Dec. 5, 1933. A. F. HENNINGER, JR 1,938,538

NEGATIVE GLOW SYSTEM FOR CREATING ILLUSION OF MOTION

Filed May 18, 1931

Fig. 1

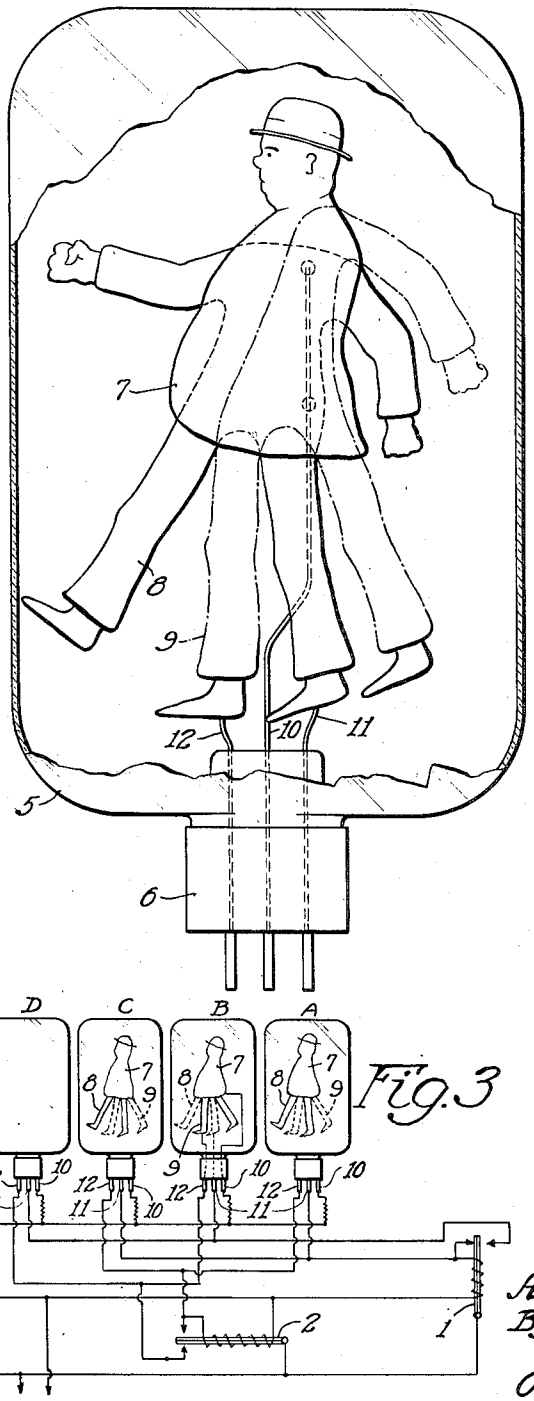

Fig. 2

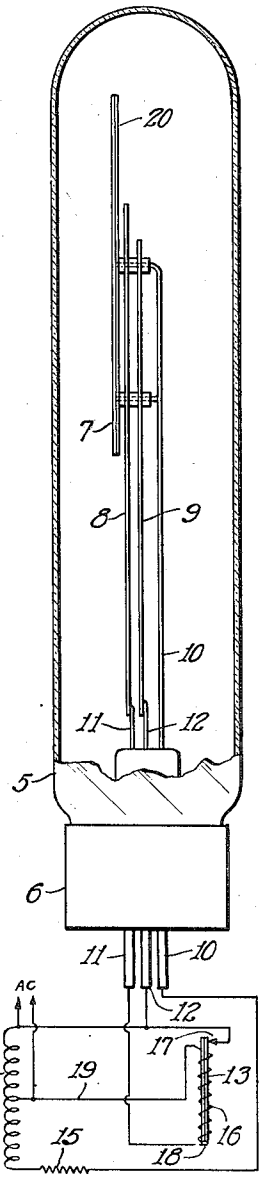

Fig. 3

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NEGATIVE GLOW SYSTEM FOR CREATING ILLUSION OF MOTION

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5 Claims. (Cl. 176—14)

My invention relates to negative glow devices and more particularly to a device of this character which is calculated to give an illusion of a continuous motion of a figure or design where there is in fact no motion present.

