

(No Model.)

G. S. NEU.
ELECTRIC FIRE AND WATER ALARM.

No. 539,234.

Patented May 14, 1895.

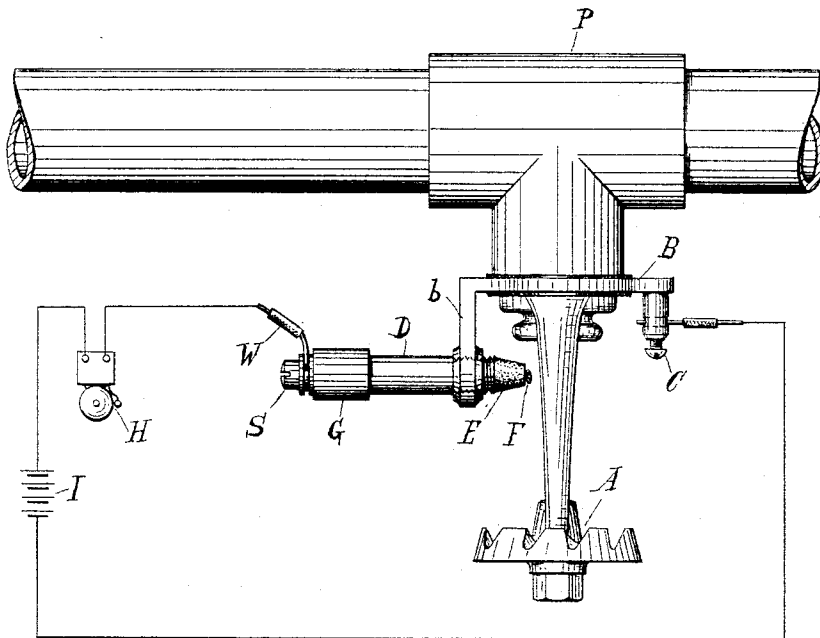


Fig: 1.

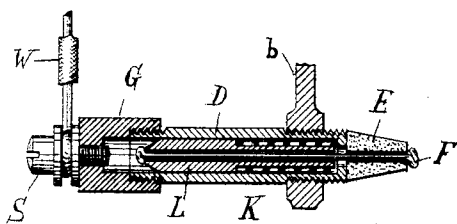


Fig: 2.

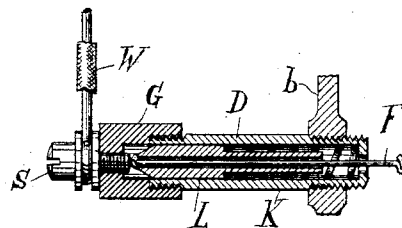


Fig: 3.

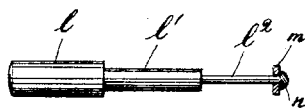
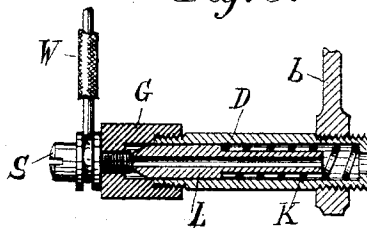


Fig: 5.

Fig: 4.



Witnesses
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UNITED STATES PATENT OFFICE.

GUSTAVE S. NEU, OF NEW YORK, N. Y.

ELECTRIC FIRE AND WATER ALARM.

SPECIFICATION forming part of Letters Patent No. 539,234, dated May 14, 1895.

Application filed January 25, 1895. Serial No. 536,236. (No model.)

To all whom it may concern:

Be it known that I, GUSTAVE S. NEU, a citizen of the United States, and a resident of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in an Electric Fire and Water Alarm, of which the following is a specification.

My invention has reference to a novel electric fire and water alarm in connection with an automatic sprinkler and has for its object to produce an alarm which indicates electrically the start of a fire and reports also the start of the automatic sprinkler or any possibly occurring leak or deficiency in the same even when only a small quantity of water will run out.

Heretofore devices have been used which indicate the start of a fire at the same time the automatic sprinkler commenced to operate but neither the outflow of the water nor any leak or defect in the sprinkler was reported by such apparatus. I have now succeeded in producing a plain and very reliable device which reports the start of a fire as well as the start of the automatic sprinkler and any leak or other deficiency in the same. Thus one plain apparatus contains in combination devices which are released by heat and by water.

My novel electric fire and water alarm consists substantially of a tube shaped holder containing the devices which are released by heat and water, an automatic sprinkler, an alarm bell, an electric battery and the electrical connections.

In the accompanying drawings, Figure 1 is a front elevation of the whole apparatus and shows the electrical connections in diagram. Fig. 2 is a central vertical section of the device to be released by heat and water. Fig. 3 is a central vertical section of this device when released by water. Fig. 4 shows the same when released by fire, and Fig. 5 shows a modified form of plunger or piston with fuse.

Similar letters of reference indicate corresponding parts in all the figures.

