

(No Model.)

2 Sheets—Sheet 1.

O. T. WOOD.
DANGER SIGNAL.

No. 534,620.

Patented Feb. 19, 1895.

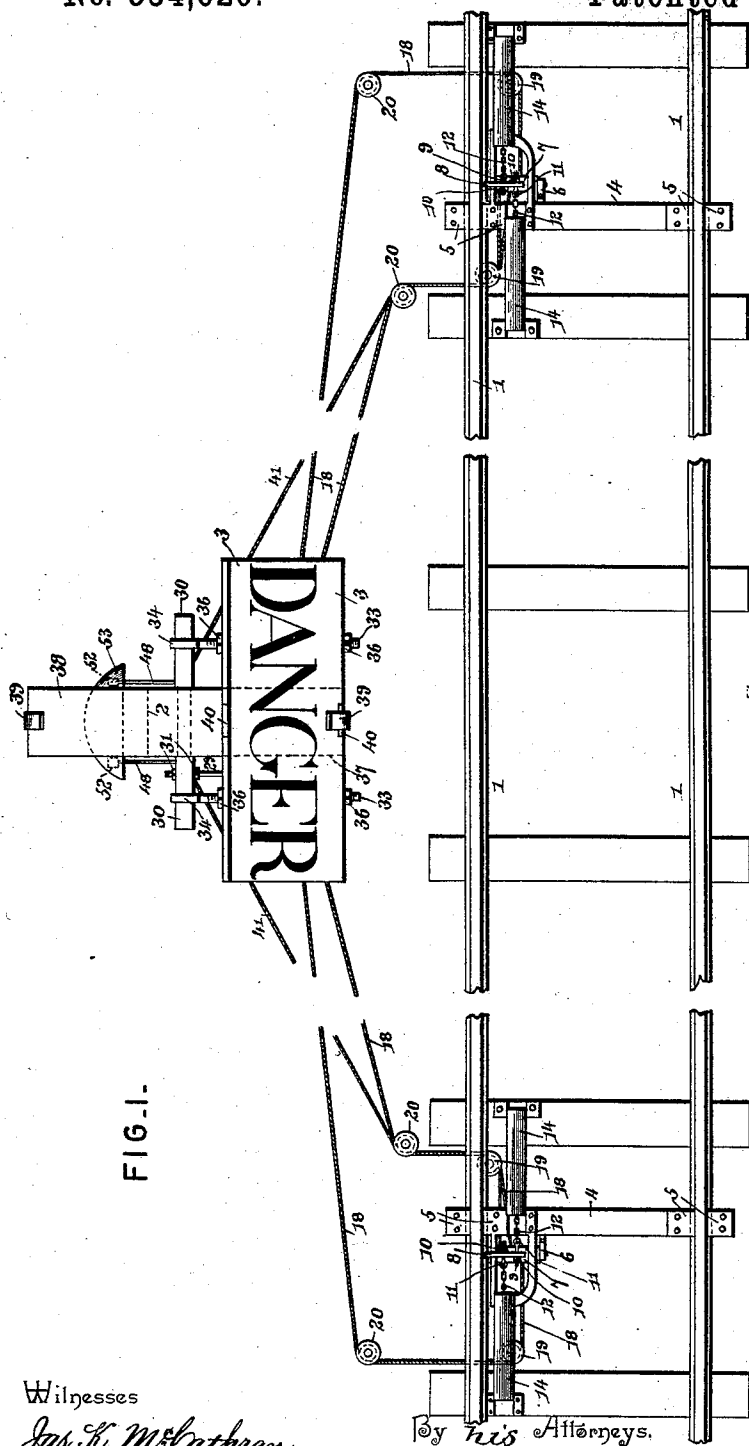


FIG. 1.

