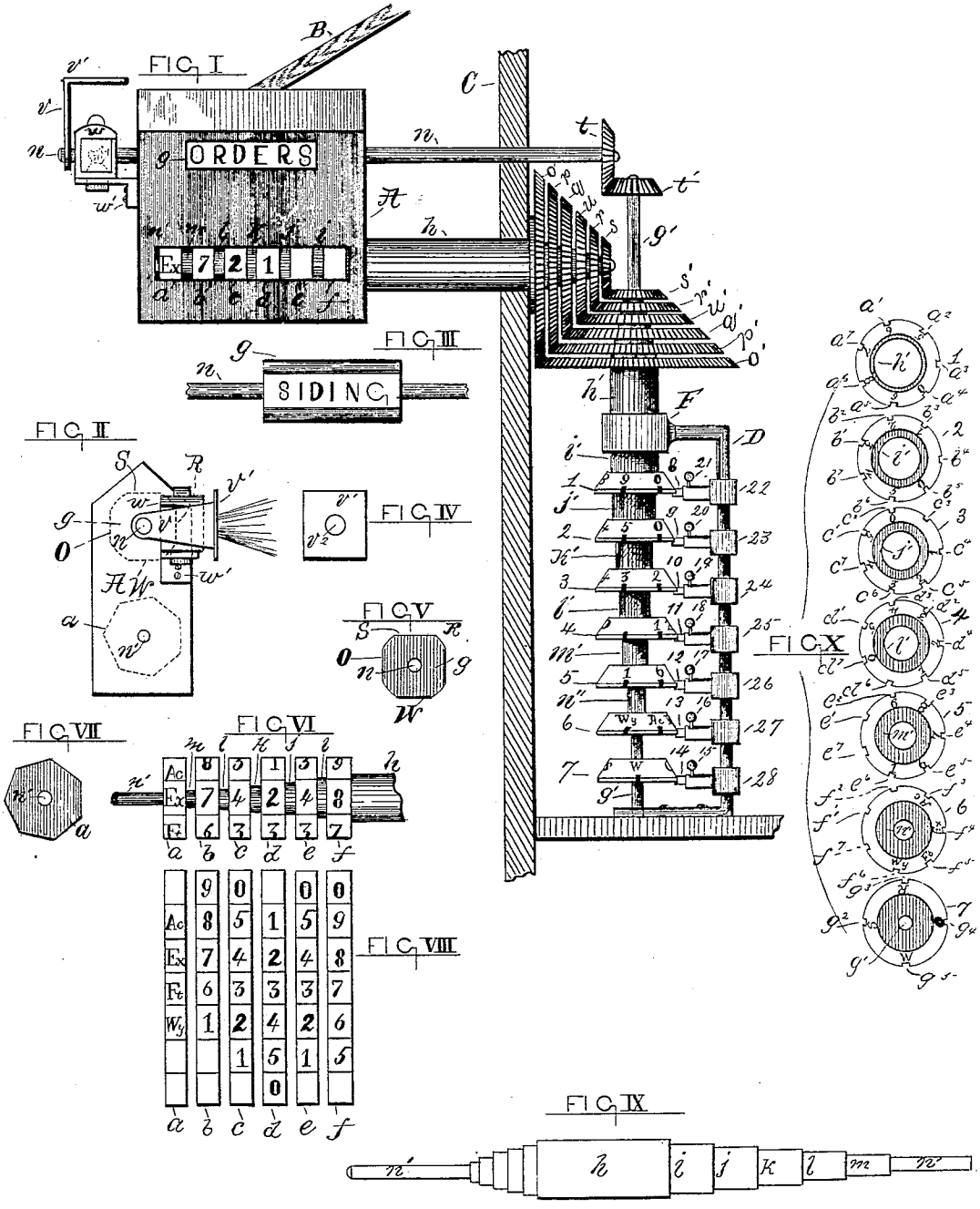
(No Model.)

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

RAILWAY SIGNAL.

No. 391,919. Patented Oct. 30, 1888.



Witnesses.

Sylvester V. Nichols.

George D. Phillips.

Inventors.

Elisha R. Roswell,

George H. Conger.

By Geo. D. Phillips

N. PETERS. Photo-Lithographer, Washington, D. C.

UNITED STATES PATENT OFFICE.

ELISHA R. ROSWELL, OF STRATFORD, CONNECTICUT, AND GEORGE H. CONGER, OF CHAMOIS, MISSOURI.

RAILWAY-SIGNAL.

SPECIFICATION forming part of Letters Patent No. 391,919, dated October 30, 1888.

Application filed July 14, 1887. Serial No. 244,254. (No model.)

