March 6, 1951 G. MANAHAN 2,543,862

NOTICE IMPELLING DEVICE

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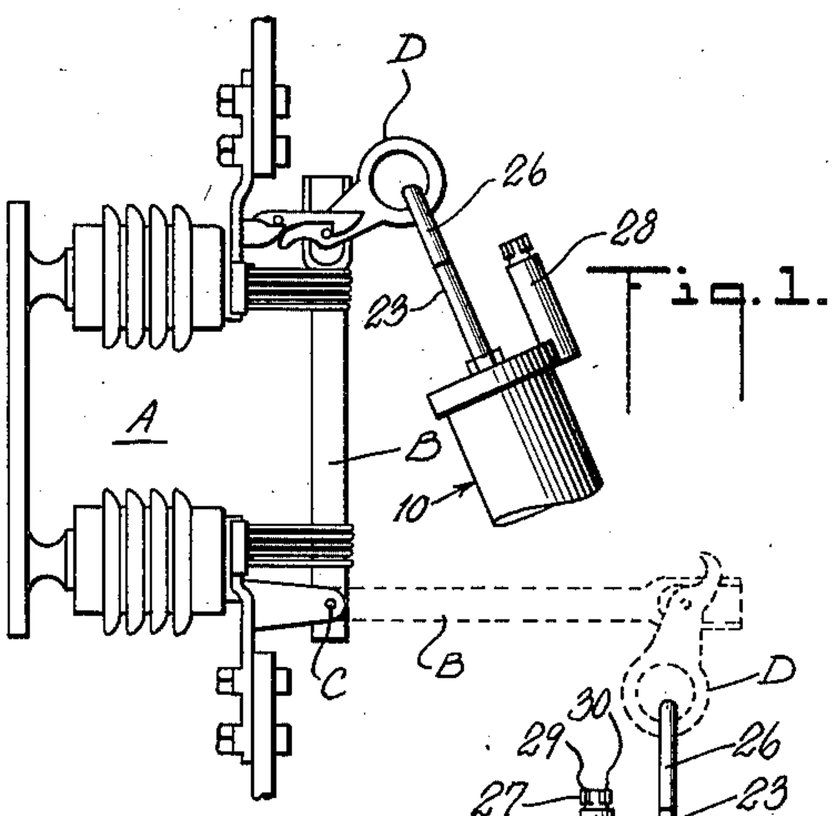
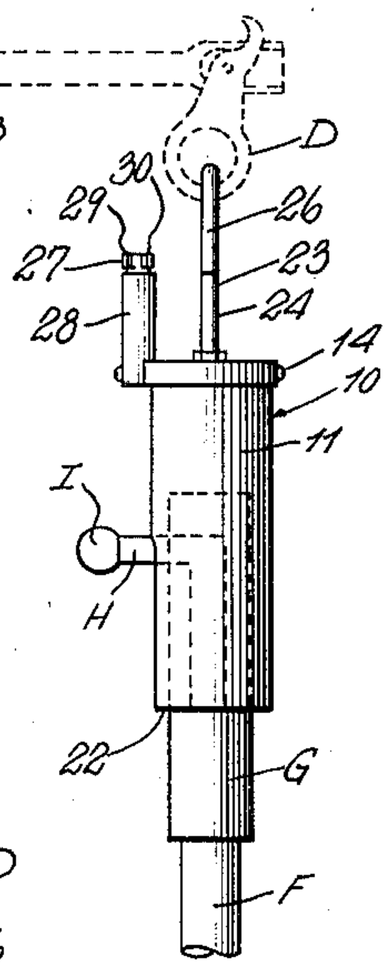


Fig. 1.



