S. FRENSDORF.

FUSE IGNITER.

APPLICATION FILED MAY 24, 1915.

1,167,288.

Patented Jan. 4, 1916.

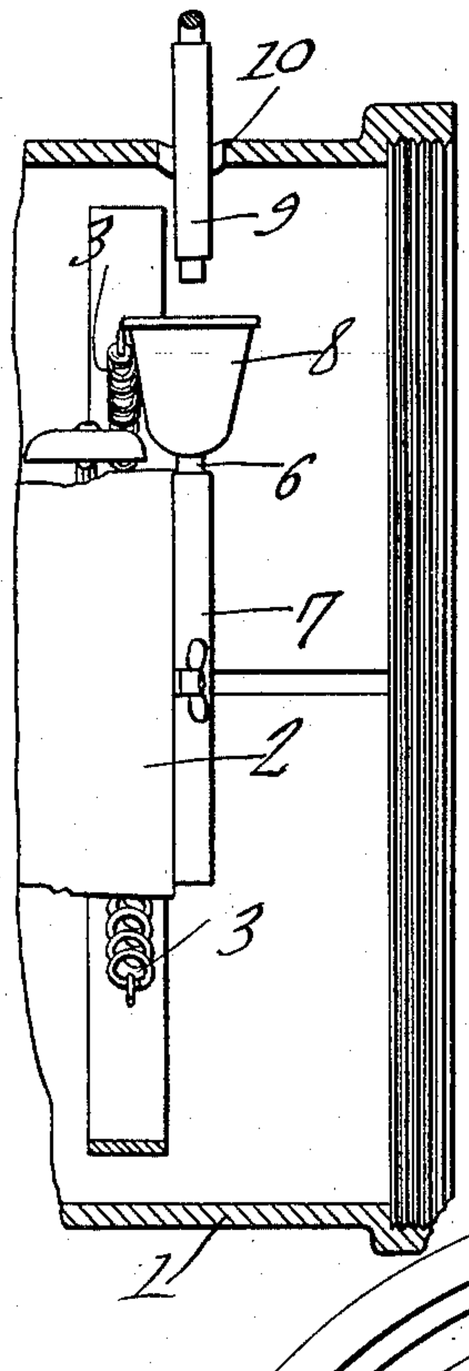

Fig. 3.

