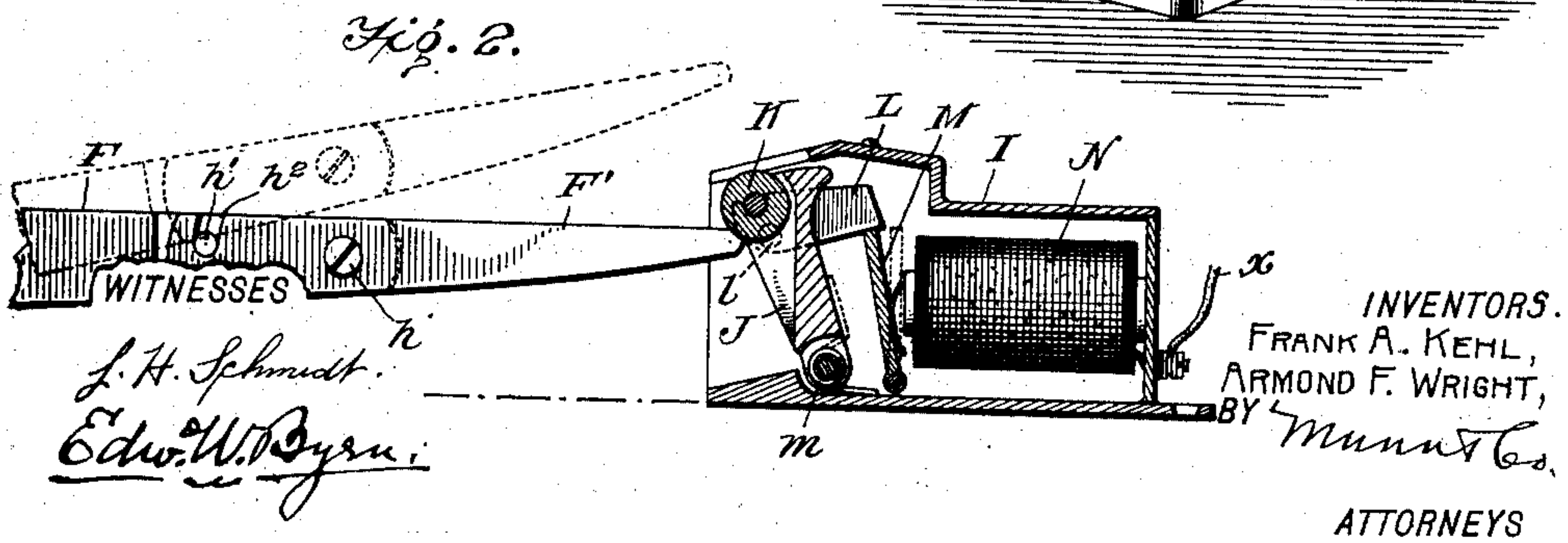
