

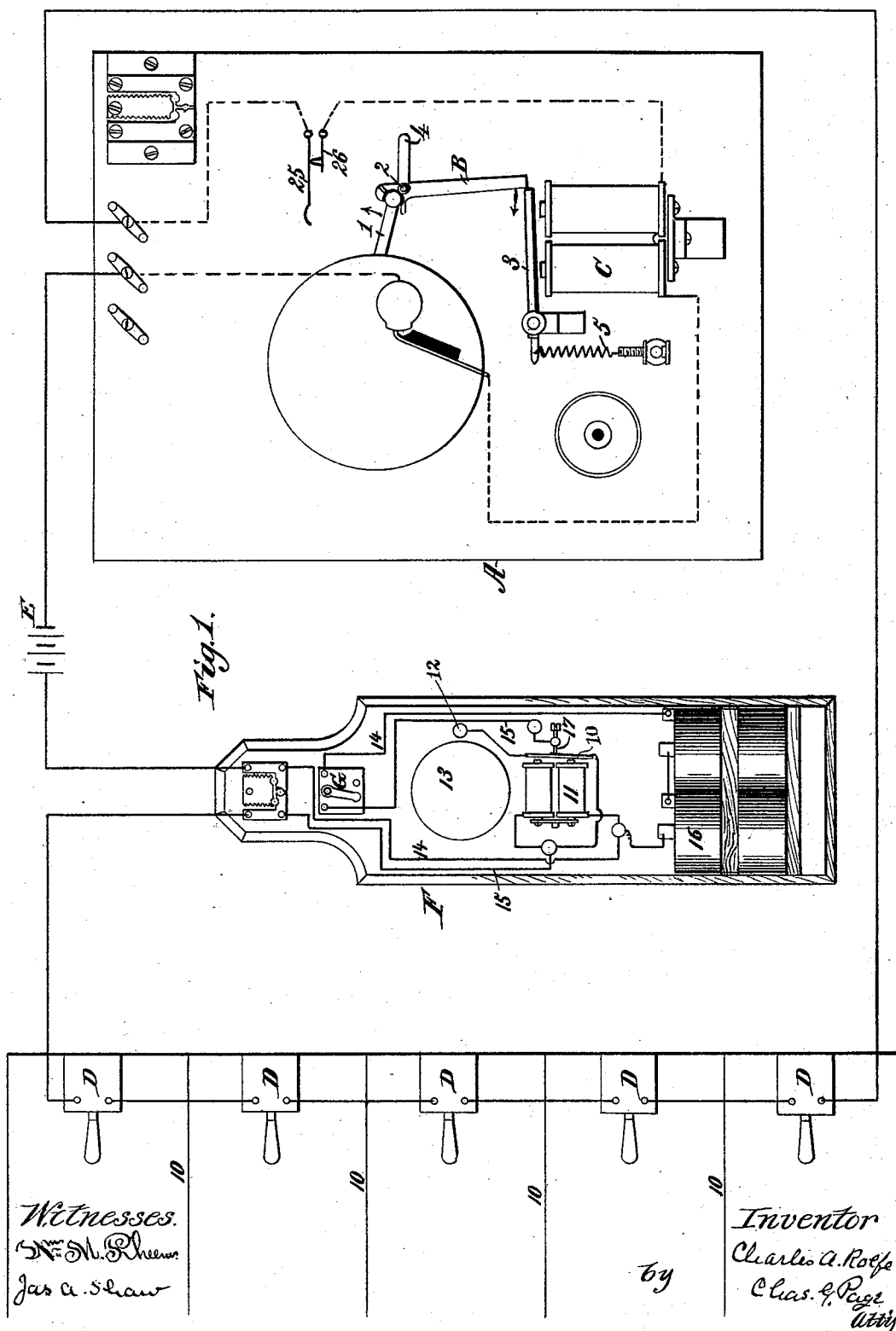
(No Model.)

