

March 23, 1926.

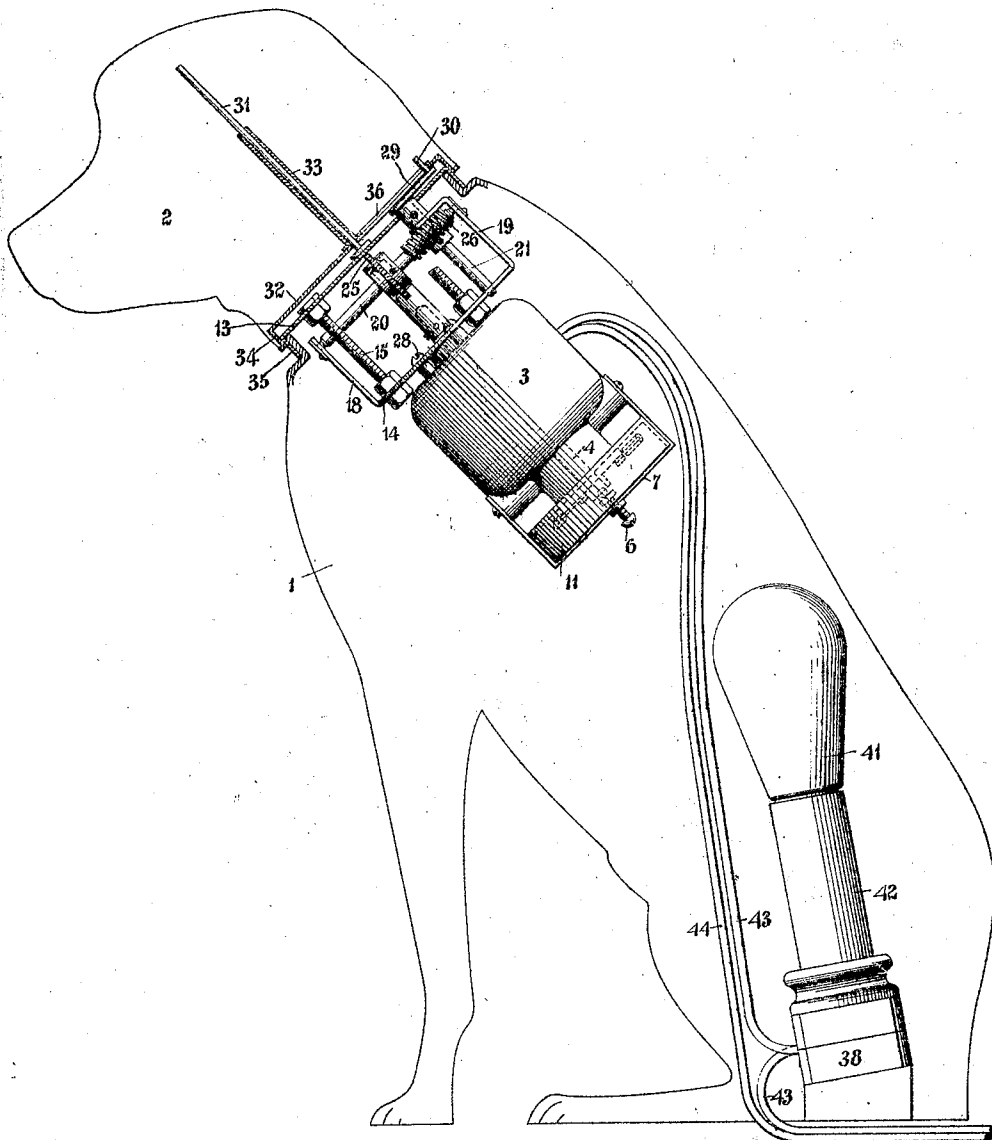
1,577,903

A. E. GOVER ET AL
MECHANICALLY OPERATED FIGURE

Filed April 6, 1922

2 Sheets-Sheet 1

Fig. 1.



INVENTORS

*Alfred E. Gover and
Christian H. Hartman*

BY ATTORNEYS
Wm. H. Smith

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A. E. GOVER ET AL

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Fig. 2.

