Sept. 28, 1926. 1,600,998

T. C. RUSSELL

ADVERTISING OR DISPLAY STRUCTURE

Filed Nov. 30, 1925

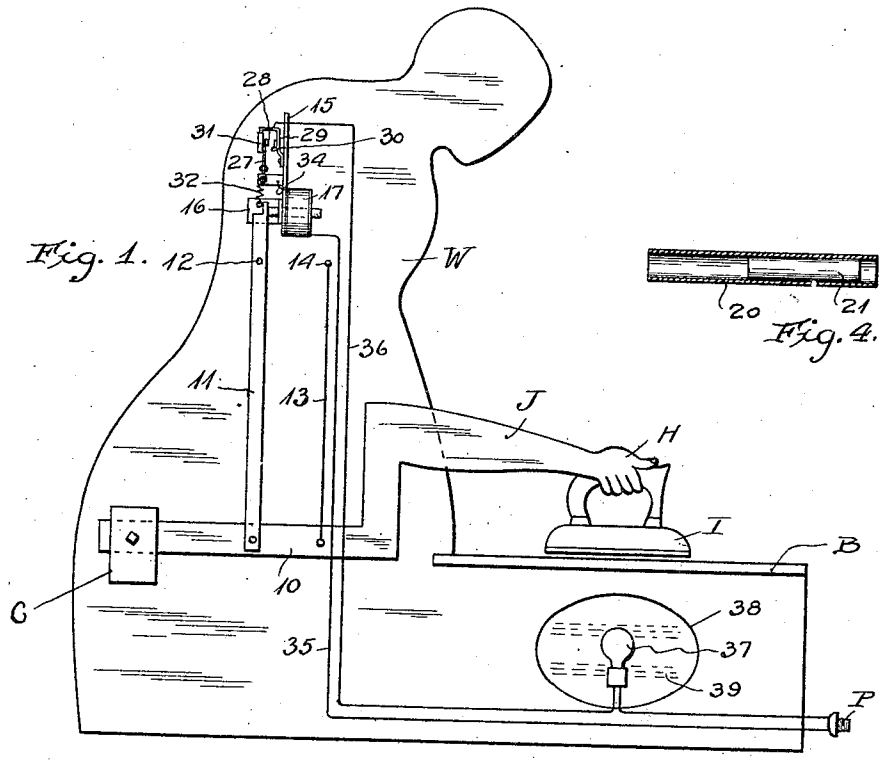


Fig. 1.

Fig. 4.

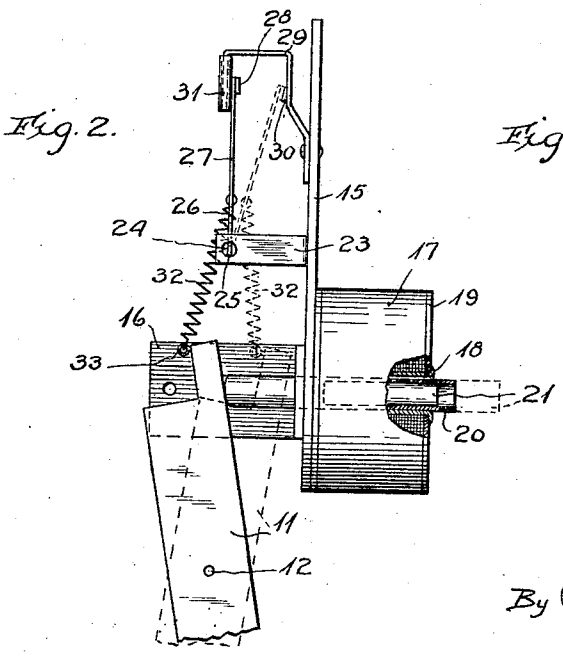


Fig. 2.