My invention contemplates as a means for obtaining this result the provision of a multiple unit figure so arranged that while certain parts of it may be caused to glow continuously, the glow discharge may be shifted between other parts of the figure to create the illusion to the eye that the parts are actually moving.

My invention also contemplates the provision of a combination of negative glow devices so arranged with respect to each other and operated with respect to each other as to create an effect upon the eye of the observer that the figures are continuously marching or moving in one direction.

I will describe the preferred form of my invention more fully by reference to the accompanying drawing wherein—

Fig. 1 is a front view of a device embodying the invention;

Fig. 2 is a view taken at right angles to Fig. 1 showing the relative positioning of parts; and

Fig. 3 is a view of a plurality of units so connected as to create a certain illusory appearance.

Referring now in detail to the drawing, the numeral 5 indicates an evacuated envelope or tube which is preferably made in the flat rectangular shape indicated and which has the mounting base 6 thereon. Within the tube, which may be filled with any of the proper conducting gases such for example as neon at the proper pressure, I provide a plurality of electrodes 7, 8, and 9 which electrodes are provided with the terminal leads 10, 11, and 12, respectively.

By means of the circuit as shown in Fig. 2, a thermostat 13 is adapted to open and close to alternately cause the discharge between electrodes 7 and 8 at one instant and electrodes 7 and 9 at the next instant. Thus electrode 7, representing the body of the figure, is illuminated at all times while the quick flashing of electrodes 8 and 9 alternately gives an impression of a change in position of the hands and feet of the figure so as to create the illusion that he is walking or running. In this manner the appendages of the figure may be made to appear as moving by causing the flashing to occur at such a rapid rate as to prevent the eye from following or discovering the illusion.

It is obvious, of course, that the figure need not be limited to the same type as shown and described since the same system may be applied to different types of figures where a body portion is caused to move or has movement of the appendages thereto. For example, this system could easily be applied to the figure of a four-footed animal.

The particular means of creating the flashing of the electrodes shown consist of the thermostat 13, an autotransformer 14, a limiting resistance 15, and a heating coil 16 for the thermostat. Terminal 12 and one end of the transformer 14 make contact at 17 with the thermostat element. Terminal 10 is connected through the limiting resistance 15 to the other side of the transformer 14. This transformer is, as shown in Fig. 2, energized from a suitable source alternating current potential. Lead terminal 11, as shown, is connected to the end 18 of the thermostat opposite the contact 17.

The operation of the device is as follows:

Assuming that at starting contact 17 is closed, the electrodes 8 and 9 are connected in parallel across the transformer to the electrode 7. Electrode 8, however, being much closer to electrode 7 will take all of the current and thus glow brightly while electrode 9 will be substantially dark. Thus electrodes 7 and 8 will be glowing to illustrate the figure in the full line position as shown in Fig. 1. While this is occurring, however, the current is flowing through the heating coil 16 owing to the fact that one end of this coil is connected at 18 to one terminal of the transformer while the other end of the coil is connected by lead 19 to the mid point of the transformer. The heating of thermostat 13 in this fashion would cause it to break the circuit at 17 thus cutting out terminal 11 and its associated electrode 8 from connection with either side of the transformer; similarly, the circuit for the heating coil is broken at 17. Electrode 9 will now be caused to glow due to current flowing between it and electrode 7 so that now the body electrode 7 is still glowing but electrode 8 is dark and electrode 9 is glowing to put the figure in the position shown by the dotted and dash lines in Fig. 1. This alternating reaction will continue to take place at intervals depending upon the constants of thermostat 13 and the heating coil 16.

Referring now to Fig. 3, there is illustrated a manner in which an illusion of a continuous stream of figures passing across a space may be created. This is accomplished by using a series

of tubes or figures such as A, B, C, and D, each figure operating substantially like the figure shown in Figs. 1 and 2. For this apparatus, however, I prefer to use the circuit similar to that shown in my prior application serial No. 518,981, filed February 28, 1931, for Flashing negative glow display device.

