March 7, 1939. E. STEINMANN 2,149,559

ELECTRIC MOTOR

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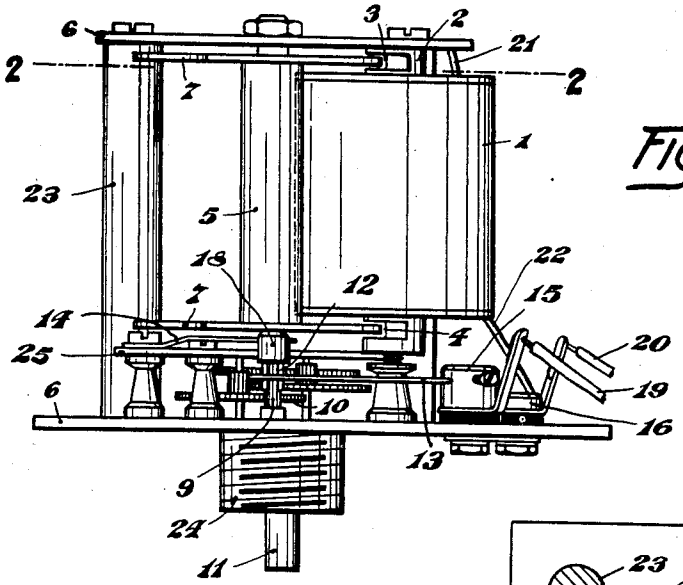


Fig. 1

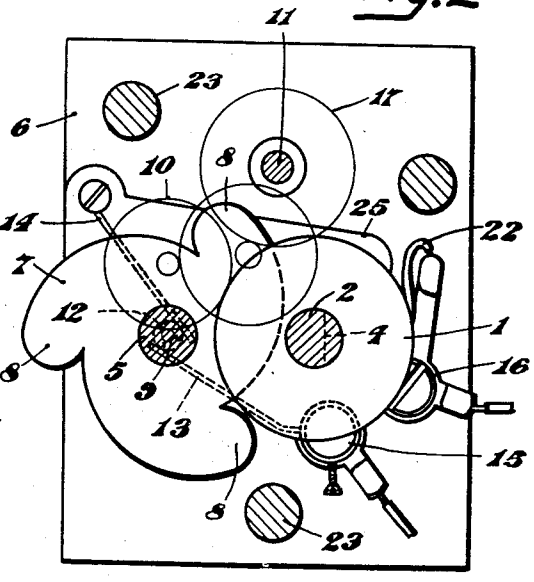


Fig. 2

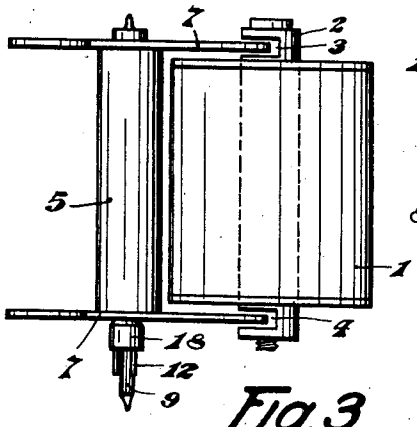


Fig. 3

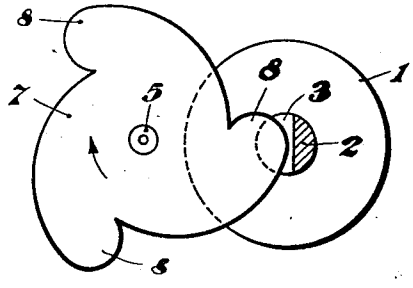


Fig. 4

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ELECTRIC MOTOR

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Application May 9, 1938, Serial No. 206,943
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4 Claims. (Cl. 172—36)

This invention relates to electric motors of the type having an electromagnet and a rotatable armature the movement of which is transmitted to the member to be driven.

The object of the invention is the provision of an electric motor of the above type, of simple improved construction and of relatively small dimensions, forming a unit which may easily be mounted as a whole on the frame of the apparatus to be driven.

The invention consists in the arrangement and construction of parts as will be described hereinafter, reference being had to the accompanying drawing showing by way of example a preferred form of the invention constituted by an electric motor which may be used for driving a rotary advertising apparatus.

Figure 1 is an elevation of the motor.

Figure 2 is a horizontal section along the line 2—2 of Fig. 1.

Figures 3 and 4 show a detail of the motor in elevation and in plan view.