4 Sheets—Sheet 1.

C. A. ROLFE.
FIRE ALARM TELEGRAPH SYSTEM.

No. 534,671.

Patented Feb. 26, 1895.



(No Model.)

4 Sheets—Sheet 2.

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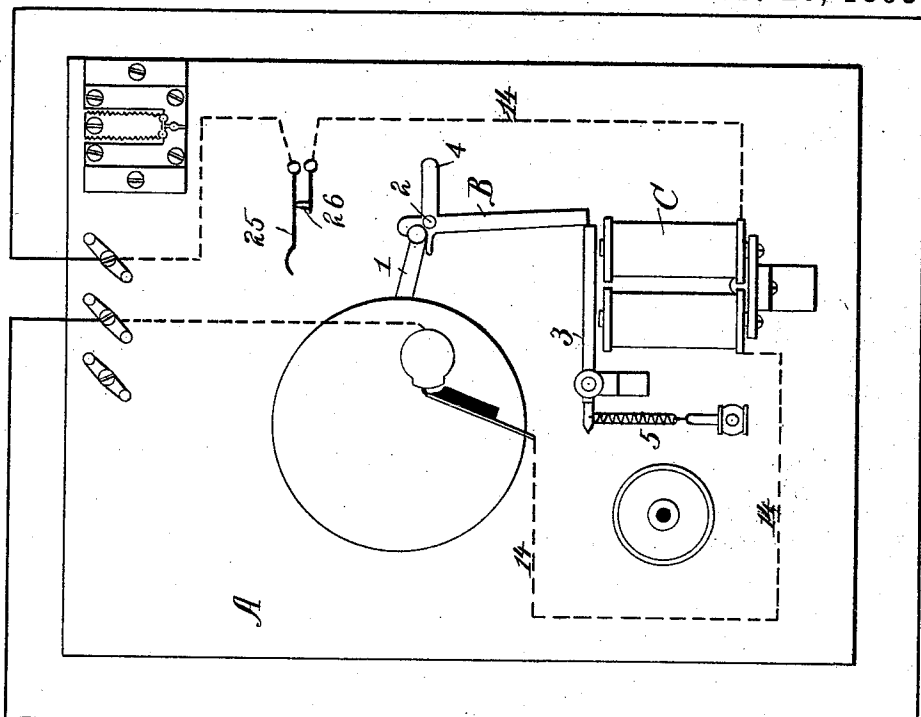
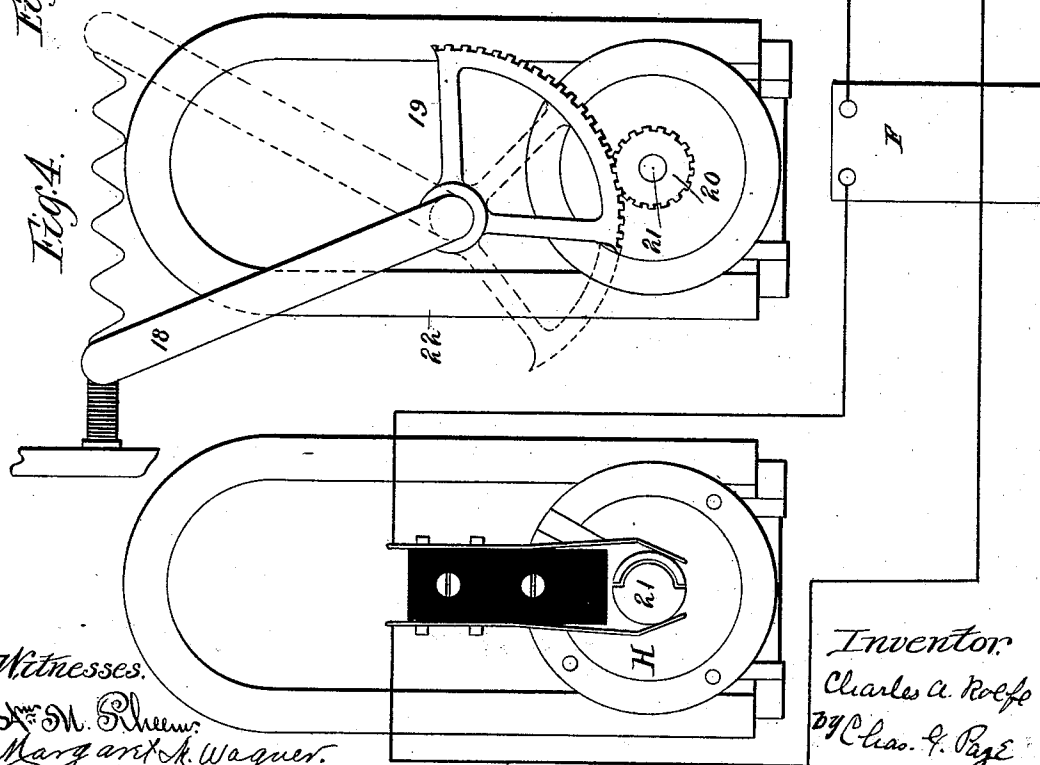