Witnesses

Jas. K. McLaughlin

J. B. Owens.

By *his* Attorneys,

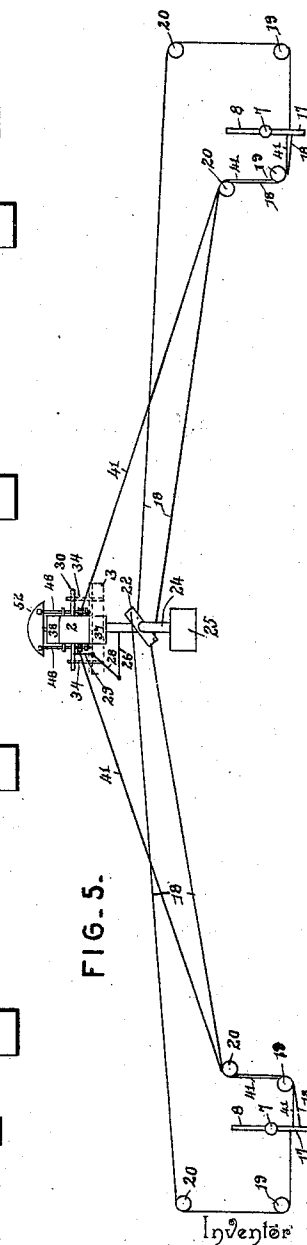


FIG-5.

Inventör:

Orlan T. Wood

Chas. Snow & Co.

(No Model.)

2 Sheets—Sheet 2.

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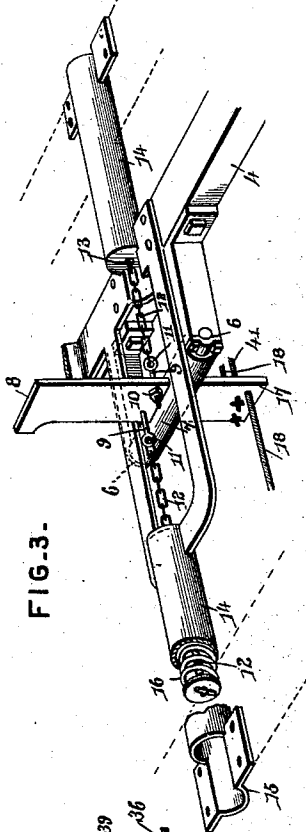


FIG. 3.

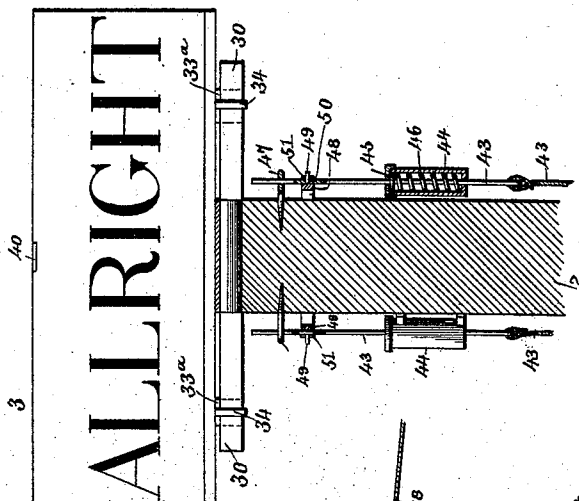


FIG. 4.

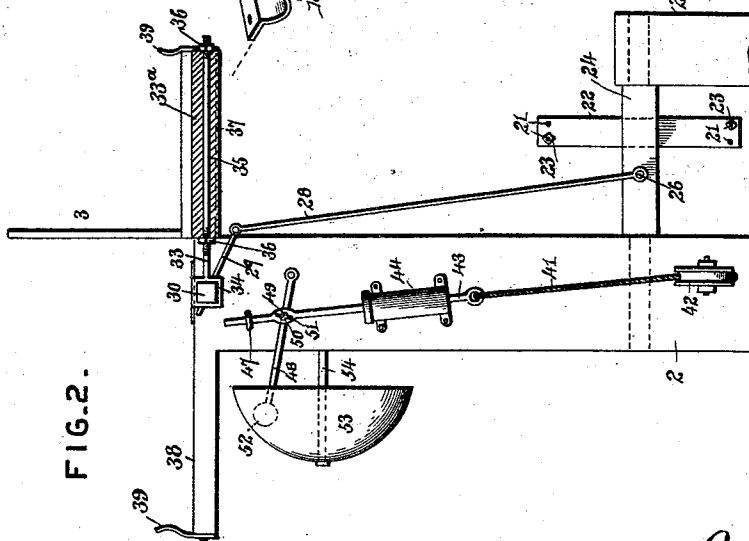


FIG. 2.