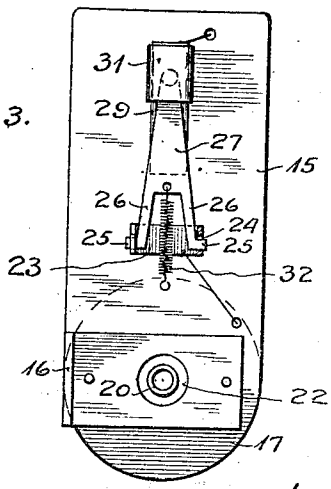


Fig. 3.

Inventor,
Thomas C. Russell
By Brown, Boettcher & Dinner
Attys.

Patented Sept. 28, 1926. 1,600,998

UNITED STATES PATENT OFFICE.

THOMAS C. RUSSELL, OF CHICAGO, ILLINOIS.

ADVERTISING OR DISPLAY STRUCTURE.

Application filed November 30, 1925. Serial No. 72,206.

My invention relates to advertising or display structure, and particularly to improved electromagnetically operated propulsion mechanism for imparting regular and uniform movement to a movable member of a sign or display structure.

The object of the invention is to provide a sign or display support comprising a pendulum structure, together with electromagnetic mechanism cooperating with the pendulum structure to control the swing thereof, and quick acting circuit breaking and making mechanisms for controlling the current flow for the electromagnetic mechanism.

My invention will be clearly understood by referring to the drawings, in which

Fig. 1 is the rear view of a sign or display structure with my improved operating mechanism installed;

Fig. 2 is an enlarged side elevational view of the upper end of the supporting pendulum structure and electromagnetic and circuit controlling mechanism;

Fig. 3 is a front elevational view of the electromagnetic and circuit controlling mechanism; and

Fig. 4 is a vertical diametral sectional view of the armature structure for the electromagnet mechanism.

The sign structure S shown in Fig. 1 is intended to represent a woman W bending over an ironing board B and operating the flat iron I over the ironing board as in the act of ironing. The iron is shown held by the hand H, the arm J being part of and extending from the structure or support 10 carried at the lower end of the pendulum rod 11. This pendulum rod is shown pivoted at 12 and, in order to insure horizontal movement of the flat iron, an auxiliary support in the form of a parallel wire 13 is extended to the structure 10 from the pin 14, the wire being parallel with the pendulum.

For balancing the pendulum structure a weight C is adjustably mounted on the support 10.

The structure of the pendulum operating mechanism is best shown in Figs. 2 and 3. It comprises a base 15 of insulating material for which a supporting bracket 16 is provided by means of which it may be secured to the back of the sign S, shown in Fig. 1, or to any other sign or display device. At its lower end the base 15 supports the electromagnet coil 17 whose wire is confined on a tubular non-magnetic core 18 between the base 15 and the end disc 19. Slidable within the tubular core 18 is a tube 20 of non-magnetic material and preferably light material, such as fiber, and in the outer end of this tube is secured an armature bar 21. In the arrangement shown, the armature projects through a hole 22 in the bracket 16 to abut against the upper end of the pendulum so as to give said pendulum a swing impetus when the electromagnet winding 17 is energized.

Above the pendulum a U-shaped bracket 23 extends forwardly from the base 15 and in its ends has the circular openings 24 for receiving the lower deflected ends 25 of the legs 26 of contact lever 27, which at its upper end carries a contact point 28. Secured to the base 15 above the bracket 23 is the vertical U-shaped bracket 29 whose inner wall has the contact 30 and whose outer wall has the insulating cushioning abutment 31, the upper end of the contact lever 27 traveling between the contact 30 and the abutment. A tension spring 32 is secured to the lever between its legs 26 and connects with the pin 33 extending from the pendulum. The arrangement is such that as the pendulum swings, the spring axis will be carried to one side or the other of the plane of the contact lever so that this lever will be quickly thrown in corresponding direction. When the electromagnet winding is connected for current flow, its armature structure 20—21 will be drawn outwardly from the dotted line to the full line position in Fig. 2, and into abutment with the upper end of the pendulum, which will then be swung in a counterclockwise direction, as shown in full lines in Fig. 2. The contact lever will remain against the contact 30 until the axis of the spring arrives at the outside of the plane of the lever 27, when the lever will be quickly thrown outwardly away from the contact and against the abutment 31, and, as will be presently explained, the circuit will then be broken through the electromagnet winding. The armature pressure against the pendulum being released, the pendulum will return to its former position and will restore the armature to its outer position, and as soon as the spring axis passes inwardly beyond the plane of the contact lever, the contact lever will be rapidly swung against its contact 30 and the circuit through the electromag-

net winding reestablished. The pendulum is thus swung in one direction by the attracted armature structure and is swung in the opposite direction by the force of gravity.