Fig. 2.

Fig. 4.



Witnesses.

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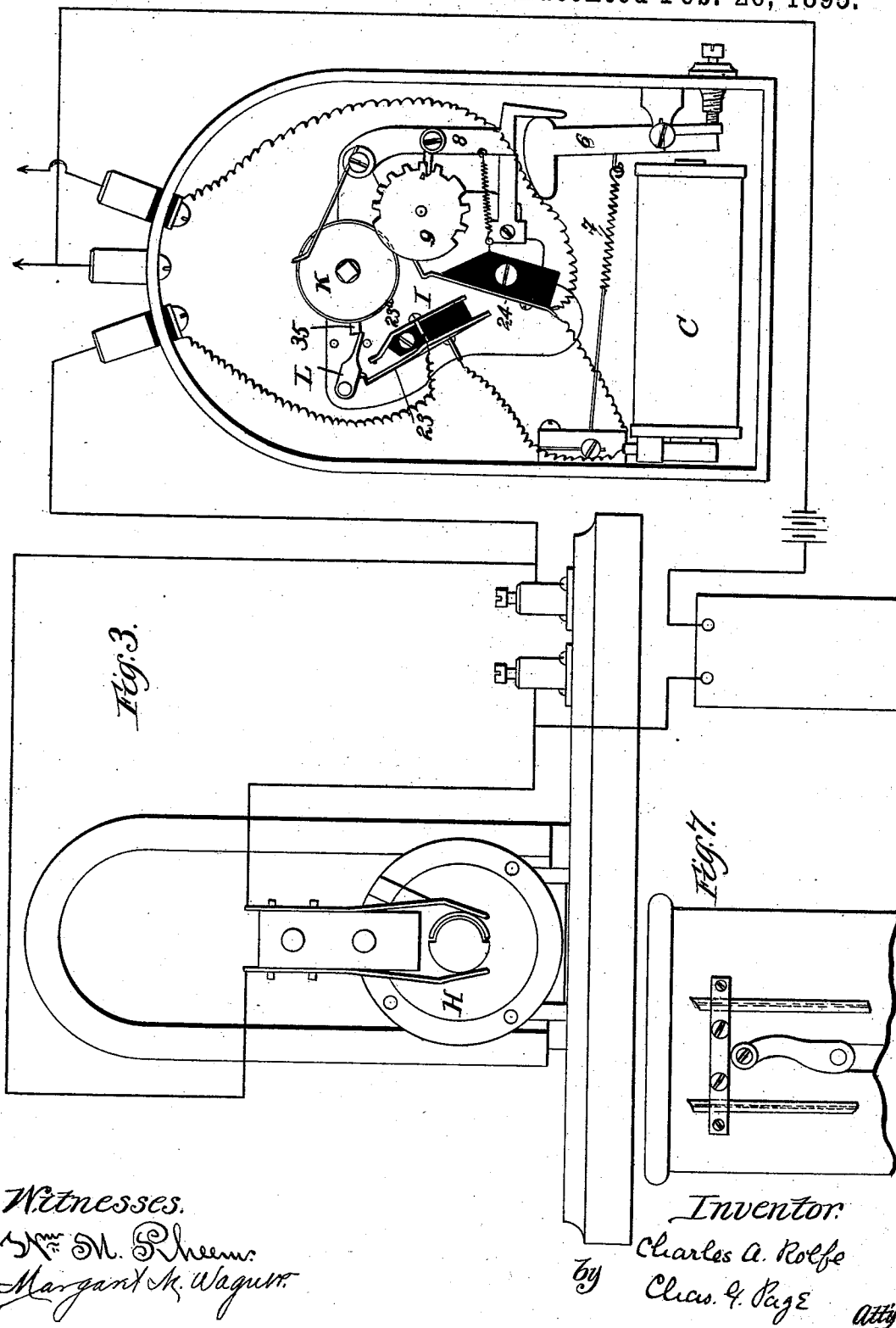
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