To all whom it may concern:

Be it known that we, ELISHA R. ROSWELL, of Stratford, in the county of Fairfield and State of Connecticut, and GEORGE H. CONGER, of Chamois, in the county of Osage and State of Missouri, citizens of the United States, 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, also to establish between the engineer and station-agent a code of signals, saving thereby valuable time to a train approaching the station.

Our invention is an improvement on the patent granted to us June 1, 1886, No. 343,070; and it consists in the manner of operating the signals by the agent within the station.

It further consists in adopting a combination or table of figures arranged so as to represent any interval or minute portion of time, thereby greatly reducing the size of the rolls on which said figures are placed.

To fully comprehend our invention, reference is had to the drawings, and to the figures and letters of reference thereon, in which—

Figure 1 represents a side elevation of the signal frame and mechanism. Fig. 2 represents an end elevation of the signal-frame. Figs. 3, 4, 5, 6, 7, 8, 9, and 10 represent various detail views.

Its operation and construction are as follows:

A is the frame in which the several signal drums or rolls are placed. B is a section of the roof of the station, to which said frame is attached; C, the station-wall; *a b c d e f g*, signal-drums; *h i j k l m n*, shafts and hollow sleeves on which said drums are placed; *o p q u r s t o' p' q' u' r' s' t'*, gears to operate said drums; 1 2 3 4 5 6 7, dials by which said drums are properly set; 8 9 10 11 12 13 14, spring-stops to engage with said dials. The frame A is placed, as shown, at the outer edge of the platform and attached to the roof B. (See Fig. 1.) The shaft *n*, on which the order-roll *g* is placed, projects through the station-wall C and into the office, and has on its end the gear *t*.

The shaft *n'* (see Fig. 9) represents a shaft either solid or hollow, and mounted on said shaft is the hollow tube or sleeve *m*, and in like manner are arranged and mounted, one over the other, the several hollow tubes or sleeves *h i j k l*, and arranged to move freely thereon. On shaft *n'*, within frame A, (see Figs. 1 and 6,) is mounted securely the drum *a*, denoting the character of the trains. On shafts *i j k l m* are also securely mounted the time rolls or drums *b c d e f*. These several sleeves also project, as shown, through the station-wall, and on their several ends are mounted the gears *o p q u r s t*.

Within the office *g' h' i' j' k' l' m' n''* represent a series of hollow tubes or sleeves and a duplicate of those without. On the upper end of shaft *g'* is mounted the gear *t'*, engaging with gear *t* of shaft *n*. On the upper end of the several tubes or sleeves *h' i' j' k' l' m' n''* are mounted the gears *o' p' q' u' r' s'*. Said gears engage with gears *o p q u r s*. On the lower end of shafts or sleeves *g' h' i' j' k' l' m' n''* are mounted, respectively, the dials 1 2 3 4 5 6 7. On these several dials are marked a duplicate of the characters and figures represented on the several drums or rolls within the frame A and without the station. Around the periphery and opposite each character and figure on said dials (see Fig. 10) are the notches $a'^{1\,2\,3\,4\,5\,6\,7}$ $b'^{1\,2\,3\,4\,5\,6\,7}$ $c'^{1\,2\,3\,4\,5\,6\,7}$ $d'^{1\,2\,3\,4\,5\,6\,7}$ $e'^{1\,2\,3\,4\,5\,6\,7}$ $f'^{1\,2\,3\,4\,5\,6\,7}$ $g'^{2\,3\,4\,5}$. The spring-pins 8 9 10 11 12 13 14 engage with said notches, locking them firmly in place. The levers 15 16 17 18 19 20 21, together with said spring-pins, are secured by their frames 22 23 24 25 26 27 28 to the support D.

The shaft *n* (see Fig. 1) projects through frame A, and on such projecting end is firmly secured the shade *v*, having the red-glass face *v'* and the hole v^2 in the center. The lantern *w* is secured (see Figs. 1 and 2) to frame A by the bracket *w'*. The drum *g* has four sides.

(See Fig. 5.) One of these sides has painted thereon (see Fig. 3) the word "Siding," another face (see Fig. 1) having the word "Orders" thereon. One of the other sides is supposed to be painted white and the other red.

The drums *a b c d e f* (see Figs. 6 and 7) have each seven sides. The drum *a* will represent on its several faces the character of the different trains. The drums *b c d e f* each has a series of figures which will form any combination required, so that it is possible to represent the smallest fraction of time. In Fig. 8 this combination is better illustrated, said figure representing a plan view of the periphery of the several drums *a b c d e f*. On drum *b* are the figures 1 6 7 8 9 and two blank sides.