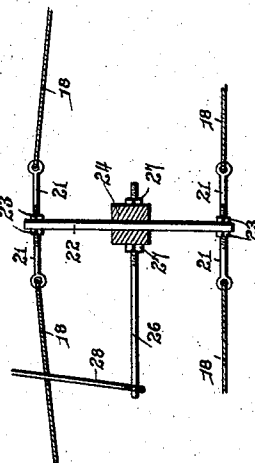


FIG. 6.

Witnesses

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Inventor
Orlan T. Wood

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UNITED STATES PATENT OFFICE.

ORLAN T. WOOD, OF PLATTSMOUTH, NEBRASKA, ASSIGNOR TO PHILLIP V. McCULLEY AND ANNA WOOD, OF SAME PLACE.

DANGER-SIGNAL.

SPECIFICATION forming part of Letters Patent No. 534,620, dated February 19, 1895.

Application filed May 1, 1894. Serial No. 509,681. (No model.)

To all whom it may concern:

Be it known that I, ORLAN T. WOOD, a citizen of the United States, residing at Plattsmouth, in the county of Cass and State of Nebraska, have invented a new and useful Danger-Signal, of which the following is a specification.

My invention has special reference to an improvement in that class of railway signals wherein the signal is automatically changed by the engagement of the train wheels with a trip connected to the signal, and arranged alongside the track; and it consists of certain improvements in the construction of those devices whereby they are made more desirable and capable of more extensive use.

In the accompanying drawings: Figure 1 represents a plan view of a railroad signal having my improvements applied. Fig. 2 is a side elevation of the signal post, showing the board and operating devices. Fig. 3 is a detail perspective of the trip mechanism. Fig. 4 is a vertical section of the signal post. Fig. 5 is a diagrammatical view illustrating the system of levers and cords for operating the signal. Fig. 6 is a detail section of the devices for attaching the operating cords to the signal post.

The reference numeral 1 indicates the track, which may be, of course, of any construction, and 2 the signal post or standard. This is arranged alongside the track and provided with the signal board 3, which is operated by duplicate cord and detent mechanism located one on each side of the post and adapted to be engaged by the trains when moving in either direction. This mechanism is the same on each side of the signal and will not be described in duplicate, since a description of one will apply equally to either.

Secured to the under side of the rails of the track and extending from one to another is the transverse beam 4, held in place by means of the metallic plates 5, secured one on each side of the rails and to the beam. Fixed to the beam 4, and projecting outwardly therefrom, are the bearings 6, and these are two in number and adapted for the reception of the shaft 7. The shaft 7 is provided with the rigid vertical arm 8, which projects up to a point level with the tread of the track-rail

directly adjacent to the post 2, so that it may be engaged by the flange of the wheel operating on the said rail.

Arranged in the arm 8, and projecting out longitudinally with the track and one on each side of the arm, are the rods 9, which extend through the arm and are provided with adjusting-nuts 10, whereby their length beyond the arm may be adjusted. The outer or free ends of these rods 9 are each provided with the eye 11, to which the chains 12 are connected, and these chains extend out on opposite sides of the arm 8, and through the opening 13, of the cylinders 14.

The cylinders 14 are two in number, one for each chain 12, and are secured in the semi-circular depressions 15, of the cross-ties adjacent to the beam 4, and extend longitudinally with the track. Located in the cylinders, are the spiral springs 16, through which the chains 12 extend and are connected to the ends thereof which are farther away from the arm 8. By these means the arm 8 is given a normal tendency to a vertical position, and when it swings on its mountings, such movement will be against the tendency of the springs, which will result in an immediate return to the normal positions.