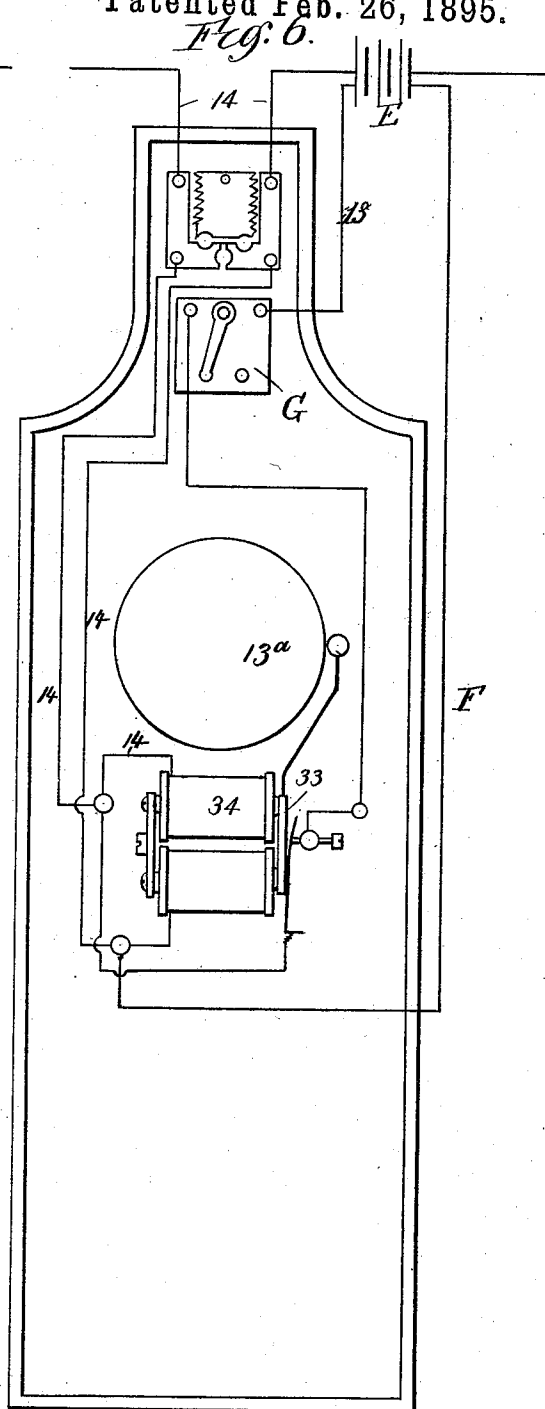
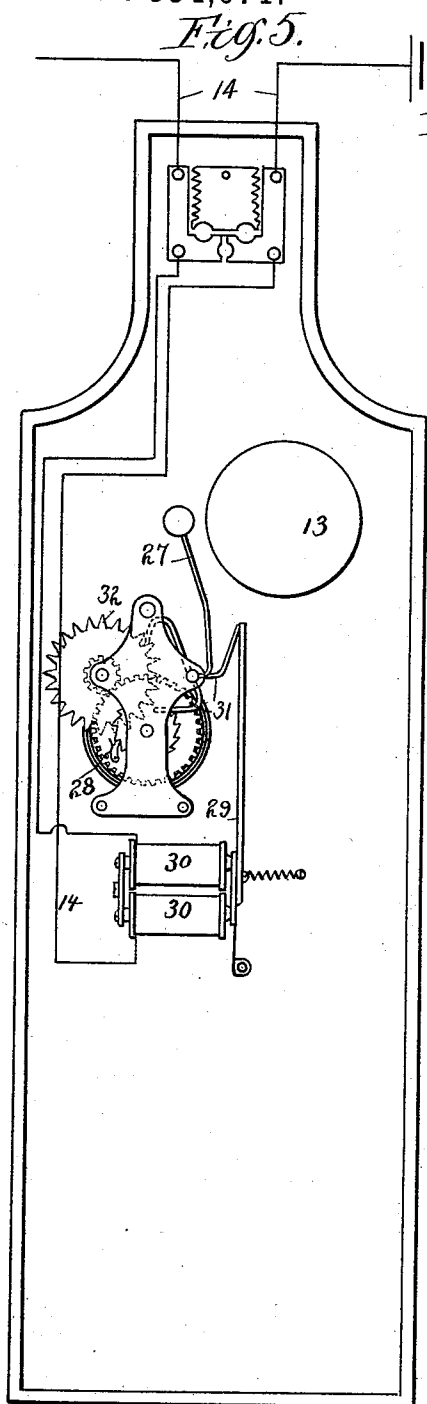
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UNITED STATES PATENT OFFICE.

