June 17, 1930. H. P. HESTER ET AL 1,765,073

ELECTRIC SIGN

Filed Nov. 2, 1929 2 Sheets-Sheet 1

Fig. 1.

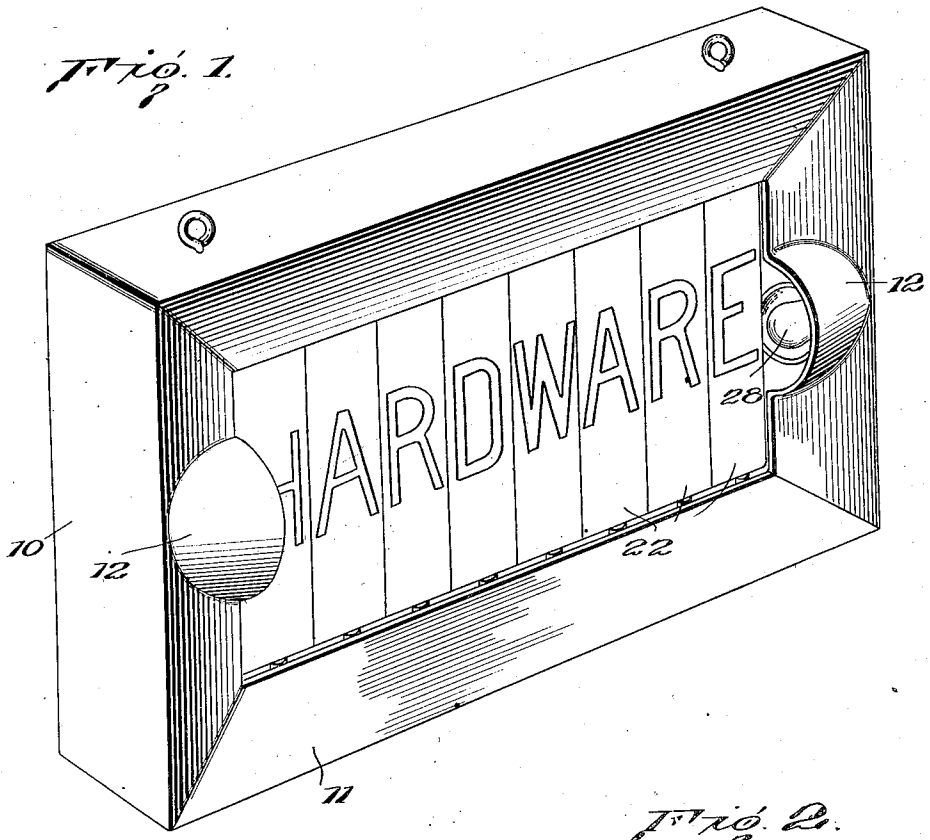
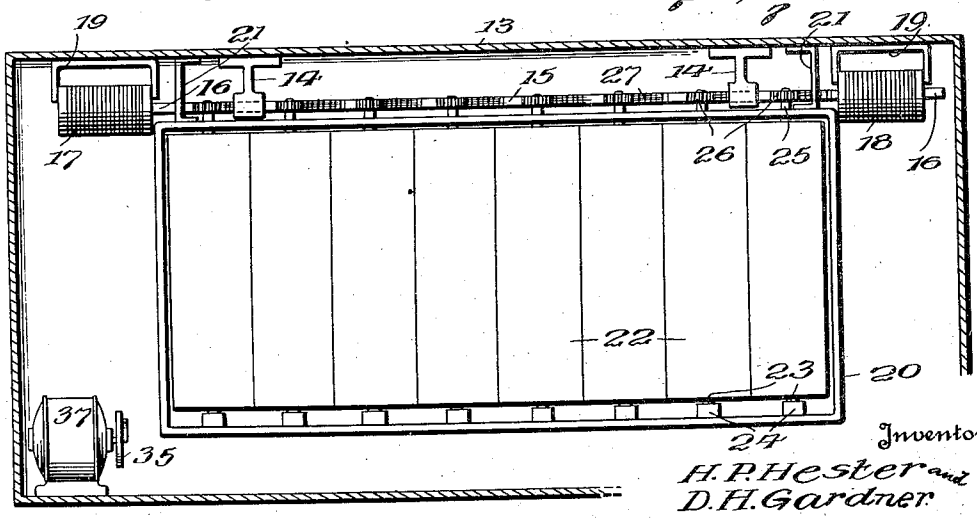


Fig. 2.



