Jan. 26, 1932. F. A. APFELBAUM 1,842,645

DISPLAY DEVICE

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Fig. 1.

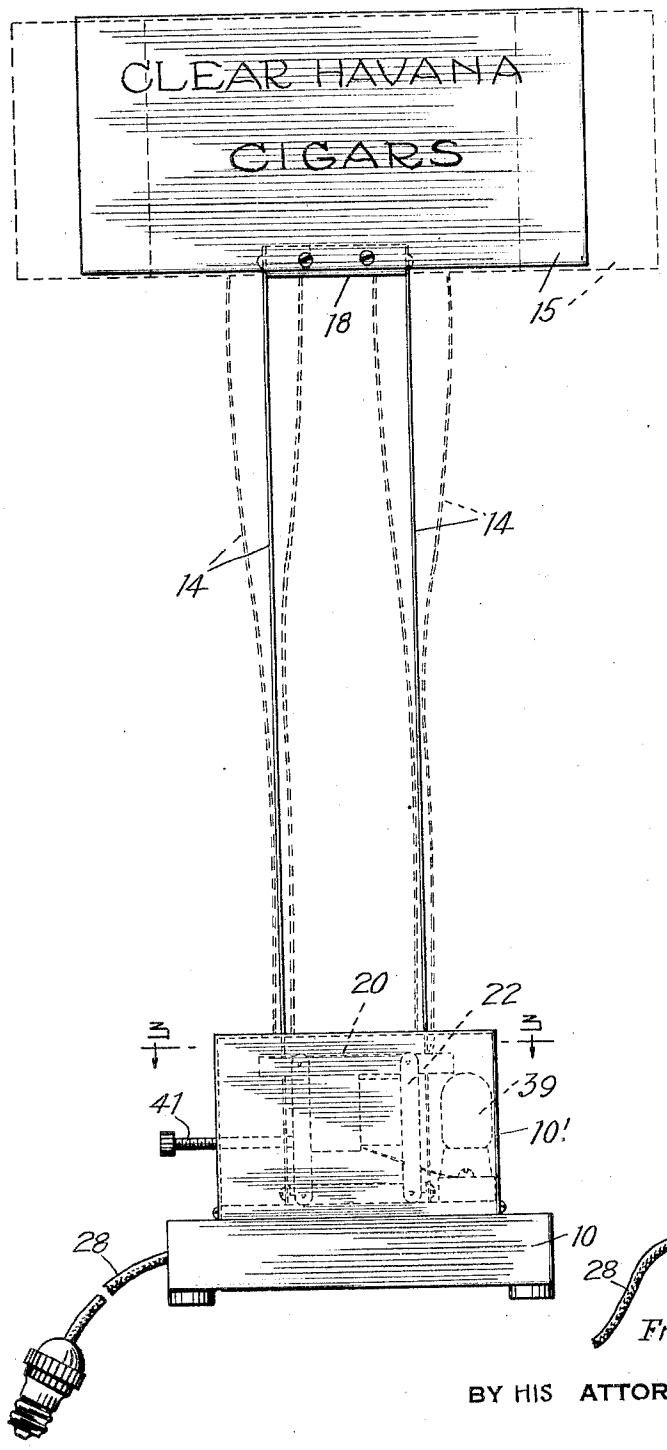
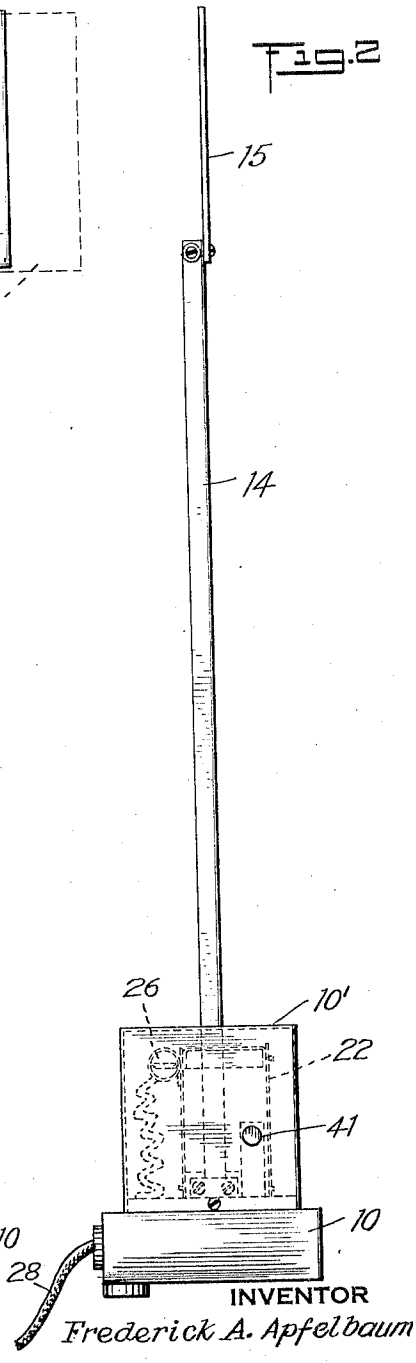