CHARLES A. ROLFE, OF CHICAGO, ILLINOIS.

FIRE-ALARM-TELEGRAPH SYSTEM.

SPECIFICATION forming part of Letters Patent No. 534,671, dated February 26, 1895.

Application filed April 10, 1894. Serial No. 506,998. (No model.)

To all whom it may concern:

Be it known that I, CHARLES A. ROLFE, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Fire-Alarm-Telegraph Systems, of which the following is a specification.

My invention relates to fire-alarm telegraph systems comprising means whereby the signal-transmitting mechanism of a street-box can be started by a person within a neighboring building.

In a fire-alarm telegraph system characterized by my invention, I provide in connection with means suitable for releasing the signal-transmitting mechanism, a normally closed auxiliary or house circuit including a local or house alarm, a battery, and one or more magneto-generators. When the signal-transmitting mechanism is wound up and set, the said auxiliary circuit will be closed, and when thus closed, the battery will serve to maintain the local or house-alarm, inactive. Said battery is not of sufficient strength to operate the means employed for releasing the signal-transmitting mechanism, although said means will be subject to the battery. In the event of a fire within a neighboring building supplied with this system, it will only be necessary for a person within the building to slightly operate the magneto-electric generator, whereupon an impulse of high electromotive force will be sent over the normally closed circuit, and this, as auxiliary or supplemental to the battery, will actuate the means employed for releasing the signal transmitting mechanism. Thereupon, the signal transmitting mechanism will start up, and while sending in signals over the main line to the fire-department will also repeat back to the house alarm, whereby, local notification will be made of the fact that the signal-transmitting mechanism is in order and properly working. When the signal-transmitting mechanism has run down, the auxiliary circuit will be left open, and so long as the said auxiliary circuit is in such condition, the alarm will continue to sound, unless manually arrested, that is to say—arrested by the act of a person. As soon as desired, however, the converse of said act can be employed for the purpose of again placing the alarm in

condition for operation, and if at such time the signal-transmitting mechanism should be wound up and set, the alarm will remain inactive, while on the other hand, should the auxiliary circuit be open, either as a result of accidental rupture, or by reason of an omission to wind up and set the signal-transmitting mechanism, the local alarm will sound and give notice of such fact. Also, should the local battery give out, or should the line of the auxiliary circuit be broken by any cause whatsoever, the local or house alarm will sound and thereby give notice that the system needs attention. When the signal-transmitting mechanism is manually started, all local or house alarms in the local system will sound, thereby giving local notice of the existence of a fire.