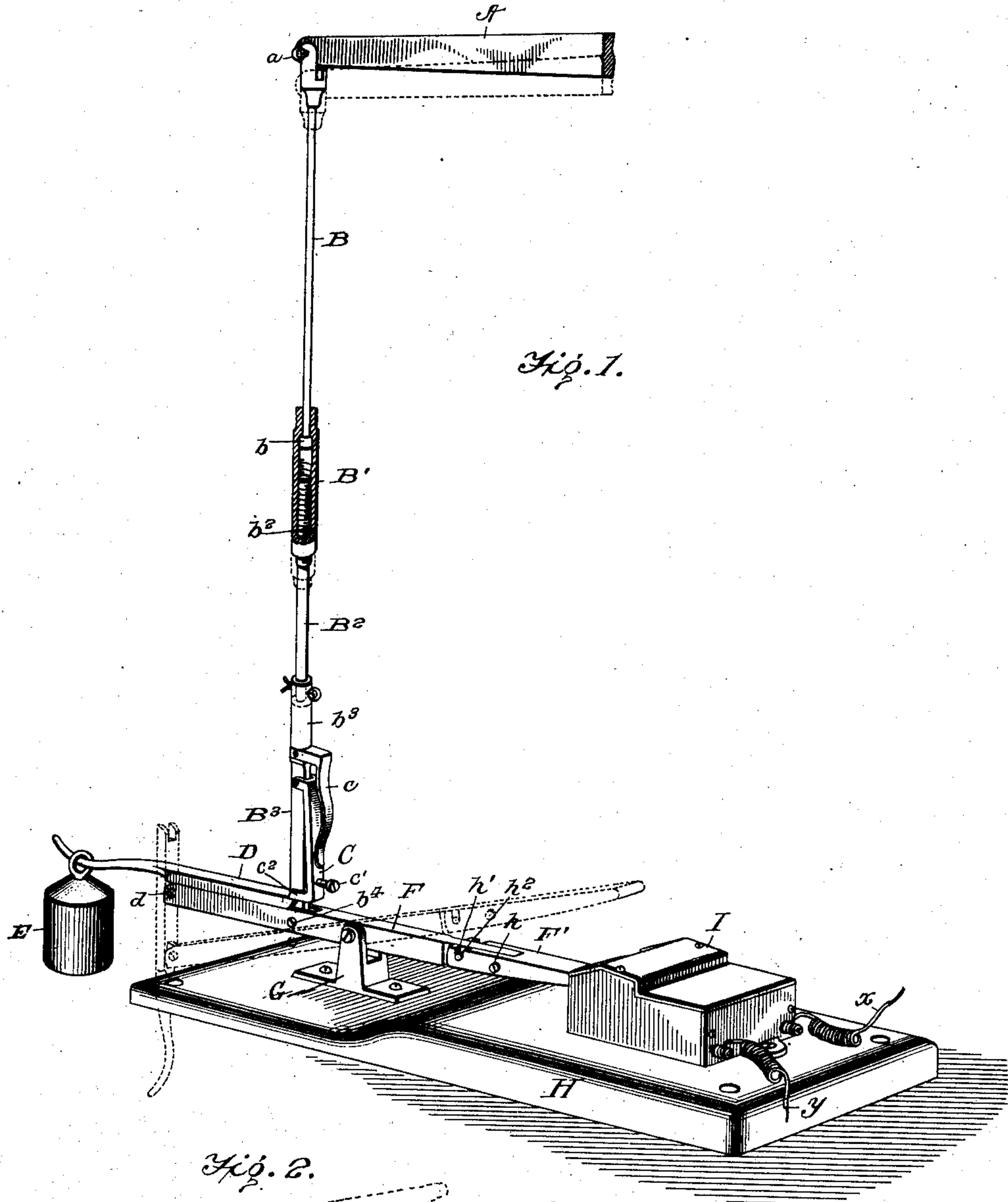