The automatic sprinkler A, Fig. 1, may be of any known construction and is connected to the water pipe P in the usual manner. Between the downward portion of the water pipe

and the automatic sprinkler is located the insulated support B which carries the tube shaped holder D. The support B is provided on one side with a binding post C and on the other with a downward extension b which forms a circular flange wherein the tube shaped holder D is fastened by means of screw threads. Thus the holder D is permanently fixed to the support B. The holder D is made of metal, preferably of brass or iron and is provided near the automatic sprinkler with a soluble button E at the end of which is seen the end of the fuse F. On the other side the tube shaped holder is screwed on an insulating piece G of hard rubber or the like.

In the insulating piece G fits opposite the holder a screw S which is provided with two washers wherein the connecting wire W is fastened. This wire connects with an alarm bell H and further with the battery I. From the battery a wire leads to the binding post C but the device may also be grounded in the usual manner and then the support B is not insulated from the water pipe.

The construction of the device which is released by heat and water is shown in Fig. 2. The tube shaped holder D is threaded outside on both ends. By means of one thread it is permanently fixed in the flange of the lower portion b of the support B. On the other side the insulating piece G is screwed thereon so that the holder D reaches in about one-third. The screw S fits on this insulating piece opposite the holder reaching in about one-third; so that one-third of the space is empty. The holder D contains a wire spring K and the plunger L. The latter fits loosely the holder and is turned down in the rear so as to fit within the wire spring. The plunger is hollow and in the opening rests the fuse F which is made of a low melting alloy. At the rear end and outside of the holder D the fuse is surrounded by a soluble button E. The spring is compressed and is held in the compressed condition by the fuse F which forms knots on either end. In this way the current is interrupted by the insulating piece G and the empty space within the same. If now the fuse melts by heat or the soluble button is destroyed by water then the spring inside the holder pushes the plunger forward until it

touches the screw S thus making electrical connection and setting the alarm bell in action.

Fig. 3 illustrates the device when released by water. The soluble button has dropped off and the spring has pushed the plunger toward the screw S thus making metallic contact with it and completing the circuit.

Fig. 4 shows the device as released by fire. The fuse has been melted by heat. At the same time the fuse in the automatic sprinkler has been melted and the outflowing water has destroyed the soluble button. The spring has pushed the plunger forward so that it is in contact with the screw S whereby the circuit is closed.

A modified form of plunger is illustrated in Fig. 5 which is very substantial since it avoids the long wire shaped fuse and only a small knob of low fusing solder forming a fuse. The plunger is solid. The front portion *l* fits loosely into the tube shaped holder D. The middle portion *l'* is turned down so as to go inside the wire spring K and the rear portion *l''* is decreased in diameter so as to pass through the soluble button E. A washer *m* is provided at the end of *l''*. The washer and the rear portion of *l''* are soldered together by a low fusing solder. The solder forms a little knob *n* which fuses by heat. The rear portion *l''* of the plunger is surrounded by the soluble button E.

The soluble button E is made of compositions which contain chiefly water-soluble salts so that it drops off when water comes in contact with it. The salts are employed in combination with water-soluble glutinous substances, for instance, aqueous solutions of gum tragacanth, gum arabic, glue, starch or the like. The glutinous substance acts as a binder and surrounds the particles of salt so that the button is not destroyed by atmospheric moisture. Any salt which is soluble in water may be employed, but those are preferably used which are not hygroscopic. The chlorides, nitrates, or alkali carbonates for instance are employed. The button may further contain insoluble substances such as plaster of paris, clay or the like for the purpose of enabling compression. All these substances are inactive and merely give body to the mass. The button is prepared as follows: the salts are first powdered and then mixed with the substances which give the mass body. Then the dry powder is stirred into the glutinous solution until a very thick paste is obtained which is capable of compression.

The mass is then shaped in suitable molds and provided with an opening when they will be ready for mounting.

As is illustrated in Fig. 2 the plunger is held back by the fuse and the soluble button and the device is mounted close under the water pipe as is illustrated in Fig. 1 so that any water flowing out of the pipe must strike it. Thus I have produced an apparatus containing very plain and effective devices which are released by heat and by water.

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

1. An electric fire and water alarm consisting of a device to be released by heat and water and provided with a spring actuated plunger, a soluble button, a fuse, and electrical contacts kept normally apart by the soluble button and the fuse; an automatic sprinkler, an alarm bell and an electrical battery, substantially as described.

2. In an electric fire and water alarm a device to be released by heat and water which consists of a holder containing a spring actuated plunger, a soluble button behind the holder, a fuse of a low melting alloy, an insulating piece in the front of the holder, a metallic screw in the insulating piece and opposite the holder to which is attached a connecting wire, the plunger and the screw forming electric contacts being normally kept apart by the fuse and the soluble button, substantially as specified.

3. In an electrical fire and water alarm a device to be released by heat and water composed of a spring actuated plunger, a soluble button, a fuse and electrical contacts kept normally apart by the soluble button and the fuse in combination with an automatic sprinkler, as specified.

4. In an electrical fire and water alarm a device to be released by heat and water composed of a spring actuated plunger, a soluble button, a fuse and electrical contacts kept normally apart by the soluble button and the fuse in combination with an automatic sprinkler, an alarm bell and an electrical battery, substantially as described.

Signed at New York, in the county of New York and State of New York, this 21st day of January, A. D. 1895.

GUSTAVE S. NEU.

Witnesses:

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