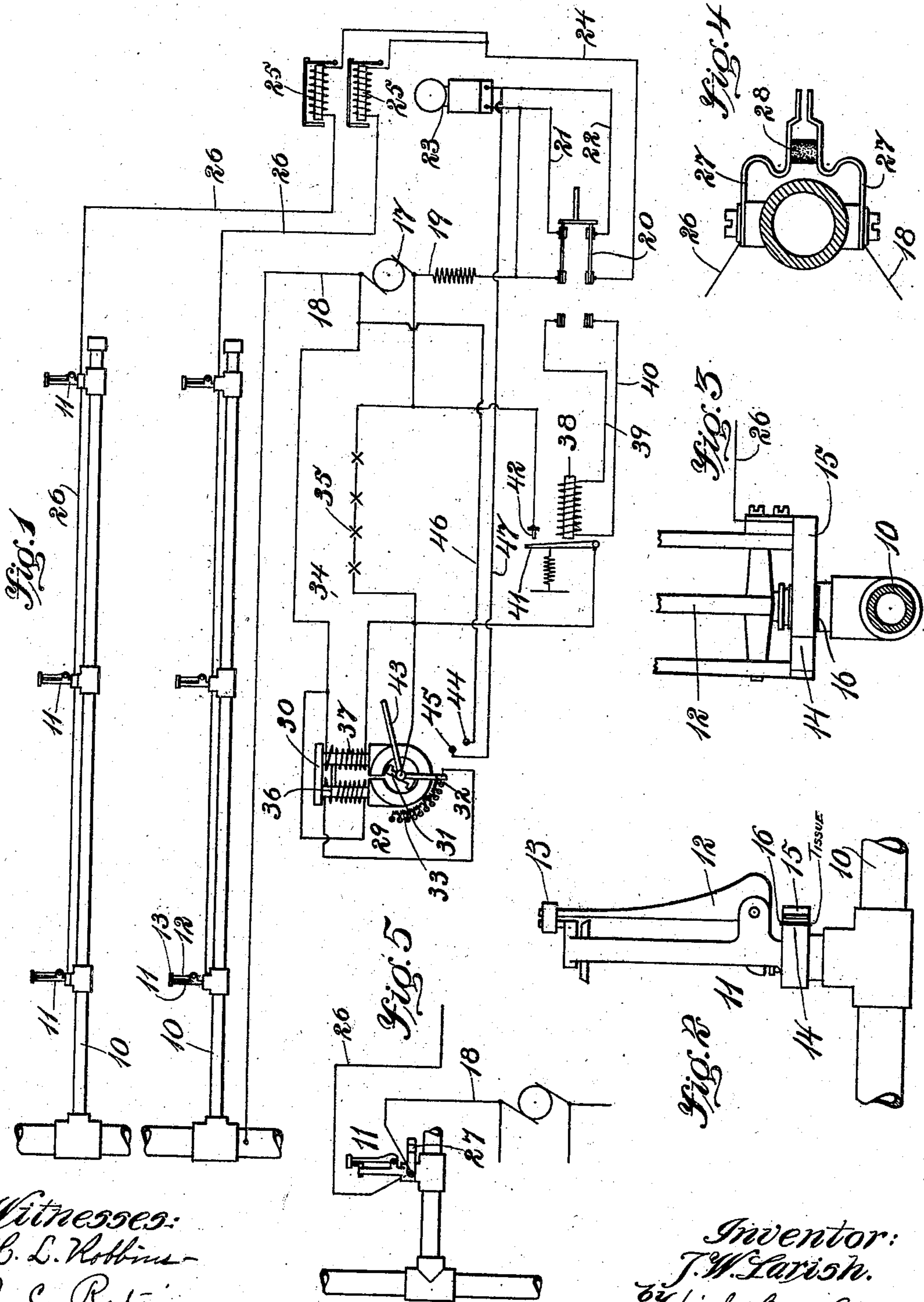


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J. W. LARISH.
ELECTRIC SPRINKLER APPARATUS.
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ELECTRIC SPRINKLER APPARATUS.

No. 814,852.

Specification of Letters Patent.