F. A. KEHL & A. F. WRIGHT.
 AUTOMATIC FIRE ALARM TRIP.
 APPLICATION FILED NOV. 30, 1907.

901,243.

Patented Oct. 13, 1908.



UNITED STATES PATENT OFFICE.

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AUTOMATIC FIRE-ALARM TRIP.

No. 901,243.

Specification of Letters Patent.

Patented Oct. 13, 1908.

Application filed November 30, 1907. Serial No. 404,507.

To all whom it may concern:

Be it known that we, FRANK A. KEHL and ARMOND F. WRIGHT, citizens of the United States, and residents of Tacoma, in the county of Pierce and State of Washington, have invented certain new and useful Improvements in Automatic Fire-Alarm Trips, of which the following is a specification.

Our invention is in the nature of an automatic fire alarm trip or device designed to put into operation a fire alarm box by pulling down its operating lever whenever an electric circuit shall be closed through the electro-magnetic devices forming part of our invention. It is designed to be used in connection with sprinkling systems, fire doors, fire windows or other devices used for fire protection and under the control of an electric circuit, but more especially for such systems as are employed in large factories where it is important that the fire department shall be apprized of the fire at the earliest possible moment in addition to the protection afforded by the sprinkling system.

Our invention consists in the novel construction and arrangement of the trip devices which are set into action by the closure of the electric circuit and which are especially arranged to send in but a single alarm, and which are also so constructed as to permit the fire alarm box to be operated without disturbing our trip mechanism.

In the drawing Figure 1 represents a perspective view partly in section showing our invention. Fig. 2 is an enlarged detail showing in section the means for holding the trip lever in its set position.

Referring to Fig. 1, A represents the lever arm or hook of the fire alarm box which is pulled down to send the fire alarm and which in our invention is automatically pulled down by the subjacent attached devices. These devices are suitably arranged in a box or casing beneath the casing of the fire alarm box, which it is not necessary to show.

B, B', B² and B³, represent the sectional pull bar by which the fire alarm lever is pulled down, which pull bar is normally held in a vertical position, and F and F', represent the trip lever which normally occupies a horizontal position. This trip lever

is under the normal influence of a weight E, and is held in horizontal position and restrained against tipping by means of stop devices contained within the casing I, and under the control of an electro-magnet, so that when an electric circuit is closed through said electro-magnet, the trip lever F, F', responding to the overbalancing influence of the weight E will be tilted to the dotted position, and in pulling down the bar B, B', B² and B³ will also pull down the attached lever A of the fire alarm box, and send in the alarm.

The pull bar is made in several sections. The upper section B has a bifurcated coupling connected by a pin *a* to the lever of the fire alarm box and at its lower end said section B is formed with an enlarged head *b* which plays freely within the barrel B'. Normally this head *b* rests in the upper end of the barrel B' so that when the subjacent trip lever F pulls down thereupon, the power will be transmitted to the lever of the fire alarm box, but if at any time it should be desired to pull down the fire alarm lever A without disturbing the position of the trip devices below, the head *b* at the lower end, of the section B of the pull bar moves freely down in the barrel B' and permits of the independent use of the fire alarm box.

The barrel B' is screwthreaded at its lower end and entering the same is the screwthreaded end *b*² of the middle section B² of the pull bar. This forms a means of vertical adjustment of the pull bar as to length, so that the position of the box or casing containing the trip devices in relation to the fire alarm box above may be adjusted according to the space between the same. The lower end of the section B² of the pull bar is detachably connected with the socket *b*³ formed on the end of the lower member B³, which in turn is pivoted at *b*⁴ to the trip lever F. The trip lever F is fulcrumed upon a support G on a suitable base H, at a point near its middle and between the connection of the pull bar and the electro-magnetic stop device.

Pivoted to the lower section B³ of the pull bar is a detent bar C, having a stop screw *c*' at its lower end and pressed toward the pull bar by means of a spring *c*, attached to the pull bar. The lower end *c*² of the detent is bent at right angles and is made to overlap

and abut against the upper side of a tilting weight support D, fulcrumed at d to the outer end of the tilting lever F. On a horn-like projection at the outer end of this lever D is suspended a weight E of approximately one pound. The locking engagement of the end c^2 of the detent C against the end of the lever D maintains the latter in a horizontal position with the weight upon its outer end, but when the tilting lever F assumes the deflected position shown in dotted lines, the lever D is withdrawn from locking engagement with the end c^2 of the detent C, and a secondary movement of the lever D follows successively, with the result that the weight E is entirely dumped or discharged from the end thereof. The purpose of discharging the weight is to permit the tilting lever to again assume its horizontal position and to prevent the tripping apparatus from repeating its operation and of sending in a succession of alarms.

On the end of the tilting lever F cooperating with the electro-magnetic stop devices is attached a deflectable end F' pivotally connected at h to the lever F and having recesses h^1 adapted to engage pins h^2 on the lever F so as to form a species of knuckle joint which breaks upwardly but is rigid with the lever F as against any downward pressure on its end. This knuckle extension F' is normally held, together with the lever F, in its horizontal position by means of a friction roller K mounted in the upper end of a tilting bar J fulcrumed at its lower end within the casing I and pressed outwardly into engagement with the knuckle by a coil spring m .

