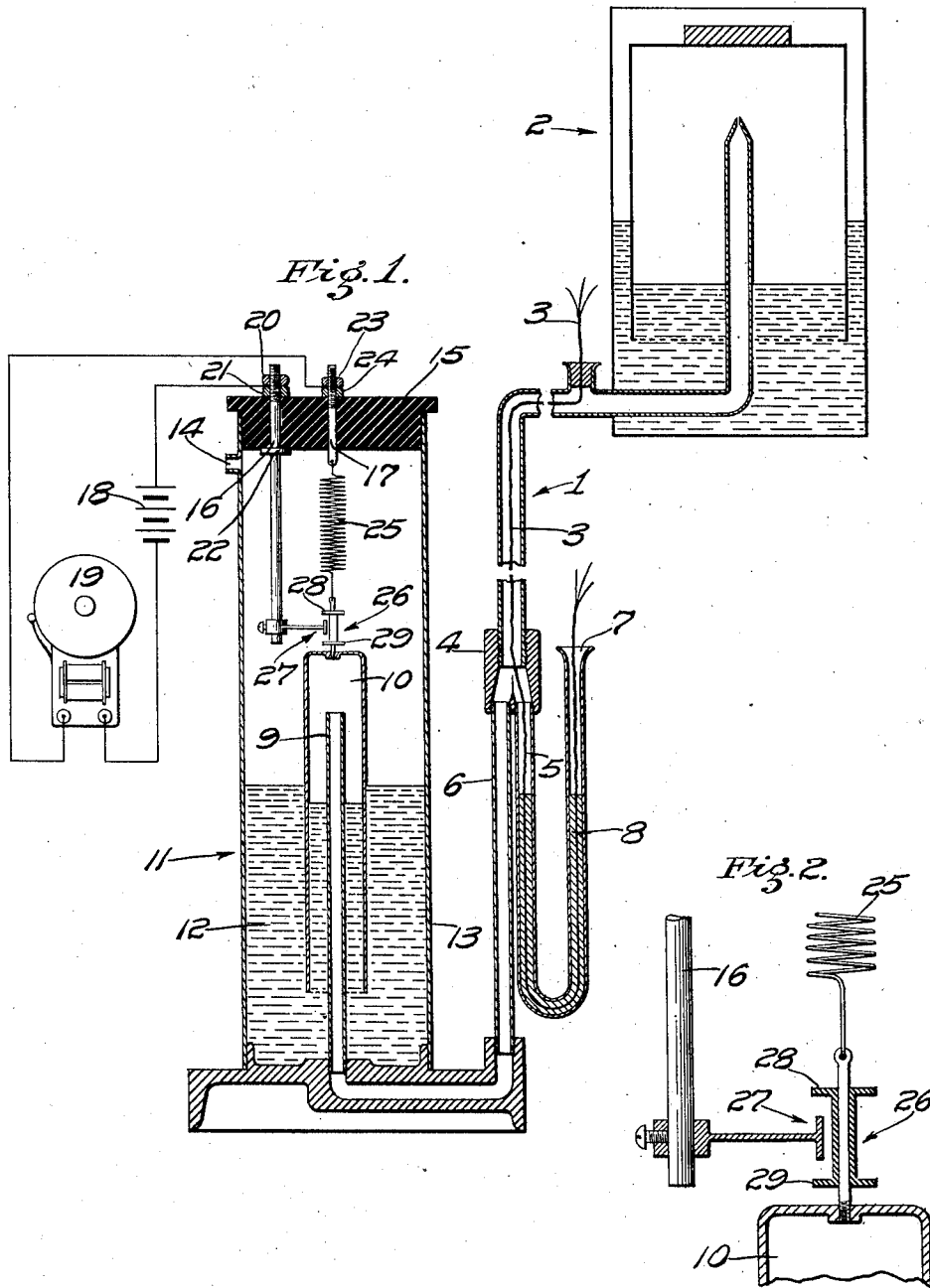


A. J. KERCHER.
SIGNAL APPARATUS.
APPLICATION FILED OCT. 6, 1909.

1,003,185.

Patented Sept. 12, 1911.



Witnesses:
H. N. Tishby
L. Belle Rice.

Inventor
Arthur Jerome Kercher
James R. Townsend
his Atty.

UNITED STATES PATENT OFFICE.