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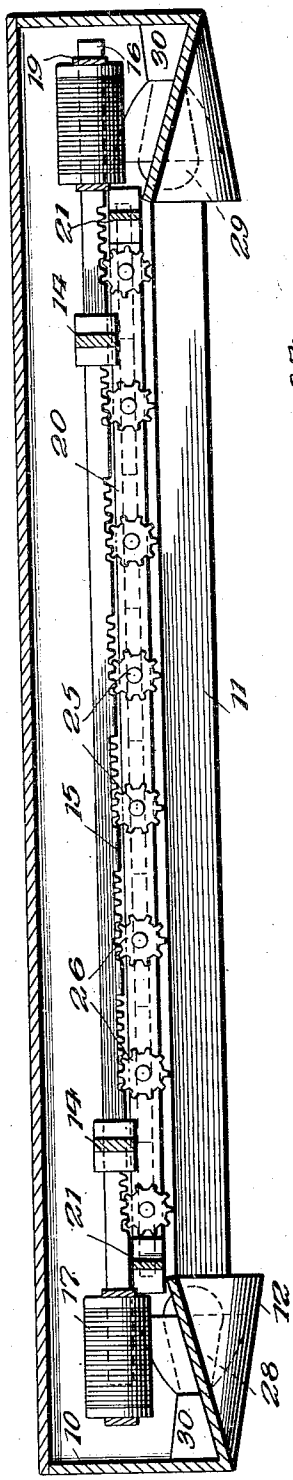


Fig. 3.

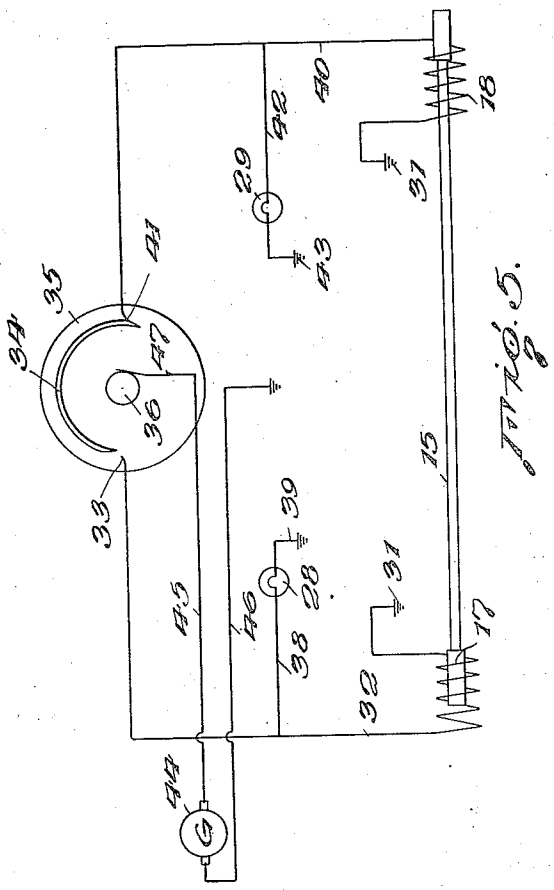


Fig. 5.

