(No Model.)

E. R. ROSWELL & G. H. CONGER.

RAILWAY SIGNAL.

No. 343,070. Patented June 1, 1886.

FIG. I

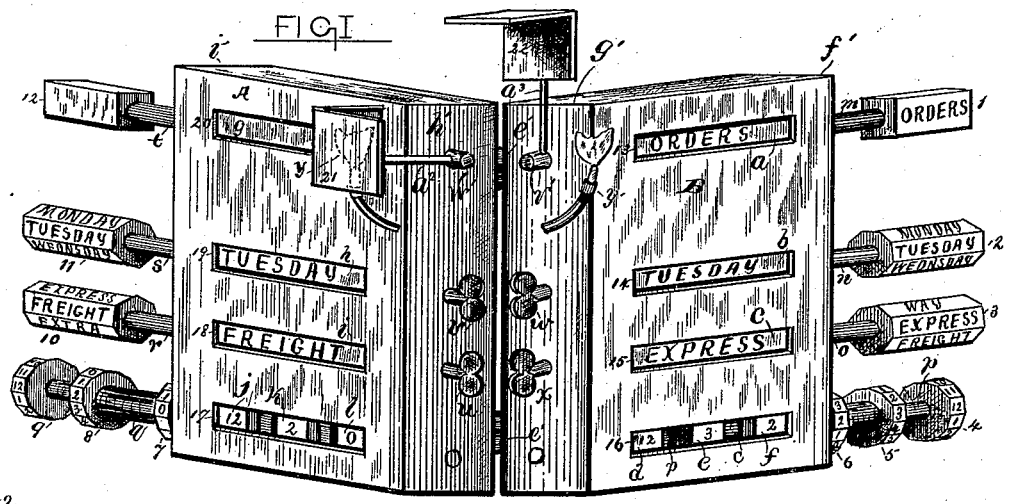


FIG. II

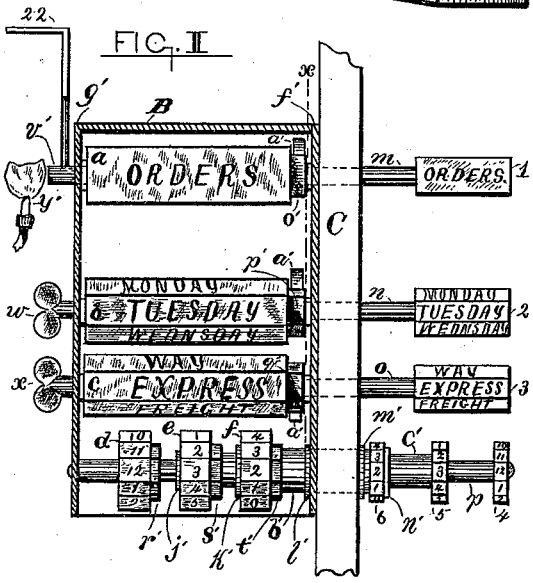


FIG. III

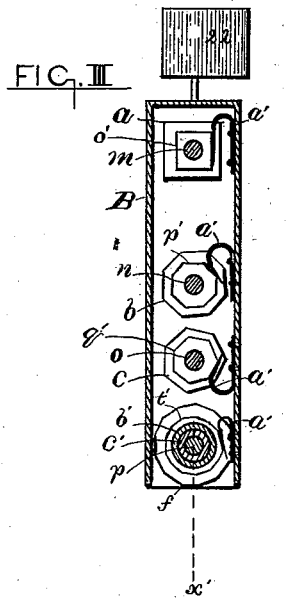


FIG. IV.

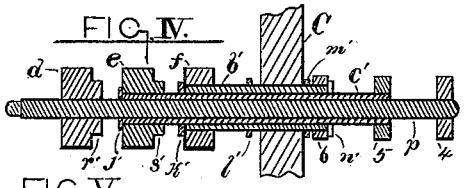
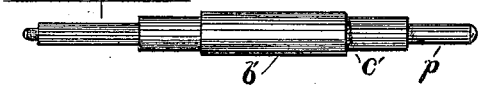


FIG. V.



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UNITED STATES PATENT OFFICE.

ELISHA R. ROSWELL AND GEORGE H. CONGER, OF STRATFORD, CONN.

RAILWAY-SIGNAL.

SPECIFICATION forming part of Letters Patent No. 343,070, dated June 1, 1886.

Application filed March 15, 1886. Serial No. 195,364. (No model.)

To all whom it may concern:

Be it known that we, ELISHA R. ROSWELL and GEORGE H. CONGER, citizens of the United States, residing at Stratford, in the county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in Railway-Signals; and we do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

Our invention relates to railway-signals.

The object of our invention is to improve the manner of operating the signals at railway-stations, which indicate to the engineer of an incoming train the character and time of departure of the train preceding him.

