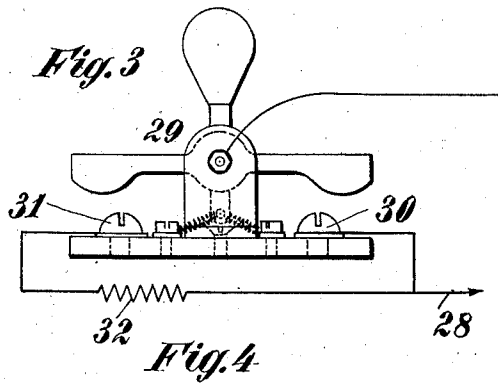
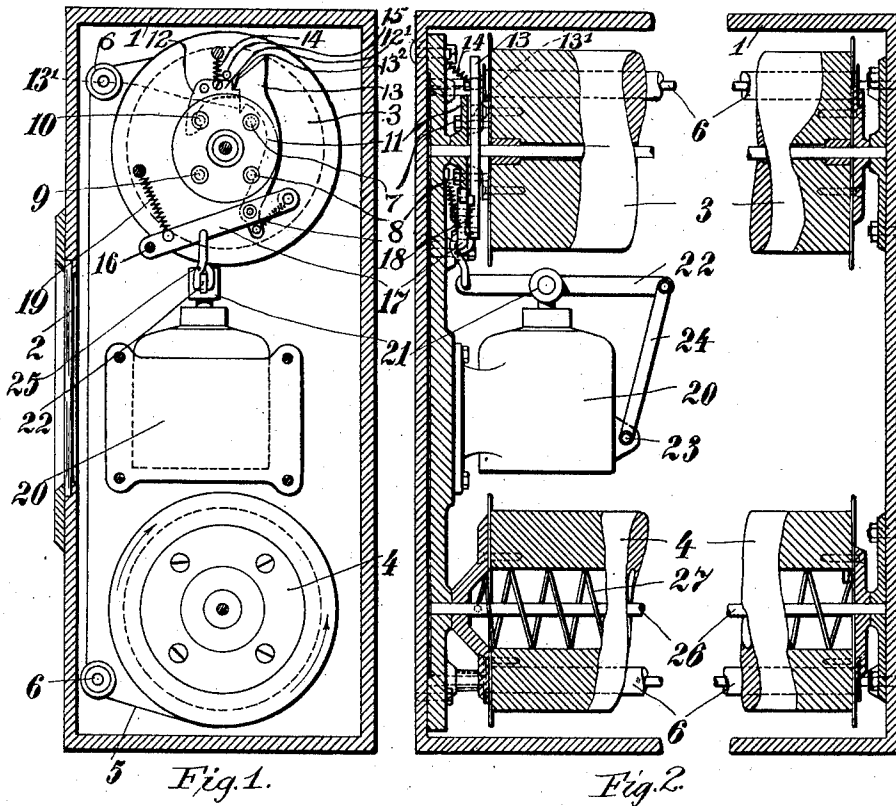


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ELECTRICAL APPARATUS FOR OPTIC SIGNALS.
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1,003,183.

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ELECTRICAL APPARATUS FOR OPTIC SIGNALS.

1,003,183.

Specification of Letters Patent.

Patented Sept. 12, 1911.

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To all whom it may concern:

Be it known that I, CARL JOHANN HERBECK, a citizen of Switzerland, residing at Berlin, Germany, have invented certain new and useful Improvements in Electrical Apparatus for Optic Signals, of which the following is a specification.

This invention relates to an apparatus for the alternating signaling of written or ornamental signs; this apparatus can be used for various purposes, for example for displaying advertisements, for railway signaling, with luminous pictures and the like.

The apparatus essentially consists of an electro-magnet connected with a control mechanism of a bobbin; the armature of the electro-magnet is submitted to a tractional effort of either constant or varying strength according to whether the bobbins are to be transported in one direction only or alternately in a certain direction and then in the opposite direction. The bobbins which are not connected with the electro-magnet are connected with an elastic intermediary member, such as spiral spring or the like in such a manner that they put the spring under tension when they revolve in the direction of unwinding, so that they are automatically returned to their original position through the influence of said spring as soon as the control mechanism is released. The switch which forms part of the electro-magnet, is a double switch and controls simultaneously several devices, the electric connections between the different devices being effected by earth connection of one pole of the source of electricity and by only one copper wire for example.

In the accompanying drawing the improved apparatus is shown in its application as a station indicator for tramways, railways, and steamers and the like.

