Nov. 18, 1924.

1,515,936

C. DE ROOS

FIRE ALARM

Filed May 21, 1923

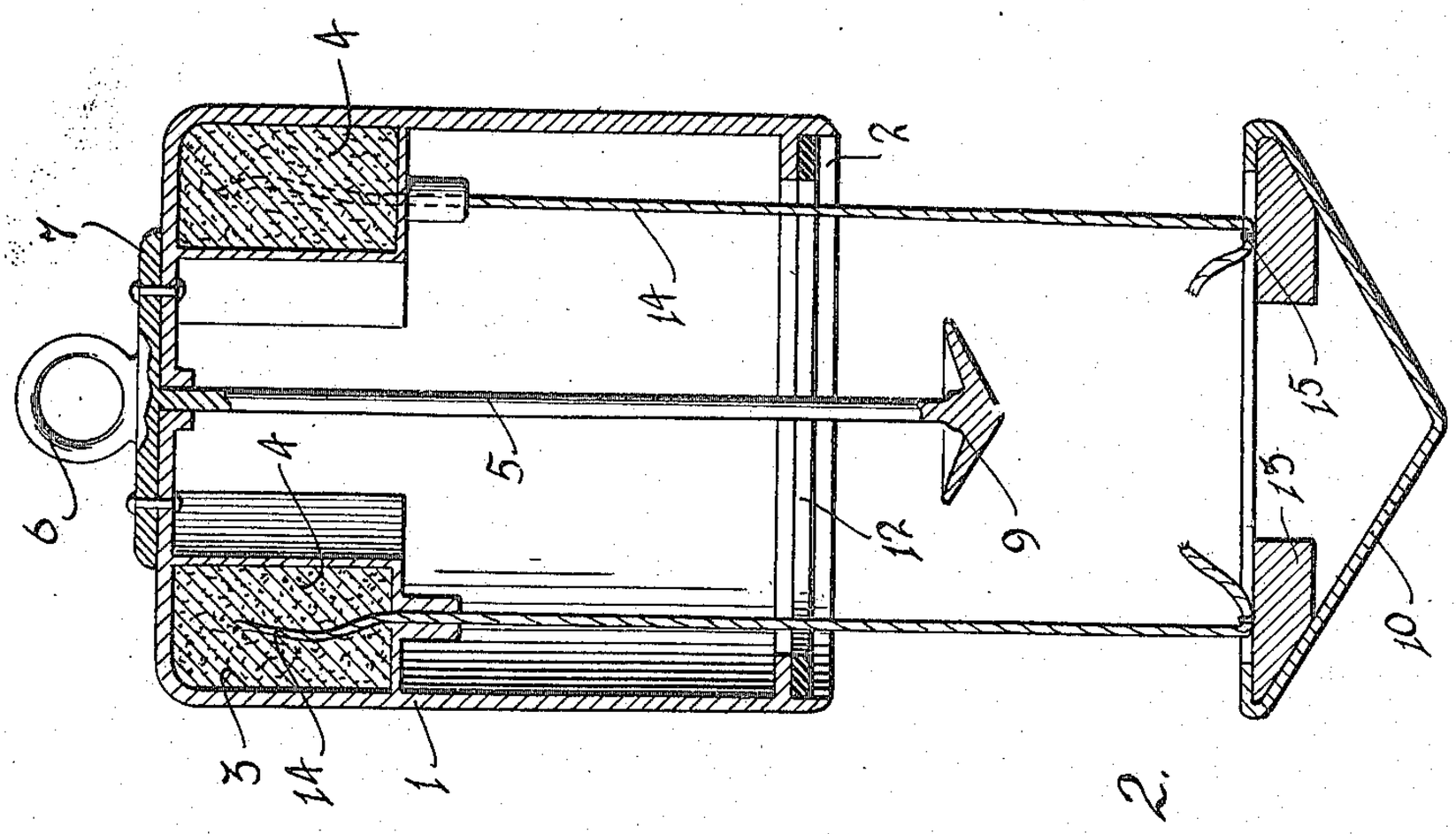

Fig. 2.

