(No Model.) 3 Sheets—Sheet 1.

G. GIBBS.

INTERLOCKING SWITCH AND SIGNAL.

No. 381,773. Patented Apr. 24, 1888.

Fig. 1.

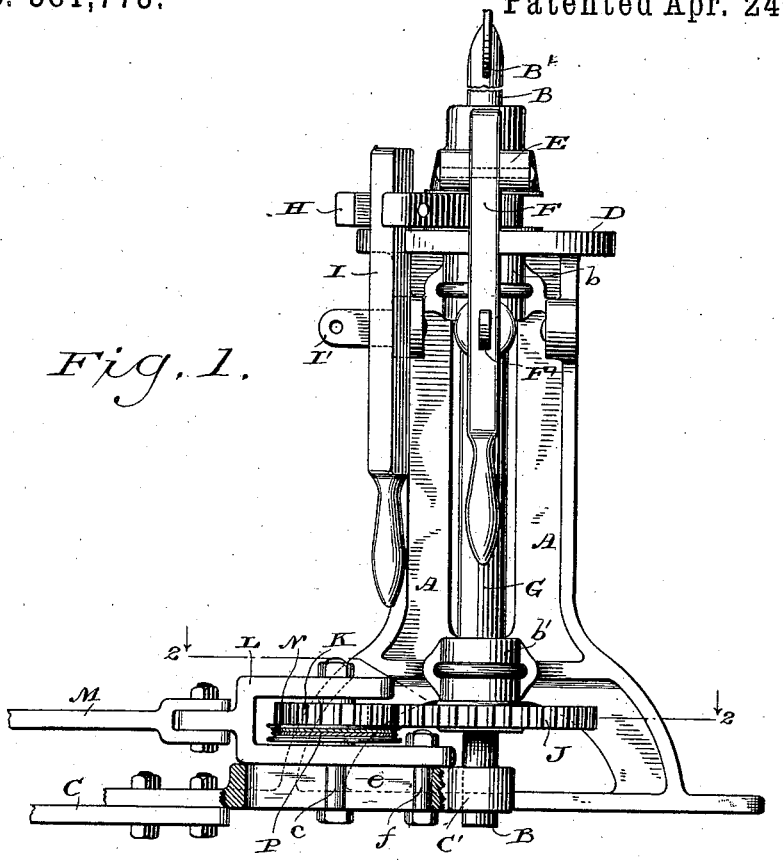
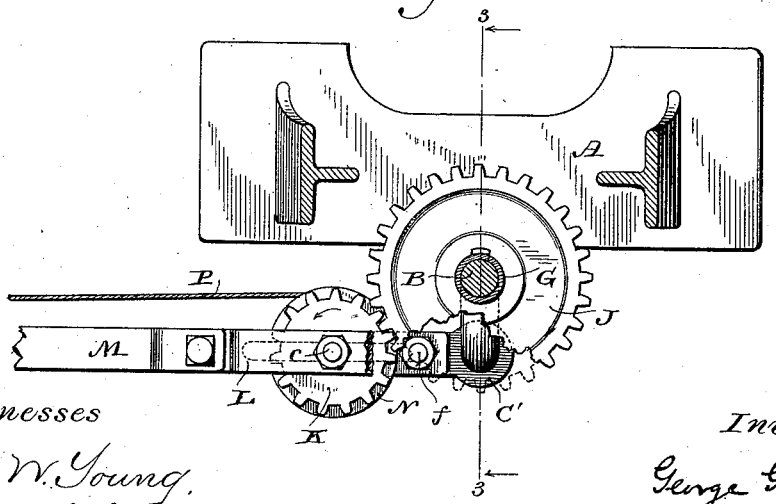


Fig. 2.



Witnesses
Geo. W. Young.
N. E. Oliphant

Inventor.
George Gibbs.
By Stuart Underwood
Attorneys.

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Fig. 4.

