F. LIEBLER.

SIGNAL, INDICATOR, AND RECORDER.

APPLICATION FILED AUG. 5, 1913.

1,328,245.

Patented Jan. 13, 1920.

2 SHEETS—SHEET 1.

Fig. 1.

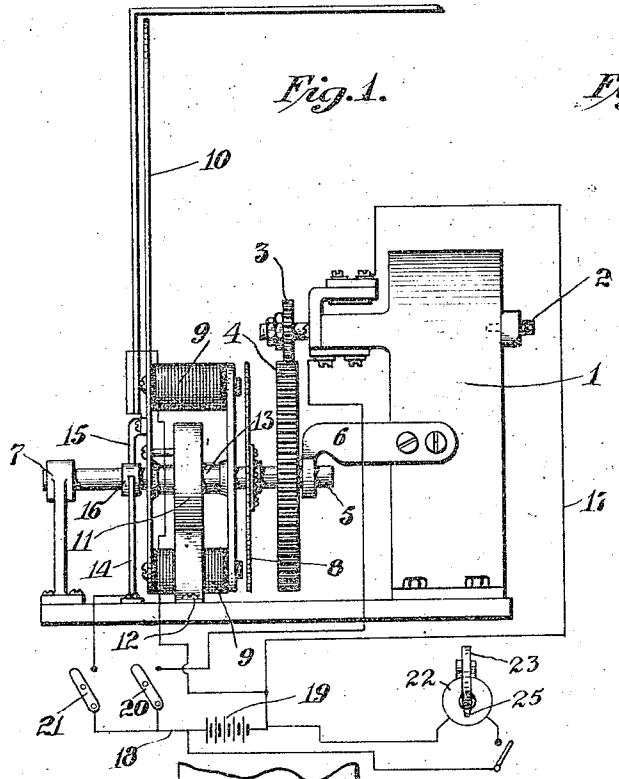


Fig. 3.

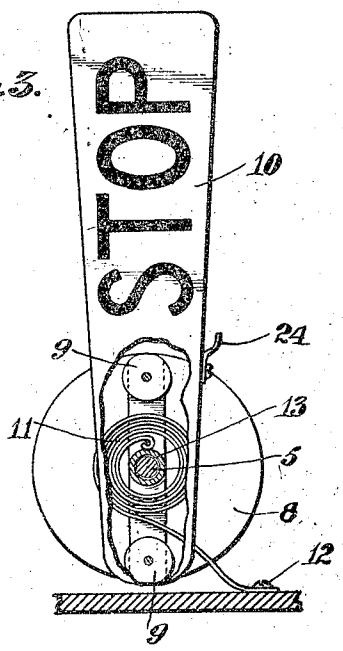


Fig. 4.

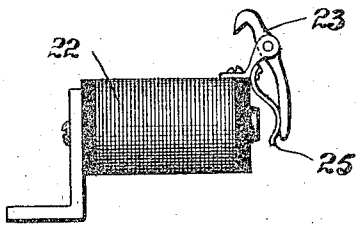
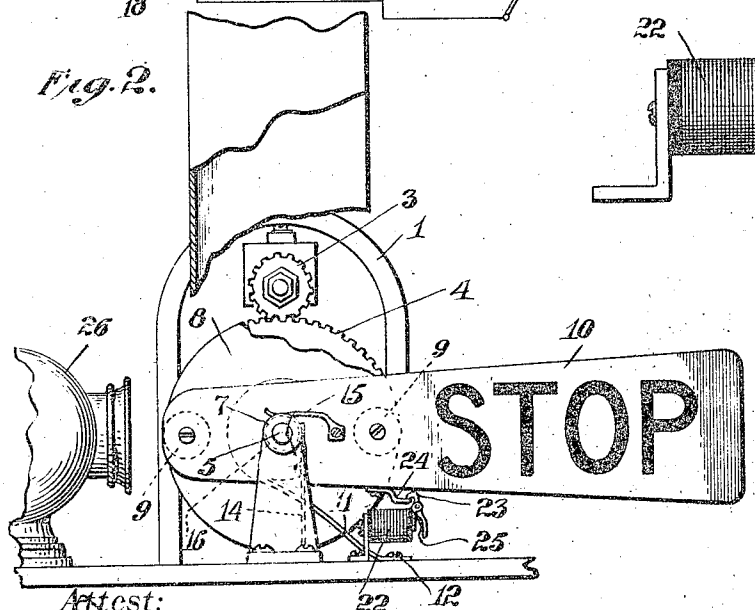


Fig. 2.



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2 SHEETS—SHEET 2.

Fig. 5.