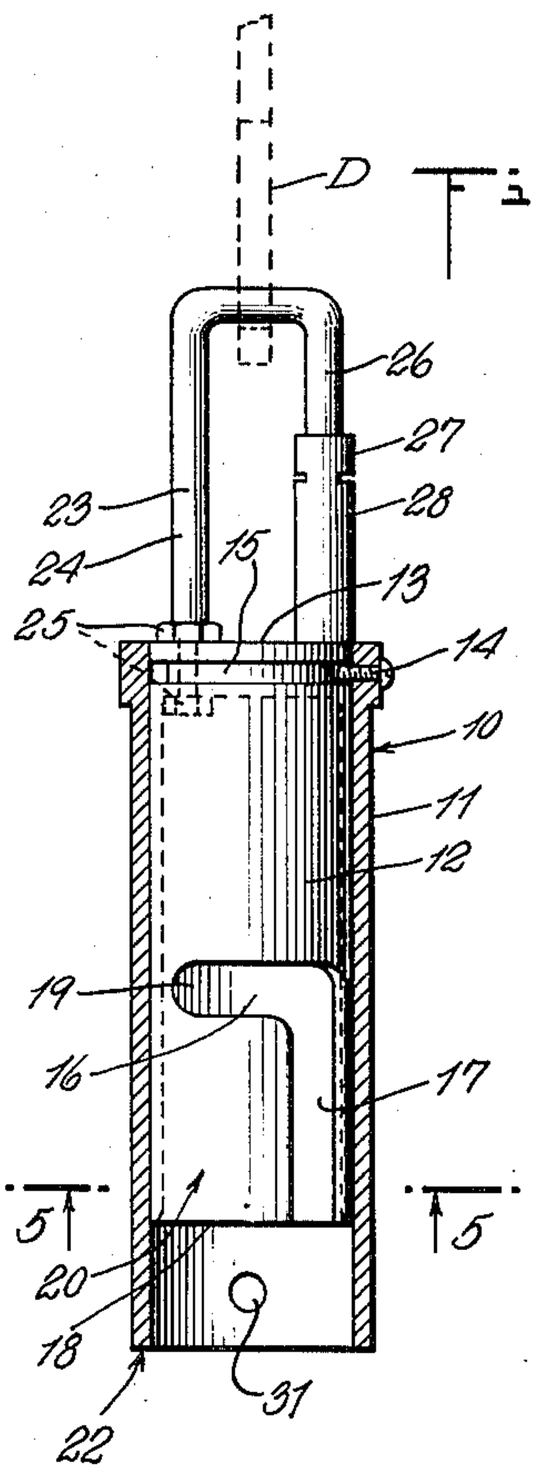


Fig. 3.

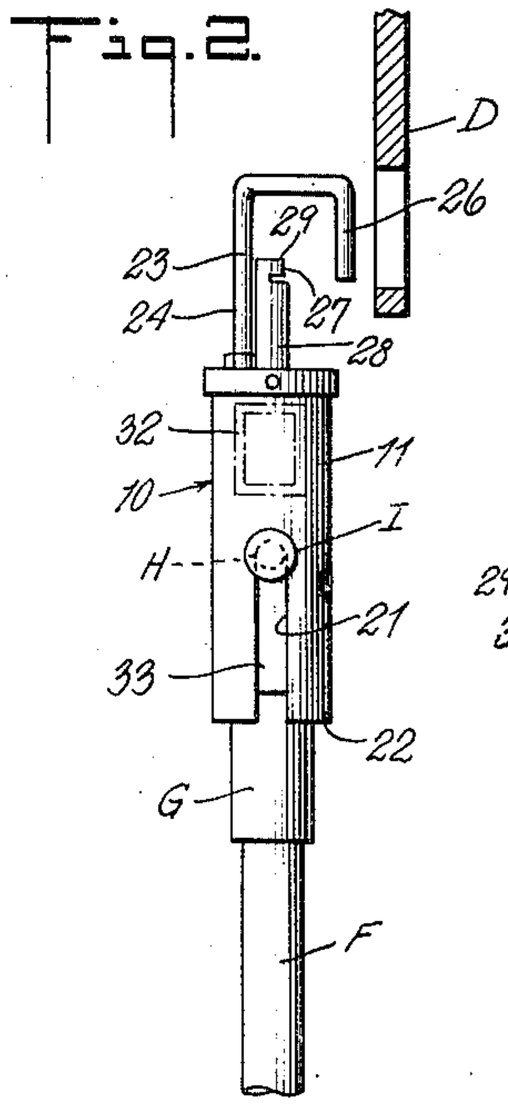


Fig. 2.

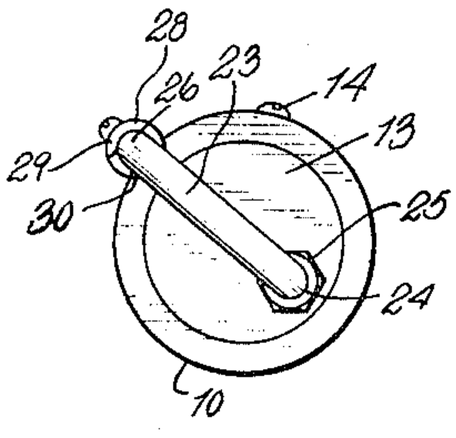


Fig. 4.