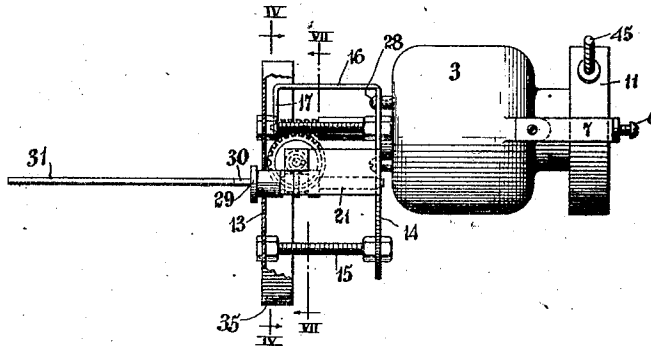


Fig. 3.

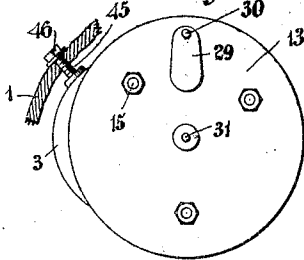


Fig. 4.

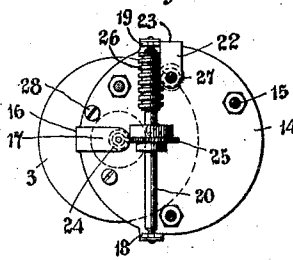


Fig. 5.

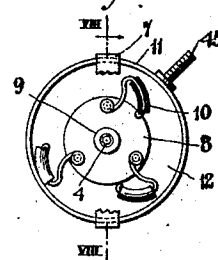


Fig. 6.

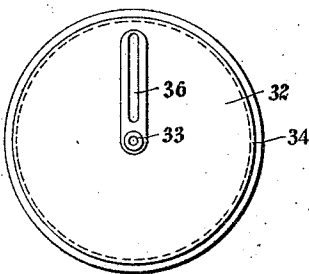


Fig. 7.

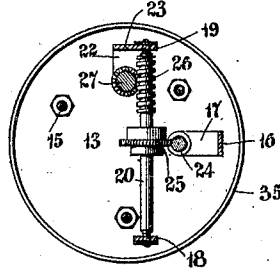


Fig. 8.

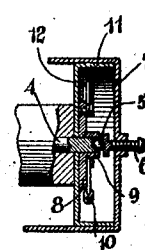
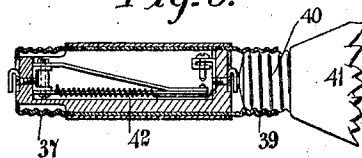


Fig. 9.



INVENTORS
Alfred E. Gover and
Christian H. Hartman
BY *Attorneys*

UNITED STATES PATENT OFFICE.

ALFRED E. GOVER AND CHRISTIAN H. HARTMAN, OF PORT JEFFERSON, NEW YORK.

MECHANICALLY-OPERATED FIGURE.

Application filed April 6, 1922. Serial No. 550,179.

To all whom it may concern:

Be it known that we, ALFRED E. GOVER and CHRISTIAN H. HARTMAN, citizens of the United States, and residents of Port Jefferson, in the county of Suffolk and State of New York, have invented a new and useful Improvement in Mechanically-Operated Figures, of which the following is a specification.

The object of our invention is to produce a mechanically operated figure in which the movable member of the figure is operated by an electric motor slowly and at varying intervals, thereby eliminating the undesirable regularity of movement, such as is produced by mechanically operated figures having clock movement motors, and also eliminating the necessity of periodic winding of the clock movement.

Our invention comprises a hollow figure having fixed and movable members in which the movable member is intermittently operated at a very slow speed, by an electric motor, without danger of the motor becoming overheated or stalled; means being provided for so mounting the motor shaft that the motor may be easily started by very little current, a mechanical governor being mounted on the motor shaft to ensure an even running speed of the motor, and a thermal switch being provided for controlling the circuit through the motor.

A practical embodiment of our invention is represented in the accompanying drawings, in which—

Fig. 1 represents a hollow mechanical figure with our improved driving mechanism enclosed therein.

Fig. 2 represents a detail side view of the motor and its adjacent parts.

Fig. 3 represents a top plan view of the same.

Fig. 4 represents a transverse section taken in the plane of the line IV—IV of Fig. 2, looking in the direction of the arrows.

Fig. 5 represents a bottom plan view of the motor.

Fig. 6 represents a plan view of the plate carried by the movable member of the figure.