Thermostats 1 and 2 have front and back contacts and operate to illuminate the electrodes in the following fashion: When thermostat 1 is cold, it closes its front contact thus connecting full voltage across electrodes 7 and 8 of tubes A and C causing these electrodes to glow. Also the heating coil of thermostat 1 is energized by this connection causing after a brief interval the opening of the circuit at front contact of thermostat 1. Thermostat 2 is timed to close its front or top contact when front contact of thermostat 1 opens. When this occurs, electrodes 7 and 9 in tubes B and D glow, and, as the back contact of thermostat 1 does not close for a short time after the front contact is open, tubes C and A will be dark for a period creating the impression that the figures have stepped from tubes A and C to tubes B and D. As heat is now applied to thermostat 2 by means of its heating coil, it opens its front contact at about the time thermostat 1 closes its back contact. Closing of the back contact of thermostat 1 causes the potential to be applied across electrodes 7 and 8 of tubes B and D, and then as thermostat 2 swings over to its back contact due to the heat applied, thermostat 1 separates from its back contact and moves toward its front contact. When thermostat 2 strikes its back contact, tubes A and C are again lighted, this time with electrodes 7 and 9 glowing; and then, when thermostat 2 reverses as it cools and moves away from its back contact, thermostat 1 is cooled enough to strike its front contact again to start the cycle over. I find it is not difficult to so adjust the heating and cooling of the thermostats, which are bimetallic elements, to obtain the above operation. The front and back contacts may, of course, be made of spring material to yield more or less as their thermostatic elements 1 and 2 engage them and facilitate adjustment in this manner.

In this manner, the figure is made to appear as walking from one tube to the next, and of course if desired, by continuous operation of each of the tubes, the illusion created is that of a plurality of figures marching across the space occupied by the tubes.

From the above description, it is believed that the construction and operation of this device will be clear to those skilled in this art and the advantages thereof readily apparent. It is also believed to be obvious that various minor modifications may be made without departing from the scope of the invention herein set forth.

It is advisable to coat the backs of electrodes 7, 8, and 9 with an insulation of some sort as indicated at 20 to prevent discharge to their back surfaces. The lead-in and supporting wires are also insulated to protect them from the discharge and prevent their glowing.

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

1. A negative glow device for creating an illusion of an animated object in motion comprising a gas filled envelope having a stationary electrode forming the body of said object, and a plurality of electrodes forming appendages of said object, said last named electrodes each presenting said appendages as in a different position relative to said body, and means for passing an alternating electric current between said body electrode and different ones of said appendage forming electrodes in a serial order to produce an optical illusion of motion.

2. A negative glow device for creating an illusion of an animated object in motion comprising a gas filled envelope having therein a plurality of stationary electrodes depicting said object in different positions, each electrode forming a visible part of the object when in circuit, a source of alternating current supply for causing a discharge between said electrodes and thereby cause them to glow with the characteristic negative glow, and means for connecting said source of current supply across different groups of said electrodes in a definite order whereby to produce a glowing object in different positions, one of said electrodes being illuminated as a part of the object in all said groups.

3. A negative glow device for creating an illusion of an animated object in motion comprising a gas filled envelope having therein a plurality of stationary electrodes depicting said object in different positions, a source of alternating current supply for causing a discharge between said electrodes and thereby cause them to glow with the characteristic negative glow, and means for connecting said source of current supply across different groups of said electrodes in a definite order whereby to produce a glowing object in different positions, said electrodes being substantially flat plates each shaped to form a portion of said object.

4. A negative glow device for creating an illusion of an animated object in motion comprising a gas filled envelope having therein a plurality of stationary electrodes depicting said object in different positions each electrode forming a visible part of the object when in circuit, a source of alternating current supply for causing a discharge between said electrodes and thereby cause them to glow with the characteristic negative glow, and means for connecting said source of current supply across different groups of said electrodes in a definite order whereby to produce a glowing object in different positions, said electrodes being interconnected to form a rigid structure by non-conducting means.

5. A negative glow device for creating an illusion of an animated object in motion comprising a gas filled envelope having therein a plurality of stationary electrodes depicting said object in different positions each electrode forming a visible part of the object when in circuit, a source of alternating current supply for causing a discharge between said electrodes and thereby cause them to glow with the characteristic negative glow, and means for connecting said source of current supply across different groups of said electrodes in a definite order whereby to produce a glowing object in different positions, said electrodes having discharge receiving surfaces all facing in the same direction.

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