Fig. 2



INVENTOR

Frederick A. Apfelbaum

BY HIS ATTORNEY

E. F. Mecham

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Fig. 3.

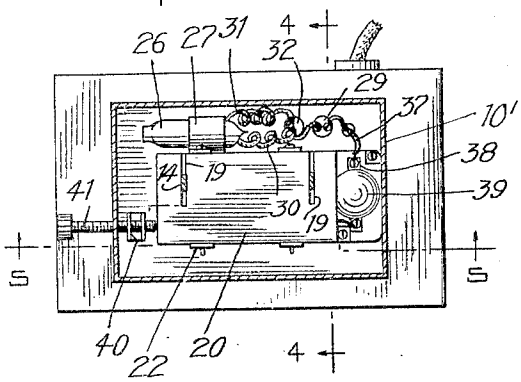


Fig. 4.

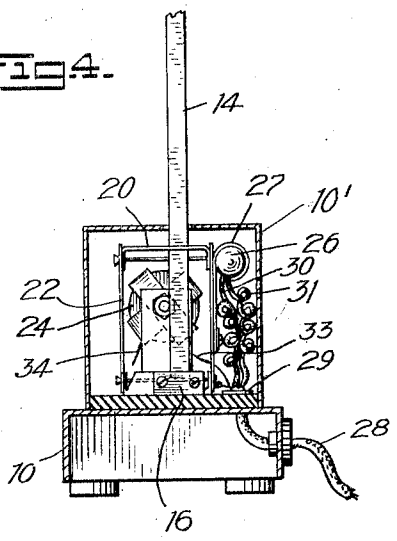


Fig. 5.

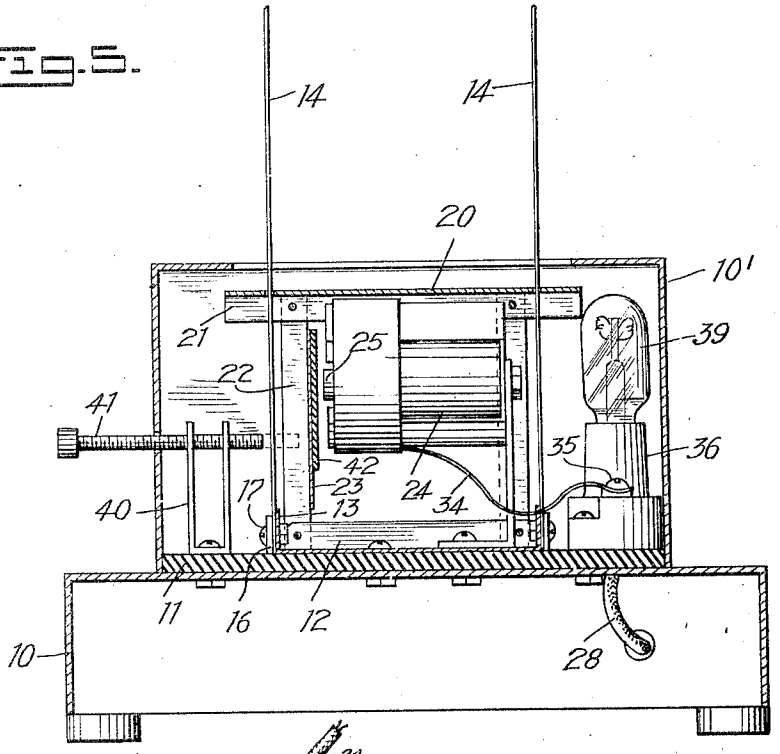
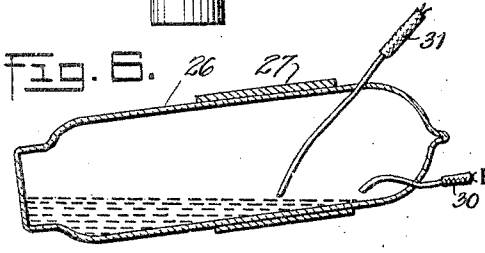


