(No Model.)

W. E. DECROW.

FIRE ALARM TELEGRAPH SYSTEM.

No. 526,893. Patented Oct. 2, 1894.

FIG. 1.

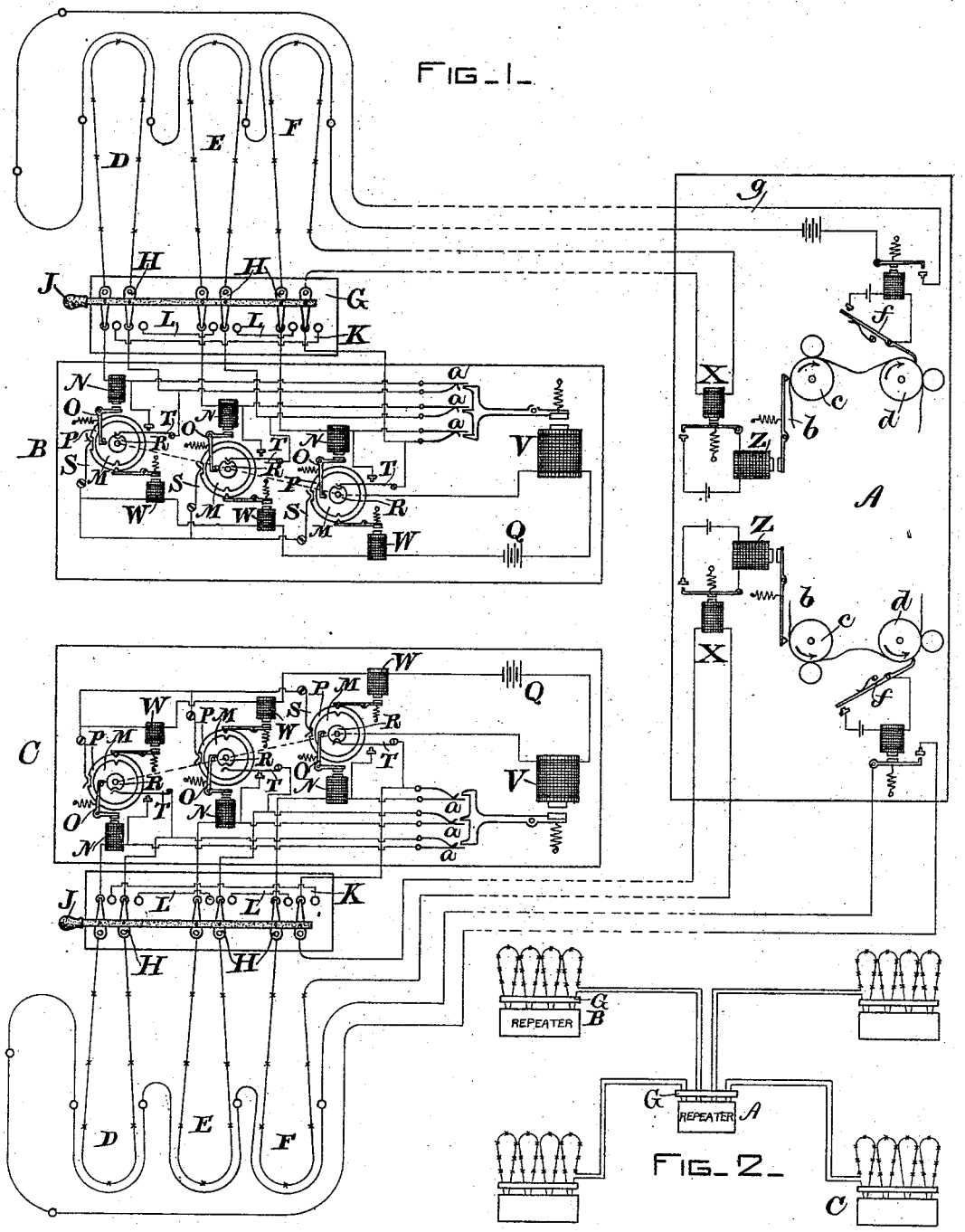

FIG. 2.

WITNESSES

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FIRE-ALARM-TELEGRAPH SYSTEM.

SPECIFICATION forming part of Letters Patent No. 526,893, dated October 2, 1894.

Application filed March 13, 1893. Serial No. 465,754. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM E. DECROW, a citizen of the United States, residing at Boston, county of Suffolk, State of Massachusetts, have invented a certain new and useful Improvement in Fire-Alarm-Telegraph Systems, of which the following is a specification, reference being had to the accompanying drawings, in which—

Figure 1 illustrates my invention diagrammatically, and Fig. 2 is a modification thereof.

It has been usual heretofore in fire alarm systems to have a single central station located at a convenient place in a city from which a number of lines radiate out to different sections of the town. It has been found, however, that in cities of large size a simple system of this kind necessitates long circuits with many boxes on each circuit. The whole system is liable to serious interruption in the event of the central station, or any part thereof, being burned or otherwise destroyed. To avoid this difficulty I have devised the present system in which, in addition to the central station, a number of local stations are established at convenient points in different sections of the city, and from these local stations the circuits serving the immediate neighborhood are taken. Each of these local stations is provided with a repeater, and one of the lines extending therefrom is made to connect with the central station. I also provide at a point outside of each local station a switch for disconnecting all of the local lines from said station, and placing them in series with one another so that, since one of them, as above stated, is connected with the central station, all of these lines form one part of a long circuit which may be operated from the central station, and over which any signal from the local district may be communicated to the central station. By this arrangement any one of the local stations may become disabled by fire or otherwise and yet the system will not be interrupted because after the said switch has been turned, the circuits will be in connection with the main office, and thus establish temporary communication, although of course not with such good effect because the circuit will be of great length and subject to accidents upon any part of the extended territory which it covers. At the same time the main station may be disabled by fire or otherwise and yet cause no interruption of the working of the system through the local districts.