While a battery could be arranged as an auxiliary source of energy, in lieu of the magneto-generator, I regard the provision of the latter as a matter of further and decided improvement.

The provision of a magneto-generator is also far more economical, since with such arrangement, I need only employ a comparatively light local battery for the purpose hereinbefore first described.

In the accompanying drawings,—Figure 1 is in the nature of a diagrammatic illustration of a system embodying the principles of my invention. Fig. 2 is a similar view, more fully illustrating one of the magneto-generators. Fig. 3 is a like view with a different construction of signal-transmitting mechanism. Fig. 4 represents one of the magneto-generators in end elevation. Fig. 5 illustrates the local or house alarm having an operating spring. Fig. 6 illustrates the local or house alarm arranged to be operated from the battery of the normally closed auxiliary circuit. Fig. 7 indicates glass rods which can be placed at opposite sides of the crank of the magneto-generator, whereby said crank cannot be turned without breaking one of the rods.

In the several figures of the said drawings, A indicates a street signal-box which is understood to comprise any known or suitable signal transmitting mechanism for sending fire-alarm signals to the main or central station. With reference to my invention, the signal transmitting mechanism is associated

with certain adjuncts which may be mechanically varied without departing from the general purpose for which they are provided, and while not deeming it essential to illustrate and describe all mechanical possibilities, I have indicated two arrangements as illustrative of the principle involved. With reference to Figs. 1 and 2, the usual crank or lever 1 of the signal transmitting mechanism can be temporarily locked by a weighted catch B which is pivoted at 2 and adapted to engage and hold said lever and to such end it has a hook-shaped portion 2^a which can engage a stud 2^b on said lever. When the armature 3 of magnet C is away from the latter, it will be in position to prevent catch B from swinging in a direction to release its hook-portion from the lever 1, it being seen that in such position the armature serves as a stop. When however the armature is drawn toward the magnet, it will clear and release the catch, whereupon the latter, which is weighted as at 4, will swing in a direction to liberate lever 1 of the signal transmitting mechanism and thereby permit such mechanism to operate. The armature, when thus attracted, is moved against any suitable arrangement of weight or spring resistance, for example, against the resistance of a spring 5. In Fig. 3, the armature 6, of magnet C, is subject to a spring 7, for the same purpose. When said armature 6 is drawn toward the magnet, it will move a pivoted catch 8 in a direction to cause said catch to release a toothed wheel 9 of the signal transmitting mechanism and thereby leave the latter free to operate.

The signal transmitting proper need not be described in detail, since it may be of any ordinary or desired construction, arranged and connected up for transmitting signals, as usual, it being observed that in Fig. 3, the main line is indicated at 14^a.

In Fig. 1, the lines 10, are understood to illustrate the several floors of a building. One or more magneto generators D of any suitable construction can be arranged within the building, for example, one on each floor, or otherwise as may be preferred, it being understood that one or more of such sources of energy can be used, according to need. The generator or generators thus employed, is or are connected up in closed circuit with the magnet of the signal transmitting mechanism. Said circuit (herein termed the auxiliary or house circuit) also includes a battery E and a safety or local alarm device F, which is termed the local or house alarm. The alarm device F is desirably within the building which is to be protected, it being understood that for convenience of illustration, the building is illustrated on a small scale, while the alarm device is shown on a comparatively larger scale, and outside of the building. The local battery E could be located at the signal box, but in practice, I prefer arranging it within the building.