Fig. 7 represents a transverse section taken in the plane of the line VII—VII of Fig. 2, looking in the direction of the arrows.

Fig. 8 represents a detail longitudinal sec-

tion taken in the plane of the line VIII—VIII of Fig. 5 looking in the direction of the arrows.

Fig. 9 represents a detail longitudinal central section through the intermittent thermal flashing switch that we employ for controlling the circuit through the motor.

The hollow mechanical figure comprises the fixed member 1 and the movable member 2, which is herein shown as mounted for oscillation on the fixed member.

The electric motor 3 is located within the fixed member of the hollow figure and is so positioned that its shaft 4 is arranged diagonally. The lower end of the motor shaft rests upon a ball bearing 5. Greater or lesser pressure may be exerted endwise against the lower end of the motor shaft by providing an adjusting screw 6, carried by a frame 7, secured to the motor casing.

A mechanical governor is mounted on the lower end of the motor shaft 4, which governor is herein shown as comprising a disc 8, having its hub 9 fast on the motor shaft, on which disc are pivoted the weights 10, which are arranged to be thrown by centrifugal action against the flange 11 of a cup-shaped casing 12, secured to the motor casing.

A gear frame comprises top and bottom plates 13 and 14, properly spaced apart by bolts 15, an arm 16 uprising from the bottom plate 14 having an inwardly turned end 17 which serves as a mounting for the upper end of the motor shaft 4. Two oppositely arranged uprising arms 18 and 19 serve as supports for a cross shaft 20. A crank shaft 21 offset from the motor shaft 4 is mounted at its lower end in the bottom plate 14 of the gear frame and near its upper end in the inwardly turned end 22 of an arm 23, uprising from the bottom plate 14. A worm and gear connection 24, 25 is provided between the motor shaft 4 and cross shaft 20. A worm and gear connection 26, 27 is provided between the cross shaft 20 and the crank shaft 21.

The bottom plate of the gear frame is secured to the motor casing by the fastening screws 28.

The crank arm 29 of the crank shaft 21 is located above the top plate 13 of the gear frame and is there provided with an uprising crank pin 30.

A spindle 31 uprises from the top plate 13 and on this spindle the movable member

2 of the hollow mechanical figure is mounted to oscillate as follows:

This movable member 2 is provided with a plate 32 having a tube 33 uprising therefrom and by means of which the movable member is removably pivoted on the spindle 31, uprising from a top gear plate 13. This plate 32 is provided with a depending peripheral flange 34, which fits over the depending peripheral flange 35 of the top gear plate 13.

This plate 32 has a radially elongated slot 36 into which the crank shaft pin 30 projects. It will thus be seen that the rotary movement of the crank shaft 21 will impart an oscillating movement to the movable member 2 of the mechanical figure.

To provide an intermittent oscillating movement of varying periods to the movable member 2, we locate in the motor circuit, a thermal switch of any well known or approved form, preferably an intermittent thermal flashing switch. In the form of switch shown herein, the plug end 37 of the switch is arranged to be screwed into a suitable socket in the block 38. The socket end 39 of the switch is adapted to receive the plug 40 of an incandescent electric lamp 41. The action of the thermal switch is well known, that is, the heating and cooling of the coil 42 serving to control the motor circuit through the wires 43, 44, one of which leads directly to the motor 3 and the other of which leads to the motor through the thermal switch. This intermittent thermal flashing switch is located within the fixed body portion of the figure. A screw bolt 45 projects from the motor casing through the wall of the fixed hollow member and a nut 46 engages said screw bolt for supporting the motor in position within said fixed member.

It will therefore be seen that all of the operating parts of the device are located within the figure, which, in the present instance is represented as an animal figure comprising a fixed body portion and a movable head portion.

The arrangement of the several parts as herein described enable us to utilize an ordinary high speed electric motor, without danger of overheating or stalling the same, the anti-friction end thrust mounting for the motor shaft allowing the motor to be started with very little current. Furthermore, an oscillating movement of varying periods is provided by the use of the intermittent thermal switch in conjunction with the pin and slot arrangement, thus giving a more life like action to the movable member, as distinguished from those devices in which the movable member is moved at regular intervals. In our device the movable member may stop or start from any position between the limits of its movement.

It will be noted that by virtue of the peculiar pin and slot arrangement, operating in conjunction with the motor and switch that an indeterminate stroke at indeterminate intervals is obtained.