Patented March 13, 1906.

Application filed June 4, 1904. Serial No. 211,116.

To all whom it may concern:

Be it known that I, JOSEPH W. LARISH, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Electric Sprinkler Apparatus, of which the following is a specification.

This invention relates to automatic sprinkler systems for buildings, and has for its object to provide electrical means for giving an alarm or operating some other emergency device when the sprinkler-heads leak or when they become fully operative.

Of the accompanying drawings, Figure 1 represents a diagrammatic view of electric sprinkler-controlling apparatus constructed according to my invention with the piping utilized as a return. Fig. 2 represents a side elevation of one of the sprinkler-heads. Fig. 3 represents a front elevation thereof. Fig. 4 represents a horizontal section showing a modification in the soluble means for normally holding apart the contacts. Fig. 5 represents a diagrammatic view showing the employment of wires as an electrical return.

The same reference characters indicate the same parts in all the figures.

In the drawings, 10 10 are sprinkler-pipes equipped with automatic sprinkler-heads 11 11, one of which is shown in detail in Figs. 2 and 3 and includes the ordinary pivoted lever 12, controlling the sprinkler-head valve and normally held in valve-closing position by a fusible strap or loop 13. When this strap melts, the lever drops to the right from the position shown in Fig. 2 and releases the valve. In the arrangement shown in Figs. 1, 2, and 3 the frame of the sprinkler-head is arranged to constitute an electrical conductor, a portion of which is a contact 14. 15 is a spring-contact normally separated from contact 14 by a piece of thin tissue-paper 16, which is sufficiently soluble to permit an electrical connection between contacts 14 15, especially when aided by the conductivity of the water.

17 is a dynamo connected by return-wire 18 with the sprinkler-piping and by wire 19 with one leg of a switch 20. This switch

when thrown to the right, as shown in Fig. 1, is adapted to connect in series with the dynamo 17 the circuit 21 22 of a bell 23 and the circuit 24 branching through annunciator drop-magnets 25, the branch wires 26 leading to the spring-contacts 15 of the several sprinkler-heads.

It is evident that when any of the sprinkler-heads 11 leak the water will sufficiently dissolve the tissue-paper 16 or whatever soluble equivalent may be substituted therefor in order to connect contacts 14 15 and operate the alarm 23 and the indicator devices 25. This same result obtains when any of the sprinkler devices is fully operative, for then the arm 12 will complete the circuit in conjunction with spring 15.

Fig. 4 shows a modification in which the sprinkler-head is equipped with spring-contacts 27 27, normally held apart by a soluble block 28, which may be composed of gelatin or a compound thereof. In this case the return-wire 18 goes to one of the contacts 27. (See also Fig. 5.) The contacts 27 may also be connected by the arm 12 dropping down into the space between their separated ends.

Reverting to Fig. 1, there is shown at the left a protective device 29, whose construction embodies a field-magnet 30, having an armature 31, carrying a brush 32, adapted to travel over the contacts of a rheostatic resistance 33 for the purpose of controlling the amount of current flowing in a circuit 34, which contains translating devices 35, such as the lamps in the building. The magnet 30 has a series winding 36 and a shunt-winding 37, one terminal of each of which is connected with one terminal of the dynamo, the other terminal of the series winding connecting, through the arm 32, with the lighting-circuit 34 and therethrough with the opposite terminal of the dynamo, while the shunt-winding is connected directly across the lighting-mains. An undue increase of current in the lighting-circuit will cause the arm 32 to be moved out and insert increased resistance in the circuit, thereby protecting said circuit and the translating devices from injury. The

