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PATENTED APR. 9, 1907.

P. CLOUTIER.

SAFETY SIGNALING DEVICE FOR RAILWAY SWITCHES.

APPLICATION FILED NOV. 28, 1906.

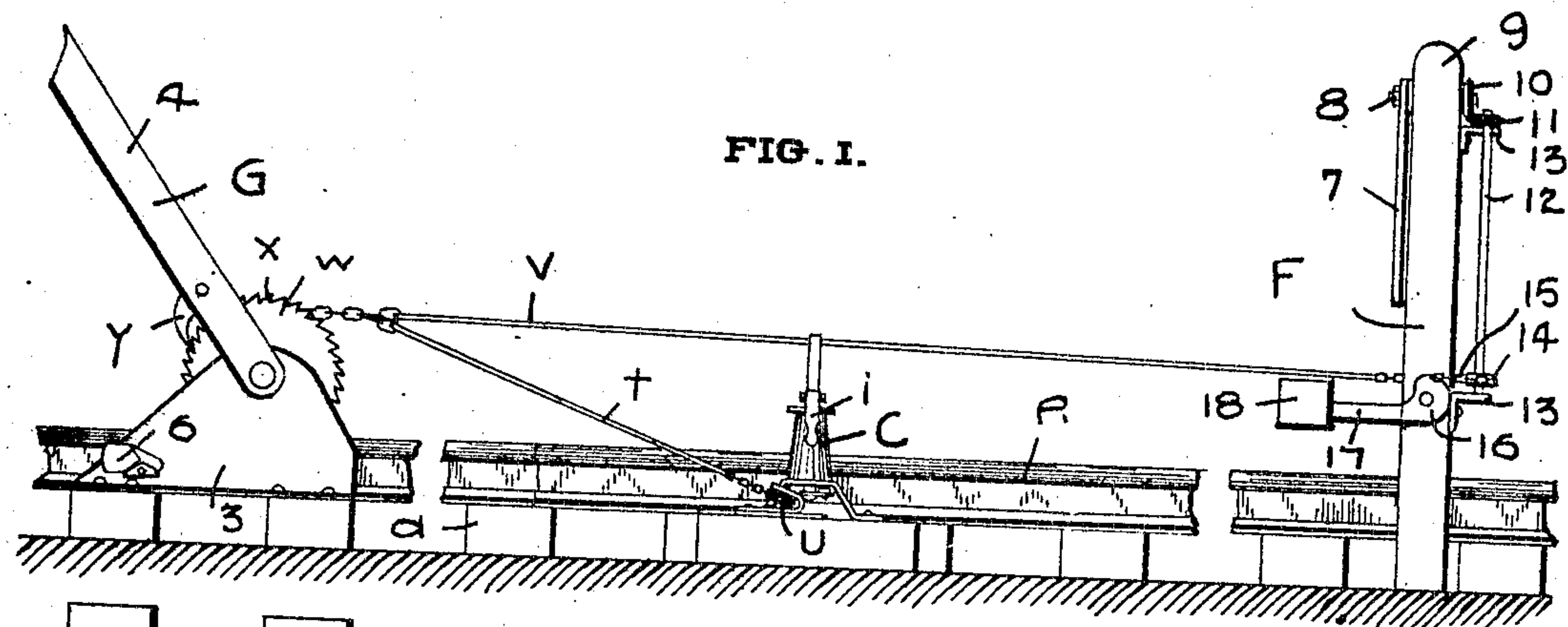


FIG. 1.

