A. U. & S. E. WEAVER.

ELECTRIC ALARM SYSTEM.

APPLICATION FILED FEB. 3, 1912.

1,052,538.

Patented Feb. 11, 1913.

2 SHEETS—SHEET 1.

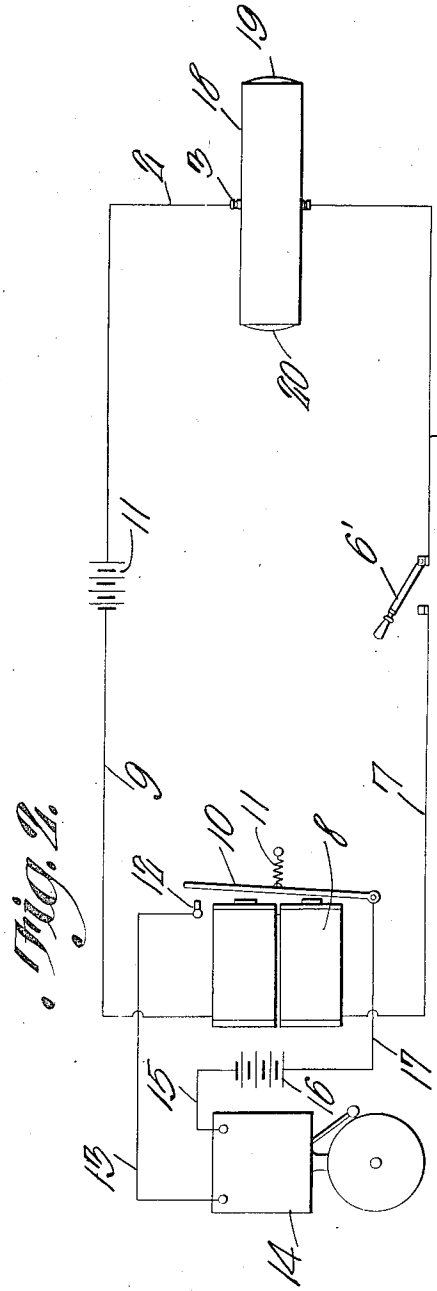


Fig. 2.

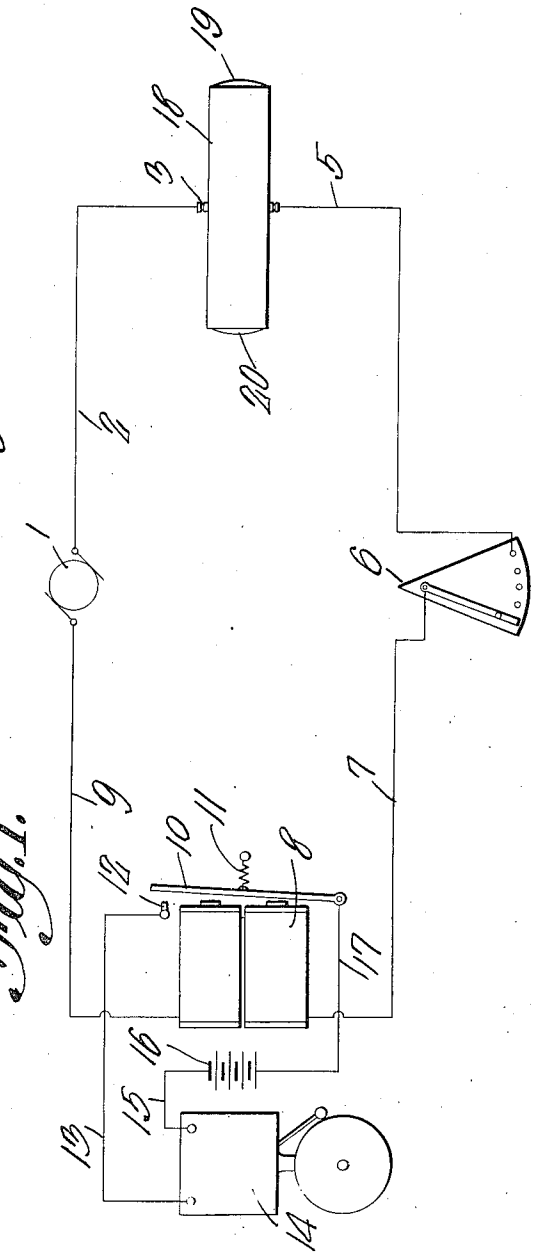


Fig. 1.

Witnesses

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2 SHEETS—SHEET 2.

Fig. 4.

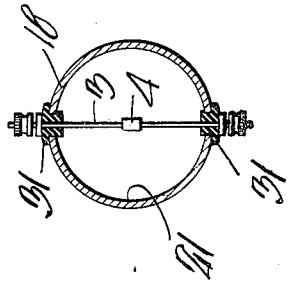


Fig. 3.