Figure 1 is a side view of the apparatus, the casing being shown in section; Fig. 2 is a front view of Fig. 1 partly in section; Fig. 3 represents the switch with its electric connections; Fig. 4 is a diagram of the electric connections for several apparatuses in series with double switch and single source of electricity.

With electric tramways the electric main serves as the source of electricity; with vehicles which are not electric an accumulator battery has to be provided.

The apparatus consists of the casing 1 with a window 2 in the front wall. In the

casing two rollers 3, 4 are revolvably mounted on which the ends of a band 5 of tissue, transparent paper or the like are fixed. Upon this band the optic signs are marked. The band is conducted by the band pulleys 6 behind the window 2. The receiving roller 3 has studs 7, 8, 9, 10 at one of its sides, maintained in position by a disk 11 mounted upon the axle of the roller 3. A pawl 12 engages always with one of said studs and a locking lever 13 secures the pawl in its position. The pawl 12 consists of an angle lever to the rear arm 12' of which a pull spring 14 is attached, the other end of which is fixed to the wall of the casing 1. The movement of the pawl 12 is limited by a stop 15 fixed upon the wall of the casing. The locking lever 13 has two arms and its lower end is pivotally connected with a lever 17 pivoted at 16, a pull spring 18 serving for pulling the lever 17 and consequently the two armed locking lever 13 so that its upper hook-shaped end bears upon the pawl 12. The upper end of the locking lever 13 has two notches 13' and 13'' of which the first is destined to engage with one of the studs of the receiving roller, the second one engaging with the rear end of the pawl 12 so that if the lever 13 is pulled down the pawl 12 is turned. A traction spring 19 fixed with one end to the casing 1 maintains the lever 17 in lifted position.

In the casing 1 an electro-magnet 20 is located whose armature 21 carries a two armed lever 22. One end of said lever 22 is hingedly connected by means of a hook 25 with the lever 17 and its other end is hinged to the upper end of a one armed lever 24 whose other end can turn around the pivot 23 fixed to an extension of the electro-magnet 20.

Upon the axle 26 of the roller 4 a spiral spring 27 is mounted, the one end of which is fixed to said axle, its other end being fixed to said roller 4 so that, if the roller revolves the spring 27 is put under tension to be unwound as soon as the roller turns in opposite direction. The spring 27 could evidently be mounted at some other convenient place and it could be of other construction.

The electro-magnet is directly or indirectly connected with the conducting wire 28 which is to be connected with the source of electricity by means of the double switch 29. The conducting wire 28 is directly con-

connected with the terminal 30, a resistance 32 being interposed between it and the terminal 31, so that the electro-magnet is supplied in one direction with a strong current and in the other direction with a feeble current.

If several devices have to be controlled by one switch, they can be connected the one with the others or in series with the conducting wire 28 as shown for example in Fig. 4.

According to the tension of the current the size of the winding of the electro-magnet varies, said magnet being preferably of such a type that the electric resistance is reduced to the minimum. This construction permits to reduce the quantity of current consumed to that which is generally required for feeding an ordinary ten candle incandescent electric lamp.

The apparatus operates as follows:—Suppose the car runs in a forward direction—the switch lever 29 is turned so that it is in contact with the terminal 30. The full amount of current is thus sent through all the apparatuses which are in connection and it produces in the electro-magnet 20 an effort which attracts the armature. This effort is further communicated through the pivot 21 to the lever 22 and through the intermediary of the link 25 to the lever 17 so that the lever 13 is pulled into its lowest position. The lever 17 pivoting around the axle 16 is returned to its normal position by the action of the spring 19 as soon as the current is shut off the electro-magnet. When the levers 17 and 13 descend the catch 12 is released from pin 10 before the nose 13' engages pin 7 so that the spool is prevented from moving backward as the pin 7 butts against the nose 13'. When the lever 13 continues its descending motion, the pawl 12 is released and pulled by the spring 14 into the proper position to be arrested by the stop 15. When the nose 13' has brought the stud 7 to the position formerly occupied by the stud 8, the roller 3 has completed a fourth of a revolution, and the band upon which the names of the stations and stopping places are marked has been advanced so that the name of the next station appears behind the window. The roller 4 in turning has put under tension the spring 27 fixed on the axle 26 so that the band is kept properly stretched. At the same time the stud 9 has arrived at the position formerly occupied by the stud 10 so that when the current is shut off the electro-magnet, and when the lever 13 under the action of the pull spring 19 jumps back to its highest position, the pawl 12 engages with the stud 9 and locks the roller against backward motion. In order to obtain a secure guiding of the lever 13 the upper end of the same is rounded off and pointed. As soon as another station has been reached, the same