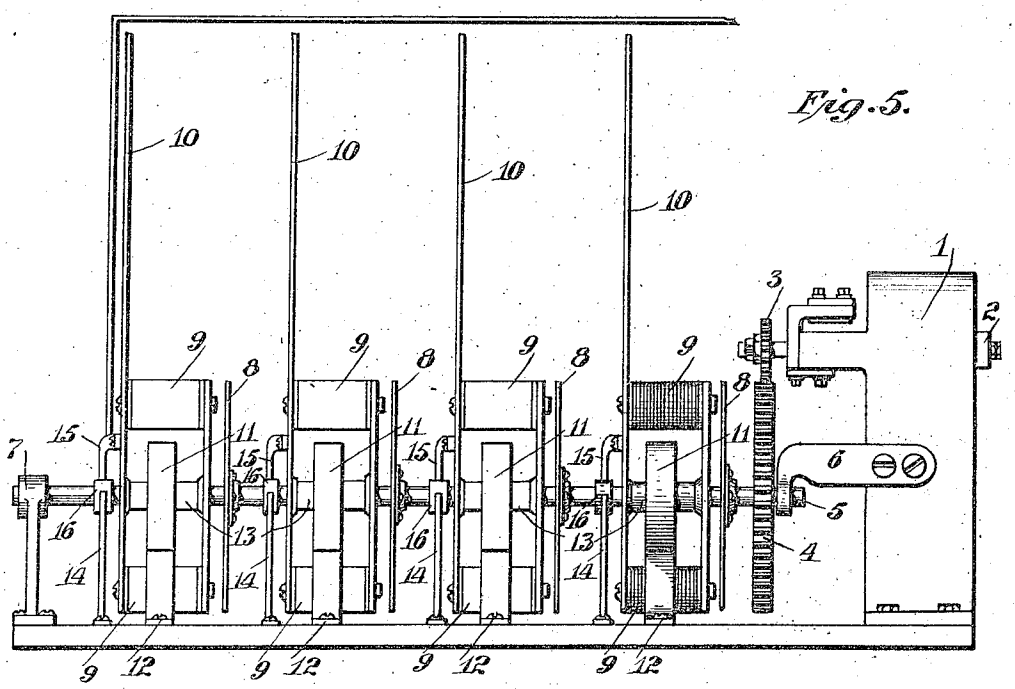
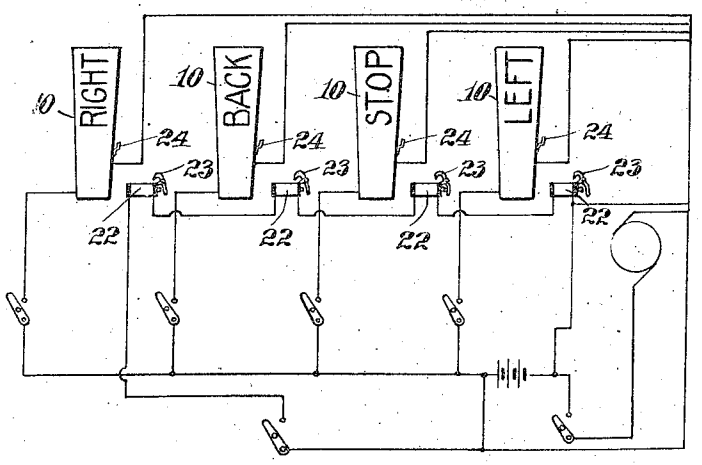


Fig. 6.



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UNITED STATES PATENT OFFICE.

FREDERICK LIEBLER, OF NEW YORK, N. Y.

SIGNAL, INDICATOR, AND RECORDER.

1,328,245. Specification of Letters Patent. Patented Jan. 13, 1920.

Application filed August 5, 1913. Serial No. 783,019.

To all whom it may concern:

Be it known that I, FREDERICK LIEBLER, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Signals, Indicators, and Recorders, of which the following is a specification.

This invention relates to devices adapted directly or indirectly, to operate signals, indicators, electrical switches or contacts, annunciators, fire alarms, or for other purposes, and comprises a combination of parts or members including a mechanical movement or controlling means, the operation of which is induced or performed by magnetic action in conjunction, co-action or coöperation with a moving armature.

The object of the invention broadly is to provide a means for magnetically or electrically inducing, maintaining, and controlling the operation of machines or mechanisms by electricity or magnetism and specifically to that class of devices intended to indicate, record, annunciate, or otherwise direct or attract attention and carry information or notice of coming, existing, or past conditions, by curves, signs, symbols, or alarms, of understandable forms or nature, and more particularly to that class of signals employed to direct attention to the movement of vehicles and conveying information to the operator or driver thereof from one to another or from other sources, whereby they may govern or operate their vehicles and control them with care to avoid accidents or damage, such as automobiles, cars, carriages or the like.