Our invention consists in arranging the various signals on the faces of a series of independent drums adapted to be revolved, so that any desired signal may be brought to view by a series of sleeves or hollow shafts, one within the other, to which certain of the drums are attached, so that said drums may be turned independently without disturbing others in the same line.

To more clearly understand our invention, reference is had to the drawings, in which Figure I represents a view in perspective of two frames or boxes, each containing a complete set of signals. Fig. II represents a front elevation and sectional view of one of the signal-frames. Fig. III represents a sectional view through dotted line *x* of Fig. II. Figs. IV and V represent detail views.

Its construction and operation are a follows:

A B are the frames containing the signals; *a b c d e f g h i j k l*, signal-drums within the frames; 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, and 12, duplicate drums on the outside of the signal-frames; *m n o p q r s t*, shafts to which said drums are attached; *u v w x*, thumb-nuts on the ends of said shafts *n o r s*; 13 14 15 16 17 18 19 20, openings in the frames through which the signals may be seen; *y y'*, lights; 21 22, shades for same; *b' c'*, sleeves or hollow shafts; C, section of wall.

At railway-stations, and situated at one end of the platform, is a set of signals to indicate to the engineer of an incoming train the exact time of departure and also the character of the train preceding him. These signals are slips or tablets of wood having the necessary signals thereon. It requires at least five of these tablets to complete a set, four of which have to be changed for every train. This device is cumbersome, taking up considerable space, besides requiring the attention of an extra man to operate it, and whose duty it is, when the signals are set, to report the same immediately to the telegraph-operator.

In our device the signals are arranged about the circumference of a cylinder or drum adapted to be revolved. These drums are placed in a frame or box near the depot and operated from the inside, preferably by the telegraph-operator.

In Fig. I is shown a set of signals consisting of the two frames A B, one an exact counterpart of the other, and hinged at *e' e'*. This matter of hinging will serve to prevent the misplacement of the two sections, enabling them to be placed at the proper angle, so that the signals can be readily seen by the engineers of trains approaching from opposite directions. The drums *a b c g h i* are rigidly attached to the shafts on which they are placed. These shafts are journaled in the sides *f' g' h' i'* of the frames A B. The front elevation and sectional view of frame B, as seen in Fig. II, which is a counterpart of the other frame, A, will fully show the construction of the device. The signal-drums may be plain cylinders instead of the many-sided figures, as shown; but it is thought by placing the signals on a flat surface they can be seen more readily.

a is a square drum, having on one of its faces the word "Orders," the other faces being blank, *b* having sides corresponding to the days of the week and one blank face, *c*, having a sufficient number of sides to represent the character of all trains liable to run over the road, and having one blank face.

d is a drum whose sides contain figures ranging from 1 to 12, representing the hours, having also one face left blank.

e is a like drum, containing figures from 0 to 5; *f*, a drum containing figures from 0 to 9.

As the drum *d* would contain thirteen faces, and the drums *e f* are the same size, so that their faces may be on a line with *d*, *e* and *f*, therefore having a less number of figures and as many sides as *d*, would have sufficient blank space for the purpose, which will hereinafter be more fully described.

The frames containing the signals are placed outside the telegraph-operator's office, and the shafts on which the drums are situated project through the wall, as represented by C, and into the office. On the said shafts, within the building, are placed duplicate drums of those on the outside, having on their faces the same characters. Thus the operator in setting the signals will place the drums on the inside as they should appear in the signal-boxes.

The drums *d e f* are placed on the shaft *p* and hollow shafts or sleeves *c' b'*, a better view of which may be seen at Figs. IV and V, Fig. IV being a sectional view of shaft, sleeves, and drums through dotted line *x'* of Fig. III. The sleeve *c'* is supported on shaft *p*, turning freely thereon. On one end of said sleeve, and within the signal-box, is placed the drum *e*. On the other end, and within the office, is the drum 5, the sleeve *b'* loosely fitting sleeve *c'*, and having on its extreme ends the drums *f* and 6. The collars *j' k' l' m' n'* serve to keep said sleeves in position and prevent end-play. Turning drum 4 will operate drum *d*, 5 will operate *e*, and 6 will move *f*, so that any one in the line may be turned without disturbing any of the others. This independent movement of said drums is necessary to set the proper combination of figures to denote the hour and minute.

The two frames A and B form the sides of an angle more or less acute, the point at which they are hinged forming the apex and projecting toward the track. The base of said angle, which is open, will face the station. The signal-frames may be set against the station-wall or at any desirable distance therefrom.

The angle at which the frames A and B are placed will depend somewhat on the relative position of the station and track. If the station is situated at a curve on the road, the angle of said frames would be more acute than if the road and station were parallel, the object being to set them in such positions in relation to the track that they may be readily seen by the engineers of trains approaching from opposite directions. For instance, let it be supposed a train is going north, then the face of signal-frame A is the only one seen by the engineer, and he will observe that the last north-bound train was a freight, and left the station at 12.20. Likewise the engineer of a south-bound train will see by the signals set in frame B that the train he is following is an express, and left that station at 12.32.