Fig. 6.



INVENTOR

Frederick A. Apfelbaum

BY HIS ATTORNEY

E. F. Mueller

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UNITED STATES PATENT OFFICE

FREDERICK A. APFELBAUM, OF NEW YORK, N. Y.

DISPLAY DEVICE

Application filed April 22, 1931. Serial No. 531,861.

This invention relates to display devices and more particularly to display devices having a movable display.

Among the principal objects which the invention has in view are: To provide a continuously moving display; to provide a display which will attract the eye and hold the attention; to obtain an automatic reciprocatory movement for the display; to actuate the display electrically; to enable the device to be operated with commercial or house lighting current; to provide for intermittent application of the actuating current; to utilize momentums for opening the circuit; to maintain the display in horizontal position through the entire amplitude of oscillation; to secure simplicity of construction and operation; and to obtain other advantages and results as may be brought out in the following description.

In the drawings:

Figure 1 is an elevation embodying my invention, and looking at the same towards the front as ordinarily viewed by a passerby.

Figure 2 is a side elevation;

Figure 3 is a sectional view on line 3—3 of Figure 1, and

Figures 4 and 5 are sectional views on lines 4—4 and 5—5 respectively of Figure 3 and

Figure 6 is a detail view of the closed tube.

In the description:

In the specific embodiment of the invention illustrated in said drawings, the reference numeral 10 indicates a suitable base of metal or otherwise having a plate 11 of insulative material covering a portion of the upper portion of said base, and a cover 10′ secured thereto.

Secured upon the upper face of the insulative plate is mounted a supporting fixture 12 of suitable construction for carrying the movable parts. This fixture as here shown, comprises a plate positioned flatwise upon the insulatory plate and of a size considerably smaller than the insulatory plate. The fixture plate is shown as rectangular and has its four edges turned upwardly perpendicular to the base forming an upstanding flange 13 at each edge of the fixture.

An opposite pair of these flanges provides a convenient means for attaching a pair of upstanding arms 14, said arms being relatively long and carrying a display panel 15 at the upper ends thereof. As here shown, these arms are of resilient material, such as thin spring steel and have their lower ends clamped to the respective flanges supporting the same as by a yoke 16 and screws 17. The upper ends of these arms may be held in proper spaced relation by a spacing bar 18 which also forms a convenient means for attaching the display panel 15.

Furthermore, the arms 14 are preferably in parallel planes so that the flexibility of each arm is in a direction toward and away from the other arm. The flexibility therefore enables the arms to swing back and forth, and by virtue of the spaced connection thereof at the top of the arms, the arms will maintain substantially the same spacing from each other both in normal and in swung position. The result of this structure enables the device to function with the display always in a horizontal position so that the observer can readily read the matter on the display while the same is in motion. The eye is capable of following a straight line motion, particularly when reciprocating, much more readily than a reciprocating curvilinear motion. By making the arms 14 quite long and flexible, and providing a relatively large mass at the upper end of the arms, such as by utilizing a heavy cross-bar 18, the rocking motion imparted to the cross-bar will distort the arms until the momentum of the cross-head is overcome when the distortion in the arms sets up a return movement of force causing the cross-bar to return and gather momentum and carrying it considerably beyond normal positions of the arms. A slight actuating force properly synchronized with the movement of the arms will keep the arms in swinging movement very readily and continuously.

