, the teeth of which mesh with beveled teeth on the face of the master-gear, whereby the counter-shaft may be rotated by the master-gear when the latter is free from the trigger and under the influence of the mainspring.

On the top of the box or casing A is fastened a metallic plate or ring I, which is flanged at its periphery, as at *i*, and has short posts *i'* within said peripheral flange. To these posts *i'* is fastened a plate I', and in these two plates I I' is journaled a short shaft I^2, the lower end of which has a polygonal socket to receive the upper polygonal end of the counter-shaft H, thus operatively connecting the two shafts H I^2. On this short shaft I^2 is fixed a large gear *j*, which meshes with a pinion *j'*, having attached to its arbor j^2 a gear j^3, which in turn meshes with a pinion j^4, loose on the short striker-carrying arbor or shaft J, that is fixed in the top plate I^2. On said fixed striker-shaft J is loosely fitted a striker-arm J^3, which has the pinion J^4 attached thereto, and the arm is applied centrally to the shaft J to have two projecting ends, and in these ends of the arms are fixed the pins j^5, that receive the loose washers j^6, which confine the striker-heads J^2 loosely is place on the arms J^3 in position to strike the bell attached in any preferred way to the arbor or shaft J and so as to conceal the multiplying-gearing hereinbefore described.

A retracting-spring K is attached at one end to the front plate of the framework *d* and has its other end connected to the trigger G at a point below its fulcrum *g'*, in order to pull the arm *g* of the trigger out of the path of the detent on the master-gear when the cord or wire is broken that attaches to the draw-bar L. This draw-bar is operatively connected with the trigger and through the latter with the retracting-spring K, which is thus made to slide the draw-bar inward and throw the trigger out of the path of the detent. This draw-bar consists of two members L' L'' and a spring-latch L'''. The upper member L'' of the draw-bar is provided with loops *l l'*, which embrace the lower member L' and thus join the two members slidably together, and the back loop *l'* has an ear l^2, to which is pivoted the lower end of the trigger G, as at g^2. The front loop *l* on the upper member L'' has a keeper l^3, and to the rear end of this member L'' is attached the heel of the spring-latch L''', which passes through the keeper l^3. The latch L''' has a beak or hook l^4, which is adapted to fit in a slot l^5 in the front end of the lower member L' in order to connect the two members L' L'', so as to insure simultaneous movement thereof while so connected, but when the latch is raised to free its beak from the slot in member L' the member L'' is adapted to slide on the member L', and the beak or hook l^4 rides on the solid part of the plate-like member L'. The member L'' has a threaded lug *m*, to which is connected a stem M, that passes through an opening in the wall of the box or case and has a ring or eye for the attachment of an operating-cord *m'*, which may run through eyes and be attached to a door or window. The other member L' of the draw-bar has the lugs m^2 m^3, in which are screwed the pins or stems M' M^2, which pass through apertures in the case or box, one of the said pins M' having a head or eye to which the cord *m'* may be connected.

The spring-latch L''' is provided with one eye *n*, to which is attached a swivel N, connected to a loop on a vertical operating-rod O, which passes through apertures in the top and bottom of the casing. This operating-rod is adapted to be lifted by a pull-string N', attached to the casing, and the rod or wire N, and the lower end of the rod or wire has a

ring n', adapted to fit on an arm N^2 on the bottom of the casing.

With the pin M'' of the slidable draw-bar in the alarm on the ground-floor engages a loop-shaped end of the vertical operating-wire P, which passes through suitable guides p and extends up to and through the floor of the first story, so that the wire P may be connected to the ring or loop n' on the vertical rod or wire N of the alarm device on the first floor of the building or dwelling.

The alarm may be set on a bracket-shelf and fastened thereto by a screw which passes through the bottom of the box or casing, or if it is not convenient to set up the alarm in this way I may employ the clamp shown by Fig. 6 of the drawings. This clamp is applied to the back of the box or casing, and it consists of the fixed jaw Q, the slidable jaw Q', and the adjusting-lever Q''. The jaw Q has its shank fastened rigidly to the casing, while the jaw Q' has its body slotted at q to permit the fastening-screws q' to be screwed into the box or casing and enable the jaw Q' to slide on said screws. The lever Q'' is fulcrumed at q^2 to the box, and the slidable jaw Q' is pivoted at q^3 to said lever Q''. The device is set up on a window or door jamb in position for the serrated faces of the jaws to engage with the jamb, and by moving the lever the jaw Q' is drawn toward the jaw Q, thus making the jaws grip the jamb and hold the alarm device rigidly thereon.