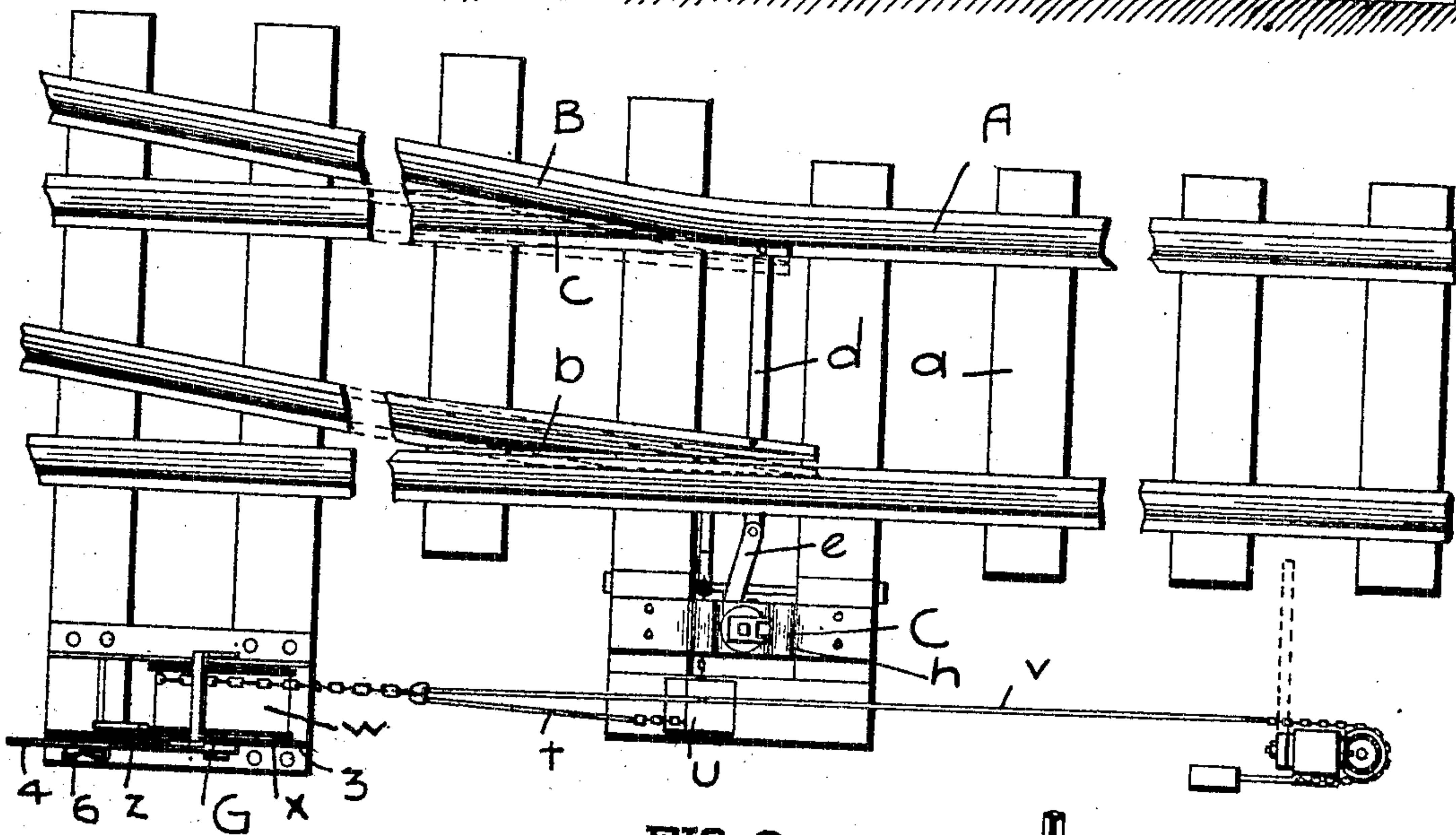


FIG. 2.