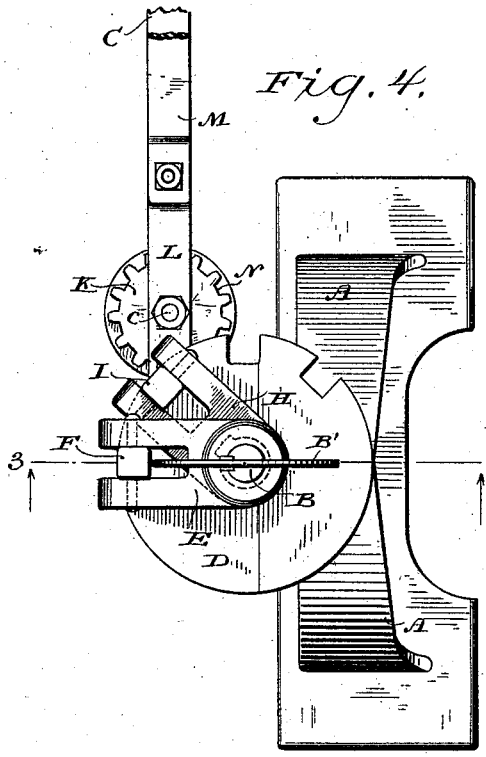

Fig. 3.

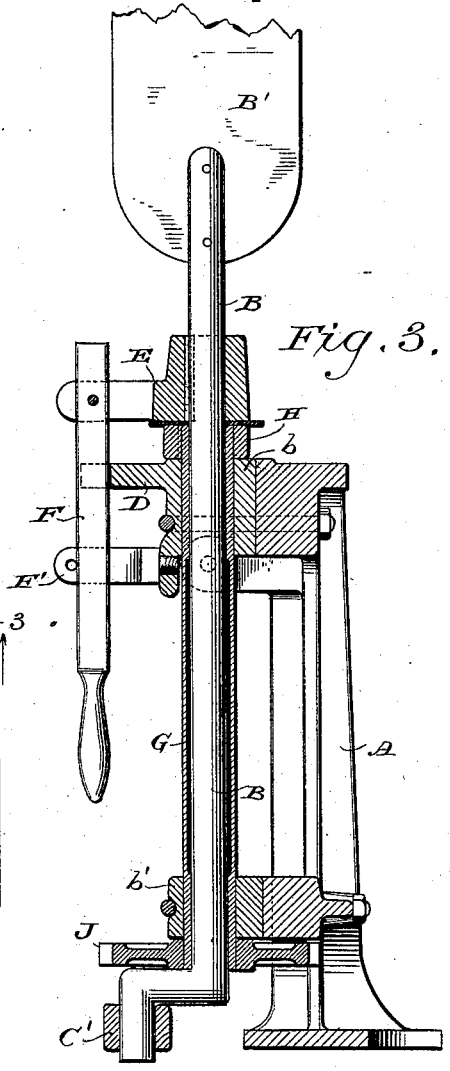

Fig. 5.

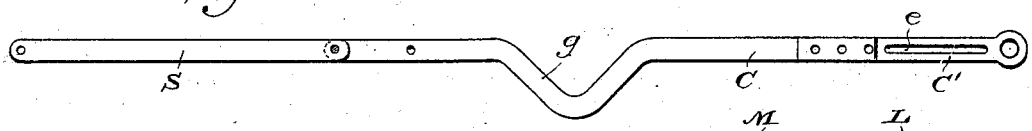

Fig. 6.

Witnesses
Geo. W. Young.
N. E. Oliphant

Inventor.
George Gibbs.
By Stout & Underwood.
Attorneys.

(No Model.) 3 Sheets—Sheet 3.

G. GIBBS.

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Fig. 7.