In the circuit arrangement shown, the end 34 of the electromagnet winding connects with the bracket 23 and thus with the contact lever 27. The other end 35 of the winding connects with one terminal of a plug P while the bracket 29 and consequently the contact 30 are connected by a conductor 36 with the other terminal of the plug, the plug being adapted to be screwed into any electric light socket. With this arrangement, when the contact lever engages the contact 30, current will flow through the electromagnet winding, and as soon as the lever is swung away from the contact to its abutment 31, the circuit will be broken. I preferably include a lamp 37 in the circuit so that in case the contacts should stick or the circuit should be otherwise out of order, there will be no undue current flow or danger from fire, the lamp 37 then taking care of the current flow. The lamp may be situated behind a display or legend opening 38 in the sign, so that as the device I moves back and forth the sign or legend 39 in the opening 38 will be repeatedly illuminated.

By properly adjusting the pivot point of the pendulum and the weight of the pendulum, the speed of oscillation can be very readily controlled, so that the movement of the display device can be accurately regulated. The armature structure 20, 21, is light and moves very readily through the coil so that very little current flow is needed for its operation and for giving the necessary impulses to the pendulum to maintain proper swing thereof. The contact lever 27 is also mounted to swing with very little friction and is thus rapidly responsive to open and close the energizing circuit for the electromagnet. If it is desired to stop the structure at any time, the pendulum is stopped in its vertical position, in which position the spring 32 will just have swung the lever away from contact 30 to open the circuit. To start the structure, the pendulum is swung, and as soon as contact is made between the lever and its contact to close the circuit, the device will continue its operation.

Besides controlling the movements of the contact lever 27, the spring 32 acts to brake and cushion the movements of the pendulum for when the spring has been moved to one side or the other of the plane of the lever, the spring will resist further movement of the pendulum and will thus act as a yielding brake or cushion to maintain the proper amplitude of swing.

I thus produce a simple, noiseless, smooth running and efficient propulsion arrangement for sign or display structures, and I claim the following:—

1. In a sign structure, the combination of a support, a pendulum and a moving sign member connected therewith, said pendulum being pivoted on said support, an electromagnet having an armature disconnected from but adapted to coact with said pendulum to give a swing impulse thereto upon current flow through said electromagnet winding, a contact lever pivoted at one end over said pendulum, a contact and an abutment between which one end of said lever swings, a spring connection between said pendulum and said lever intermediate the ends of said lever, and an electrical circuit including the electromagnet winding, said contact and said lever, engagement of said lever with said contact causing closure of said circuit, said lever engaging with said abutment when said pendulum is swung by said armature and engaging with said contact when said pendulum is released from said armature.

2. In an electric sign structure, the combination of a support, a pendulum pivoted on said support, a sign member connected with said pendulum to be moved thereby, an electromagnet having an armature adapted when attracted to engage with said pendulum to give swinging impulse thereto, a vertical lever pivoted at its lower end above said pendulum, an abutment and a contact between which the upper end of the lever extends, a spring extending from said pendulum and connecting with said lever intermediate its ends whereby when said pendulum is swung said spring will be carried with its axis to one side or the other of the plane of said lever to be thus engaged alternately with said contact and with said abutment, and an energizing circuit closed through the electromagnet winding when said lever engages said contact.

In testimony whereof, I hereunto subscribe my name this 25th day of November, 1925.

THOMAS C. RUSSELL.