Oct. 3, 1933. J. N. SHERWIN 1,928,872

ELECTROMAGNETIC MOTOR

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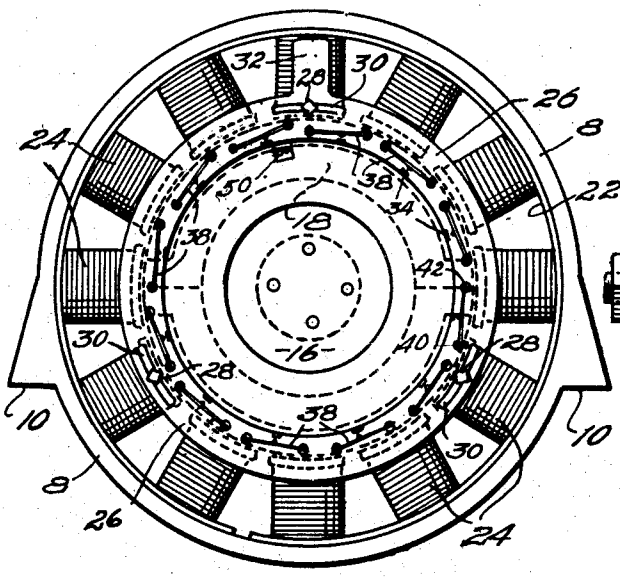


Fig. 1

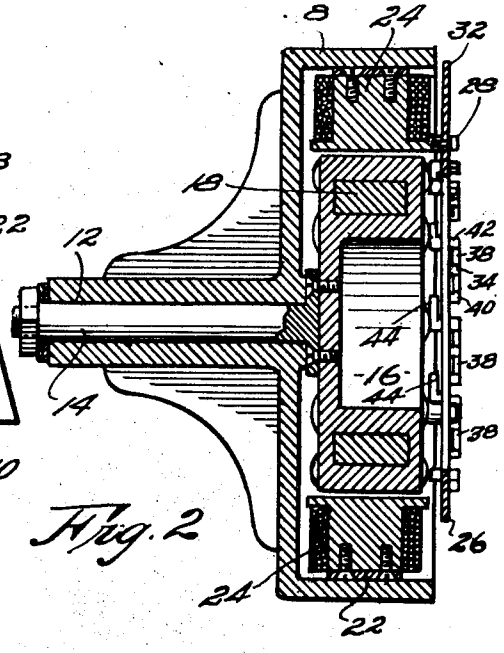


Fig. 2

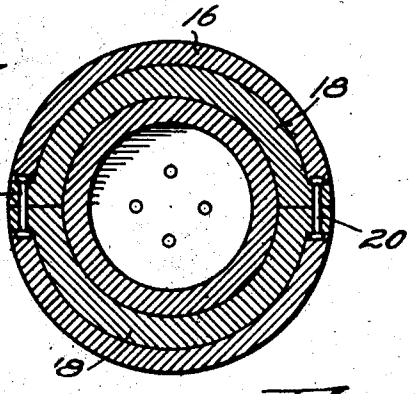


Fig. 3

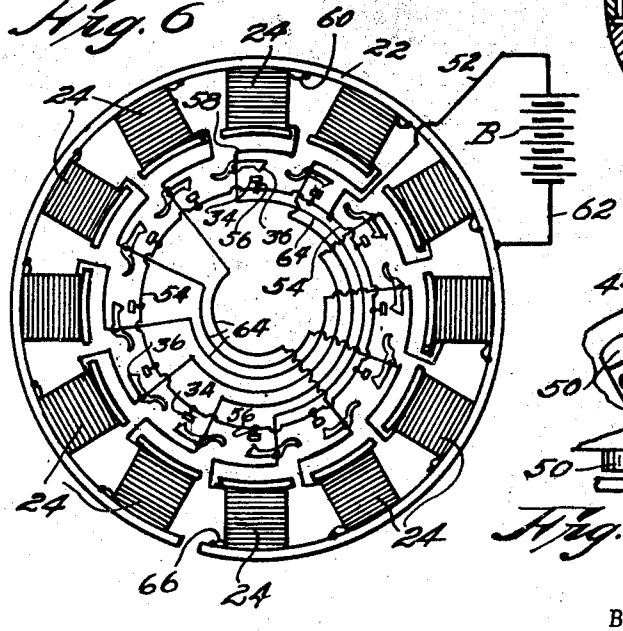


Fig. 6

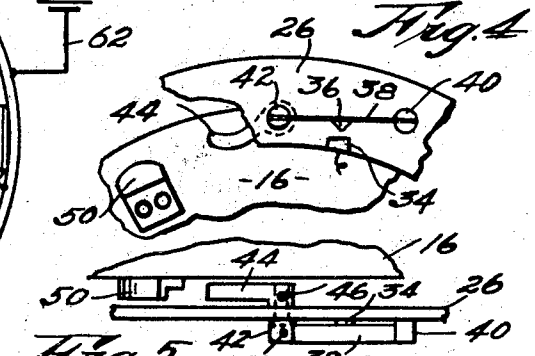


Fig. 4

Fig. 5

INVENTOR,
John N. Sherwin

BY
Harvey & Hamilton.
ATTORNEYS.