A catch R is arranged on the framework d to engage with the trigger G to hold it in engagement with the detent F and prevent the alarm from working while the cords are being adjusted.

After the device has been set up the shaft B is turned to rotate the shaft C and wind the spring D. The operator now draws out the draw-bar L, which throws the trigger G so its arm engages within this detent to hold the master-gear and spring, after which the door may be opened to permit the attendant to engage the catch R with the detent while the cords and wires are being adjusted. The cord m' is attached to the stems M M' of the draw-bar, and this cord is led through suitable guides and fastened to suitable devices on the doors or windows, (one or more,) the tension of the cord being sufficient to hold the draw-bar pulled out to its set position and overcome the tension of the retracting-spring K. The vertical wire or rod P is fitted over the stem M'' of the alarm on the ground-floor, and its upper end is connected to the ring n' on the vertical rod or wire N in the alarm on the first floor. The rod or wire N in the alarm on the ground-floor is pulled down so as to cause the ring n' to engage the arm N^2, and the catch R is released from the trigger, thus placing the alarm in a "set" condition ready for operation. Should a door or window be opened to which the cord m' is attached or should the cord be burned by a fire in the apartment, the retracting-spring K pulls the draw-bar back into the case or box and throws the trigger out of engagement with the detent F, thus releasing the master-gear and causing the spring to rotate the shaft C and master-gear, which in turn rotates the counter-shaft H, that impels the multiplying-gearing to rotate the strikers which sound the alarm on the bell. At the instant that the draw-bar is pulled into the case on the ground-floor the pin or stem M is retracted from the rod P, which is thus released and permits the spring N' in the alarm of the first floor to lift the rod N in said alarm of the first floor, whereupon this rod N lifts the latch and frees the upper member L'' from the lower member L' of the draw-bar, and thus the retracting-spring K in said alarm on the first floor is permitted to draw in the member L'' of the draw-bar and throw the trigger to release the master-gear, thus sounding the alarm on the first floor.

It is evident that alarms may be placed on all the floors of the building or dwelling or in different parts of the dwelling and that they may be coupled together in series, to be operated successively when one of the alarms is set in motion either by opening of a door or window or by fire.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In an alarm, the combination with a mainspring and an arbor therefor, of the master-gear attached to said arbor and carrying a detent, a spring-controlled trigger pivoted adjacent to the master-gear and adapted to engage with the detent thereon, a counter-shaft H geared to the master-gear, a bell-striker mechanism, multiplying-gearing between the bell-striker mechanism and the counter-shaft, and means to free the trigger from engagement with the detent on the master-gear, substantially as and for the purposes described.

2. In an alarm, the combination with a casing, a bell-post, and a bell mounted thereon, of a mainspring, a master-gear carried by the mainspring-arbor, a train of gears the member j of which has its arbor I^2 provided with a socket, a counter-shaft fitted at its upper end in said socket of the arbor I^2, a striker-arm driven by said train of gears and carrying the striker-heads which are fitted loosely on the pins j^5, and means for holding or releasing the master-gear, as and for the purposes described.

3. The combination with a mainspring-arbor and a trigger to control a detent on said arbor, of a sectional draw-bar, one member of which is connected with said trigger, a latch engaging with both members of said draw-bar to connect them together normally, and means connected to the latch to release the same and permit the member connected to the trigger to move therewith and release

the mainspring without disturbing the member of the draw-bar to which an operating cord or wire may be attached, as set forth.

4. In combination with a mainspring-arbor, and a trigger to control a detent and said arbor, the sectional draw-bar having its two members slidably joined together and normally held against movement on each other by a spring-latch, one member being attached to said trigger and the other member having means for attachment of an operating-cord thereto, and a vertical operating rod or wire connected to said latch and controlled by a spring to lift the latch and free the two members of the draw-bar so that the member attached to the trigger may move therewith without disturbing the other member to which the operating door or window cord may be connected, as set forth.

5. The combination with a mainspring, an arbor, and a bell-striker mechanism, of a detent carried by a gear on said arbor, a trigger arranged to engage with said detent, a spring connected to the trigger, a draw-bar made in two parts which are connected by a latch and having its upper part pivoted to said trigger, a stem attached to the other lower part of the draw-bar and adapted to have an operating-cord connected thereto, another stem M'' attached to the lower member of the draw-bar, and a vertical rod connected with said stem M'' as and for the purposes described.

In testimony whereof I affix my signature in presence of two witnesses.

DESMOND O. BENJAMIN.

Witnesses:

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P. V. N. MYERS.