The local or house alarm E can be of va-

ried construction without departing from the spirit of my invention, the principle involved, being illustrated by the arrangement shown in Fig. 1. In said arrangement, the armature 11^a allotted to magnet 11 is provided with a clapper 12 for ringing the bell 13. This bell-magnet 11 is included in the aforesaid normally closed auxiliary circuit, indicated by lines or wires 14, and is normally energized to an extent to hold the armature closed. Said armature is also comprised within a normally open circuit indicated by lines or wires 15 and including the local bell-battery 16. So long as circuit 14 is closed, the alarm F will be silent. When however, said circuit is open, the bell of the alarm F will be rung. Thus, when armature 11^a is released as the result of a break in circuit 14, the magnet 11 will be de-energized, and will release the armature 11^a, and hence, so long as said circuit remains open, the armature will be free to operate for the purpose of ringing the bell, in accordance with the way in which electric alarm bells are usually sounded. The releasement of the armature permits its spring to throw it into contact with a back-stop 17 in circuit 15. Such contact closes the circuit 15, which includes the magnet 11 and the battery 16, and hence, the magnet will then be supplied from said battery for the purpose of operating the armature. The local alarm also comprises a switch G arranged in the circuit 15, whereby the ringing of the bell can be stopped, although the circuit 14 may be open.

The magneto-generator may be of any suitable construction and can be operated by a crank or lever 18. In Fig. 4, the operating lever 18 is provided with a gear segment 19, arranged to engage a gear 20 fixed upon the rotary armature 21. The armature is understood to be suitably arranged with relation to a magnet 22, and a commutator H can be employed.

The auxiliary circuit 14, including the magnet C, of the signal box; the magneto-generator or generators; the alarm magnet; and the local battery, is normally closed. The current over such circuit is suitable for maintaining the local alarm inactive, but it is not of sufficient strength to release the signal transmitting mechanism, and hence, although it will energize the magnet C, it will not energize the same to an extent to cause it to draw said armature against the spring resistance. A slight operation however, of any one of the magneto-generators will send over the line or circuit 14 a quick impulse of high electro-motive force, and this in supplementing the energy derived from the local battery E, which is constantly included in said circuit, will energize magnet C to an extent to cause the releasement of the signal transmitting mechanism. Upon such release of the signal transmitting mechanism, it will automatically start up and send signals to the fire department, as usual, and while so doing, will by reason of a make-and-break

device hereinafter described, repeat back to the local alarm F so as to notify the occupant of a house who may have operated the magneto-generator as aforesaid, of the fact that the street box is at work, it being observed that the make and break periods are sufficiently slow to permit the bell to thus sound.

As hereinbefore explained, the alarm F is sounded as a result of breaking the normally closed circuit 14. In order therefore to cause the signal transmitting mechanism to repeat its signals back to the local alarm, it will only be necessary to cause the signal transmitting mechanism while at work to make and break circuit 14 in accordance with the signals it is transmitting to the fire department, and to such end the usual circuit breaker 24, (Fig. 3) of the signal transmitting mechanism can for example, be used to perform the further duty of making and breaking circuit 14, and to such end it is included in said circuit it being apparent that the closing of auxiliary circuit 14 by the make-and-break device will cause magnet 11 to attract and hold its armature 10, and that the opening of said circuit by the make-and-break device will cause the releasement of said armature as hereinbefore fully explained. It will also be seen that should the auxiliary circuit 14 be accidentally broken, the local alarm will sound and give warning of such fact.

When the signal transmitting mechanism is wound up and set, it serves to close the circuit 14, but should the signal transmitting mechanism be left unwound for any length of time, the party within the building can stop the alarm by opening switch G, and if upon subsequently closing said switch the alarm should sound, it would be evidence of the fact that either the signal transmitting mechanism had not been wound up and set, or that the line 14 had become accidentally broken.

