

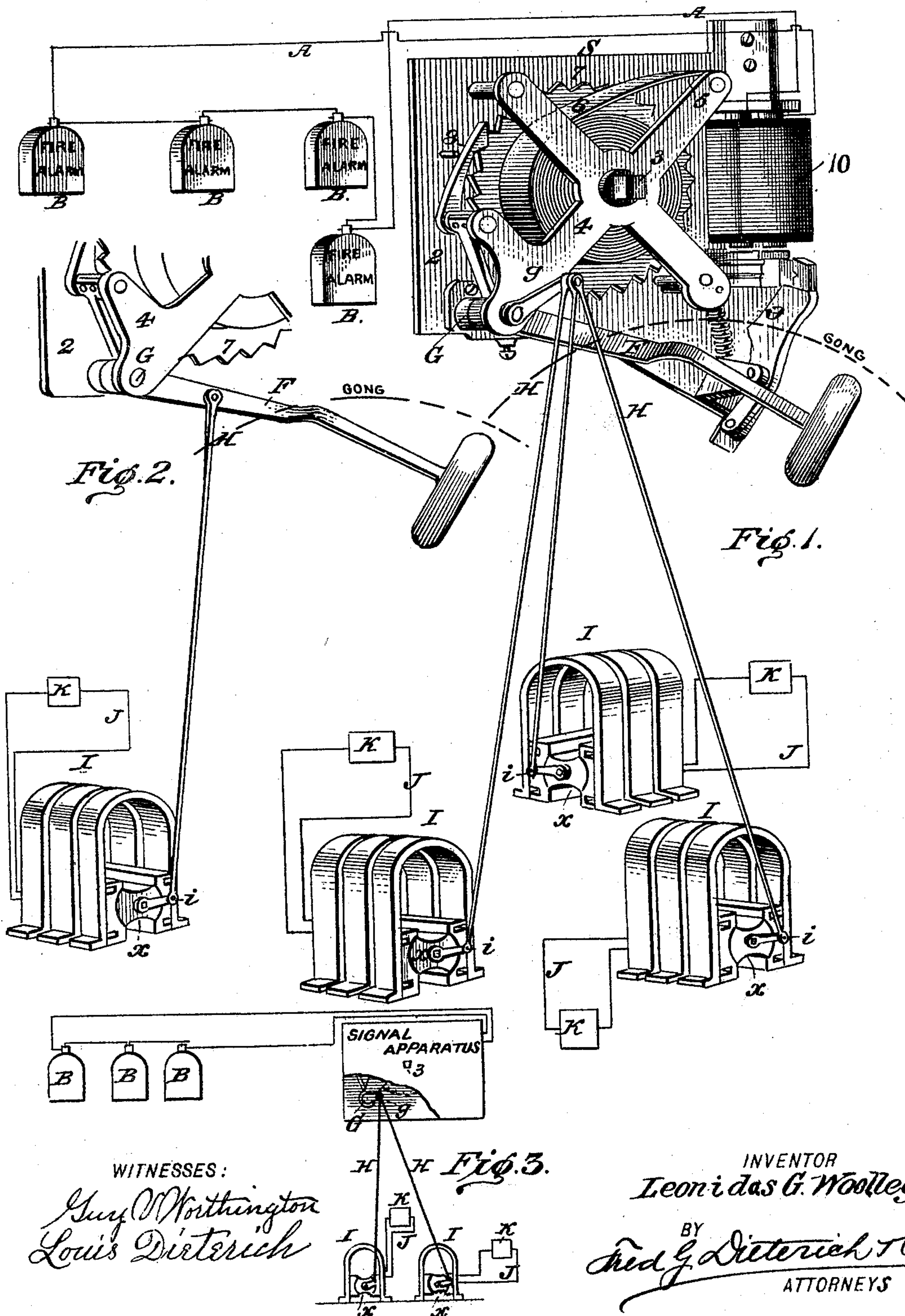
No. 695,777.

Patented Mar. 18, 1902.

L. G. WOOLLEY.
FIRE ALARM TELEGRAPH REPEATER.

(Application filed July 18, 1900.)

(No Model.)



UNITED STATES PATENT OFFICE.

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FIRE-ALARM-TELEGRAPH REPEATER.

SPECIFICATION forming part of Letters Patent No. 695,777, dated March 18, 1902.

Application filed July 18, 1900. Serial No. 24,097. (No model.)

To all whom it may concern:

Be it known that I, LEONIDAS G. WOOLLEY, a citizen of the United States, residing at Kenton, in the county of Hardin and State of Ohio, have invented certain new and useful Improvements in Fire-Alarm-Telegraph Repeaters; and I do 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 the letters and figures of reference marked thereon, which form a part of this specification.