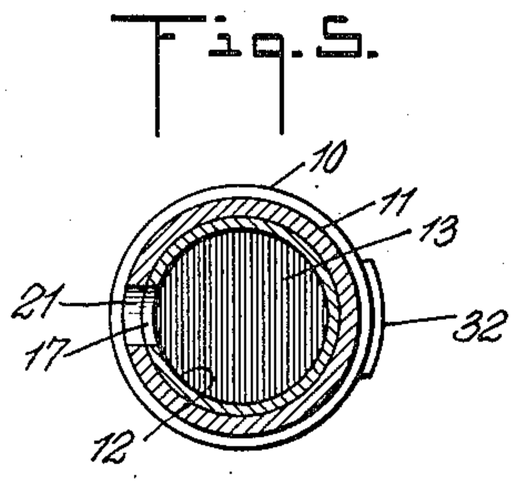


Fig. 5.

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NOTICE IMPELLING DEVICE

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7 Claims. (Cl. 294—19)

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The invention relates in general to a notice impelling device and the invention specifically relates to a safety device for attachment to an overhead disconnect switch when in open circuit position to give notice that the switch is not to be prematurely closed by unauthorized persons.

It is a usual practice, particularly in an emergency on an electric power line for a lineman to analyze what might be the trouble on the line, to telephone to the system operator who instructs him to pull a certain switch and the lineman then makes any necessary repair on the line so disengaged from the power supply. It is of course necessary that while the line is so being repaired that no one should come along later and close the switch so opened. In order to protect the lineman it has been the practice for many years to attach a red tag to the associated pole or other accessible place and it is understood in the industry that no one should close a switch so tagged without authority. It has not been usual to place the tag on the switch itself because such switches are high on the pole and usually difficult to reach for any notice labeling.

Naturally the ideal place to locate a notice to persons not to close the switch until authorized to do so, would be on the switch itself, but this would necessitate the lineman climbing the pole to make the attachment. Any such practice would be at least inconvenient, if not actually dangerous since in an emergency situation the lineman has no time to climb a pole for any such purpose. Such disconnect switches are usually in some exposed position and thus subject to wind and other storm conditions which are very apt to cause any casually applied device to become separated from the device to which it may be applied.

The primary object of the invention is to provide a simple form of notice compelling device which can be elevated from a safe position therebelow and easily and quickly secured in a positively locked engagement with some part of the switch, and which device can be freed from the switch only with some difficulty and must be freed before the switch can be restored to its normal circuit closing position.

Broadly, the object is attained by providing what has become to be known as a switch tag holder and features means for supporting therein a replaceable direction card or tag containing information relative to the instant situations in which the device is presently used. This switch tag holder when so charged with the direction card is fitted to the end of a long reach stick or lift; is lifted into position hooked on to the switch,

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preferably to the movable blade element of the switch; the hook is closed by the manipulation of the reach stick and the stick is removed leaving the notice prominently displayed hanging from the switch.

Another object of the invention is to provide a notice impelling device capable of use as above indicated and which both by reason of the fact that it is free to swing in space and because of its brilliant color contrasting with its environments and reacting vividly to a beam of a search light thrown on it from any direction, will tend to attract attention to the fact that the part labelled thereby distinguishes in some way from the part when functioning normally.

Various other objects and advantages of the invention will be in part obvious from an inspection of the accompanying drawings and in part will be more fully set forth in the following particular description of one form of device embodying the invention, and the invention also consists in certain new and novel features of construction and combination of parts hereinafter set forth and claimed.