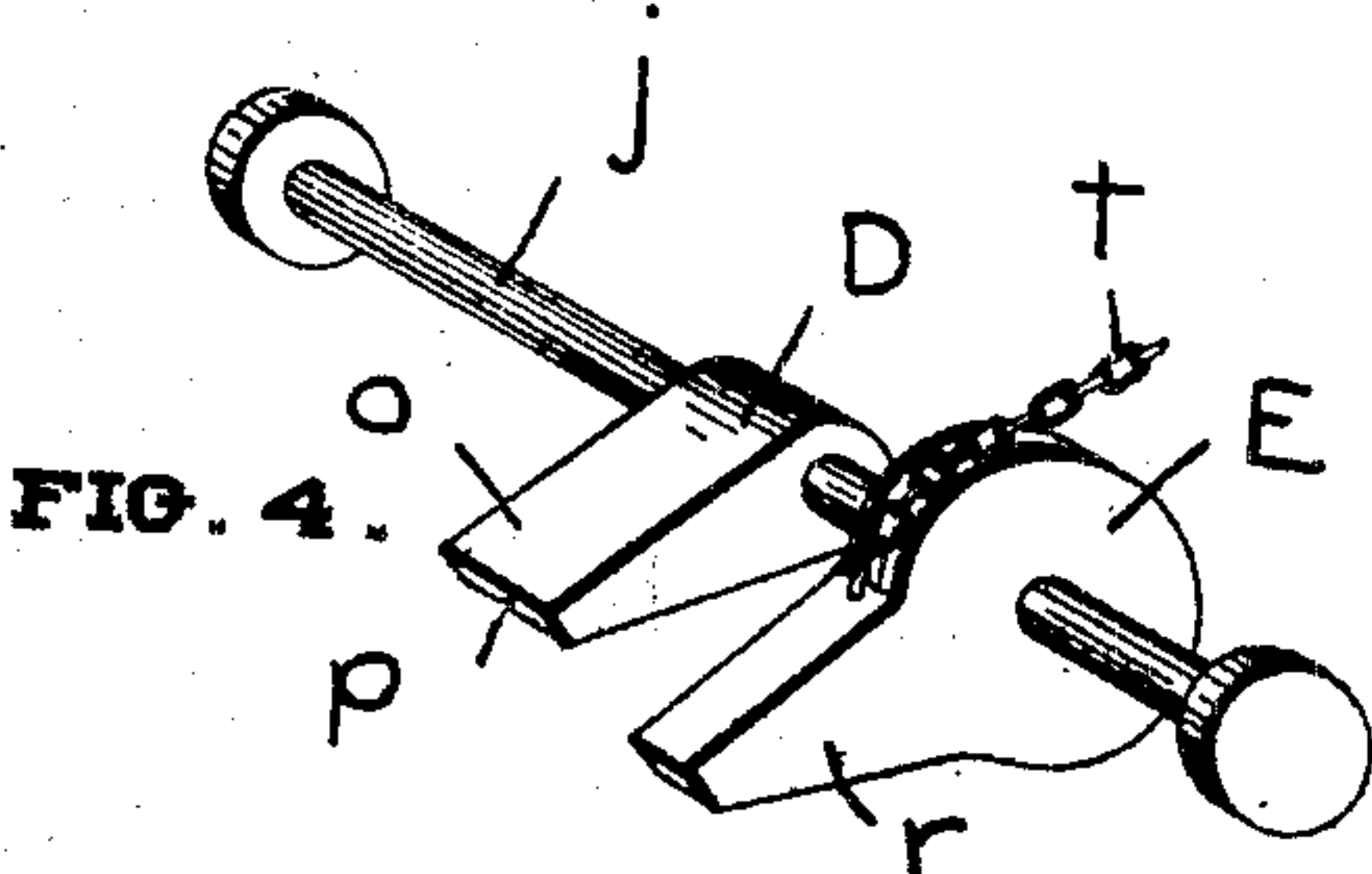


FIG. 4.