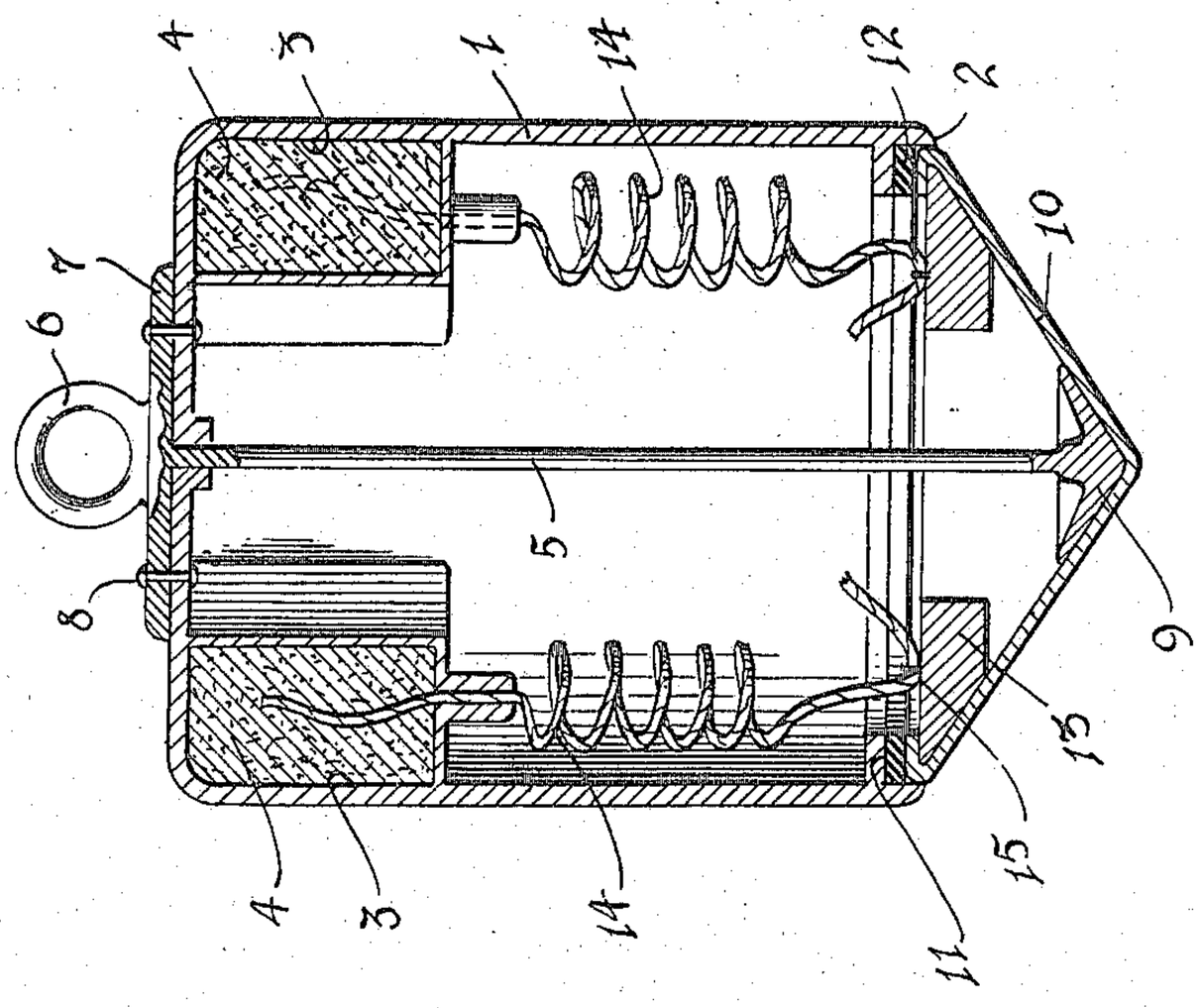

Fig. 1

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Patented Nov. 18, 1924. 1,515,936

UNITED STATES PATENT OFFICE.

CHARLES DE ROOS, OF SIOUX CITY, IOWA.

FIRE ALARM.

Application filed May 21, 1923. Serial No. 640,518.

To all whom it may concern:

Be it known that I, CHARLES DE ROOS, a citizen of the United States, and a resident of Sioux City, in the county of Woodbury and State of Iowa, have invented a new and useful Improvement in Fire Alarms, of which the following is a clear and exact description.

My invention relates to improvements in fire alarms, and it consists in the combinations, constructions, and arrangements herein described and claimed.

An object of my invention is to provide a fire alarm of the character described in which an explosive is ignited in the event of fire so that those in the other parts of the building in which the fire occurs may be notified. My invention is particularly well adapted for awakening sleeping persons, as in a fire at night, who might otherwise meet disaster should the fire increase to any extent.

A further object of my invention is to provide a fire alarm of the character described in which the explosive is disposed in a bell-shaped container open at the time at one end, whereby the report from the explosion may be greatly amplified and the damage done by the concussion of the explosion reduced to a minimum. It will be noted, however, that small quantities of the explosion will suffice and furthermore that damage such as might occur from a slight explosion would be of little significance in the event of a truly destructive fire.

A further object of my invention is to provide a fire alarm of the character described in which the explosive employed and the fuse for igniting the explosive is entirely encased in a moisture-proof case when the device is not in actual use, thereby keeping the explosive and fuse in a dry condition which is essential to the successful operation of the device.

A further object of my invention is to provide a fire alarm of the character described that is simple in construction, compact in form, and that is thoroughly practical for the purpose intended.