In the drawings:

Fig. 1 is a view in side elevation of an overhead switch with its switch blade shown in full lines in its upright circuit closing position, and shown in dotted line in its open horizontal lowered circuit breaking position, and with a switch tag holder constituting a preferred embodiment of the invention hanging from its pull ring to swing freely in space in both positions of the switch blade;

Fig. 2 is a view of the switch tag holder of Fig. 1 mounted on a disconnect stick and with the hook open in position about to be hooked into the eye shown in section and corresponding to the upper position of the parts shown in Fig. 1 before it is rotated into locked position;

Fig. 3 is a view of the holder of Figs. 1 and 2 hooked into the switch ring corresponding to the lower portion of the parts shown in Fig. 1 before it is rotated into open position with the outer cylinder in axial section, with the inner cylinder in side elevation and with the hook forming latch rotated into its locked position;

Fig. 4 is a plan view looking down on the showing in Fig. 3 and thus with the hook latch in its locked position; and

Fig. 5 is a transverse sectional view taken on the line 5—5 of Fig. 3 looking upward and showing the slots of the inner and outer cylinders in registry and showing the dark socket as viewed from a position below the device when in use.

Referring first to the showing in Fig. 1 there is disclosed parts of a hook operated disconnect switch A of a voltage regulator. The switch includes a switch blade B pivotally mounted at C to move from the upright full line circuit closing position into the horizontal dotted line circuit open position. The switch blade is provided with a vertically extending pull eye D designed to be engaged by the hook like end of a long disconnect stick F following usual practices in opening and closing overhead switches. These sticks as now supplied to the market are made of insulating material; have their upper ends enlarged to form a cylinder G from which project a laterally extending hook forming shank H of relatively small diameter and terminating at its outer end in a button I.

The switch tag holder herein featured is designed to be operated by the same disconnect stick which is now used to move the switch blade to and from its two limiting positions as disclosed, it being recalled that these sticks are usually from four to eight or ten feet in length.

The holder 10 consists primarily of a pair of telescoping cylinders, an outer cylinder 11 and an inner cylinder 12 mounted for rotation about their common axis and having a fairly snug fit. Both cylinders are open at their lower ends to provide a socket for receiving the upper end of the disconnect stick and the inner cylinder is closed at its top by means of a top closure or a wall 13. These cylinders are made of insulating material and in one form are molded to shape from a plastic material such as a laminated phenolic sheet known commercialy as "Formica."

The cylinders are free to turn but are locked against relative axial movement by one or more screws 14 passed through the outer cylinder and intruded into an endless groove 15 formed in the inner cylinder adjacent the wall 13.

The lower portion of the inner cylinder is provided with a bayonet slot 16 formed of a longitudinally extending portion 17 open at the lower edge 18 of the inner cylinder and a short circumferentially extending portion 19 opening into the upper end of slot 17. The bore 20 of the inner cylinder 12 is dimensioned to form a downwardly facing socket exposed to permit the easy intrusion into the lower end of the same of the cylinder G of the disconnect stick.

The outer cylinder 11 is provided with a longitudinal slot 21 open at the lower edge 22 of the cylinder 11 and disposed to register with the slot 17, when the cylinders are rotated into position to effect such registration as shown in Fig. 5. When so registering the laterally extending shank H of the lift or disconnect stick can be slid along the registering slots 17 and 21 until it reaches the inner portion of the transverse slot 19 and in position to engage the sides of the outer cylinder at the upper end of the slot 21.

An inverted J-shaped hook 23 has an upstanding shank 24 secured rigidly to the wall 13 to revolve therewith and is secured in place by nuts 25 engaging opposite sides of the wall 13. The free end of the hook forms a downturned latch 26 circular in cross section and designed when rotated to intrude into a keeper 27 formed at the upper end of a post 28. The post 28 extends above and is fixed to the outer sleeve 11 and turns therewith. The keeper is a ring split along one side to form a U-shaped spring fashioned to receive the latch 26 and including a pair of spring ends or jaws 29 and 30 adapted to close in on the latch and retain the same in place as shown in Fig. 4.

The lengthwise extending slots 17 and 21 are so related relative to each other and to the latch 26 and its keeper 27 that the slots are in registry to permit the insertion and withdrawal of the lift stick when the hook is in its locked position engaging the keeper as shown in Figs. 3–5. The transverse slot 19 is in registry with the slot 21 when the hook has been rotated away from its locked position as shown in Fig. 2 to resist accidental withdrawal of the lift stick as hereinafter described.

The tag holder 10 is provided with some means to house a tag secured thereto as by passing the wire usually attached to instruction tags through an eye 31 in the portion of the outer cylinder which projects below the inner cylinder. An alternate suggestion is to provide the holder with a ticket or tag holding frame 32 into which the ticket or tag containing the instructions from the system operator may be slipped.