series and shunt windings 36 37 steady the movement of the arm. Provision is made for effecting a short circuit of the lighting-circuit 34 and consequent movement of the arm 32 to the extreme of its movement when any one of the sprinkler-heads leaks or becomes operative, such provision comprising the relay-magnet 38, in whose circuit 39 40 the dynamo 17 and sprinkler-circuit 19 24 26 may be placed by throwing the switch 20 to the left, such movement cutting out the bell 23. The armature-controlled contacts 41 42 of the relay are in circuit around the translating devices 35, whereby these devices are short-circuited when an impulse is sent from any sprinkler-head. At the limit of resistance-inserting movement of the armature 31 of magnet 30 a bridge-arm 43, carried thereby, may connect contacts 44 45 and close a circuit 46 47 through the bell 23, (or through other alarm or emergency device.) With the switch 20 thrown to the right, as shown in Fig. 1, upon the operation of any of the sprinkler-circuit closers the circuit will be from the generator 17, through the bell 23, switch 20, wires 22 and 24, the annunciator 25, corresponding to the circuit in which the operated sprinkler is located, and back to the generator through the pipe system and the wire 18. If, however, a sprinkler should be operated with the switch 20 thrown to the left, the circuit will be the same as before, except that in lieu of the bell 23 and wire 20 there will be included in the circuit the relay-coil of the magnet 38 and the wires 39 and 40. If with the switch thrown to the left, as shown in Fig. 1, or to the right the contacts 44 and 45 should be bridged by the arm 43, upon an excess of current in the lighting-circuit an alarm-circuit will be completed from the generator 17, through the bell 27, wires 47 and 46, back to the other side of the generator, and thus this alarm-circuit is independent of the position of the said switch and is always operative.

I claim—

1. In a sprinkler system, the combination of a sprinkler-head comprising a valve-controlling pivoted lever, fusible means normally holding the latter in valve-closing position, electric contacts closed by said lever in its valve-releasing position, and soluble means normally holding said contacts apart.

2. In a sprinkler system, the combination of a sprinkling device, a circuit containing a translating device and protective mechanism for automatically limiting the current flowing in said circuit, and means whereby the outflow from said sprinkling device actuates said protective device.

3. In a sprinkler system, the combination of a sprinkling device, a circuit containing a translating device, protective means to automatically limit the current flowing in said

circuit, and temperature-controlled means to actuate said protective means.

4. In a sprinkler system, the combination of a sprinkling device, a circuit containing a translating device, protective means for automatically limiting the current flowing in said circuit, and means controlled by the sprinkling device for effecting the actuation of said protective means.

5. In a sprinkler system, the combination of a sprinkling device, a circuit containing a translating device, means controlled by the current in said circuit for automatically limiting said current, a relay for short-circuiting said translating device, and means whereby the outflow from said sprinkling device actuates said relay.

6. In a sprinkler system, the combination of a sprinkler-head comprising electric contacts, soluble means normally holding said contacts apart, a valve-controlled pivoted lever bridging the said contacts in its valve-releasing position, and fusible means normally holding the lever in its valve-closing position.

7. In a sprinkler system, the combination with a sprinkler-head, an electric circuit, contacts in the said circuit, soluble means normally holding said contacts apart, a valve-controlled pivoted lever adapted to close the circuit when in its valve-releasing position, and fusible means normally holding the lever in its valve-closing position.

8. In a sprinkler system, the combination of sprinkling devices, an electric circuit comprising branches to the several sprinkling devices, a source of current common to the said branches, annunciators in the said branches, a bell branch associated with the annunciator branches, normally opened contacts in the bell branch, a second circuit containing translating devices, an electrically-actuated switch for controlling the current through the translating devices, and for closing the normally open contacts in the bell branch of the first-named circuit, a switch in the second circuit, and an electromagnet included in circuit with the annunciator branches to actuate the said switch and thereby cause the controlling-switch to cut down the current in the second circuit and close the bell branch of the first circuit.

9. In a sprinkler system, the combination of sprinkling devices, a source of electrical energy, an alarm-circuit from said source to the sprinklers, comprising a plurality of branches, annunciators located in the said branches, a bell branch associated with the annunciator branches, an electromagnet in series with the annunciator branches, a consumption-circuit from the said source, an electrically-actuated controlling-switch and translating devices therein, a circuit-closer, actuated by the electromagnet, in series with the annunciator branches, in shunt to the

translating devices and in series with the actuating-coils of the controlling-switch, contacts controlled by the controlling-switch for closing the bell branch, and circuit-completing means controlled by the sprinkling devices located in the several annunciator branches.

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

JOSEPH W. LARISH.

Witnesses:

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