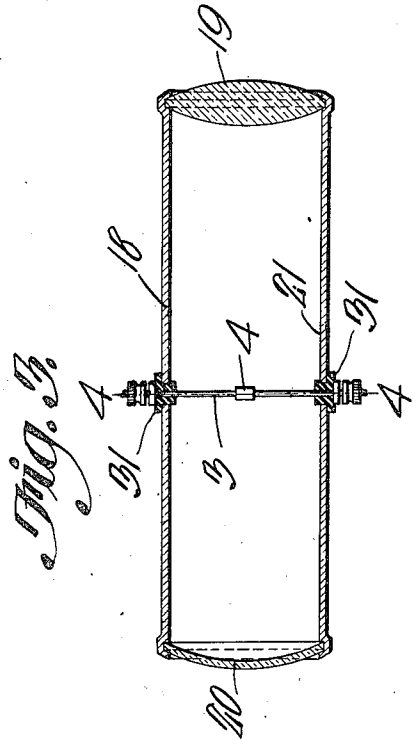
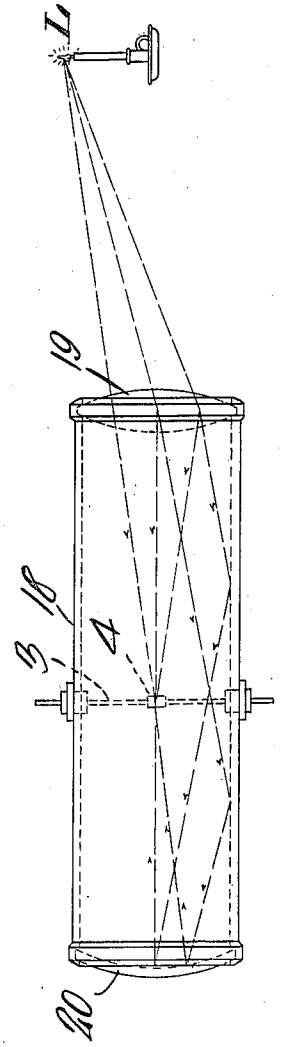


Fig. 5.



Witnesses

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UNITED STATES PATENT OFFICE.

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ELECTRIC ALARM SYSTEM.

1,052,538. Specification of Letters Patent. Patented Feb. 11, 1913.

Application filed February 3, 1912. Serial No. 675,194.

To all whom it may concern:

Be it known that we, ALLISON U. WEAVER and SPENCER E. WEAVER, citizens of the United States, residing at Santa Anna, in the county of Coleman, State of Texas, have invented a new and useful Electric Alarm System, of which the following is a specification.

The present invention relates to improvements in electrical alarm signals, the present invention being especially adapted for use in connection with the detection of a fire and the operation of a fire alarm, a novel form of circuit closing means being provided in the form of a selenium cell so disposed with a reflecting and refracting medium, that the rays of light due to the fire are projected upon such selenium cell, so as to render the same a conductor of electricity and thereby close an alarm circuit or an alarm controlling circuit to actuate an alarm.

A further object of the present invention is the novel construction of a light reflecting and refracting member which has disposed therein and suspended centrally of the longitudinal length of said member and concentrically with relation to the cross sectional area, a selenium cell, such cell being connected in an operating circuit, while at one end such member is provided with a magnifying reflector, and with a lens disposed in the opposite end, the inner walls of such member being further provided with a reflecting surface, whereby the entrance of the rays of light through the lens will be reflected or refracted upon the selenium cell to render the same a conductor of electricity.

With the foregoing and other objects in view which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that changes in the precise embodiment of invention herein disclosed can be made within the scope of what is claimed without departing from the spirit of the invention.

In the drawings—Figure 1 is a diagrammatic view with this novel form of circuit closer used in connection with a power circuit and rheostat. Fig. 2 is a similar view employing a battery source and a manually operated cut out switch. Fig. 3 is a longitudinal sectional view through the circuit closing mechanism. Fig. 4 is a section taken on line 4—4 of Fig. 4. Fig. 5 is a detail view illustrating the action and direction of projection of the rays of light through the lens and upon the interior surface and reflector or mirror of the circuit closer and the selenium cell.

Referring to the drawings, and more particularly to Fig. 1 thereof, the numeral 1 designates the generator which has led thereaway from the conductor 2 which is connected to a metal conductor 3 insulated by means of the bushing 31 and carrying the selenium cell 4 within the cylinder 18. Leading away from said conductor 3 from the opposite end thereof is a conductor 5 connected to a rheostat 6, another conductor 7 being led away from the rheostat to an electromagnet 8, which is connected to the other side of the generator 1 by means of the conductor 9. In the diagram as shown in Fig. 2, the battery source 1′ and a manual switch 6′ is employed in lieu of the generator 1 and rheostat 6. In both of these diagrams, the armature 10 forms the switch for an alarm circuit, the same being normally held open by means of the spring 11.

When the control circuit containing the selenium cell 4 is closed, due to the effect of light upon the selenium cell, the electromagnet 8 is energized and attracts the armature 10, which in turn engages the contact point 12, and thus closes a circuit through the conductor 13, audible alarm 14, conductor 15, batteries 16 and conductor 17 which is connected to the armature 10. By this means it will be seen that an alarm is given, due to the effect of light upon the selenium cell, thus closing the control circuit, and that by reason of the rheostat 6 or the switch 6′, the said control circuit including the selenium cell will be cut out during the daytime so that a false alarm will not be given.