Referring to the drawings A is a central station, and B and C are local stations, which may be as numerous as desired, and placed in any convenient section of the city. Referring, for example, to the local station B, a number of lines radiate therefrom to serve the immediate neighborhood. In the drawings I have shown such circuits marked D, E and F respectively. These circuits are preferably quite short so that any accident will disable but a comparatively small part of the system. On these circuits are located the usual signal boxes, and if desired, bells, registers, or other apparatus. In the present instance, however, I have shown a separate circuit extending through the district and including the large bells so that these bells may be operated independently either from the local stations, or, as I have shown in this instance, from the central station A. The three circuits D, E and F come into station B through a switch-board G, which is preferably placed at a point outside of the station so as to be safe from any injury in the event of any accident happening in the station. This switch-board is arranged as follows: The two terminals of the circuit are brought to a series of switch levers H, H, which are arranged in pairs corresponding to the respective circuits. Preferably all these levers are connected together so as to be operated manually by a single bar or handle J. The levers H, H, remain in the position shown in the drawings with free ends in contact with terminals leading to the station B. There are, however, a second set of terminals upon which the levers H, H, may be thrown by a longitudinal movement of handle J. The second set of terminals are connected as shown in the drawings, the two outer ones being connected by a wire K, and the inner terminals connected in pairs by wires L, L. The normal circuit therefore will be as shown with the lines connected directly to station

B. If, however, the switch is operated, the outer terminals of the two extreme circuits will be connected together and the inner terminals will be connected to the respective terminals of the intermediate circuits so that they will be disconnected from station B and connected in series with one another. One of these circuits, as F, has a loop extending to the main station A and therefore when the circuits are in series they will form one long circuit communicating with the main station.

At station B is provided a repeater of any well known design, by means of which a signal coming in on any one of the circuits is automatically repeated upon all the remaining circuits. I have shown for the purpose of illustration, a simple form of repeater, although any other suitable type can be used. In the repeater which I have shown there are three disks M corresponding to the respective circuits. In each of the circuits is a relay or controlling magnet N which when energized, attracts a detent O and holds the disk M against rotation. It is understood that each disk is provided with a train tending to rotate it whenever it is released by detent O. Each disk M has an outer notched rim P and inner notched cam R, and when M is rotated, rim P comes in contact with a spring S and R comes in contact with a spring T. The spring S forms one terminal of a local circuit having a battery Q and including repeater magnet V and a series of stop magnets W. The magnet V when energized opens the circuit of each of the three lines D, E and F at the contact points *a*, *a*, *a* respectively, and the stop magnets W when energized throw a detent into engagement with a notch on the periphery of disk M and holds it against rotation. The spring T when disk M rotates, is thrown up by cam R and thereby closes a short circuit around the contact points *a*, *a*, *a*. The action of this repeater is as follows: Assuming all the lines to be closed, if the signal is sent from a box upon line D, for example, there will be a series of breaks corresponding to the signal which is being sent. At each break of the circuit the magnet N will be de-energized thereby releasing disk M which will then complete one rotation and be caught by the detent O as the circuit is again closed and magnet N energized. The release of disk M immediately closes the local circuit by the contact of spring S with rim P, the opposite terminal of the battery being in connection with the metal of the disk. The closing of the local circuit first energizes all the detent magnets W which prevents the movement of any of the other disks, and it then energizes magnet V which immediately opens the circuit of the lines E and F. It does not affect the circuit of line D since its contact point *a* is short-circuited by the contact of spring T with its back stop under the pressure of cam R. In this manner the break in the circuit of line D is automatically repeated on the lines E and F, and as the time of rotation of the disk M is adjusted relatively to the time of the break made by the signal box so that the magnet N becomes energized and draws up detent O before the disk has completed its rotation, the parts will be restored after each break to their original condition ready for operation by the succeeding break.

At the central station A whither the loop from line F extends, there is a relay magnet X acting upon a register or other recording apparatus in the usual manner, but I have indicated also an automatic slow repeater which in general is of a type not novel with me, and which may be used or not as desired. In general this consists of a registering tape upon which is embossed by the stylus on the armature of local magnet Z a series of grooves corresponding to the impulses caused by the sending of the box number. This paper is marked *b*, and is led from the ordinary feed roll *c* over a second similar moving feed roll *d*, and as it passes roll *d* a contact lever *f* which bears upon the paper and follows the grooves made by the stylus, closes a local circuit in a manner corresponding to the impulses which indicate the box number, and thereby repeats at a slower rate the impulses over a bell circuit *g* extending throughout the corresponding local district. The bell circuit *g*, however, may be operated manually or the bells may be included in the local circuits D, E and F. It will be well understood that other local stations will be duplicates of station B.

I may also find it convenient to place a repeater at the central station A to which the lines from the several districts will be led so that the signals from one district may be completed to another district through the central station A. Such an arrangement is indicated in Fig. 2.

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

1. In a signaling telegraph system the combination with a central station and one or more local stations with circuits extending therefrom, a circuit connecting the local stations with the central station, and a switch at the local station for disconnecting the circuits therefrom and connecting them in series with the central station.

2. The combination with a central station and a local station, of a circuit connecting them, a series of circuits extending from the local station, and a switch placed at a point outside the local station for disconnecting the lines therefrom, and connecting them in series with the central station.

In testimony whereof I have hereto set my hand this 9th day of March, 1893.

WILLIAM E. DECROW.

Witnesses:
EDWIN ROGERS,
OTIS T. PETTEE.