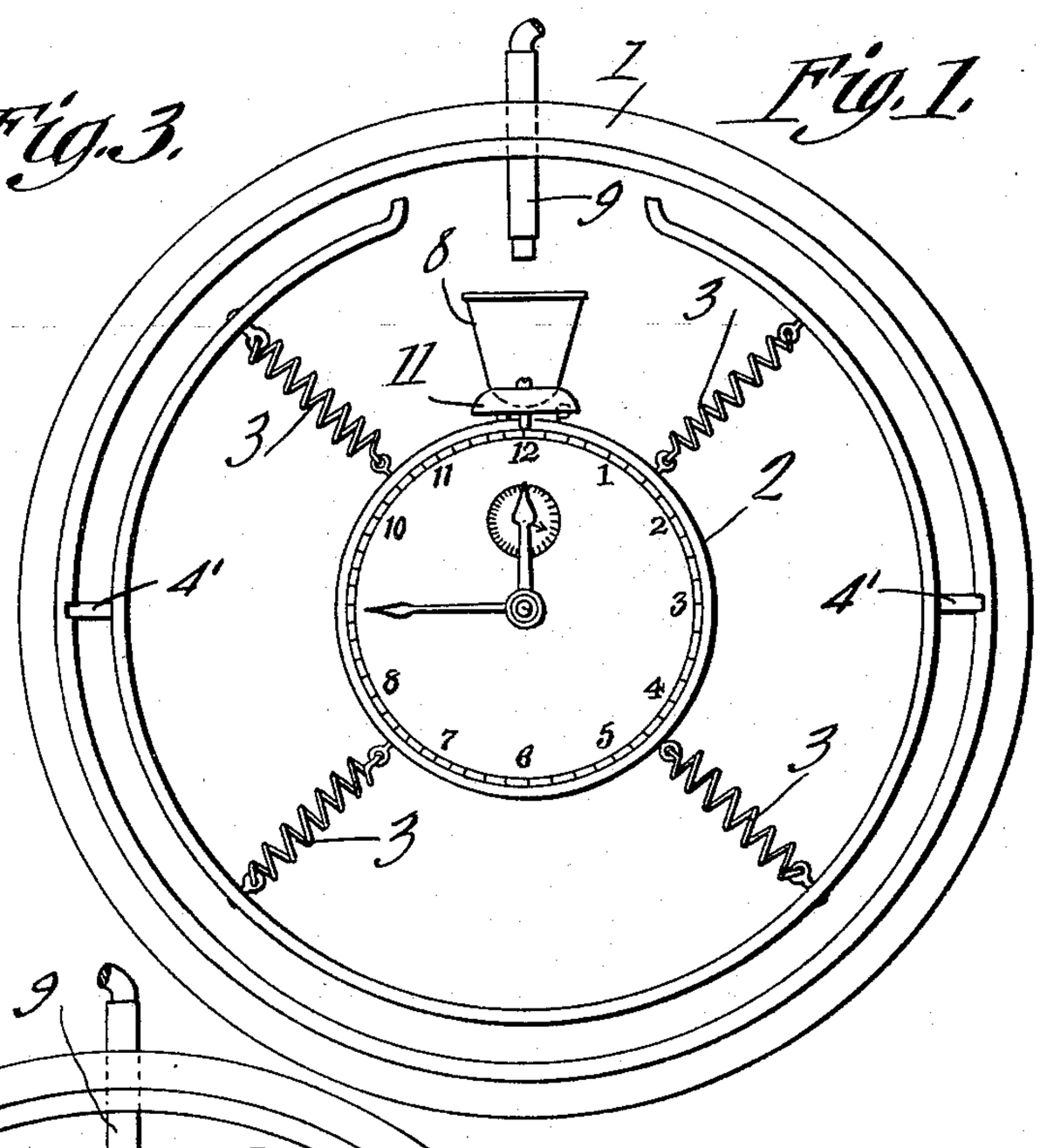

Fig. 1.

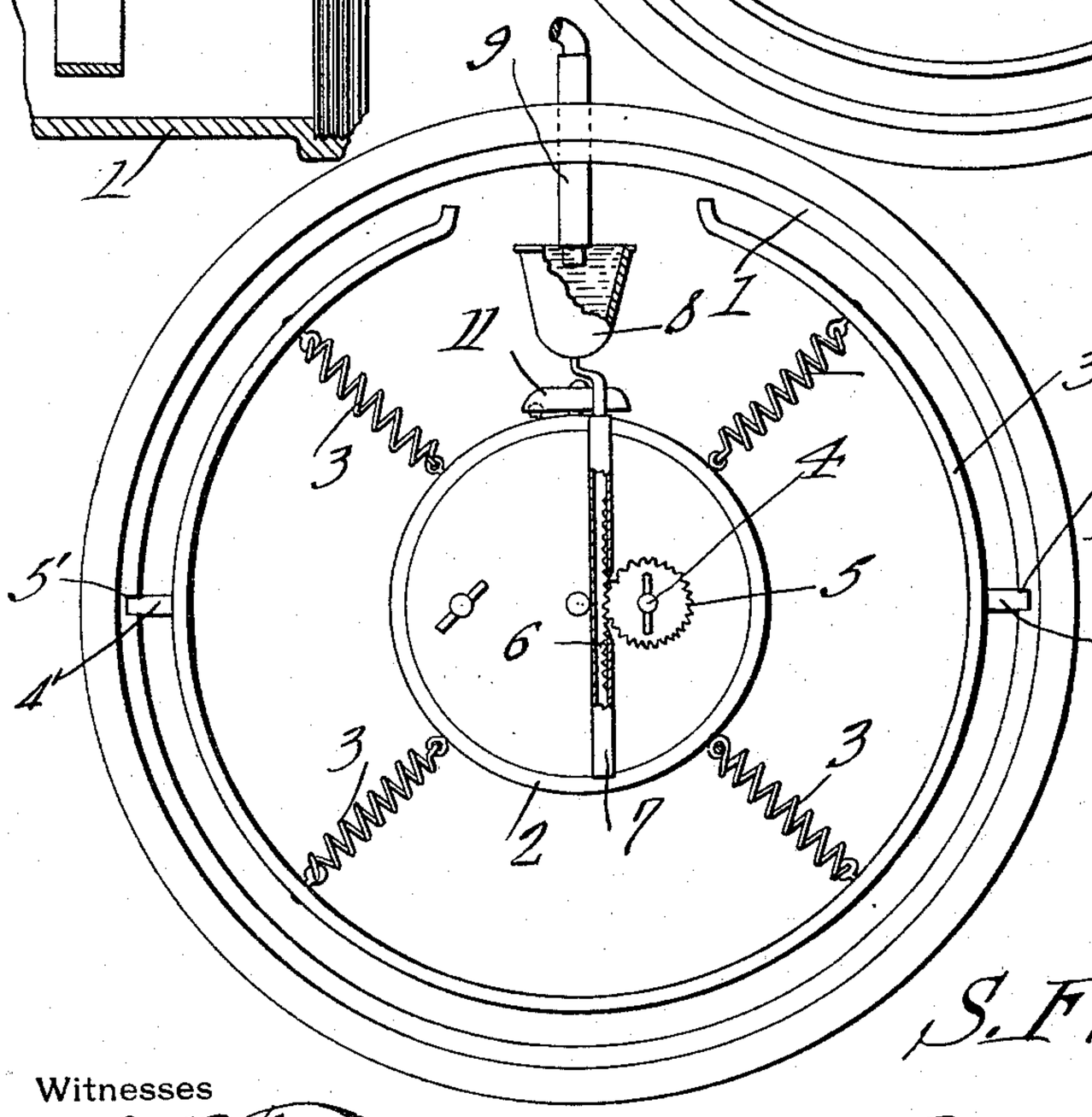

Fig. 2.