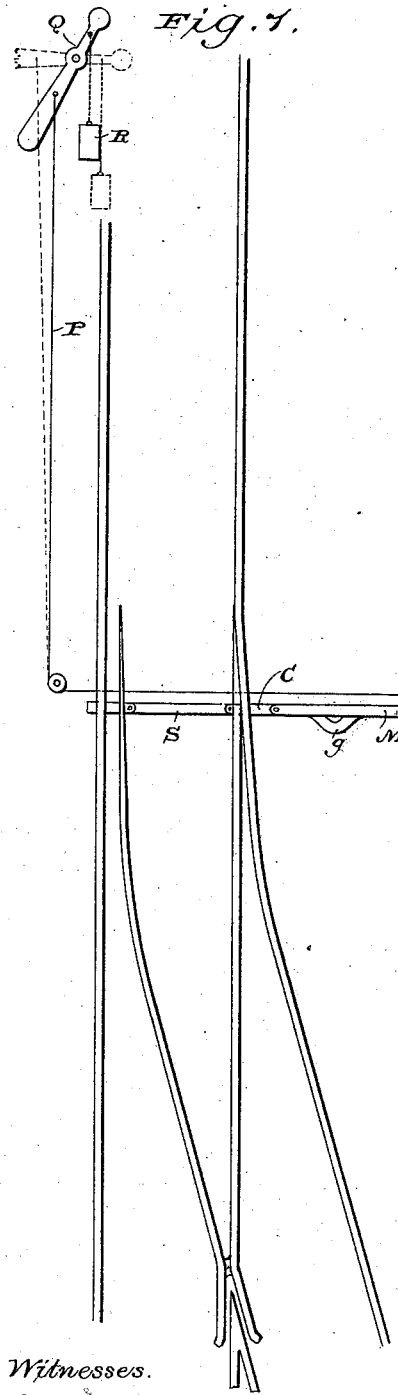
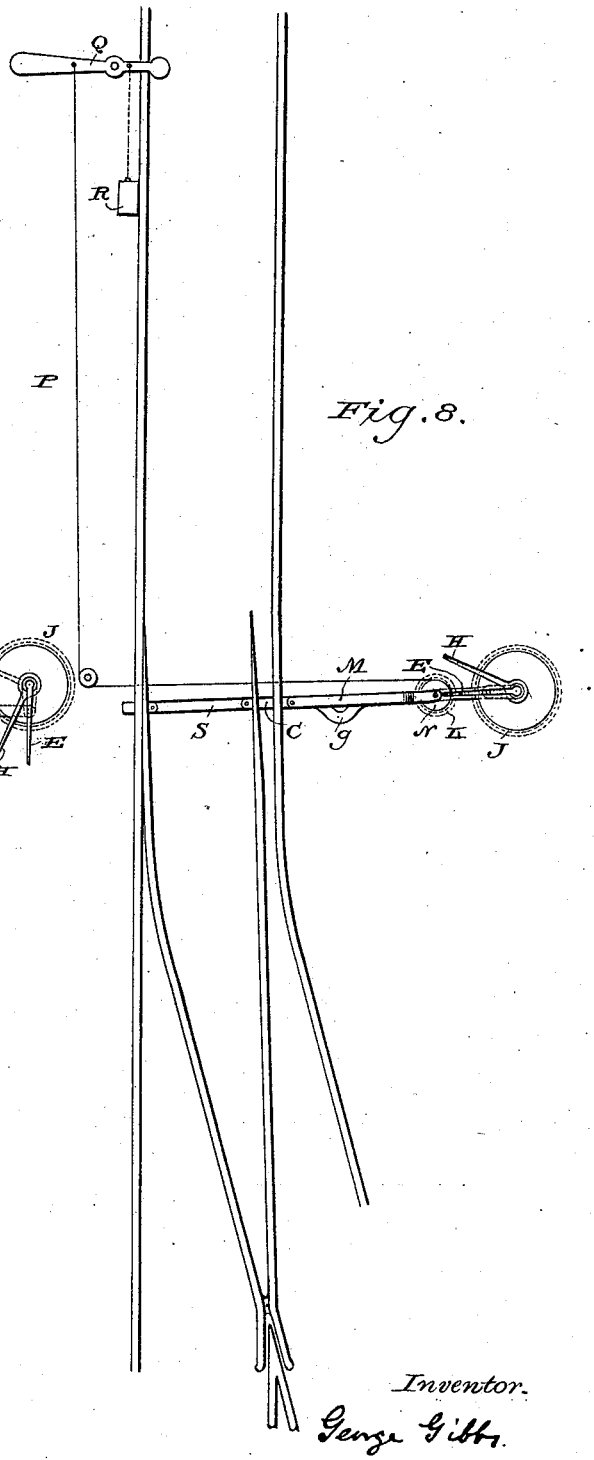


Fig. 8.



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Geo. W. Young.
N. E. Oliphant.

Inventor.
George Gibbs.
By Stout & Underwood.
Attorneys.

UNITED STATES PATENT OFFICE.

GEORGE GIBBS, OF MILWAUKEE, WISCONSIN.

INTERLOCKING SWITCH AND SIGNAL.

SPECIFICATION forming part of Letters Patent No. 381,773, dated April 24, 1888.

Application filed January 13, 1888. Serial No. 260,609. (No model.)

To all whom it may concern:

Be it known that I, GEORGE GIBBS, of Milwaukee, in the county of Milwaukee, and in the State of Wisconsin, have invented certain new and useful Improvements in Interlocking Switches and Signals; and I do hereby declare that the following is a full, clear, and exact description thereof.

My invention relates to interlocking switches and signals; and it consists in certain peculiarities of construction and combination of parts, to be hereinafter described with reference to the accompanying drawings, and subsequently claimed.