In order to obtain such a synchronized actuation for the arms, I have shown the same passed through slots 19 in a rocker 20 shown

herein as a horizontally disposed plate with side flanges 21 depending from the plates. The plate is supported near opposite ends of each flange by legs 22 shown pivoted at their upper ends to said flanges of the rocker and at their lower ends to flanges of the fixture 12. The depending flanges on the rocker are at the edges thereof parallel to the plane of movement to the rocker.

Beneath the rocker 20 shown herein as extending from beneath one flange to a position beneath the other flange of the rocker, is an armature 23. In the present showing this armature is integral with an opposite pair of legs 22, but may be otherwise if desired. Beneath the rocker and carried from the base so as to be stationary, is provided, an electro-magnet 24 horizontally disposed with the core or pole 25 thereof, disposed toward and relatively close to the armature 23. The circuit in this magnet is automatically controlled so as to alternately attract and release the armature from attraction with respect to said core.

The automatic control of the electrical circuit may be obtained by a mercury contact or other suitable means. As here shown, I attach a closed tube 26 at one side of the rocker, as by a clip 27, said tube being arranged longitudinally parallel to the direction of movement of the rocker. This tube contains a pair of depending contacts which in normal position of the parts will dip into a pool of mercury or other electrically conductive liquid. When the rocker swings in one direction, the tube is both tilted slightly and is affected by the momentum set up sufficient to cause the mercury to leave the contact points and travel toward the opposite end of the tube. As the rocker reaches the end of the movement and starts back again, the mercury likewise recovers and again makes contact with the points in the tube by the time the rocker reaches the end of its movement.

As here shown, the circuit for the electric current enters through the base from a suitable source as by a double flexible wire 28. One of the double wires is attached to a connector 29 from which another wire 30 goes to one of the contacts in the mercury tube. Another wire 31 from the other contact in the mercury tube goes to another connector 32 to which the wire 33 from the magnet 24 is also connected. The opposite wire 34 from the magnet goes to one terminal 35 of a light socket 36 and the second entry wire 37 from the source is connected to the terminal 38 of this socket. A bulb 39 is positioned in the socket and it will therefore be observed the magnet bulb and mercury contact points are in series each with the other.

In order to regulate the oscillation of the arms 14, the rocker is provided with an adjustable stop. As here shown a bracket 40 is secured to the base and insulative plate 11 at the end next the armature 23 and in this bracket is a transverse screw 41 directed toward the armature and its inner end can be brought to proper position to be engaged by the armature as the armature swings away from the magnet. Insulative means 42 may be attached to the surface of the armature toward the magnet for engaging the magnet as a stop when attracted by the magnet.

Claims:

1. A device as characterized comprising means for supporting a display, a rocker for oscillating said supporting means to move the display so as to remain in substantially parallel relation to its initial position, an electro-magnet for actuating said rocker in one direction and a mercury switch for controlling the circuit for automatically making and breaking the circuit in synchronism with the movement of the rocker.

2. A device as characterized comprising means for supporting a display, a rocker for oscillating said supporting means to move the display so as to remain in substantially parallel relation to its initial position, an electro-magnet for actuating said rocker in one direction, means for controlling the circuit for automatically making and breaking the circuit in synchronism with the movement of the rocker, and means for limiting retraction of the rocker in a direction away from the magnet.

3. A device as characterized comprising a pair of elongated flexible arms, supported in a normal parallel relation at one end of each arm, the opposite ends of said arms being secured in fixed relation to each other, a display secured at this second mentioned end of the arms whereby the arms may be resiliently flexed so as to move the display from side to side in substantially parallel positions.

FREDERICK A. APFELBAUM.