It is of the greatest importance to the engineer about to leave the station to know the character as well as the time of departure of the train he is following. If it is a freight and his a passenger, and the time short between the trains, he will run with extreme caution.

o' p' q' r' s' t', as seen in Figs. II and III, are reduced portions of the drums *a b c d e f*, and having the same number of faces as the main body of the drum. Against these smaller faces the springs *a'* act and operate as a brake to hold the signals in the position in which they may be placed. The thumb-nuts *u v w x* on the ends of shafts *n o r s* and outside of the frames A B enable the operator to set the signals on said shafts from the outside should he happen to be on the platform when they required changing. At such times the drums *d e f*, having figures thereon, can be manipulated from beneath the box or frame, the same being open at the bottom.

The upper signals—viz., "Orders"—(see Fig. I) are placed on one of the faces of the rectangular drums *a g*. These are intended as special signals. For instance, the telegraph-operator at a certain station receives notice from headquarters to stop and hold a certain train. This is what is termed in railroad parlance "orders." To stop the train, the operator, if in the day-time, places over the track a red flag, and at night a red lantern. These signals at all times and under all circumstances mean "stop," and no engineer would dare pass such a signal, and he must also stop before he reaches it. He cannot tell whether the signals indicate danger, an accident, or simply orders. It is therefore the duty of the conductor in such a case to walk the entire length of his train to the telegraph-office before he can learn the true state of affairs. If the stoppage were simply for orders, there could be no objection to the train moving up to the station; but the only means known, or at least used, is the red flag or light. It will be seen that in the case of orders it causes an unnecessary delay to the train and extra trouble to the conductor.

With our improvement, when necessary to stop a train for the purpose, as above described, the upper signal, *a*, is set in the same manner as the others, and the engineer, knowing that nothing serious has occurred to stop his train, as the red flag or light would seem to indicate, continues on, so that the conductor may step from his car into the telegraph-office. When this signal is not required, the drum is turned and presents one of its blank faces, as seen in frame A, Fig. I. At night lights *y y'* are used to throw a light on the upper signals. Attached to the ends *v' w'* of the shafts *m t*, which project through frames A B, are the rods a^2 a^3, supporting the shades 21 and 22. These shades are secured firmly to shafts *m* and *t*. Thus, when the drum *g* (see frame A, Fig. I) is turned so as to present a blank face, the shade 21 by the operation will be carried down and hide the light. Bringing the signal to view, as shown in frame B, also carries shade 22 up and out of the way, permitting the light to shine fully on said signal. The lights *y y'* are

intended expressly for the upper signals. A separate light, although not shown, will be provided for the signals below. Providing the upper signals with an independent light enables them to be more readily seen by the engineer, and when the signals are removed and the lights obscured it will leave the upper portion of the frame in comparative darkness.

We do not wish to be understood as claiming, broadly, a drum adapted to be revolved, and having certain characters or figures thereon. We are aware that such a device is not new.

What, therefore, we claim is—

1. In railway-signals, a frame or box holding a series of drums arranged to be revolved, and on which the proper characters and figures comprising the signals are placed, the shafts on which said drums are situated extending outward from said frame or box, and having on such outward projections a fac-simile of the signals within the frame, by means of which the signals within said frame are properly set, substantially as set forth.

2. The arrangement, as shown, of the frames A B, each a counterpart of the other, each having a series of drums arranged to be revolved, and having on their faces the proper characters and figures, the shafts on which said drums are placed projecting outside of said frames, and having thereon duplicate characters and figures corresponding to those within the frames, said frames hinged or connected together so that their faces may be placed at the proper angle, substantially as described.

3. The combination, as set forth, of a shaft supporting a hollow tube or sleeve, or a series of sleeves, each individual sleeve and shaft having drums securely attached thereto with the proper characters and figures thereon, said sleeves and shafts arranged to revolve freely over each other, so that any one of the several drums may be revolved without disturbing the others.

4. The combination, as described, of frame B, revolving drum *b*, expressing the days, drum *c*, the character of the trains, drums *d e f*, having figures thereon, shaft *p*, and sleeves *b' c'* supporting said drums, the several shafts and sleeves projecting without the frame, and having thereon duplicate characters and figures of those on said drums within the frame.

5. The combination, as set forth, of the frame B, drum *a*, and shaft *m*, said drum having thereon the word "Orders," or other suitable character or signal for stopping a train, said shaft projecting without the frame, and having thereon a duplicate character or signal of that within the frame.

6. The combination of frame B, drum *a*, shaft *m*, said shaft projecting without the frame, and having thereon drum 1, and a shade or hood rigidly attached to said shaft, and arranged to turn with the same so as to hide or obscure the light, all substantially as described, and for the purpose set forth.

In testimony whereof we affix our signatures in presence of two witnesses.

ELISHA R. ROSWELL.
GEORGE H. CONGER.

Witnesses:
PINKNEY LESSER,
SIGMUND LOEWITH.