As an illustration of one of various ways in which the foregoing can be attained, the line or circuit 14 in Fig. 1 includes a couple of normally closed contacts 25 and 26, whereof the contact 25 may be either a movable spring or suitably weighted device. When the signal transmitting mechanism runs down, its crank or lever moves in a direction to engage contact 25 and separate the same from contact 26, thereby leaving the circuit open. Upon pulling down the lever, however, to set the signal transmitting mechanism, contact 25 will be liberated, and hence will again close upon contact 26, so as to again close the circuit. It is also understood that this principle is involved in the signal mechanism of Fig. 3, and that various other means which will be obvious to those skilled in the art to which my invention relates, could be provided.

With further and special reference to Fig. 3, the contact device I for opening and closing the local circuit has its contacts 23 and 23^a included in the auxiliary circuit, said contact 23 being a spring arm. When the signal mechanism runs down and reaches the termination

of such action, a wheel K included in said mechanism reaches a point in its rotation where a stud 35 thereon will engage a movable member or pivoted dog L and throw the latter into position to separate contact 23 from contact 23^a and thus open the local circuit, as shown.

In Fig. 7 the glass rods 36, are arranged at opposite sides of the crank or lever employed to operate the magneto-generator, and hence the latter cannot be operated without first breaking one of said rods. This serves as a check on unauthorized tampering with the magneto-generator.

From the foregoing it will be seen that should the signal transmitting mechanism be started by a party at its box, all neighboring local alarms subject thereto will be sounded, and this will warn occupants of the several buildings of the presence of a fire in their neighborhood.

With further reference to the local alarm, the bell thereof can be operated from the winding spring of a suitable clock or like mechanism, and in such case the battery 16, can be dispensed with.

As a simple arrangement Fig. 5 shows the bell clapper 27 subject to and operated by a spring 28, in which case the armature 29 can be normally held by the magnet 30 in position to check the escapement 31 for an ordinary escapement wheel 32. When therefore circuit 14 is broken, the escapement will be released and thereupon the spring will unwind.

As another arrangement, the local battery E may also be used to operate the alarm, as illustrated in Fig. 6. Thus, when circuit 14 is closed, the armature 33 will be held upon the magnet 34. When said circuit is broken, either at intervals, or by a dead-break, the battery E will be called into use for ringing the bell, and to such end said battery is also connected up with the alarm device by a normally open circuit substantially as the battery 16 of Fig. 1 is connected up with said alarm.

In practice I also prefer arranging one or more galvanometers in the circuit 14 whereby any undue increase in or falling away of the current will be noted.

What I claim as my invention is—

1. In a signal transmitting system, a signal transmitting mechanism having a suitable releasing device, a local battery and a normally closed auxiliary circuit including said battery and releasing device, and a local or house alarm and a magneto-generator, both likewise included in said normally closed circuit and a make-and-break device operated by the signal transmitting mechanism and arranged for making and breaking the auxiliary circuit when the signal transmitting mechanism is operated the said releasing device being operated to release the signal-transmitting mechanism by an impulse from the magneto-generator sent over the circuit and supplemental to the local battery current, and the said local or house alarm being sounded by rea-

son of the operation of the signal transmitting mechanism, and also by reason of a break in the local circuit from any other cause, substantially as described.

5 2. In a signal transmitting system, the combination with a local circuit including a local or house alarm, of a signal transmitting mechanism comprising a contact device for opening and closing the said circuit, and a movable member operated by the signal transmitting mechanism and arranged to separate
10 the contacts and maintain them separate when the signal mechanism is in a run-down condition, substantially as described.

15 3. In a signal transmitting system, the com-

bination with a local circuit including a local or house alarm, of a signal transmitting mechanism including a contact device for opening and closing the local circuit, a movable dog for separating the contacts of the contact device, and a wheel included in the signal transmitting mechanism and adapted to engage and move the dog into position to separate said contacts when the signal transmitting mechanism runs down, substantially as described. 20 25

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