Other objects and advantages will appear in the following specification, and the novel features of the invention will be particularly pointed out in the appended claim.

My invention is illustrated in the accompanying drawings, forming part of this application, in which—

Figure 1 is a sectional view of an embodiment of my invention, and

Figure 2 is a sectional view of the mechanism illustrated in Figure 1 with the fuse exposed as in the event of fire.

In carrying out my invention, I make use of a bell-shaped casing 1 open at its lower end 2. The casing 1 is bell-shaped and constructed of a durable material so that any explosion which may occur within the casing will greatly amplify the report.

The casing 1 has a pair of partition chambers 3 at the inner end thereof, each of which is filled with an explosive material 4. I desire to employ an explosive which will give a loud report but in which the concussion therefrom is as small as possible. The inner walls of the chambers 3, that is, the walls facing the interior of the casing, are relatively thin, so that they may burst easily when the explosive 4 is consumed, and thereby prevent the rupture of the casing 1.

The shaft 5 is projected through the casing 1 along the axis thereof and the exterior portion of the shaft terminates in a ring-shaped member 6. A radially extending flange 7, forming a part of the shaft 5, serves as a means for fixing the shaft against movement relative to the casing by means of rivets or bolts 8 projected therethrough.

The lower end of the shaft 5 extends beyond the lower end 2 of the casing 1 and has somewhat the shape of a mushroom, as shown at 9, the outer surface thereof being substantially conical.

A conical cap 10 having a circumference equal to the circumference of the inner wall of the end 2 of the casing 1, is fitted within the casing at its lower end. An inwardly extending flange 11 forming a part of the casing 1 serves as a means for limiting the inward movement of the cap 10. A felt packing ring 12 is disposed between the flange 11 and the cap 10.

The cap 10 is soldered to the member 9 of the shaft 5. It is absolutely essential that this solder be of such composition as to melt at a predetermined and relatively low temperature.

A pair of weights formed of lead, or the like, and illustrated at 13, are disposed with-

in the cap 19 and firmly secured thereto. Each of the chambers 3 has a fuse projected therein and extending exteriorly of the chambers for a distance of approximately two to three feet. This portion of the fuse 14 extending exterior of the chambers in which the explosive 4 is confined, is coiled, as shown in Figure 1, and is secured adjacent its opposite end, as shown at 15, to some portion of the cap 10.

In the present instance I have shown the fuse secured adjacent its outer ends to the weights 13, although this construction is optional and may be varied to suit the particular requirements and conditions arising in the manufacture and use of the device.

From the foregoing description of the various parts of the device, the operation thereof may be readily understood. To obtain the complete benefit from the use of my improved fire alarm, I consider it best to fix the devices, there being several used for each building, some within the walls of the building, over the furnace, inner flues which might be the direct cause through leakage, of fire, and in any other places where spontaneous combustion might occur, or where combustible materials are stored or permitted to accumulate.

Let us assume that one of the devices is suspended by means of the ring 6 within the wall of a home and that the occupants of the house are on an upper floor asleep and that fire is started from an overheated furnace or the like, igniting the walls on the first floor. Immediately upon the rise of temperature, due to the presence of flames within the wall, the solder, by means of which the cap 10 is secured and supported by the mushroom-shaped portion of the shaft 5, will melt and the cap 10, by virtue of the weights 13, will drop, assuming the position shown in Figure 2.

When the cap 10 drops, the fuses 14 are straightened out and larger portions of the fuses are exposed below the lower end of the casing 1. It then remains for the fire to ignite the fuses 14 which will readily occur, since the fuses are constructed of a highly combustible and readily ignited material.

It should be noted at this time that I have provided two explosion chambers and two fuses. This is to make sure of the effective operation of the device. If one of the fuses 14 does not ignite, the other may be ignited and the same rule applies where more than two fuses are used which might be necessary when the device is of a larger caliber.

When the fuse 14 is burnt to a point within the chamber 3, the explosive 4 will become ignited and a loud report will result to awaken the occupants of the building and this warning may permit them to leave the building before destruction has become too great to prevent the exit and imperil life.

It should be noted that if desired, a lining of fire-proof material, such as asbestos sheeting may be employed on the inner side of the casing 1. The purpose of this fireproof lining is to prevent the heating of the explosive prior to the time that the cap 10 was dislodged from its connection with the conical member 9. It will therefore be apparent that such lining should be principally in the upper portion of the casing.

I claim:

A device of the character described comprising an explosive, a metal resonating casing for holding said explosive, means for suspending said casing free of rigid support, a fuse communicating at one end with said explosive, a cap arranged to close one end of said resonating casing and fixed against dislodgment therefrom by means of a cementitious material having a relatively low liquefying temperature, said fuse being normally coiled within said casing and having its lower end attached to said cap, and weights carried by said cap for causing the downward movement of said cap when said cementitious material is liquefied.

CHARLES DE ROOS.