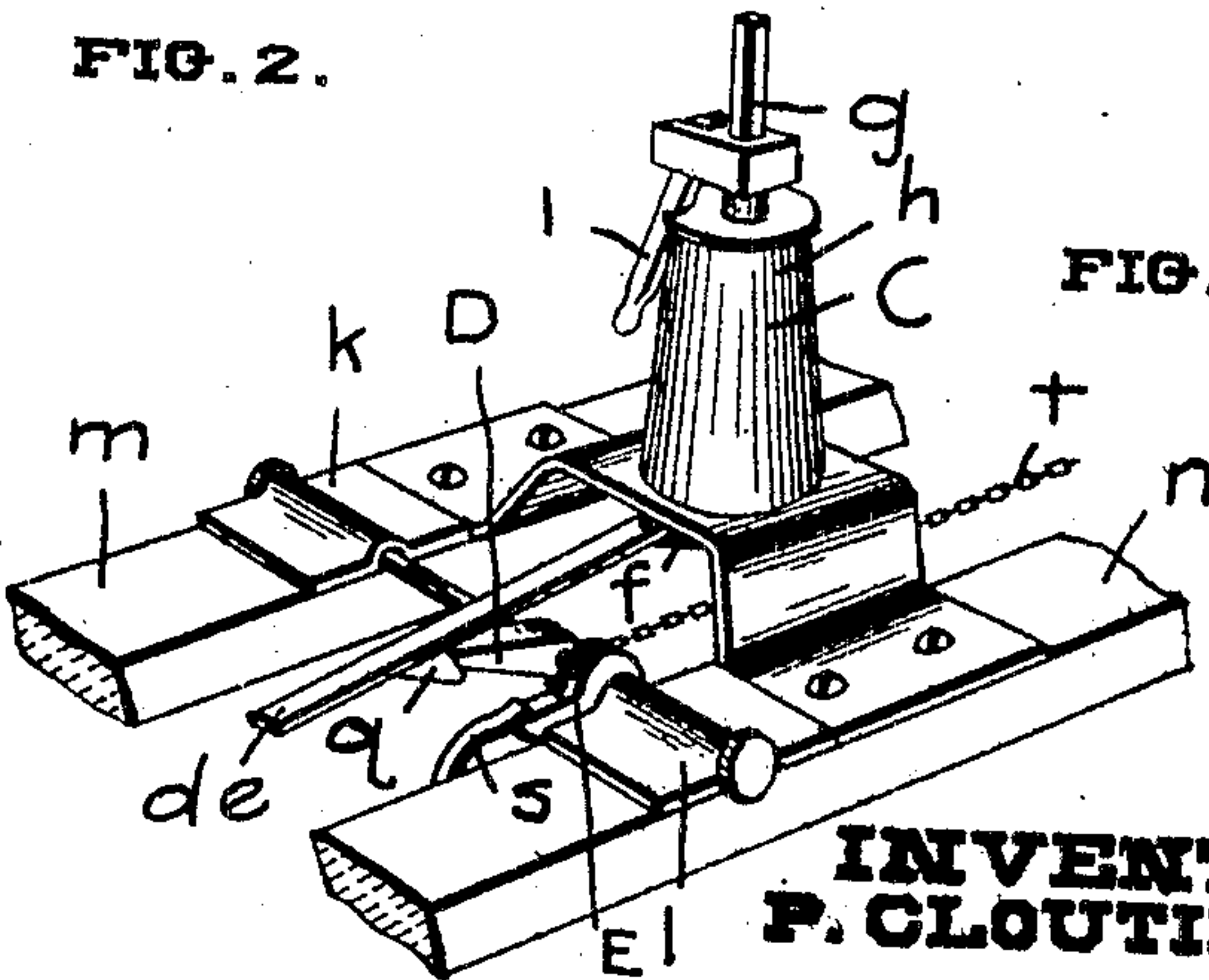


FIG. 3.

WITNESSES

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SAFETY SIGNALING DEVICE FOR RAILWAY-SWITCHES.

No. 849,460.

Specification of Letters Patent.

Patented April 9, 1907.

Application filed November 28, 1906. Serial No. 345,565.

To all whom it may concern:

Be it known that I, PROSPER CLOUTIER, of Three Rivers, in the county of St. Maurice, Province of Quebec, Canada, have invented certain new and useful Improvements in Safety Signaling Devices for Railway-Switches, of which the following is a specification.

My invention relates to railway-switches of the type in which a semaphore or other signal is used to indicate the condition of the switch; and the objects of my invention are to provide a simple and efficient form of interlocking device which will prevent any independent action of either the switch or the semaphore, whereby when the switch is open the semaphore must be in a danger position and when the semaphore is lowered the switch must be in a closed position. This object I attain by employing the semaphore which normally remains in a danger position, combined with a locking device attached to the switch and which is operated by the same means as lower the semaphore from its danger position, whereby when the semaphore is lowered the switch is simultaneously locked in a closed position.

In carrying out the invention I provide a locking device which locks the switch in its closed position, the arrangement being such that the act of raising the semaphore unlocks the switch and the act of closing the switch unlocks the semaphore. The actions of raising the semaphore and opening the switch are thus made to depend on each other and cannot take place independently.

The construction of the device is described fully in the accompanying specification and drawings, and the parts of the invention are set forth in the accompanying claims.

Figure 1 is a side elevation of a switch and signaling device made in accordance with my invention. Fig. 2 is a top view of the same. Fig. 3 is an enlarged perspective detail of the operating mechanism for the switch. Fig. 4 is an enlarged perspective detail of the locking device for the switch and semaphore.

In the drawings like letters of reference indicate corresponding parts in each figure.