Secured to the lower side of the shaft 7, and projecting downwardly therefrom, is the second arm 17, which may be formed independent of the arm 8, or may be a continuation thereof, preferably the latter. Connected to the lower end of the arm 17, and extending one on each side thereof, are the cords 18, which are those that operate the signal-board 3, and may be formed of chains, wires, or any other devices suitable for the purpose. The cords 18 extend longitudinally with the track for a short distance, and thence pass around the pulleys 19 and proceed out at right angles to the track. This direction is retained for a distance, which will place the cords in about longitudinal alignment with the post 2, whereupon they turn and pass around the pulleys 20, and proceed along the track toward the signal post. When this is reached the cords are respectively connected to the rods 21 of the arm 22. The rods 21 are one for each of the cords 18, and consequently four in number, two for each duplicate trip mechanism. These rods

21 are connected to the arm 22, by passing through an opening therein, and are provided with the nuts 23, one on each side of the arm, whereby the rods may be adjusted.

5 The arm 22 is normally disposed vertically, and passes through a transverse opening in the shaft 24, which is, in turn, journaled in the post 2 and in the short auxiliary post 25, located adjacent thereto. Secured to the
10 shaft 24, and extending at right angles to the arm 22, is the arm 26, which projects out from one side of the shaft, and is connected thereto by means of the nuts 27, arranged one on each side of the shaft and by which the arm 26
15 may be adjusted according to the length desired to give it.

Pivotaly connected to the free end of the arm 26 is the rod 28, which extends up approximately parallel with the post 2, and has
20 its upper end pivotaly connected to the arm 29, of shaft 30. The arm 29 extends transversely from the shaft 30 and has a connection therewith similar to that of the arm 26, viz., by means of nuts 31 arranged one on each
25 side of the shaft. The shaft 30 is revolubly mounted in the upper end of the post 2, and has that part which lies in the bearing rounded, while the ends beyond the post 2 are square in cross-section, and adapted for the recep-
30 tion of the arms 33, by which the signal-board is held in place.

The signal-board 3 consists essentially of two boards arranged at right angles to each other and rigidly joined together at one of
35 their edges, thus forming a substantially trough-shaped signal. The signal is connected to the shaft 30 by means of the metallic arms 33, which are preferably two in number, and provided at their lower ends with the square eyes 34, adapted to fit over the
40 square ends of the shaft 30 and to be thereby rigidly secured to it. The arms 33 extend through passages 35, formed in the cleats 33^a of one board of the signal 3, and extending entirely through the width thereof, the arms
45 being rigidly connected to the cleats by means of the nuts 36, which are arranged one on each side of the board to which the arms 33 are connected, and adjustable thereon. By
50 these means the signal-board is connected to the shaft 30, so as to swing therewith, and its oscillations are limited by the arms 37 and 38, which are rigidly connected to the post 2, and extend out horizontally on each side there-
55 of. These arms 37 and 38 are each provided with the spring-clasps 39, which are adapted to be engaged by the edge of the boards comprising the signal 3, and to hold the same in place, the engaging edges of the boards being
60 provided with the metallic facings 40, which operate to prevent undue wear of the parts.

The two boards of the signal are each provided with word signals, and each board is respectively adapted for a specific signal.
65 Thus, the board farther from the track is provided on each side with the words "All Right," while the companion board is provided with

the word "Danger." Now the signal is always located with one of its boards in a vertical position, so that the words printed thereon
70 will appear to persons crossing from both sides of the track.

The cords of each of the trip mechanisms are so connected to the signal 3 that they will cause the danger board thereof to be displayed
75 when a train moving toward the signal, from either side, strikes the arm 8, and to keep said board so displayed until the train strikes the second arm on its way from the post. Thus the "danger" signal is displayed as soon as
80 the train approaches the crossing and this display continues until the train has passed, whereupon the normal or "all right" signal is returned to a vertical position.

It will be seen that the arm 8 will be oscil-
85 lated on its bearings for a number of times equal to the number of wheels which pass over the rail to which the arm is adjacent, but that this will not change the position of the signal, it being necessary to operate the
90 cords in a reverse direction to do this. It will also be seen that this reverse operation is effected by the engagement of the trip-arm 8 which is arranged down the track from or
95 ahead of the train.