The represented motor comprises a straight electromagnet having a winding 1 and a core 2. Both ends of the core project beyond the winding and are each provided with a lateral notch 3 and 4, respectively. The armature of the electromagnet is formed by a rotatable shaft 5 carrying at each of its ends a disk 7. This shaft 5 is mounted between two plates 6 fixed to each other by pillars 23, one of which has been removed in Fig. 1 for the sake of clearness. The plates 6 and pillars 23 form the frame of the motor which can be mounted by means of a screw socket 24 to the frame of the apparatus to be driven. Each disk 7 is formed with three lateral projections 8 which, upon rotation of the shaft, penetrate through the notches 3 and 4 of the core 2. The bottom end of the shaft 5 carries a pinion 9 meshing with the first wheel 10 of a wheel work mounted between the lower plate 6 and a bridge 25 and transmitting the movement of the shaft 5 to a wheel 17 keyed to a shaft 11 which is connected to the member to be driven by the motor, in the present case a rotatable advertising disk. The shaft 5 is provided with a collar 18 which carries three axially extending contact pins 12 coacting with a contact brush 13. A second contact brush 14 bears against the collar 18 of the shaft 5.

One of the poles of an electric current supply, not shown, is connected by means of a conductor 19 to a terminal 15 which is insulatedly mounted on the lower plate 6 and which carries the brush 13. The second pole of the current supply is connected by means of a conductor 20 to a terminal 16 also insulatedly mounted on the plate 6. When the brush 13 makes contact with one of the pins 12, electric current passes from the terminal 15 through brush 13, the pin 12, the shaft 5 and the brush 14 to the plate 6, and accordingly to the frame of the motor. From the upper plate 6 the current passes through the conductor 21 to one end of the winding of the electromagnet 1, while the other end of the winding is connected to the terminal 16 by means of a conductor 22.

Just before the electric circuit is closed, that is to say a moment before the brush 13 makes contact with one of the pins 12, the two disks 7 are in a position relative to the core 2 of the electromagnet as shown in Fig. 2. When the circuit is closed, one of the projections 8 of the disks 7 is attracted by the core 2 and penetrates into the corresponding notch 3 or 4 of the core as shown in Fig. 4. The magnetic circuit of the motor is then the following: Positive pole of the core 2, projection 8 of corresponding disk 7, shaft 5, second disk 7, projection 8 engaged in corresponding notch of core 2, and negative pole of core. In the moment when the projection 8 arrives in the notch of the core, the circuit is opened between the pin 12 and the brush 13; the disks 7 owing to their inertia, continue the movement of rotation, the projections 8 abandon the notches of the core and the next pin 12 makes contact with the brush 13, closing again the circuit to produce attraction of the following projection 8 of the disks 7.

I claim:

1. An electric motor comprising an electromagnet including a winding and a core, one end of the core projecting beyond the winding, said end of the core being provided with a notch, an armature including a rotatable shaft extending parallel to the core, a disk on said shaft, said disk being provided with peripheral projections destined to penetrate through said notch upon rotation of said shaft, an electric circuit, a circuit interrupter including contact members moving with said shaft, and a stationary contact member coacting with said movable contact members to open and close the circuit when the armature arrives in predetermined angular positions relative to the core.

2. An electric motor comprising an electromagnet having a winding and a core, the two ends of the core projecting beyond the winding, both said ends being provided with a notch, an armature including a rotatable shaft extending

parallel to the core, two disks on said shaft adapted each to cooperate with one of said projecting ends of the core, each disk being provided with peripheral projections destined to penetrate through said notch in the corresponding end of the core upon rotation of said shaft, an electric circuit, a circuit interrupter including contact members moving with said shaft, and a stationary contact member coacting with said movable contact members to open and close the circuit when said disks arrive in predetermined angular positions relative to said core.

3. An electric motor comprising an electromagnet having a winding and a core, one end of the core projecting beyond the winding, said end of the core being provided with a notch, an armature having a rotatable shaft extending parallel to said core, a disk on said shaft, said disk being provided with peripheral projections destined to penetrate through said notch upon rotation of said shaft, an electric circuit, a circuit interrupter including a number of contact pins equal to the number of peripheral projections on said disk, said contact pins moving with said shaft and being electrically connected to the winding of the electromagnet, and a stationary contact member coacting with said contact pins to open and close the circuit when said disk on the armature shaft arrives in predetermined angular positions relative to the core of the electromagnet.

4. An electric motor comprising an electromagnet having a winding and a core, the two ends of the core projecting beyond the winding, both said ends being provided with a notch, an armature including a rotatable shaft extending parallel to said core, a pinion on said shaft, a wheelwork actuated by said pinion and transmitting movement to the member to be driven by the motor, two disks carried by the shaft and adapted each to cooperate with one of said projecting ends of the core, each disk being provided with a plurality of peripheral projections destined to penetrate through said notch in the corresponding core projection upon rotation of said shaft, an electric circuit including the winding of the electromagnet, a circuit interrupter including a plurality of contact pins equal in number to the number of projections on each of said disks, said contact pins moving with said shaft and being electrically connected to the winding of the electromagnet, and a stationary contact member coacting with said contact pins to open and close the circuit when said disks on the armature shaft arrive in predetermined angular positions relative to the core.

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