ARTHUR JEROME KERCHER, OF LOS ANGELES, CALIFORNIA, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO SAFE, VAULT AND PROTECTION COMPANY, OF LOS ANGELES, CALIFORNIA, A CORPORATION OF CALIFORNIA.

SIGNAL APPARATUS.

1,003,185.

Specification of Letters Patent.

Patented Sept. 12, 1911.

Application filed October 6, 1909. Serial No. 521,388.

To all whom it may concern:

Be it known that I, ARTHUR JEROME KERCHER, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented a new and useful Improvement in Signal Apparatus, of which the following is a specification.

The object of this invention is to provide a highly sensitive device for the purpose of indicating variations of pressure.

An object of this invention is to provide improvements in signaling devices for the protection of electrical conductors, or other objects, by tubes subject to variations of fluid pressure.

The invention includes a pneumatic relay and its connection with an alarm system.

The accompanying drawings illustrate the invention.

Figure 1 is a fragmental view of a signal apparatus constructed in accordance with this invention. Parts are shown in section, and other parts are shown diagrammatically. Portions of the protected conductor and its protecting tube are broken away to contract the view. Fig. 2 is an enlarged sectional detail of the contact device.

The static pressure pneumatic tube 1 is subject to variations of pressure and is provided with pressure-maintaining means, as a gasometer 2. Through the tube 1 an electrical conductor 3 may be led, a Y-connection 4 being provided on the end of the tube 1 for the reception of the sealing tube 5 and the pneumatic tube 6. The sealing tube 5 may be U-shaped and have a funnel mouth 7 to receive the liquid sealing material 8, which may be of any suitable material, as sealing wax, to hermetically close the sealing tube 5. The pneumatic tube 6 terminates in a stand-pipe 9 inside the receiver 10 of a gasometer 11, having the usual liquid seal 12 in a receptacle 13, provided with a vent 14 to admit atmospheric pressure. The cover 15 of the receptacle 13 forms an insulating support for the electrical conductors 16, 17, which are connected with the opposite sides of the circuit through a battery 18 and signal 19. Said conductors 16, 17 are in the form of binding posts, the post 16 being provided with nuts 20, 21, and also being provided with a shoulder 22 to engage the under side of the insulating support 15, so

that by screwing the nuts 20, 21, the binding post 16 may be fixed to the support. The binding post 17 is adjustable in the support 15 by means of the nuts 23, 24, and forms a support for a spring 25, to the lower end of which is suspended the receiver 10 of the gasometer. A contact device 26 is interposed between the receiver and the supporting spring 25. A second contact device 27 is adjustably mounted on the binding post 16 and the two contact devices 26, 27, are arranged to close the circuit to operate the signal 19 upon a determined movement either up or down of the contact device 26. One or the other of the contact devices 26 or 27 may be provided with two points between which a contact point of the other device is located. In the form shown, the contact device 26 is provided with two points 28, 29, and the contact device 27 comprises a contact head located between the points 28, 29.

Unvarying pneumatic pressure may be normally maintained in the pneumatic tube 1 by any suitable means, as the gasometer 2 under normal conditions, and such pressure may be disturbed by compression or by perforation of the tube 1. The spring 25 is purposely sensitive and designed to maintain a delicate balance of the receiver 10, so that any slight variation of the pressure inside the receiver 10 which may result from compression or perforation of the tube 1, will cause the receiver to ascend or descend, and in either instance, electrical contact is effected and the signal 19 operated. Said signal may be of automatic character so that when started into operation, it can only be stopped by an attendant. Such signaling devices are well-known and no attempt to illustrate the same has been made in the drawing. The form of the signaling device may be varied within the judgment of the constructor.

I claim:

In a signal apparatus, the combination of a conductor, a vertically movable contact device, a spring partly supporting said contact device, electrical connection between said contact device and said conductor through said spring, another conductor, a contact point supported thereby in operative relation to said contact device, a gasometer receptacle, a liquid seal therein, a gas-

ometer receiver in the seal pendent from
said contact device and arranged to assist
the said spring in supporting said contact
device, a static pressure tube communicat-
5 ing with the interior of the receiver, and
means for normally maintaining unvarying
pressure in said static tube.

In testimony whereof, I have hereunto set
my hand at Los Angeles, California, this
29th day of September, 1909.

ARTHUR JEROME KERCHER.

In presence of—

JAMES R. TOWNSEND,
L. BELLE RICE.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,
Washington, D. C."