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ELECTROMAGNETIC MOTOR

John N. Sherwin, Independence, Mo.

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6 Claims. (Cl. 172—36)

This invention relates to improvements in electromagnetic motors, and has particular reference to the use therein of means for forming a horse-shoe magnet, whereby the two poles thereof act upon a rotatable wheel for the purpose of imparting a driving force thereto.

Another object of the invention is a novel form for the aforementioned wheel which includes the creation on the annular periphery thereof of magnetic zones that are acted upon by induction coils associated with said split ring for the purpose and in a manner hereinafter set forth.

A further aim of the invention is to provide unique means for making and breaking an electrical circuit, whereby current is allowed to pass to the appropriate number of a series of induction coils at a predetermined time for purpose of creating a constant driving force upon a rotatable wheel.

Even further objects of this invention will be made apparent during the course of the detailed specification, wherein unique structures will be set forth and described by reference to the accompanying drawing, wherein:

Figure 1 is a side elevation of an electromagnetic motor embodying the concepts of this invention.

Fig. 2 is a vertical, central section through the unit shown in Fig. 1.

Fig. 3 is a cross-section through the novelly formed fly wheel, showing the magnetic core therein.

Fig. 4 is an enlarged, fragmentary, detailed view of one of the breaker points and associated means for opening and closing the contacts thereof.

Fig. 5 is an edge elevation of the same, and,

Fig. 6 is a diagrammatical view illustrating one form of a circuit which may be used in an electromagnetic motor having the invention embodied therein.

Only the preferred form of the invention is illustrated in the accompanying drawing, and while the electromagnetic motor shown is complete as to its embodiment of the important features, it is understood that modifications might be made which would change the general form and appearance of the motor without departing from the basic ideas and broad principles.

Like reference characters will be used to designate similar parts throughout the several views, and the numeral 8 indicates a housing having shoulders 10 thereon for the purpose of supporting the mechanism in operative position. Housing 8 forms a bearing 12 wherein is journaled shaft 14, rigidly secured to a revoluble fly wheel 16 within housing 8. Wheel 16 is novelly formed as shown in detail in Figs. 2 and 3 to the extent that a magnetic core 18 is embedded therein and presents a pair of diametrically opposite zones 20 at the annular periphery of wheel 16, which are acted upon by the hereinafter described induction coils. Wheel 16 may be cast of bronze or brass and core 18 formed of iron. Fly wheel 16 is circumscribed by a split ring 22 that is secured to and carried by housing 8 and has a series of induction coils 24 secured thereto for the purpose of setting up a magnetic wheel of the horse-shoe magnet form. Coils 24 are preferably arranged in diametrically opposed relation and since ring 22 is split as illustrated in Figs. 1 and 6, an equal pull upon zones 20 will be created when opposed coils 24 are energized.

Obviously, means is provided whereby fly wheel 16 cannot stop on "dead center" or that position where an equal diametrically opposite force is exerted thereon. This means is incorporated in the relative positioning of a number of breaker points of the character shown in Figs. 4 and 5, of which there is one set for each coil 24.

All of these breaker points are carried by an adjustable breaker-point carrying support 26, which is ring-shaped so that said breaker points are disposed in an annular path spaced slightly forwardly of wheel 16. Support 26 is adjustable about the axial center of this annular path through the medium of bolts 28 and receiving slot therefor 30. A handle 32 may be provided for moving support ring 26 and when the same is in the proper position, bolts 28 are tightened to maintain the same in that place. Each breaker point comprises a stationary contact 34 and a movable contact 36, the latter being mounted upon a resilient leaf spring 38 that is supported by pintles 40 and 42 at the ends thereof, as shown in Figs. 4 and 5. Pintle 42 extends through ring 26 to carry finger 44 which is pinned thereto for movement therewith as at 46.