A is the track, of the usual construction, and *a* the ties thereof. B is the switch, and *b* and *c* the pivoted and movable points of the rails, the pivoting means not being shown in the drawings.

d is the connecting-link, connected to the extremity of these points, the inner end of

which is connected, by means of a connecting-bar *e*, to the crank *f* of the switch-operating mechanism C. This may be of any well-known construction, that shown comprising a central shaft *g*, journaled in the casing *h*, the lower end of the said shaft being connected to and operating the crank *f*. An operating-handle *i* is secured to the shaft *g* above the casing *h*.

j is a shaft journaled in bearings *k* and *l*, provided on the supporting device *m* and *n* for the switch-operating mechanism. This shaft has provided thereon a detent D, which is provided with two flat surfaces *o* and *p*, which are adapted to engage a stop *q*, provided on the inside of the connecting-rod *e*, when the detent is rotated into certain positions.

E is a disk provided with a grooved periphery and secured to the shaft *j* and having thereon a projecting lug *r*, the upper surface of which is adapted to be engaged by a spring *s*, the opposite end of which is secured to the tie *n* and which is adapted to normally press the lug *r* downwardly and hold the shaft *j* in such a position that the surface *o* on the detent D will be in engagement with the stop *q*.

Secured to the disk E and extending around the periphery thereof is a chain or rope *t*, which is led around a fixed pulley *u* and connected to the chain or rope *v*, extending between the semaphore F or other signaling apparatus and the operating mechanism G therefor.

The operating mechanism G is of the type usually employed in connection with semaphores or signaling apparatus of this character, comprising a drum *w*, around which a chain or rope *v* extends, having on the periphery of one side thereof a plurality of ratchet-teeth *x*, which are engaged by the gravity-operated dog *y* on the operating-lever 4 and by a second dog *z*, pivoted to the supporting-casing 3.

6 is a lever connected to the dog *z* and adapted when rotated to throw the dog out of engagement with the ratchet-teeth, whereby the drum may be free to rotate, carrying with it the lever 4. The signaling device or semaphore F may be of any desirable well-known construction, that I have shown comprising a signaling-arm 7, secured to a shaft 8, supported from a post 9, driven in the ground. The opposite end of the shaft 8 has secured thereto a beveled gear 10, engaging a similar beveled gear 11, secured to a verti-

cally-extending shaft 12, supported in bearings 13, secured to the post 9. The lower end of the shaft has secured thereto a grooved pulley 14, within which is secured a rope or chain 15, the opposite end of which extends around a rotatably-supported grooved disk 16, having integral therewith an outwardly-extending arm 17, to the outer end of which is secured a weight 18.

The mechanism is so designed that the arm 17 will be in a substantially horizontal position when the signaling-arm 7 is lowered to a vertical position, and thus the weight 18 will act to rotate the arm 17 downwardly, which will exert a tension through the rope or chain 15 and tend to rotate the shaft 12, moving the signaling-arm 7 into the horizontal or danger position. The end of the rope or chain *v* is also secured to the pulley 14. It will thus be seen that the semaphore is normally held in a danger position and can only be lowered by a pull exerting through the rope or chain *v*, which will cause a tension to remain in said rope or chain as long as the semaphore is held in a lowered position.

Having now described the various parts of my device, I will briefly point out the method of operation of the same. When the switch is in its closed position, as indicated in Figs. 1 and 2, the arm of the semaphore will be lowered, being held in that position by the rope *v*, wound around the drum *w*, which is held from rotation by the dogs *y* and *z*. The switch is locked in position by means of the stop *q*, which engages the surface *p* on the detent D. The switch cannot be moved until the detent D is rotated. This detent is normally held in this position by means of the rope or chain *t*, which will have been tightened at the same time as the rope or chain *v* is tightened and the semaphore-arm lowered. When it is desired to open the switch, the dog *z* is released by means of the lever 6 and the operating-lever 4 rotated, which will cause the ropes or chains *v* and *t* to become slack. The weight 18 on the semaphore will then raise the arm 7 thereof to the danger-signal, while the spring *s* will act on the lug *r* to depress the same and rotate the shaft *j*, which will rotate the end of the detent D out of contact with the stop *q*, leaving the switch free to be operated by means of the operating mechanism C. As long as the semaphore is raised the switch may be closed and opened with freedom. Any attempt to lower the semaphore-arm without closing the switch will be prevented by the stop *q*, which engages the surface *o* on the detent D and prevents rotation of the shaft *j*, which in turn prevents a sufficient amount of rope or chain *t* being unwound from off the disk E to enable the drum *w* to rotate sufficiently far to lower the semaphore-arm. Previous, then, to lowering the semaphore it is necessary to close the switch. As soon as this is done the

semaphore may be freely operated by means of the operating-lever 4, leaving the track again in its original position. The dotted lines in Fig. 2 indicate the open position of the switch and the corresponding position of the semaphore-arm.