In the drawings, Figure 1 represents a side elevation of my invention, partly broken away. Fig. 2, a horizontal section on line 2 2, Fig. 1; Fig. 3, a vertical transverse section on line 3 3, Figs. 2 and 4; Fig. 4, a plan view; Fig. 5, a detail view of a throw-rod for the switch, and Fig. 6 a similar view of an auxiliary rod. Figs. 7 and 8 are diagram views illustrating the open and closed positions of an ordinary split switch, a distant signal, and the operation of my invention.

Referring by letter to the drawings, A represents a switch-stand of ordinary construction; B, the crank-rod for the switch; B′, the target; C, the throw-rod; D, the notched table that forms part of said stand, and E the switch-lever provided with a pivoted hand-piece, F, for engagement with certain of the notches in said table accordingly as said switch may be open or closed.

Surrounding the crank-rod B and forming the bearings therefor is a pipe-sleeve, G, the latter having a bearing, *b*, that depends from the table D, and another bearing, *b′*, that is made fast to the stand of which said table forms a part.

Fast on the upper end of the pipe-sleeve G is a lever, H, provided with a pivoted hand-piece, I, for engagement with certain notches in the table D, and keyed to the lower end of said pipe-sleeve is a gear-wheel, J, for engagement with another gear-wheel, K, that is loose on a bolt, *c*, passed through the short and long arms of a yoke, L, that forms the bifurcated rear end of a rod, M, the forward end of the latter being bolted to the throw-rod C, and as a matter of convenience the yoke L is preferably detachable from said rod M, as best illustrated in Fig. 1.

Both the hand-pieces F I of the levers E H are provided with slots to engage lugs F′ I′ on the switch-stand, said lugs being respectively provided with an eye for engagement with a padlock. This being a well-known construction, further description thereof is deemed unnecessary in connection with my invention.

Made in one piece with the gear-wheel K, or rigidly connected thereto, is a sheave, N, and the bolt *c*, that serves as a spindle for said gear-wheel and sheave, is extended in a downward direction to engage a longitudinal slot, *e*, in the rear section, C′, or that portion of the throw-rod C that is connected to the crank-rod B. I also show a bolt, *f*, that passes through the inner end of the long arm of the yoke L and engages the slot *e* in the adjacent end of the throw-rod C; but the latter bolt may be omitted and both arms of said yoke made the same length, if found more desirable.

Secured to the sheave K, so as to wind thereon, is a cord or wire, P, that connects with a distant signal, the latter in this instance consisting of a pivotal arm, Q, that has attached thereto a counter-weight, R; but it is obvious that the counter-weight may be omitted and the cord or wire arranged on said sheave to wind and unwind in opposite directions, and in the latter case both ends of said cord or wire would be united to the arm Q on opposite sides of its pivot.

I have shown one section of the throw-rod C as provided with a goose-neck, *g;* but instead of the goose-neck I may employ what is termed a "spring-pocket" or other flexible connection between the switch-bar S and the crank-rod B. Such connections are well known and form no essential part of my device; but, because they are in general use, I have made the necessary provision for the application of my invention in conjunction therewith.

In the operation of my invention we will suppose a switch to be set for main track and the pivoted signal-arm Q standing at an angle, as shown by full lines, Fig. 7, to indicate "safety." The parts being in this position, the gear-wheels J K are in mesh, the cord or wire P wound on the sheave N to overcome the resistance of the counter-weight R, at-

tached to the signal-arm Q, and the levers E H, respectively, in the positions shown in Figs. 1 and 7. Now, if it is desirable to throw the switch so as to connect the main track with a spur or side track, it will be necessary to move the lever E toward the left in order to actuate the crank-rod B; but this operation cannot be accomplished until the lever H is moved out of the way, and hence it becomes necessary to bring the latter lever toward the left at least as far as shown by the dotted lines, Fig. 7, and full lines, Fig. 8. The lever H being fast on the pipe-sleeve G, the gear-wheel J, keyed to the latter, is rotated by the movement of said lever and imparts motion to the gear-wheel K, thereby slackening the cord or wire P and permitting the counter-weight R to unwind said cord or wire from the sheave N and draw the pivoted signal-arm Q up to a horizontal position, as shown by dotted lines, Fig. 7, and full lines, Fig. 8, this position of said arm indicating "danger."