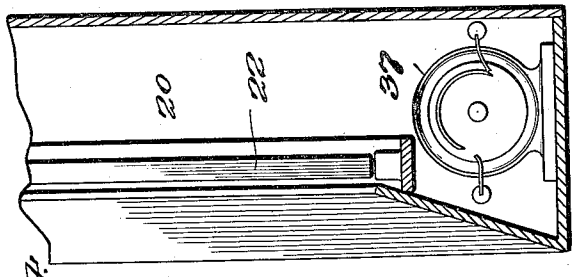


Fig. 4.

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UNITED STATES PATENT OFFICE

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ELECTRIC SIGN

Application filed November 2, 1929. Serial No. 404,369.

The present invention relates to signs, and more particularly to a sign adapted to be operated and illuminated by electricity.

An object of the present invention is to provide a sign which has the appearance of a bill board, and wherein the front of the sign imparts the appearance of evenly divided panels, and wherein the sign may be quickly and easily adjusted to change the reading or display thereon.

Another object of the present invention is to provide a sign of the character having a plurality of small hinge panels adapted to be turned about their own axes so as to change the character of the display at the front of the sign, and wherein a specific construction is resorted to to provide a sign which is economical in construction, easily erected, will be light in weight and easily installed, and a sign which cannot easily get out of order.

Another object of the present invention is to provide a sign of this character which may be operated by solenoids, the construction and arrangement being such that the operation is by the direct pull of the solenoid without the use of intervening levers or the like and wherein relatively small power is required for the operation of the sign.

Another object of the present invention is to provide a sign which may be intermittently changed by connecting the sign in a divided circuit and controlling the same by a continuously rotating or operating commutator so that the sign may be intermittently shifted to alternately display predetermined words or the like for advertising or other purposes.

With the foregoing and other objects in view, the invention will be more fully described hereinafter, and will be more particularly pointed out in the claims appended hereto.

In the drawings, wherein like symbols refer to like or corresponding parts throughout the several views.

Figure 1 is a perspective view of a sign constructed according to the present invention.

Figure 2 is a fragmentary vertical longitudinal section taken through the same.

Figure 3 is a longitudinal vertical horizontal section taken through the sign immediately beneath the top wall or plate thereof.

Figure 4 is an enlarged fragmentary transverse vertical section taken through the lower portion of the sign, and

Figure 5 is a diagrammatic view of one arrangement of the electric circuit which may be employed to operate the sign.

Referring to the drawings, 10 designates the frame or casing of the sign which may be of any suitable desired configuration for adapting the sign to the particular purpose to which it is to be applied.

In the present instance the casing or frame 10 is shown as open at one side only and is provided with an inwardly extending and inwardly inclined marginal flange 11 which, at opposite ends, may be pressed or otherwise provided with hoods or reflectors 12 which face inwardly toward each other to illuminate the surface of the sign, which is exposed through the open side of the frame 10.

As shown particularly in Figures 2 and 3, the top plate or cover 13 of the frame 10 is provided with a pair of depending brackets 14 which are spaced lengthwise of the frame 10 and in which is slidably supported a rack bar 15 having on each end an armature or core 16 which may comprise extensions on the opposite ends of the rack bar 15 and which are slidably received in a pair of opposed solenoids 17 and 18. Each solenoid is supported in a depending bracket or frame 19 secured to the underside of the top wall 13 of the frame or casing 10 in position to hold the solenoids 17 and 18 in axial alignment with the rack bar 15.

Within the casing or frame 10 there is also supported, in vertical position, a panel frame 20 which may be of rectangular construction as shown and which may be suspended from the top cover 13 by bracket arms 21 or the like. The panel frame 20 has its central open portion of slightly greater length and height than the open portion of the frame between the marginal flanges 11,

and the central open portion of the frame 20 is substantially filled with a plurality of vertically disposed panels or shutters 22. The shutters 22 in normal position are adapted to be arranged in a common vertical plane with their edge portions substantially abuting so as to present a relatively smooth flat surface at the front of the sign. Each shutter 22 is provided at its lower end with a pivot pin 23 which is seated in a step bearing 24 mounted on the lower bar of the frame 20. The upper end of each panel or shutter 22 is provided with a pin or shaft 25 which extends upwardly through and has bearings in the top rail of the frame 20, and the pins 23 and 25 are co-axially disposed intermediate the lateral edges and sides of the panels or shutters 22. The panels or shutters 22 are so mounted that they may freely swing or turn upon their pivotal support so that the opposite faces of the panels or shutters 22 may be alternately displayed through the front of the frame or casing 10.