In operation, the lineman first prepares the holder by manually rotating the cylinders relative to each other into position to bring the slots 17 and 21 into registry and in which position incidentally the hook is in its locked engagement with its keeper. The instruction tag is secured either to the eye 31 or inserted in the frame 32. The lineman then inserts the upper end of the disconnect stick F into the lower socket forming open end of the holder passing the shank H upwardly along the aligned slots until the shank reaches the upper end of the slot 21. Then by manually engaging the hook 23 he rotates the latch 26 away from its closed or locked position for a half turn in a counter-clockwise direction as viewed in Fig. 4. The transverse slot 19 of the bayonet slot is thus moved to receive the shank H. This brings the portion 33 of the inner cylinder which is immediately below the slot 19 into position closing the lower portion of the slot 21 and thus locking the disconnect stick to the holder. At this time the hook will be in open position as shown in Fig. 2 and ready to be inserted into or removed from the pull eye D. The assembly of holder and disconnect stick thus formed is elevated hand-over-hand by the lineman and the hook looped into the opening of eye D and lowered into position as shown in the upper part of Fig. 1. The lineman then pulls down forcefully on the disconnect stick, and swings the switch blade from the full line into the dotted line position shown in Fig. 1.

The fact that the portion 33 is at this time underlapping the shank H prevents any accidental removal of the stick F from the holder 10. When the blade is fully lowered the lineman re-rotates the stick and therethrough re-rotates the outer cylinder 11 back into position to cause the latch to force its way into engagement with the keeper 27 momentarily springing the jaws 29 and 30 apart to permit the latch to pass therebetween. The holder is thus locked securely to the switch ring. This movement also brings the slots 17 and 21 into registry and then the lift stick is withdrawn fully from the holder.

When the lineman is instructed to remove the holder, he reaches up with his disconnect stick, inserting its cylindrical end G into the downwardly facing socket and pushes the stick along the aligned slots until stopped by the upper end of the slot 21. He lifts the holder and with it the switch blade and returns the latter to the switch closing position shown in full lines in Fig. 1. When the blade is in its locked position he rotates the outer cylinder by a half-turn of the stick to

shift the post 28 away from the latch held by the switch eye E and thus opens the hook. He then lowers the holder and removes the tag therefrom so that the device is again ready for a subsequent use.

By means of a device of this character it is possible to label a switch high in the air and the device can be locked in its elevated position by manipulation of the disconnect stick while the lineman is located below and safely on the pole. It is suggested that the device be of some easily noticed color and in one form of the invention the outer shell is of a bright yellow.

The presence of a bright swinging yellow object even if high in the air notifies other linemen, and even reminds the lineman who placed it there, that this is an open switch and that it is prohibitive to close it without authority. As it is not particularly easy to get the disconnect stick into the socket at the lower end of the holder when suspended high overhead and even when inserted, it must be rotated in the proper releasing direction, the possibility of accidentally ruining the caution signal is minimized.

Further as a practical matter it is necessary to remove the holder as herein before indicated in order to clear the switch eye to permit the insertion therein of the usual disconnect stick to close the switch. As the interior of the holder is dark, the socket when viewed from below presents itself as a dark spot vividly contrasting with the bright yellow of the holder considered as a whole and this practically black spot assists the lineman in reinserting the stick back into the socket when it is desired to reach up to demount the holder after it has restored the switch blade back into its circuit closing position.

I claim:

1. In a device of the class described, the combination of two cylinders each formed of insulating material, in telescopic relation and mounted for relative rotary movement about the common axis of the cylinders, both cylinders being open at their lower ends to form a disconnect stick socket downwardly facing when the device is in operative position, the inner cylinder provided with a wall closing the upper end, and the inner cylinder provided in the side thereof with a bayonet slot including a longitudinal slot open at the lower edge of the inner cylinder, the outer cylinder provided with a longitudinal slot open at the lower edge of the outer cylinder, the open end portions of the slots adapted to register when the cylinders are rotated to bring them into registry, a hook secured to the wall to rotate with the inner cylinder and a keeper for closing the opening of the hook, secured to the outer cylinder and adapted to engage and thus lock the hook against accidental rotation when rotated into engagement therewith, the longitudinal slots related to each other and to the hook to bring the slots into registry when the hook and its keeper are in their interlocking relation.