My invention is in the nature of an improved fire-alarm telegraph-repeater apparatus especially designed for operating mechanically any desired number of magneto-generators, each one of which is arranged when mechanically operated to produce an independent electrical circuit for operating a separate instrument, (one for each generator,) the several parts being coöperatively arranged, so that when an alarm is turned in at any one of the alarm-transmitting boxes in the circuit with the striking or annunciator apparatus each one of the magneto-generators coupled with the system will be energized mechanically by the action of a movable part (preferably the striker) of the striking apparatus, such mechanical operation of the means for generating the sub or independent electrical circuits being provided to avoid the use of expensive battery-power such as has heretofore been used for operating the said magneto-electric generators.

In its generic sense my invention comprehends, in combination with a bell-striking mechanism within a fire-alarm circuit set into an operative condition whenever an alarm is sent in, a magneto-electric generator and intermediate mechanical connections joining said magneto-generator with the striking mechanism, whereby by reason of a direct mechanical connection between the striking mechanism and the generator said generator will be put into motion during the time the striking mechanism is active and said generator stopped when the striking mechanism is inactive.

Heretofore, so far as I know, in fire-alarm-repeating apparatus the repeaters have all

been placed in the same circuit and said repeaters operated electrically, thereby making it necessary to provide a large amount of electrical energy for such purpose, which has rendered the maintenance of said apparatus costly, and by reason of their dependence on the stored-up electrical energy the operation of said apparatus has at times been found not entirely reliable. My present invention differentiates from the electrical method of energizing the repeater-circuits by providing an electromechanical power independent of the circuit that controls the striking apparatus, but controlled by the mechanical power created at each active operation of the striking apparatus, dispensing, as it were, with all battery or supplemental electrical energy for bringing into action the repeater-circuits.

In carrying out my invention I utilize the active movement of the striking apparatus as the power "mechanical" for bringing into action the magneto-generators that control the repeating or other subordinate devices, and said power may be harnessed with the generator in various ways; but I prefer to connect same directly with the hammer-shank, as I obtain the best and most positive results and a convenient way for imparting motion to the generator.

In its complete nature my invention also embodies certain details of construction and peculiar combination of parts, all of which will hereinafter be fully explained, and particularly pointed out in the claims, reference being had to the accompanying drawings, in which—

Figure 1 is a view illustrating an ordinary bell-striking mechanism in circuit with a number of fire-alarm transmitters or boxes and a series of independent magneto-electric generators mechanically connected with the striking mechanism, and Fig. 2 is a view of a modified arrangement of the mechanical means for joining the magneto-electric generators with the striking mechanism. Fig. 3 is a diagrammatic view illustrating a generic arrangement of my invention hereinafter specifically referred to.

In carrying out my invention I utilize a striking mechanism of any well-known construction that includes a rocker member for imparting the proper striking movement to

the bell tapper or arm located within a fire-alarm system, also of any well-known and approved type. In the drawings I have illustrated diagrammatically a fire-alarm system the circuit-wires A of which are coöperatively joined with the alarm transmitters or boxes B and with the striking mechanism, (indicated generally by S,) which mechanism, as shown, includes a suitable base 2, upon which is mounted the winding stub or spindle 3, the outer end of which is journaled in the cross-frame 4, and to one of the spacing-posts 5 upon the frame 4 is connected one end of the striker-arm-operating spring 6, the other end of which connects with the winding-spindle 3 in the usual manner.

7 designates the escapement-wheel; 8, the pawl; 9, the pawl-tripper devices; 10, the magnet for controlling the said tripper devices, and F the striker-arm, mounted on the rock-shaft G, all of said devices being of a well-known construction and form *per se* no part of my invention.

Upon one end of the shaft G is fixedly mounted a crank-arm *g* of any suitable length, and to this arm, preferably at its outer end, is pivotally connected a series of connecting-rods H, each of which acts as an independent power-transmitting means and each connects with a crank-arm *i* on the armature *x* of a magneto-electric generator I, each of which is in an independent circuit J of any desired length, and in each circuit J is disposed an electrically-operated mechanism K also of suitable construction—say, for example, an electromechanical repeater or striker, a recording-register, or bell-tapper.

