July 14, 1925. 1,545,606

H. W. RYDER

SIGNAL

Filed Dec. 28, 1923

Fig. 1

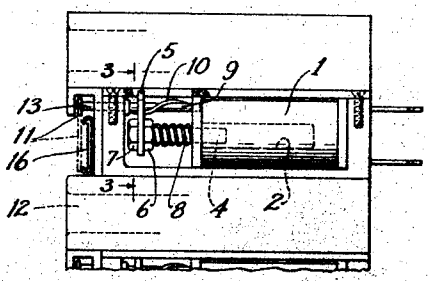


Fig. 2

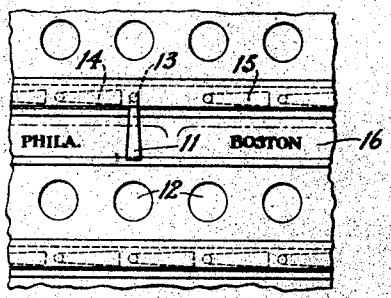
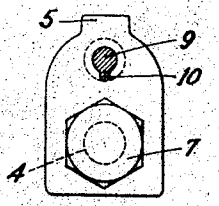


Fig. 3



Inventor:
Harold W. Ryder,
by E. W. Adams Atty

Patented July 14, 1925. 1,545,606

UNITED STATES PATENT OFFICE.

HAROLD W. RYDER, OF CICERO, ILLINOIS, ASSIGNOR TO WESTERN ELECTRIC COMPANY, INCORPORATED, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

SIGNAL.

Application filed December 28, 1923. Serial No. 683,107.

To all whom it may concern:

Be it known that I, HAROLD W. RYDER, a citizen of the United States of America, residing at Cicero, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Signals, of which the following is a full, clear, concise, and exact description.

This invention relates to signals and contemplates particularly a method of signaling and a device for carrying out the method.

Certain signaling devices heretofore used in telephone systems have consisted of a target or indicator of different colors, displaying one color if the associated line was idle and the other if the line was busy. Another type of signaling device heretofore used is provided with an indicator which appears if the line is busy and disappears from sight if the line is idle.

In all these forms of signals the device itself occupies considerable space on the face of the telephone switchboard and in many of them the attendant frequently mistakes the signal displayed and connects with a busy line instead of an idle one.

One object of this invention is the conserving of space in the face of the telephone switchboard.

Another object of this invention is a method of signaling which eliminates errors similar to those heretofore committed due to the mistaking of the particular signal supported to be displayed.

In accordance with this invention a signaling device is so arranged that it is concealed from view when the line with which it is associated is idle, but appears fully in view pointing to the jack associated with the line when the line is busy. The device is so constructed that it may be placed behind the designation strip, thus saving the space heretofore occupied by the signal itself.

It is believed that the invention and its general application will be more readily understood from the drawings (Figs. 1, 2 and 3) and the specification hereto annexed.

In the drawing, Fig. 1 represents a side view of the device partly in section as it would appear if mounted in the switchboard line-up. Fig. 2 represents a view of the face of a section of a switchboard showing the position occupied by the semaphores of a number of the devices, and their relation to the associated jacks and other switchboard equipment. Fig. 3 shows a front view 3—3 of Fig. 1 illustrating in greater detail certain features of the invention.

The coil 1 is a solenoid with a plunger 4 free to move in the air gap 2 when the solenoid is energized. Fastened to the plunger 4 by the nuts 6 and 7 is a plate 5 through which passes a circular pin or rod 9 to which is permanently secured a wire 10 the rod and wire forming a worm which passes through the face of the plate 5. The plate 5 may be of magnetic or non-magnetic material. A coil spring 8 is tensioned when the plunger 4 is drawn into the air gap 2 by the action of the solenoid, and when the solenoid is deenergized the energy stored in the coiled spring 8 tends to compel the plunger 4 carrying the plate 5 to return to its normal position.

The movement of the plate 5 causes it to slide back and forth along the rod 9 and the wire 10. The rod 9 is free to revolve and as the wire 10 always passes through the plate 5 at a fixed point, the rod 9 is forced to rotate in order to permit the plunger 4 carrying the plate 5 to travel the proper distance in the air gap 2.

The direction of rotation of the rod 9 when the plunger 4 is drawn inwards is clockwise, and conversely when the plunger is released and forced outwards by the action of the spring 8, the direction of rotation is counterclockwise.

The semaphore 11 is secured at 13 to the rod 9. Hence, when the rod 9 rotates the semaphore 11 rotates in unison. The rod 9 is arranged to rotate through an arc of a quarter of a circle. Hence, the semaphore 11 likewise travels through an arc of 90 degrees.

In the normal position the semaphore is concealed from view and occupies a horizontal position indicating that the line is idle, as shown by the semaphores in dotted lines at 14 and 15, but when operated it occupies a position at right angles to the designation strip 16 and pointing to the associated line jack as shown by the semaphore 11 Fig. 2 which is indicating that the line associated with the jack 12 is busy.

The semaphore 11 is associated with and

is individual to the jack 12 situated immediately underneath it, which jack is associated with a particular circuit. In this case (Fig. 2) a Philadelphia trunk circuit is used, hence, the attendant may readily discern whether or not the particular circuit is available even by the most casual glance. Hence, the probability of error due to mistaking the signal is reduced to an almost negligible point.

The signal is so constructed that it may be placed behind the designation strip 16, only the rod 9 to which the semaphore 11 is secured protruding above the designation strip. It is evident that with the designation strip and signal arranged in this manner the space formerly occupied by the signal is saved, and as the jack strip, the designation strip and the strip of signals formerly used are all of approximately the same height, the saving of space effected in the face of the switchboard by placing the signal behind the designation strip in the manner disclosed herein, is approximately 50%.

What is claimed is:

1. A combination of a signal, a designation strip and a jack, said signal including a semaphore concealed when the signal is normal and moved when the signal is operated so that it occupies a readily viewable position across the face of the designation strip and pointing to the jack, and means for moving the semaphore.

2. In combination with a switchboard, a designation strip, a jack, a signal comprising an electromagnet and a semaphore concealed when said signal is normal, means for operating said signal so that said semaphore occupies a readily visible position across the face of said designation strip and pointing to said jack, said signal and said designation strip being so positioned that the superficial area occupied thereby in the face of the switchboard substantially coincide.

In witness whereof, I hereunto subscribe my name this 22nd day of December, A. D., 1923.

HAROLD W. RYDER.