As an illustration of the invention and the manner in which it operates an example of its application to a signal apparatus for automobiles and the like will be here given reference being directed to the accompanying drawings in which,

Figure 1: is a side view of the operating mechanism;

Fig. 2; is a front view of the same showing the signal-arm extended,

Fig. 3; is an enlarged view of the signal-arm showing the magnetic portion of the clutch, the spring return mechanism, and lock section,

Fig. 4; is a view of the signal-arm lock and release,

Fig. 5; is a side view of the operating mechanism showing the signal-arms in multiple or plurality, and,

Fig. 6; is a diagram illustrating the distribution of the electric current to actuate and operate different members of the apparatus combination.

Similar numerals of reference indicate corresponding parts in the several views.

Referring to Fig. 1, the numeral 1 indicates a rotary electric motor provided with a shaft 2 to which is attached the cog-wheel 3 which engages the larger cog-wheel 4 and meshes therewith. The cog-wheel 4 communicates with the shaft 5 and is fixed thereto, the said shaft being suitably mounted in the bearings of the supports 6 and 7. Upon the shaft 5 is fixed the disk 8 of soft iron or steel and adapted to act as an armature for the electro-magnet 9 carrying the signal-arm 10 and provided with the spring mechanism 11 which is fixed at the base 12, and upon the sleeve 13, through which sleeve 13 loosely passes the shaft 5. Communicating with the coil or winding wires of the magnets 9 are the electrical contacts 14 and 15 operating through and contacting with an intervening conductive ring 16 which is supported on suitable insulation about the sleeve 13.

The electrical parts of the mechanism are provided with suitable conductors 17 and 18 in circuit with the storage battery or electrical generator 19, and intervening contacts or control button, keys, switches, or similar devices 20 and 21.

In operating the device the contact 20 is first closed, when the motor 1 is put in motion turning the shaft 2 and wheel 3 which, meshing with the wheel 4 revolves the shaft 5 carrying the fixed armature or disk 8 rotatable therewith.

The mechanism is put in motion and is continued and when it is desired to signal an automobile, driver or chauffeur approaching from the rear to stop, the device having been placed upon or attached to the back part of the traveling automobile, the button or key 21 is pressed and an electrical contact made, whereupon the magnets 9 become magnetized, or electro-magnetically energized, and magnetically attract or engage the opposing rotating armature or disk 8 acting as a carrying or conveying clutch and cause the mechanism upon the movable sleeve 13 to be carried forward in a revoluble manner

throwing forward the signal-arm 10 and winding up the spiral spring 11. The signal-arm 10 is thrown out until it is extended and in view from the rear, it being normally housed when not in use in the housing and obscured from view. When the signal-arm 10 reaches a horizontal or other desired position it is adapted to engage a magnetically actuated locking device 22, shown in a large form in Fig. 4, the locking spring or member 23 of which engages a locking grip 24 of the signal-arm 10, also shown in Fig. 3, when the contact 21 may be disconnected or broken and the signal-arm retained by the locking device or grip 23 or device 24 more clearly shown in Fig. 4, until it is desired to withdraw the signal when another button, key, switch, or contact closing the circuit thereby actuating the magnet of the device 22 is pushed, causing the grip 23 to be released by the attraction of the armature 25 when the signal-arm will return to its original position in its housing by action of the spiral spring 11.

Instead of a single signal arm as shown in Fig. 1, a multiplicity or plurality of signals as shown in Fig. 5 may be carried upon a single shaft 5 by fixing a plurality of disk armatures thereon with intervening movable sleeves 13 carrying the signals and magnetically actuated devices co-acting with the rotating disk armatures to be extended and released, as aforedescribed, through the independent communicating circuits of their magnets, the release of each signal-arm being actuated through a single circuit passing through the winding or wire coils of the magnets of the locking devices 22, shown in a large form in Fig. 4. The signal-arms thus arranged in multiple or plurality may carry such signals as, Right, Left, Stop, and Back or other indicators may be exhibited at will, the signal-arms being suitably attractively decorated to attract attention in the day time and provided with a light producing and concentrating illuminating member at night as shown at 26 Fig. 2.

In Fig. 6, is shown diagrammatically, in conjunction with the legend thereof, circuits for supplying the electric current to the various signals in multiple or plurality and to other electrically actuated members of the combination, illustrating how the actuating current may be conveyed to each signal member independently through the operation of independent contacts although the electricity is derived from a single and common source.

The motor employed may be of any convenient size and of any electrical consuming capacity or voltage and of any character either alternating, poly-phase, direct, induction or of other type, and located at any convenient or available point so long as it is in power transmitting communication with the movable armature or disk and the engaging or clutching magnet may be of any convenient form or character, or may even constitute a helix, so long as it is in co-acting magnetic distance with, or in operative relation to the moving armature.