By combining a magneto-electric generator with a striking mechanism in the manner described it is manifest that each time the bell-striker F is operated the movement of the co-operating parts will operate the crank-arm *g*, the movement of which is mechanically transmitted, through the rods H, to all of the generators I harnessed therewith, the impulses transmitted to the said generators corresponding with the operations of the striking mechanism. The armatures of the generators are of the Siemens or H form, and when the armatures or rotators cut across the stationary magnets electric impulses are sent through the circuits of said generators, which set into operation the instruments within the energized circuits J of whatsoever kind. As but very little power is required for bringing into operation the generators I, it follows that no material extra energy is needed beyond the normal for operating the striking mechanism, and hence I utilize what has heretofore practically been a waste force for maintaining the electric circuits for the repeating devices. Thus as the operation of the magneto-electric generators is accomplished entirely by mechanical means the necessity of adding increased resistance in the main fire-alarm circuit is avoided, and, furthermore, a large amount of battery-power is saved and abso-

lute accuracy of operation of the devices in the supplemental or generator circuits is insured, as all contact-points which are so liable to become oxidized and dirty are done away with, and by reason thereof a cheaper, better, and more uniformly and positively operating fire-alarm-repeating system is provided, this being made possible, as no matter in what condition the magneto-electric generators are they are sure to generate an electric current when the armature passes the pole of the permanent magnet.

By connecting the rods H to the crank member *g* of the rock-shaft, as shown in Fig. 1, the striker-arm may be omitted and the repeating devices made to operate just as well, as the generators I are controlled by the action of the shaft G.

In Fig. 2 I have illustrated a modified arrangement of the upper connection for the rods H, in which they are shown as pivoted directly to the striker-arm. In this latter form the crank-arm G may be dispensed with.

While I have illustrated my invention as a coöperative part of a fire-alarm-striking mechanism, it is manifest that the invention involves, generically, a means for operating a magneto-electric generator mechanically through the media of a mechanism having predetermined actions governed by electromechanical means. For example, the same may be joined to an electromechanically-controlled signal apparatus having no striker-arm, as illustrated diagrammatically in Fig. 3 of the drawings.

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

1. As an improvement in fire-alarm-repeating systems of the character described, the combination with the alarm mechanism; of a magneto-electric generator, and mechanical connections joining the said generator with the alarm mechanism, adapted to transmit power for operating the said generator, and to be set into operation by the alarm mechanism, when it is set into an operative condition, for the purposes specified.

2. An electromechanically-operated bell-striking mechanism, and a magneto-electric generator, mechanically connected with said mechanism, and adapted to be set in motion by said mechanism during the striking operation, whereby to generate a supplemental electric current, for the purposes described.

3. A fire-alarm system of the character described, an electromechanical striking mechanism, a supplemental electric circuit, a magneto-electric generator in said circuit, and mechanical connections joining said generator and the striking mechanism, put in motion when the striking mechanism is released, for operating the said generator, as specified.

4. An electromechanically-operated bell-striking mechanism, combined with a magneto-electric generator, mechanically connected with said striking mechanism and

adapted to be operated by the striking movement of said mechanism, a circuit connected with the generator, and an electrically-operated mechanism in said circuit, as set forth.

5 5. In a fire-alarm system of the character described, an electromechanically-operated bell-striking mechanism, combined with a series of magneto-electric generators, each having an independent electric circuit, and mechanical devices connecting all of the generators with the striking mechanism, adapted to put in motion the said generators when the striking mechanism is in operation.

15 6. In a fire-alarm system of the character described, the combination with the striking mechanism, said striking mechanism including a rocking member; of a magneto-electric generator, having a circuit of its own, an electrically-operated mechanism in said circuit, and connections between the rocking member of the striking mechanism and the generator-armature, for the purposes specified.

25 7. In an electromechanically-operated mechanism in the circuit of a fire-alarm, alarm devices controlled by said circuit, combined with a magneto-electric generator operated by said mechanism, a circuit connected to the generator, and an electrically-operated mechanism placed in the circuit of the generator, substantially as shown and described.

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8. The combination with the electromechanically-operated striking mechanism, said mechanism including the rock-shaft G and arm g; of the magneto-electric generator I, the armature of which has a crank member i, and the rod H, connected to the arm g, and the member i, all being arranged substantially as shown and described.

9. In combination with an electromechanically-operated mechanism, including a circuit, and means for electrically actuating said mechanism at predetermined times; of a magneto-electric generator, a separate circuit arranged to be energized therefrom, an electrically-operated mechanism in said magneto-circuit, and mechanical connections joining the magneto-electric generator with electromechanically-operated mechanism, for the purposes described.

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

LEONIDAS G. WOOLLEY.

Witnesses:

ROSANN SMITH,
ZORA M. WOOLLEY.

It is hereby certified that the assignee in Letters Patent No. 695,777, granted March 18, 1902, upon the application of Leonidas G. Woolley, of Kenton, Ohio, for an improvement in "Fire-Alarm-Telegraph Repeaters," should have been described and specified as *The Magneto Electric Company, Incorporated, of New York, N. Y.*, instead of "The Magneto Electric Company, Incorporated, of New York, N. Y., a corporation of New York;" and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed, countersigned, and sealed this 8th day of April, A. D., 1902.

[SEAL.]

F. L. CAMPBELL,
Assistant Secretary of the Interior.

Countersigned:

F. I. ALLEN,
Commissioner of Patents.