operation takes place. If the car moves in the opposite direction, that is to say if the band has to be moved in opposite direction, the switch is turned so that it comes in contact with the terminal 31. The current, before arriving at the electro-magnet 20 is considerably weakened by the electric resistance 32 so that the armature only moves through a part of the distance through which it has moved previously. The armature is only slightly attracted, its motion being just sufficient to release the stud 10 from the pawl 12. The spring 27 pulls the band back until the stud 7 butts against the nose 13' of the lever 13 whereby the stud is arrested and the rollers are stopped. As soon as the supply of current is interrupted the lever 13 goes up under the action of the spring 19 whereby the pawl 12 is returned to its normal locking position before the nose 13' releases the stud 7. The lever 13 completes its upward movement so that the nose 13' releases the stud 7 which now jumps to the position formerly occupied by the stud 10 to be stopped by the pawl 12. The spring 27 which has been put under tension during the forward motion continuously acts upon the rollers to make the same revolve in the direction of the back motion. The roller has thus been turned through a quarter of a revolution and the band has been unwound from roller 3 and wound around the roller 4, the spring 27 having been unwound accordingly.

If the apparatus does not operate no current is consumed.

It is obvious that the apparatus may be lighted from inside the casing 1.

Claims:—

1. A combined take-up and let-off mechanism for the automatic alternating display of signs and pictures or the like comprising in combination a casing, upper and lower spools revolvably mounted in said casing, a band with the advertisements wound upon one of the spools to be transported to the other spool, a controlling mechanism for the upper spool consisting of pins on the spool, a pawl normally engaging a pin for preventing the back motion of the spool, a catch lever having two notches one for acting upon the end of the pawl to withdraw the same from the pin of the spool, and the other for acting upon a pin of the spool and for drawing the same along, an electromagnet, a two armed lever connected on the one hand with the armature of said electromagnet and on the other hand with the said catch lever, a double switch and means controlled thereby for supplying either full current or reduced current to the electromagnet, a spring mounted in the lower spool in such a manner that it is wound up when the band is being wound upon the upper spool and that it revolves the lower spool when the appa-

ratus has been reversed, said spring being of such strength as compared with the electro-magnet that it will be wound when full current is supplied and will draw web from the upper spool when reduced current is supplied, substantially as described and shown and for the purpose set forth.

2. A combined take-up and let-off mechanism for advertising apparatus comprising in combination a casing, upper and lower spools revolubly mounted in said casing, a band wound on one of said spools to be transported to the other spool, a controlling mechanism for the upper spool consisting of four pins projecting from the end of the upper spool, of a pawl pivoted to said casing and having a notch for catching one of said pins, a pull spring for maintaining said pawl in its catching position, a tooth at the rear end of said pawl, of a catch lever having a notch at its upper end engaging with the tooth of the pawl and a lower notch for gripping one of said pins of the spool, of an oscillating lever to which the lower end of said catch lever is pivoted, of an electro-magnet the armature of which is connected with said oscillating lever, of a switch and means controlled thereby for sending a full current or a weakened current into said electromagnet, of a spring arranged in the lower spool for driving the same in inverse direction, substantially as described and shown and for the purpose set forth.

3. A combined take-up and let-off mechanism for advertising apparatus comprising in combination a casing, upper and lower spools revolubly mounted in said casing, a

band with advertisements wound upon one of the spools to be transported to the other spool, a controlling mechanism for the upper spool consisting of pins on the spool, a pawl normally engaging a pin for preventing the back motion of the spool, a catch lever having two notches one for acting upon the end of the pawl to withdraw the same from the pin of the spool, and the other for acting upon a pin of the spool and for drawing the same along, an electro-magnet, a two armed lever connected on the one hand with the armature of said electro-magnet and on the other hand with the said catch lever, a double switch for the electro-magnet, two supply wires connected to the poles of said switch and to a source of supply, one of said wires having resistance inserted therein whereby either full or reduced current may be supplied to said electro-magnet, a spring mounted in the lower spool in such a manner that it is wound up when the band is being wound upon the upper spool and that it revolves the lower spool when the apparatus has been reversed, said spring being of such strength as compared with the electro-magnet that it will be wound when full current is supplied and will draw web from the upper spool when reduced current is supplied, substantially as described and shown and for the purpose set forth.

In witness whereof I have hereunto set my hand in the presence of two witnesses.

CARL JOHANN HERBECK.

Witnesses:

HENRY HASPER,
BURNS BRUER.