The signal for "danger" having been displayed, the switch may be thrown, and by this movement the gear-wheel K is brought out of mesh with the gear-wheel J, as shown by Fig. 8, and it is impossible to display the safety-signal until the switch has been brought back to its original position. When the switch is thrown to bring it back to the position shown in Fig. 7, (its original position,) the gear-wheel K is again brought into mesh with the one J; but unless the lever H is actuated the signal will still stand in the position to indicate "danger," notwithstanding said switch is set for main track. The reverse movement of the lever H will cause the gear-wheel J to rotate and set in motion the one K in mesh therewith, thus causing the cord or wire P to wind on the sheave N and draw the pivoted arm Q down to the position that indicates "safety." In case a locomotive or car runs through the switch when the latter is set for main track and the distant signal displayed for "safety," the flexible connection between said switch and the crank-rod B will yield and the rod M will be drawn toward the track to bring the gear-wheel K, carried by the latter rod, out of mesh with the gear-wheel J on the pipe-sleeve G, thereby slackening the cord or wire P and permitting the weight R to automatically bring the pivoted arm Q to the position that indicates "danger." When the operation just described takes place, the bolts *c f* move in the slotted rear section, C′, of the throw-rod C, but at no other time.

In case a locomotive or car runs through the switch when the latter is set for side track and the distant signal displayed for "danger," the flexible connection above mentioned will yield; but said signal will still remain in the position named to caution an approaching train.

While I prefer to arrange the gear-wheel K as shown and described, it is obvious that the same may have its spindle attached direct to the throw-rod C without departing from the spirit of my invention.

By the above description it will be seen that I provide a very simple and practical interlocking switch and signal, and that in case the switch is wrong, or the main track accidentally obstructed by a locomotive or car running through said switch, the distant signal will indicate "danger."

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination, with a switch, throw-rod, and distant signal, of a main gear-wheel, another gear-wheel carried by the throw-rod to come in and out of mesh with the main one, and a cord, wire, or analogous means connected to the signal and arranged to be actuated by a rotation of the gear-wheels, substantially as set forth.

2. The combination, with a switch, throw-rod, and distant signal, of a main gear-wheel, another gear-wheel carried by the throw-rod to come in and out of mesh with the main one, a sheave or analogous device arranged to be actuated by a rotation of said gear-wheels, and a cord, wire, or analogous means connecting the sheave and signal, substantially as set forth.

3. The combination, with a switch, throw-rod, and distant signal, of a main gear-wheel, another gear-wheel carried by the throw-rod to come in and out of mesh with the main one, a sheave fast to the gear-wheel on said throw-rod, a cord, wire, or analogous means connecting the sheave and signal, and suitable mechanism for actuating said main gear-wheel, substantially as set forth.

4. The combination, with a switch, a flexible throw-rod longitudinally slotted at its rear end, and a distant signal, of a main gear-wheel, an auxiliary rod bolted to the throw-rod and bifurcated at its rear end, a spindle passed through the bifurcations of the auxiliary rod and extended down into the slot of said throw-rod, a gear-wheel arranged on the spindle, a sheave or analogous device also arranged on said spindle adjacent to the latter gear-wheel, a cord, wire, or analogous means connecting the sheave and signal, and a suitable mechanism for actuating said main gear-wheel, substantially as set forth.

5. The combination, with a switch, crank-rod, throw-rod, and distant signal, of a pipe-sleeve surrounding the crank-rod, a gear-wheel fast on the pipe-sleeve, another gear-wheel carried by the throw-rod to come in and out of mesh with the one on said pipe-sleeve, a sheave adjacent to the latter gear-wheel, a cord, wire, or analogous means connecting the sheave and signal, and levers for actuating said crank-rod and pipe-sleeve, substantially as set forth.

6. The combination, with a switch, throw-rod, crank-rod, and distant signal, of a main gear-wheel, a lever mechanism for actuating

the gear-wheel, another gear-wheel carried by the throw-rod to come in and out of mesh with the main one, a cord, wire, or analogous means connected to the signal and arranged to be actuated by a rotation of the gear-wheels, and a lever connected to the crank-rod to come in the path of the lever for actuating the main gear-wheel, whereby the interference of said levers compels a proper relative position of the switch and signal, substantially as set forth.

In testimony that I claim the foregoing I have hereunto set my hand, at Milwaukee, in the county of Milwaukee and State of Wisconsin, in the presence of two witnesses.

GEO. GIBBS.

Witnesses:
H. G. UNDERWOOD,
N. E. OLIPHANT.