On drums *c d e* are the figures 1 2 3 4 5 0 and one blank face. On drum *f* are the figures 5 6 7 8 9 0 and one blank face. One great advantage obtained by this peculiar arrangement of figures as represented on the several drums is that a much smaller drum can be used than would be required for drums having ten sides and figures thereon ranging from 0 to 9. When the operator wishes to set one of the signals in frame A—for instance, the top or order drum, *g*—he will disengage spring-pin 14 from the notch in dial 7, (see Fig. 1,) and turn said dial (which is secured to shaft *g*, and having on its upper end gear *t'*, engaging with gear *t* of shaft *n*) until a fac-simile of the character thereon representing the one to be shown in frame A is brought with its notch to the spring-pin 14. In the figure the letter O on the dial represents the word "Orders," and in like manner the other sides of drum *g* are shown as required.

The dial 6, having the character of the several trains thereon, is secured to the lower end of sleeve *n''*. On the upper end of said sleeve is the gear *s'*, in contact with gear *s* of the horizontal sleeve *m*. On the opposite end of said sleeve in frame A is secured drum *a*. By turning dial 6 the character of any train may be brought to view in frame A. In like manner the time of departure of any train is recorded in frame A by manipulating the dials 1 2 3 4 5 in the office. The word "Orders" signifies to the engineer of an approaching train that certain orders await the conductor of his train, and, instead of stopping before reaching said station, and at some distance therefrom, as formerly the case when the red or danger signal—the only one known or used for such purpose—was employed, he simply brings his train up to the station without delay. The word "Siding" is also sufficiently large to be readily seen at a distance. Therefore when this signal is set the engineer will understand it as an order to side-track his train until a train that is due has passed. In this case the train to be side-tracked will be brought to a stop before reaching the switch, and a brakeman of said train will open the switch and the train will be side-tracked without interferring with or disturbing any one at the station.

The shade *v* (see Figs. 1 and 2) is set on the red or danger face of drum *g*—*i. e.*, when said red or danger face of said roll or drum is shown the face *v'* of the shade (see Fig. 2) will be brought in front of the light. The strong white uninterrupted light from the center *v''*, combined with the light passing through the red face *v'*, will show the danger-signal at a great distance. When the shaft *n* is turned to present other sides to view, the shade *v* will revolve with it, and is only brought to the front, as before stated, when the red or danger face of the drum is shown.

Although but one signal-frame and mechanism to operate it is shown representing a view from one direction only, when employed on railroads they are used in duplicate, so that signals are shown in either direction, but each set will be independent of the other.

By the simple arrangement of the hollow tubes or sleeves one within the other it is possible to present to view and operate a great variety and combination of signals, which could not otherwise be done without complicated mechanism, and the signal box or frame may also be operated at a distance.

It is evident that some changes could be effected in the construction and arrangement of our device, the manner in which the dials are held in place, the exact construction, and arrangement of the dials. Other known means to transmit power from the dials to the drums than those shown could be employed. The drum *g*, showing the words "Orders" or "Siding" or other characters or designs thereon that shall convey or express their meaning may be used together or singly; but all these are but mechanical changes and can be substituted for the devices shown without departing from the spirit of our invention.

Having thus described our invention, what, therefore, we claim as new, and desire to secure by Letters Patent, is—

1. In railway or other signals, a central tube or shaft over which is placed a second tube or sleeve or a series of sleeves, each individual sleeve arranged to move independent of the others, one end of each of said sleeves having secured thereon a drum or roll, said drums having on their faces certain characters or figures, in combination with a second series of tubes or sleeves operating in like manner to those of the first series, and means provided to connect them with the first series, and means provided to operate each individual sleeve, so that any one of the drums or signals of the first series may be moved independent of the others, substantially as shown and set forth.

2. In railway or other signals, a frame or other suitable device for holding a signal or notice, a central tube or shaft over which is placed a second tube or sleeve or a series of such sleeves arranged one within the other, one end of each of said sleeves having secured thereon a drum or roll having on its faces characters or figures, the opposite end of said

sleeves outside of said frame being provided with a series of gears, in combination with a second series of tubes or sleeves one within the other and having on one end of each of said sleeves dials, said dials having on their faces certain characters or figures to correspond with the signal-drums within the frame, means provided so that said dials may be held in place, and a series of gears on the opposite end of said sleeves to engage with the gears on the first series of sleeves projecting from the signal-frame, in the manner and for the purpose as set forth.

3. The drums *b c d e f*, each of said drums having on its faces a series of numeral figures, as follows: on drum *b* figures 1 6 7 8 9, drums *c d e*, figures 1 2 3 4 5 0, and drum *f*, figures 5 6 7 8 9 0, each of said drums having one or more blank faces, said drums arranged to form any combination of figures required, in combination with drum *a*, having on its several faces certain characters showing their relation with said numbered drums, as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

ELISHA R. ROSWELL.

Witnesses:
PHILO H. PRINDLE,
JACOB B. KLEIN.

In testimony whereof I affix my signature in presence of two witnesses.

GEORGE H. CONGER.

Witnesses:
WILLIAM H. BURCHARD,
C. R. MARQUAND.