Each pin or shaft 25 at the upper end of the panel or shutter 22 carries a pinion 26 which meshes with an adjacent toothed portion 27 of the rack bar 15, the rack bar 15 is provided with a toothed portion 27 for each pinion 26, and the toothed portions 27 are each of sufficient length to turn the adjacent pinion 26 and shutter 22 through a complete half turn, and are so positioned upon the rack bar 15 that when the latter is in one completely shifted position one face of each shutter 22 is exposed through the front of the casing 10 while when the rack bar 15 is shifted into a complete opposite position the opposite faces of the shutters or panels 22 are brought into display.

The casing 10 is also provided in its opposite ends with electric lamps 28 and 29 having suitable sockets 30 supported in the ends of the casing 10 and which are adapted one at a time to illuminate the surface of the sign. The lamps 28 and 29 may if desired be of different colors so as to change the color effect of the sign as the latter is shifted back and forth to change the display.

While any suitable circuit arrangement may be employed for alternately actuating the solenoids 17 and 18 and for alternately lighting the lamps 28 and 29, Figure 5 shows in diagram one circuit arrangement for accomplishing this purpose.

The solenoids 17 and 18 are grounded as at 31. The solenoid 17 has a wire 32 leading therefrom to a rotary switch of the continuously operating type, and is provided with a contact brush 33 adapted to engage a commutator segment 34 mounted upon a disc 35 or the like carried upon the shaft 36 of a motor 37. The shaft 36 may be provided with any suitable reduction gearing or the like found necessary and desirable for driving the shaft 36 as the desired speed of rotation with respect to the motor 37. The commutator segment 34 extends substantially 180° upon the disc 35 so that during the rotation of the switch through half a turn the brush 33 is in contact with the commutator section 34 and closes the solenoid 17 in the circuit. Branched from the wire 32 is a wire 38 which includes the lamp 28, the latter being grounded at 39 as shown.

In like manner, the opposite solenoid 18 is connected by a wire 40 with a brush 41 arranged at substantially 180° from the brush 33 and adapted to engage the commutator segment 34 and remain in contact therewith when a brush 33 is out of contact with the segment. The wire 40 has a branch 42 which includes the opposite lamp 29, the latter being grounded at 43. Current is supplied to the rotary switch from a generator 44, or other suitable source of electric current through wires 45 and 46, the latter being grounded while the wire 45 may be connected to a brush 47 which bears against the shaft 36 for supplying current to the switch.

In operation, as the rotary switch continuously turns, the commutator section 34 first engages one brush, such as the brush 41 as shown in Figure 5 whereupon the solenoid 18 is energized and the lamp 29 is illuminated. The rays of the lamp 29 are thrown over the outer face of the panels or shutters 22 and the rays of the light are confined to the shutters by the hood 12. When the solenoid 18 is energized the rack bar 15 is thrown oppositely so as to turn the shutter 22 into a reverse position, such position of the parts being shown in Figures 2 and 3 of the drawings. The shutters or panels 22 are adapted to carry suitable lettering, configurations or the like adapted to be used in the display of the sign and the various data for display are disposed on opposite sides of the shutters 22 in such manner that when the shutters 22 are turned in one direction as shown, a complete word or design is set up within the frame 10 and exposed through the outer side thereof.