The main controlling circuit closing de-

vice as clearly shown in Figs. 3, 4 and 5 consists of a cylindrical member 18 having mounted at one end thereof the lens 19, while disposed at the opposite end thereof is a mirror 20, the same being formed concaved with the concavity open to the interior of said cylinder 18. The walls 21 of said cylinder are also coated with a reflecting material, while the conductor rod 3 carrying the selenium cell 4 and insulated from the cylinder 18 by means of the bushings 31, is so disposed as to be in the longitudinal center of the cylinder 18 and forming a diameter of the circle formed by the walls of said cylinder, the selenium cell 4 being disposed centrally of said rod so as to be in the exact center, both longitudinally and transversely of the cylinder 18.

From the foregoing description taken in connection with the drawings, it is evident that when the rheostat 6 and the switch 6′ is closed, and no rays of light are penetrating the lens to the interior of the cylinder 18, that the selenium cell is not affected and that such controlling circuit is open. But for instance, however, as illustrated in Fig. 5, a light be so disposed in front of the lens and in such a way as to have its rays projected by such lens into the interior of the cylinder 18, the rays of light therefrom will be reflected and refracted as clearly illustrated by the dotted lines and arrows Fig. 5, so as to be finally projected upon either and both sides of and against the selenium cell 4, thus rendering the cell a good conductor of electricity and closing the controlling circuit and energizing the electromagnet 8 as before described.

As before stated during the day time when the selenium cell might be affected by light, the rheostat or switch is cut off, but where the device is used in cellars or dark rooms, the said rheostat or switch may be closed at all times, so that the controlling circuit will be closed due to the rays of light caused by a fire.

In practice it has been found that a very dim light, or rays therefrom that would not ordinarily affect the selenium cell, is effected and magnified by the convex lens, the concaved mirror and the polished walls of the cylinder to more readily affect the selenium cell to close the electric circuit and thus actuate the alarm.

By experience it has been found that with this form of apparatus with a light even at an angle will have the rays therefrom directed and concentrated on the cell with practically no loss, the lens being so disposed as to accomplish this, so that the walls of the cylinder in combination with the mirror will so reflect the rays that such rays that would be entirely ineffective upon the cell without a cylinder as herein set forth, are so reflected as to affect the cell and consequently actuate the alarm. In other words the cylinder with the lens, and reflector is an intensifier for the rays of light.

What is claimed is—

1. In an electric alarm, an electrical circuit, a selenium cell in said circuit, a confining member for said cell, a lens carried by said member, and means for directing rays of light entering through the lens to said selenium cell to close the circuit.

2. In an electric alarm, a normally open alarm circuit, a normally open control circuit therefor, a selenium cell in said circuit, a confining tube for said cell, a lens mounted in one end of said tube, and means carried by said tube for reflecting the rays of light permeable to the lens upon the selenium cell to close the control circuit.

3. In an electric alarm, a normally open alarm circuit, a normally open control circuit therefor, a selenium cell in said circuit, a confining tube for said cell, a lens mounted in one end of said tube, the inner walls of said tube being a reflecting surface, and a mirror disposed at the opposite end to the lens for coaction with the reflecting walls of the tube to direct the rays of light entering the tube upon the selenium cell to close the circuit.

4. In an electric alarm, a normally open alarm circuit, a normally open controlling circuit therefor, a light confining tube, a selenium cell disposed at the longitudinal and axial center of said tube and in said controlling circuit, a lens mounted in the entrance end of said tube, the interior of said tube being a reflecting surface, and a reflecting medium carried in the opposite end of said tube for coacting with the reflecting surface of the tube to direct the rays of light entering through the lens upon the selenium cell.

5. A selenium cell circuit closing medium, having a cylindrical tube, the inner surface of which is a reflecting surface, a conducting rod disposed diametrically of said tube at the longitudinal central point thereof, said rod being insulated from the tube, a selenium cell disposed axially of the tube and carried by said rod, and a reflecting medium carried in one end of said tube for coaction with the reflecting interior walls thereof to direct the rays of light entering the tube upon the selenium cell.

6. A selenium cell circuit closing medium, having a cylindrical tube, the inner surface of which is a reflecting surface, a conducting rod disposed diametrically of said tube at the longitudinal central point thereof, said rod being insulated from the tube, a selenium cell disposed axially of the tube and carried by said rod, a reflecting medium carried in one end of said tube for coaction with the

reflecting interior walls thereof to direct the rays of light entering the tube upon the selenium cell, and a lens disposed in the opposite end of said tube for magnifying the light ray effect upon the reflecting surfaces within the tube.

In testimony that we claim the foregoing as our own, we have hereto affixed our signatures in the presence of two witnesses.

ALLISON U. WEAVER.
SPENCER E. WEAVER.

Witnesses:
LEON L. SHIELD,
FRED W. TURNER.