Witnesses

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UNITED STATES PATENT OFFICE.

SIGMUND FRENSDORF, OF DEEPWATER, MISSOURI.

FUSE-IGNITER.

1,167,288. Specification of Letters Patent. Patented Jan. 4, 1916.

Application filed May 24, 1915. Serial No. 30,158.

To all whom it may concern:

Be it known that I, SIGMUND FRENSDORF, a citizen of the United States, residing at Deepwater, in the county of Henry and State of Missouri, have invented a new and useful Fuse-Igniter, of which the following is a specification.

This invention relates to apparatus for use in igniting fuses such as used in blasting or "firing" in quarries, mines and the like, one of the objects of the invention being to provide time controlled means whereby an acid or other igniting fluid will be automatically brought into contact with a fuse designed to be ignited thereby, the mechanism being so mounted as to be uninjured by the force of the resultant explosion.

A further object is to provide mechanism of this character which is accurate in operation, eliminating the danger of premature ignition of the fuse, and to provide a structure which is cheap to manufacture and can be readily set up for use.

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 the invention herein disclosed, can be made within the scope of what is claimed, without departing from the spirit of the invention.

In the accompanying drawings the preferred form of the invention has been shown.

In said drawings:—Figure 1 is a front elevation of the apparatus, a portion of a fuse being shown in position and the parts being set for use. Fig. 2 is a rear elevation of the apparatus, the parts being shown in the positions assumed thereby at the time of igniting the fuse, certain parts of the structure being broken away. Fig. 3 is a side elevation of a portion of the apparatus, the casing on which it is mounted being shown in section.

Referring to the figures by characters of reference 1 designates a casing preferably made up of a section of iron pipe and arranged within the center portion of this section is an ordinary alarm clock 2 which is yieldingly suspended in place by springs 3 radiating therefrom and attached at their outer ends to a spring band having opposed lugs 4′ which may be seated in grooves 5′ in opposed portions of the casing 1. Secured to the alarm winding stem 4 of the clock is a gear 5 constantly meshing with a rack 6 slidably mounted within a tubular guide 7 which is secured upon the back of the clock and extends from the top to the bottom thereof. The upper end of the rack 6 is attached to the bottom of a small container 8 adapted to hold acid or other liquid capable of igniting a fuse.

The container 8 is normally in lowered position and suitably supported in the upper portion of casing 1 and directly above the container is a fuse 9 the lower end of which is out of contact with the liquid contents of container 8, but is adapted to be submerged in said liquid contents when the container 8 is elevated out of its normal position.

In using the device herein described, the casing 1 with the apparatus therein is located at a suitable distance from the charge to be exploded and container 8 is filled with an igniting fluid. The fuse 9 is then extended from the charge and is inserted downwardly through an opening 10 in the top of casing 1 with its lower end close to and above container 8. It is of course to be understood that before this adjustment of the parts is effected the alarm of the clock is wound and the alarm is set to go off at a predetermined time. After the parts have been adjusted they can be left and at the time appointed the alarm will be sounded in the usual manner, the bell 11 serving as a final warning that a charge is to be fired. Simultaneously with the sounding of the bell 11, the wheel 5 gradually elevates the rack 6 so that container 8 is moved upwardly and the liquid contents thereof brought against the end of the fuse 9. Said fuse will be promptly ignited and the fire will be transmitted to the charge and an explosion produced. The force of the explosion will not injure the apparatus of the igniting mechanism for the reason that said apparatus is yieldingly supported by the springs 3 and is fully protected by the heavy pipe section or casing 1.

Instead of utilizing the arbor of the alarm mechanism for elevating the acid container, said acid container can be elevated by the arbor of the minute hand or by any other portion of the clock. Such an arrangement is so obvious that it is not deemed necessary to illustrate it in detail.

Obviously this apparatus can be cheaply

manufactured, readily handled, and is advantageous because of the absolute accuracy with which it will work, it being possible to so set the mechanism as to cause an explosion at any predetermined time and the bell 11 always sounding a final warning.

What is claimed is:—

1. In apparatus of the class described, the combination with a casing constituting a fuse holder, of a container, time controlled means for shifting the container to receive the fuse therein.

2. The combination with fuse holding means, of fuse igniting means normally spaced therefrom, and time controlled means for directing said igniting means into active position relative to the fuse.

3. The combination with a casing constituting a fuse holder, of an alarm clock supported within the casing, fuse igniting means, and means operated by the alarm clock during the sounding of the alarm, for directing said igniting means against the fuse.

4. The combination with a casing constituting a fuse holder, of an alarm clock suspended within the casing, a liquid container supported by the clock, and means operated by the clock during the sounding of the alarm for shifting said container to bring its contents into engagement with the held fuse.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

SIGMUND FRENSDORF.

Witnesses:
S. F. Leach,
Rachael A. Smith.