The constant and multiplied oscillations of the trip-arms during the passage of the train are used to operate a warning bell, and this mechanism consists of a cord 41, one for each
100 trip-arm and connected respectively to the lower ends of the arms 17, and extending parallel with the lower of the cords 18, around the pulleys 19 and 20, and thence over the
105 pulleys 42, fixed to the base of the post 2. From this point the cords 41 extend up parallel with the post 2 for a short distance, and is there connected to the rods 43.

The rods 43, in turn, extend up the post 2 and into the cylinders 44, fixed one to each side of the post. Here the rods 43 are each
110 provided with the plates 45 fitting in the cylinders and movable longitudinally therein. Interposed between the lower ends of the cylinders 44, and between the plates 45 are the
115 spiral springs 46, which operate to raise the rods in the cylinder. Above the plates 45 rods 43 extend out and above the cylinders and pass through an eye or keeper 47, fixed one to each side of the post 2.

Pivoted to each side of the posts 2, and projecting rearwardly therefrom, are the clapper
120 levers 48, which are provided with the outwardly-projecting studs 49, adapted to fit into the opening 50 of the rods 43, and to be held therein by the pins 51 passing through the
125 studs. Rearward of the rods 43 the levers 48 extend, and to a point beyond the post 2, where they are each provided with a clapper 52, adapted to operate with the bell 53, rigidly secured to the post by means of the bolt
130 54 passing through the post and connected to the bell.

Owing to the operations of the springs 46 the rods 43 are kept raised, and the clappers

consequently in engagement with the upper sides of the bell. Here they remain until the arms 8 are engaged by the train, whereupon cords 41 will be operated to draw rods 43 downwardly and cause levers 48 to strike similarly and sound the bell by the engagement of clappers 52 therewith. The springs of arm 8, and those of rods 43, will next operate to immediately return the levers 48 and cause the bell to be again sounded; and so the bell mechanism operates during the passage of the train.

It will not be necessary for me to describe in detail the connections between the cords 18 and their several arms and levers, since such matters may be done by any skilled mechanic and are sufficiently illustrated by Fig. 5, where the cords and their attendant parts are shown diagrammatically. It will therefore suffice for me to say that as soon as a train approaches the post 2, the signal 3 will be thrown to display the "danger" board, and that this position will be retained until the train passes the trip ahead, whereupon the signal is thrown to display the "all right" board. Contemporaneously with this operation the bell 53 is operating to warn the persons in the vicinity of the danger, and this operation will also continue until the train has passed the first trip. At this stage the bell will stop, since the engagement of the second trip will only operate to alternately slacken and tighten the cord 41, without ringing the bell.

Having described my invention, what I claim is—

1. A danger signal for railways, and consisting of two sections secured to each other at their edges and arranged at right angles to each other, said signal being adapted to always have one section in a vertical position

and to oscillate to change the positions of said sections, and a system of trips and operating cords adapted to be engaged by the train and connected to the signal so as to effect the oscillation aforesaid, substantially as described.

2. A bell alarm signal for railways, and comprising the combination with a post or standard, of a bell rigidly secured thereto, a clapper rod pivoted to the post or standard and provided with a stud, a cylindrical case fixed to the post or standard, a rod passing therethrough and pivotally connected to the stud on the clapper rod, a spring within the cylindrical casing and connected to the rod thereof, whereby the rod is given a tendency which will cause the clapper to normally engage the bell, and means for reciprocating the rod, substantially as described.

3. A danger signal, consisting of a post arising from the bed of the track and provided with two oppositely-projecting arms at its upper end, a rock-shaft journaled in the post and below the upper end thereof, an arm fixed to each end of the rock-shaft, a cleat through which each arm passes, and two signal boards rigidly secured to each other at their edges and extending at right angles to each other, one of said boards being fixed to the cleats of the arms whereby they are connected to the rock-shaft and whereby they may swing therewith, substantially as described.

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

ORLAN T. WOOD.

Witnesses:

JOHN FRY,
W. A. HARTLEY.