It will thus be seen that I have devised an exceedingly cheap and simple form of safety device for railway-switches which insures that the switch can never be opened without a danger-signal being displayed, thus providing security against accidents from this cause.

It is obvious that any form of switch or semaphore may be employed in connection with the device, the essential feature being the locking device controlling the operation of both the switch and the semaphore.

While I have described with great particularity of detail one specific embodiment of the invention, yet it is not to be understood that the invention is limited thereto, as certain changes might be made within the scope of the appended claims without departing from the spirit of my invention.

What I claim as my invention is—

1. In a device of the class described the combination with the switch and the operating mechanism therefor, the signal for the switch and the operating-lever therefor located at some distance therefrom, of a rotatable detent adapted to lock the switch in its open or closed position, and means operated by the signal-operating lever for automatically operating said detent to interlock the switch and signal as and for the purpose specified.

2. An improved safety-switch having a stop secured to a reciprocating member of the switch-operating mechanism, a shaft, a detent secured thereto, and upwardly extending therefrom, the end thereof being adapted to engage the stop and prevent the reciprocative movement of the member, the side of the detent being adapted in another position to be engaged by a stop whereby rotation of the detent and shaft will be prevented, a signal and means operated by the rotation of the shaft supporting the detent for locking said signal in a danger position as and for the purpose specified.

3. An improved safety-switch having a stop secured to a reciprocating member of the switch-operating mechanism, a shaft, a detent secured thereto and upwardly extending therefrom, the end thereof being adapted to engage the stop and prevent the reciprocative movement of the member, the side of the detent being adapted in another position to be engaged by the stop whereby rotation of the detent and shaft will be prevented, a disk having a grooved periphery secured to the shaft, a signal, an operating mechanism therefor and a rope or chain connected to the disk and to the operating mechanism of the signal whereby when the disk is rotated into

a predetermined position the operation of the signal will be prevented as and for the purpose specified.

4. An improved safety-switch having a
5 stop secured to a reciprocating member of the switch-operating mechanism, a shaft, a detent secured thereto and upwardly extending therefrom, the end thereof being adapted to engage the stop and prevent the reciprocating movement of the member, the side of
10 the detent being adapted in another position to be engaged by the stop whereby rotation of the detent and shaft will be prevented, a disk having a grooved periphery secured to the shaft, a signal, an operating mechanism therefor and a rope or chain connected to the disk and to the operating mechanism of the
15 signal whereby when the disk is rotated into a predetermined position the operation of the signal will be prevented, a lug secured to the disk, and upwardly extending therefrom and a spring normally depressing the lug
20 tending to move the disk into the position which will prevent the operation of the signal as and for the purpose specified.
25

5. An improved safety-switch comprising a switch, operating mechanism therefor having a reciprocating member, a stop secured to the said reciprocating member, a shaft, a de-

tent secured thereto, and outwardly extending therefrom, the end thereof being adapted to engage the stop and prevent the reciprocative movement of the member, the side of the detent being adapted in another position to be engaged by the stop whereby rotation
30 of the detent and shaft will be prevented, a disk provided with a grooved periphery secured to the shaft, a signal, gravity-operated means for normally holding it with the danger-signal displayed, an operating mechanism for the signal, a rope or chain connect-
35 ed to the disk and to the operating mechanism of the signal whereby when the said mechanism is operated the disk and shaft will be rotated, a lug integral with the disk,
40 and outwardly extending therefrom, a spring normally depressing the lug to rotate the shaft into a position such that the rope or chain connected thereto will prevent operation of the switch-operating mechanism sub-
45 stantially as described.
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Signed at Three Rivers, in the Province of Quebec, this 14th day of November, 1906.

PROSPER CLOUTIER.

Witnesses:

JACQUES BUREAU,
GEORGES GARILPY.