The armature may be of any desired form or character so long as it is fixed to and movable with the shaft in a fixed path or position and is within magnetic coacting distance of a movable device capable of inducing lines of force, such as a magnet, whereby the device is moved in a direction of the traveling armature and the parts actuated by the device may be moved or held thereby when evolving magnetic lines of force which co-act with the moving armature.

The magnetic force generator or deliverer may be a magnet of permanent nature capable of being brought within co-acting distance of the armature by suitable or proper mechanism, or an electro-magnet, helix, or other magnetic inductor or deliverer so long as it communicates with the operating mechanism of the machine and actuates the same when brought within operative co-active magnetic relation to the moving armature, either by mechanism or by delivery or control of magnetic excitant, such as electricity supplied to an electrical magnet or helix in a fixed and operative relation to the armature at times when the operation of the machine is desired.

Any other means may be provided also for the recovery of the signal-arm or actuating device than the spiral spring shown and any other specific form of engaging device for holding the signal-arm in position until restored to its original fixed position may be employed, and the arrangement of the various members of the combination or apparatus may be of any operative or co-acting character or form, so long as each performs its individual function and collective coöperation to perform or produce the result desired, so long as the integrity of the combination is maintained and the spirit of the invention not departed from, which comprises the combination and arrangement of members of the apparatus in such relation to each other that the operation is induced by a magnet, helix, or other means of magnetic inductance or magnetic deliverer or generator, co-acting and coöperating with a moving armature broadly and specifically with a revolving or moving disk of magnetically attractive material.

The electricity employed to initially operate the motor and magnetic force generators or deliverers may be of single or direct character or composite in nature, such as alternating for the motor and direct for the magnetic or helix operation and for the specific purpose of operating the signaling

apparatus for automobiles or like vehicles a storage battery may be employed as a source of electricity for accomplishing both functions and also for the additional purpose of lighting or illuminating the signs or signals at night by means of electric light.

It will be noted that when signals or other indicating or recording devices are actuated by a magnetic clutch acting upon a moving armature in accordance with the present invention that a gradual and easy movement is imparted to the indicating member in such a manner that breakage or disorganization of the apparatus is avoided which is the case where direct contact operating mechanisms or mechanical motions are employed.

One of the important and salient features of the present invention resides in the fact that the member of the combination in the apparatus relied upon to indicate signal record or finally perform the desired function of the machine is actuated in its operation by a member including the action of magnetism on a movable armature for its actuation and control.

Having now described my invention what I claim as new and desire to secure by Letters Patent is:

1. An indicator or recorder, comprising a magnet bearing signal member, a movable armature, means for moving said armature, and means for bringing the magnetic member into magnetic co-action with the moving armature, the magnet and the armature being located on a shaft with such relation to each other that their bearings will not approach or recede from each other during process of operation.

2. An indicator or recorder, comprising a magnet bearing signal member, a transversely movable armature, means for moving said armature, and means for bringing the magnetic member in magnetic co-action with the moving armature, the magnet and the armature being located on a shaft with such relation to each other that their bearings will not approach or recede from each other during process of operation.

3. An indicator or recorder, comprising a magnet bearing signal member, a movable disk armature, means for moving said disk armature, and means for bringing the magnetic member in magnetic co-action with the moving armature, the magnet and the armature being located on a shaft with such relation to each other that their bearings will not approach or recede from each other during process of operation.

4. An indicator or recorder, comprising a magnet bearing signal member, a rotatable armature, means for rotating said armature, and means for bringing the magnetic member in magnetic co-action with the rotatable armature, the magnet and the armature being located on a shaft with such relation to each other that their bearings will not approach or recede from each other during process of operation.

5. An indicator or recorder, comprising a magnet bearing signal member, a rotatable disk armature, means for rotating said armature, and means for bringing the magnetic member in magnetic co-action with the rotatable armature, the magnet and the armature being located on a shaft with such relation to each other that their bearings will not approach or recede from each other during process of operation.

6. An indicator or recorder, comprising a magnet bearing signal member, a transversely rotatable armature, means for rotating said armature, and means for bringing the magnetic member in magnetic co-action with the rotatable armature, the magnet and the armature being located on a shaft with such relation to each other that their bearings will not approach or recede from each other during process of operation.

7. An indicator or recorder, comprising a magnet bearing signal member, a transversely rotatable disk armature, means for rotating said armature and means for bringing the magnetic member in magnetic co-action with the rotatable armature, the magnet and the armature being located on a shaft with such relation to each other that their bearings will not approach or recede from each other during process of operation.

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

FREDERICK LIEBLER.

Witnesses:
WM. F. DAUGHERTY,
CORALIE L. M. TYLER.