It will also be seen that by providing a mechanical governor mounted on the motor shaft, we are enabled to secure a very even speed of the motor. Also the provision of a reducing gear between the motor shaft and the crank shaft which oscillates the movable member enables us to oscillate the movable member very slowly and naturally.

Also where the hollow figure is transparent, the use of a thermal flashing switch causes the figure to be illuminated every time the lamp is lighted, thus adding to the attractiveness of the figure, especially as an advertising medium.

It is evident that various changes may be resorted to in the construction, form and arrangement of the several parts without departing from the spirit and scope of our invention, hence we do not wish to limit ourselves to the particular embodiment herein shown and described, but

What we claim is:—

1. A hollow mechanically operated figure comprising fixed and movable figure members, means located within the fixed figure member for operating the movable figure member, said means including an electric motor, means including a thermal switch associated with said electric motor for moving the movable member indeterminately with respect to the fixed member.

2. A hollow mechanically operated figure comprising a fixed body member and an oscillating head member, means located in the fixed body member for oscillating the head member, said means including an electric motor, a mechanical governor therefor, and means including a thermal switch associated with said electric motor for moving the head member indeterminately with respect to the body member.

3. A hollow mechanical figure comprising fixed and movable figure members, an electric motor, its shaft, a mechanical governor mounted on said shaft, means driven by the motor shaft for operating the movable figure member, and mechanism including an intermittently acting thermal switch controlling the motor circuit to cause the movable figure member to be operated at indeterminate intervals.

4. A hollow mechanical figure comprising a fixed member and movable figure member mounted for oscillatory movement thereon, and means enclosed within the fixed figure member for oscillating the movable figure member at irregular intervals, comprising an electric motor, its shaft, a mechanical governor mounted on said shaft, an intermittently acting thermal switch controlling

the motor circuit, a driving connection between the motor shaft and oscillating figure member, comprising a rotary crank shaft offset from the motor shaft, and a speed reducing connection between the motor shaft and crank shaft, the oscillating figure member having a radially arranged slot for receiving the crank shaft pin.

5 5. A hollow mechanical figure comprising
10 a fixed member and movable figure member mounted for oscillatory movement thereon, and means inclosed within the fixed figure member for oscillating the movable figure member at irregular intervals, comprising
15 an electric motor, its shaft, a mechanical governor mounted on said shaft, an intermittently acting thermal flashing switch controlling the motor circuit, a driving connection between the motor shaft and oscillat-
20 ing figure member, comprising a rotary crank shaft offset from the motor shaft, and a speed reducing connection between the motor shaft and crank shaft, the oscillating figure member having a radially arranged
25 slot for receiving the crank shaft pin.

6. A hollow mechanical figure comprising a fixed figure member provided with a plate having an uprising spindle and a movable figure member mounted for oscillatory move-
30 ment thereon provided with a plate having a tube pivotally mounted on said spindle, and means enclosed within the fixed figure member for oscillating the movable figure member at irregular intervals, comprising an
35 electric motor, its shaft, a mechanical governor mounted on said shaft, an intermit-

tently acting thermal switch for controlling the motor circuit, a mechanical driving connection between the motor shaft and oscillating figure member, comprising a rotary
40 crank shaft offset from the motor shaft, and a speed reducing connection between the motor shaft and crank shaft, the plate of the oscillating figure member having a radially arranged slot for receiving the crank shaft
45 pin.

7. A hollow mechanical figure comprising a fixed figure member provided with a plate having an uprising spindle and a movable figure member mounted for oscillatory move-
50 ment on said fixed member provided with a plate having a tube pivotally mounted on said spindle, and means enclosed within the fixed figure member for oscillating the movable figure member at irregular intervals,
55 comprising an electric motor, its shaft, a mechanical governor mounted on said shaft, an intermittently acting thermal flashing switch for controlling the motor circuit, a mechanical driving connection between the
60 motor shaft and oscillating figure member, comprising a rotary crank shaft, offset from the motor shaft, and a speed reducing connection between the motor shaft and crank shaft, the plate of the oscillating figure
65 member having a radially arranged slot for receiving the crank shaft pin.

In testimony that we claim the foregoing as our invention, we have signed our names this 4th day of April, 1922.

ALFRED E. GOVER.

CHRISTIAN H. HARTMAN.