L is a trigger pivotally connected at l to the stop bar J, and normally held up, with the stop bar J overhanging the knuckle F' , by means of the armature M arranged in front of the electro-magnet N.

Assuming that the terminal wires x and y of this electro-magnet are within the circuit of the sprinkling system or other means for sounding an alarm, it will be seen that when the electric circuit is closed through the electro-magnet, the armature M will be drawn to the position shown in dotted lines, and being taken away from its position beneath the trigger L, the knuckle F' will be strained upwardly by means of the weight E on the opposite end of the trip lever, to force the friction roller K toward the electro-magnet and allow the knuckle F' to rise to the dotted position, thereby tilting the lever F and discharging the weight as hereinbefore described. After the weight is discharged, a return of the lever F to its horizontal position is permitted by virtue of the upwardly bending knuckle F' which, descending, is deflected on its axis h until the end of the knuckle again rests below the friction roller K in its normal set position.

This trip device automatically calls the fire department the moment that there is sufficient fire in the factory or other building to start the sprinkling system, and thus enables the fire department to be on the ground much more quickly. No matter how many separate sprinkling systems there may be in the factory or other building, all may be connected to the one trip device and the fire department will be called at once upon the starting of any one of the sprinkling systems. This saves the expense of fire watchmen to ring in an alarm to the fire department and does it much more quickly than could be done by hand.

The trip can be made any size and adjusted so as to pull down the hook to fire box a short distance or a long distance.

The trip may be used on any kind of a fire alarm box now in use without interfering in the least with the box.

Any number of sprinkling systems, fire doors or fire windows, or other devices for giving alarm, and any number of either or all of them, may be attached to one trip, and if any one of them is sprung, the alarm will be sent in. The idea being that this trip can be attached to a sprinkling system, fire door and fire window at the same time, or to any number of either or all.

We claim—

1. A trip device for operating a fire alarm, comprising a pull bar, a trip lever connected to the pull bar and having at one end an electro-magnetic stop device arranged to be released by a current impulse and having at the other end a weight with means for relieving the lever of the strain of the weight by the tilting of said lever.

2. A trip device for operating a fire alarm, comprising a pull bar having in its length a slip extension for the independent movement of the upper end of the pull bar, a trip lever connected to the bottom of the pull bar and having at one end an electro-magnetic stop device arranged to be released by a current impulse and having at the other end a weight with means for relieving the lever of the strain of the weight by the tilting of said lever.

3. A trip device for operating a fire alarm, comprising a pull bar made longitudinally adjustable, a trip lever connected to the pull bar and having at one end an electro-magnetic stop device arranged to be released by a current impulse and having at the other end a weight with means for relieving the lever of the strain of the weight by the tilting of said lever.

4. A trip device for operating a fire alarm, comprising a pull bar, a trip lever connected to the pull bar and having at one end an electro-magnetic stop device arranged to be released by a current impulse and having at the other end a secondary tilting support, a

weight arranged thereon, and a detent for holding the said support until the trip lever is tilted.

5. A trip device for operating a fire alarm, comprising a pull bar, a trip lever connected to the pull bar and having at one end a knuckle extension arranged to be deflected in one direction and to be rigid in the other direction, an electro - magnetic stop device engaging therewith, and arranged to be released by a current impulse, and a weight arranged on the other end of the trip lever.

6. The combination with the operating arm of a fire alarm apparatus, of a pull bar, a tilting lever attached thereto, electro-magnetic devices for releasing said lever, a weight for maintaining the horizontal posi-

tion of the tilting lever, and means for discharging said weight from the change in the angular position of said lever.

7. The combination with the operating arm of a fire alarm apparatus, of a pull bar having on its lower end a spring seated detent, a tilting lever pivoted to said pull bar, a weight support maintained in normal position by the spring seated detent, a weight mounted on the support, and means for holding and releasing the tilting lever automatically.

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Witnesses:

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