During the continuous rotation of the switch the commutator section or strip 34 is brought into engagement with the brush 33 and the solenoid 17 is energized while the current is broken with respect to the solenoid 18. The rack bar 15 may now shift and is drawn into a reverse position by the direct pull of the solenoid 17. The shutters or panels 22 are thus swung around a complete half turn so as to expose their opposite faces through the opening in the frame 10.

It will be noted from the construction above described that the sign is relatively simple, light in weight and may be economically produced. It will also be noted that the sign is sturdy and cannot be easily deranged incident to handling, vibration or the like.

As the solenoid cores or armatures 16 extend lengthwise from the ends of the rack bar 15, the action of the solenoids is direct upon the rack bar and relatively light solenoids may be employed.

What is claimed is:

1. A changeable sign, comprising a plurality of pivotally supported panels having opposed display surfaces, a reciprocating member connected to said panels, a solenoid at each end of the reciprocating member, and means for alternately energizing and de-energizing the solenoids to shift the reciprocating member back and forth and turn the panels.

2. A changeable sign, comprising a frame, a solenoid mounted in each end of the frame, a rack bar having core extensions on opposite ends for co-operation with tne respective solenoids, means for alternately energizing and de-energizing the solenoids for reciprocating the rack bar therebetween, a plurality of panels pivotally mounted in the frame, a pinion connected to each panel and intermeshing with the rack bar for turning the panels upon the reciprocation of the rack bar, and independent illuminating lamps connected in the circuits of the respective solenoids for illuminating the panels by the alternate illumination of the lamps.

3. A changeable sign, comprising a frame, a reciprocating member mounted in the frame, a solenoid disposed at each end of the reciprocating member and mounted in the frame, a plurality of shutters pivotally mounted in the frame and each having connection with said reciprocating member, said panels having opposed display surfaces, a lamp connected to each solenoid, and means for alternately energizing and de-energizing the solenoids and lamps for operating said member to turn said shutters and illuminate the surfaces thereof alternately from said lamps.

4. A changeable sign, comprising a frame, a reciprocating member slidably mounted in the upper end of the frame and provided with spaced toothed portions, a solenoid mounted in each end of the frame in line with the reciprocating member and co-operating therewith to directly shift the reciprocating member back and forth axially with respect to said solenoids, a panel frame mounted in the main frame, a plurality of panels pivotally mounted in the panel frame and adapted to turn through 180° for reversing the positions of the panels in the panel frame and expose the opposite sides of the panels for display, a pinion connected to each panel and intermeshing with said reciprocating member to turn the panels, and means for alternately energizing and de-energizing the opposite solenoids for actuating said reciprocating member.

5. A changeable sign, comprising a frame, a rack bar slidably mounted in the upper portion of the frame, a pair of solenoids arranged in the opposite upper corners of the frame in line with said rack bar and adapted to directly shift the same back and forth between the solenoids, a plurality of shutters pivotally mounted in the frame and having reverse display surfaces, a pinion mounted on each shutter and intermeshing with the rack bar, and means for alternately closing said solenoids in a circuit to shift said rack bar and said shutters.

6. A changeable sign, comprising a frame, a plurality of panels pivotally mounted in the frame and having opposed display surfaces, a pinion carried upon each panel, a rack bar intermeshing with all of said pinions and extending lengthwise in the frame, a solenoid arranged in each end of the frame and co-operating with the opposite ends of said rack bar for shifting the same between the solenoids, and means for energizing and de-energizing alternately the opposed solenoids for shifting the rack bar and turning said panels.

7. A changeable sign, comprising a frame, a plurality of panels pivotally mounted in the frame and normally arranged in substantially edge to edge relation, a pinion mounted on each panel, a rack bar extending longitudinally in the frame and intermeshing with said pinions, a solenoid in each end of the frame co-operating with the opposite ends of the rack bar for shifting the latter back and forth between the solenoids, a rotary switch having a semi-circular contact section and diametrically opposed brushes, and means for connecting the opposed solenoids one to each brush for alternately closing the circuit through said solenoids to actuate the rack bar.

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