Pintle 42 is bifurcated near one end to receive spring 38 and a pin 48 rigidly secures together these parts so that when pintle 42 is rotated, spring 38 is flexed to move contact 36 down against contact point 34. To permit such movement, pintle 40 is bifurcated and slidably receives spring 38, as illustrated in Fig. 4. Each complete breaker point has a finger 44 that lies in the path of travel of a lug 50, carried by fly wheel 16. As lug 50 passes finger 44 it moves the same upwardly and a circuit is closed through the bringing together of points 36 and 34. The momen-

tum of fly wheel 16 is brought into consideration when setting breaker point support 26 and through the structure above specified it is possible to make and break the appropriate circuits to energize and de-energize coils 24 in their proper sequence.

As previously mentioned, diametrically opposed coils 24 should be simultaneously energized to create a like pull on each zone 20. In the diagrammatical view shown in Fig. 6, none of the breaker points are closed, but since the closing of any one energizes diametrically opposite coils, it will be understandable if but a single instance is herein set down.

B is the source of electrical energy in the form of a battery or the like, and from this source current travels through conductor 52 to continuous wire 54 which is common to all of the plurality of breaker points in that a branch wire 56 extends therefrom to stationary breaker point 34. Assuming that movable breaker point 36 has moved down against stationary breaker point 34, it is obvious that current will pass through that part of wire 54 between its connection with 52 and branch 56 leading to point 34. Thence the same will travel through conductor 58 to coil 24 and then to ring 22 through wire 60, from whence the circuit will be through wire 62 which leads from ring 22 to B. It is possible that the ordinary grounding of the conductors at an appropriate point might be carried out to reach the same effect.

The diametrically opposite coil 24 from the one just described as being energized will receive current from the source of supply by way of wire 64 which leads from point 36 of the breaker point across to coil 24 and the circuit from said coil will be completed through branch wire 66 that connects coil 24 and ring 22. The circuit is completed then by connection 62 which joins ring 22 and source of supply B.

It is obvious from the foregoing that a horseshoe magnet is set up since ring 22 is split as shown and the proper pull upon core 18 is established when opposed coils are energized. Manifestly, many modifications in practicing this invention might be followed without departing from the scope of the appended claims.

Having thus described the invention, what is claimed as new and desired to be secured by Letters Patent is:

1. In an electromagnetic motor, a rotor; a split ring circumscribing said rotor; a series of coils carried by said ring between the latter and said rotor; and a magnetic core embedded in said rotor having diametrically opposite zones presented at the annular periphery of said rotor.

2. In an electromagnetic motor, a rotor; a split ring circumscribing said rotor; a series of diametrically opposite magnetic coils carried by said ring between the latter and said rotor; a magnetic core embedded in said rotor having diametrically opposite zones presented at the annular periphery of said rotor; and a stationary breaker-point support disposed in an annular path adjacent said rotor.

3. In an electromagnetic motor, a rotor; a split ring circumscribing said rotor; a series of diametrically opposite magnetic coils carried by said ring between the latter and said rotor; a magnetic core embedded in said rotor having diametrically opposite zones presented at the annular periphery of said rotor; a stationary breaker-point support disposed in an annular path adjacent said rotor, said support having mounting means adjustably holding the same for movement about the axis of said annular path.

4. In an electromagnetic motor, a rotor; a split ring circumscribing said rotor; a series of diametrically opposite magnetic coils carried by said ring between the latter and said rotor; a magnetic core embedded in said rotor having diametrically opposite zones presented at the annular periphery of said rotor; and a stationary breaker-point support disposed in an annular path adjacent said rotor, said support having a plurality of movable breaker points, a plurality of stationary breaker points, and an operating finger extending into the path of a portion of said rotor when the same is rotated whereby the same is actuated to bring together said breaker points.

5. In an electromagnetic motor, a rotor; a split ring circumscribing said rotor; a series of diametrically opposite magnetic coils carried by said ring between the latter and said rotor; a magnetic core embedded in said rotor having diametrically opposite zones presented at the annular periphery of said rotor; a stationary breaker-point support disposed in an annular path adjacent said rotor; breaker points carried by said support; and a breaker-point closing lug projecting from the face of said rotor toward said support, said lug traveling with the rotor to successively engage a portion of the breaker points to close the same for a predetermined length of time as the rotor is rotated.

6. In an electromagnetic motor, a rotor; a stationary breaker-point support adjacent the rotor; a lug carried by the rotor; a plurality of breaker points carried by the support; and an operating finger associated with each breaker point and disposed in the path of travel of said lug, said breaker points including a spring supported by a pintle at each end respectively thereof, and a contact point intermediate said pintles, one of said pintles being rotatably mounted and carrying the said finger whereby when the finger engages said lug the rotatable pintle is rotated to flex said spring and move the said contact point.

JOHN N. SHERWIN.