2. A notice impelling device including a pair of elements mounted one within the other for relative rotary movement, a hook for hanging the device onto a support, and a keeper for the hook disposed in one position to close the opening of the hook, said hook carried by one of the elements and the keeper carried by the other element, and said elements providing a socket for receiving a rotating tool and having means including a straight slot in the outer member and a bayonet slot in the inner member for receiving the tool when the slots are in registry and actuated by the rotation of the tool when so received in the slots for rotating the keeper to and from the hook when the hook is held in place hanging from the support.

3. In a device of the class described, the combination of two cylinders in telescopic relation and mounted for relative rotary movement about the common axis of the cylinders, the inner cylinder being open at its lower end to form a disconnect stick socket downwardly facing when the device is in operative position, and provided in the side thereof with a bayonet slot open at the lower edge of the inner cylinder, the outer cylinder provided with a longitudinal slot open at its lower edge, the open end portion of the slots adapted to register when the cylinders are rotated to bring them into registry, a hook having one end secured to one of the cylinders and a stop carried by the other cylinder for engagement by the other end of the hook, the longitudinal slots related to each other and to the hook to bring the slots into registry when the hook and said stop are in their interengaging position.

4. In a notice impelling device for suspension high in the air, the combination of two cylinders, one mounted in the other for relative movement about their common axis, means for restraining the cylinders from relative axial movement, the lower end of the inner cylinder being open to provide a downwardly facing socket fashioned to receive a tool for relatively rotating the cylinders, means projecting above the device for hooking it over a support to hang therefrom and for temporarily securing it to the support, said means including a suspension hook having one end secured rigidly to one of the cylinders to turn therewith and having its other end free to turn in space, and a keeper for the hook carried by the other cylinder rigidly secured thereto and turning therewith for engagement by and for retention by the free end of the hook when the cylinders, are relatively rotated by the tool to cause such interengagement of hook and its keeper.

5. A notice impelling device for use in an overhead, out-of-reach location, said device including a pair of cylinders mounted telescopically one within the other for relative rotary movement and restrained from relative axial movement, the top of the inner cylinder being closed to the infiltration of light into the top of its bore, suspension means at the top of the device for demountably securing the device suspended to swing freely from an overhead support, said means including a hook having one end secured to the closed top of the inner cylinder and a keeper secured to the outer cylinder to turn therewith and in one position engaging the free end of the hook to close the opening of the hook, the lower ends of the cylinders being open to provide a downwardly facing and wide open socket to receive a tool for rotating the outer cylinder when the hook is engaging its support and the outer cylinder provided with a slot for receiving an element of the tool, said slot being exposed for easy visibility by contrast to the outer face of the inner cylinder and by its darkened interior, the exposed surface of the outer cylinder being of relatively extensive area and of a vivid, notice impelling color, the downwardly facing socket being of sufficient length to have its interior dark and the opening into said socket appearing black by contrast to the vivid color of the exposed side of the outer cylinder.

6. In a device of the class described, the combination of two hollow tubular members mounted

in telescopic relation for relative rotary movement about their common axis and fixed against relative axial movement, the lower ends of the members provided with means for receiving a tool to rotate the members relative to each other, a hook having one end rigidly attached to the inner member in offset relation to said axis, and the other member provided with a ring to receive the free end of the hook and operating to close the opening of the hook, said ring being split along one side to form a U-shaped spring fashioned to receive and retain in place the free end of the hook when the members are rotated into position to effect such closing.

7. A notice providing device for use in an overhead, out-of-reach position, said device comprising two telescopic cylinders mounted for relative movement about a normally vertical axis, one of the cylinders provided at its upper portion with a hook for overlapping a momentarily fixed overhead support to suspend the device in position depending from the support and thus to hold the hook substantially fixed in space, the other cylinder provided with a keeper for engaging the free end of the hook when rotated into engagement therewith and provided with means to secure the hook and keeper from accidental separation while

permitting the disengagement of hook and keeper by a forceful rotation of the two cylinders, the lower end of the device provided with a downwardly facing socket for receiving the upper end of a disconnect stick by means of which the device may be elevated into position to cause the hook to overlap the support, and means operated by a rotation of the disconnect stick reacting between the said two cylinders and to effect the rotative movement of the cylinders to cause the keeper to rotate to and from its position engaging the hook while the hook is suspended from the support.

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