

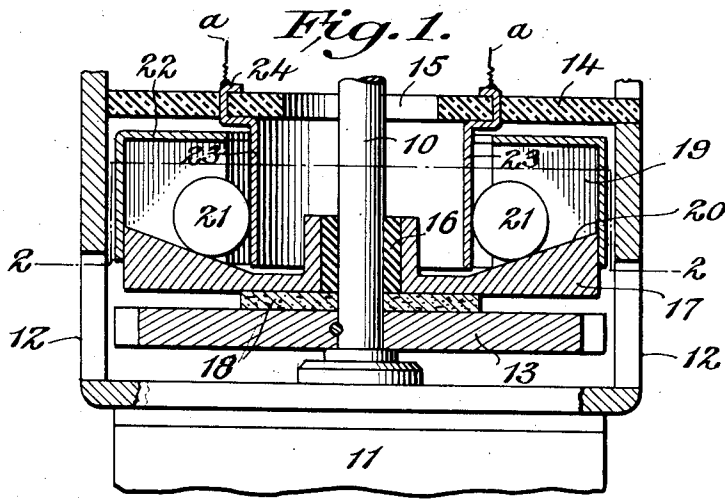
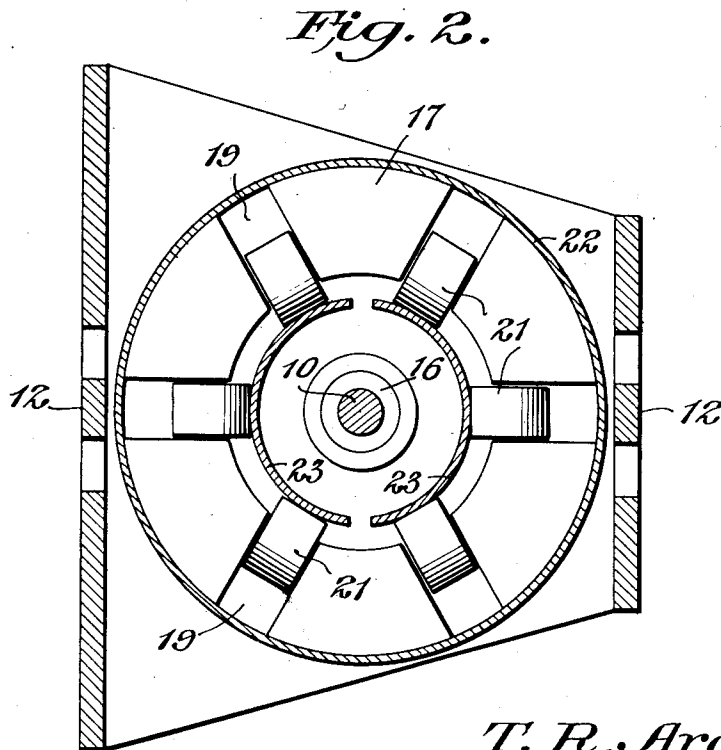
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T. R. ARDEN

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CENTRIFUGAL ELECTRIC SWITCH

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Inventor

T. R. Arden,
By *R. P. Wachsmuth*
Attorney

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CENTRIFUGAL ELECTRIC SWITCH

Thomas Raymond Arden, Baldwin, N. Y., assignor to American Flyer Manufacturing Company, Chicago, Ill., a corporation of Illinois

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4 Claims. (Cl. 200—80)

This invention relates to an electric switch which is capable of general use but which is especially designed for controlling clock alarm and similar circuits as, for example, of the type described in my prior Patent No. 1,838,069, dated December 22, 1931.

A special object of the invention is to provide a novel centrifugal switch having constant tendency to assume a closed status and to be actuated to an open status under centrifugal action, and which embodies a design and construction such that it does not impose any frictional load on its driving means.

Another object of the invention is to provide a centrifugal switch having a construction embodying the least practicable number of parts, and in which the parts are arranged in compact assembly.

Another object of the invention is to provide a centrifugal switch which is of simple, inexpensive, rugged construction, and which is thoroughly reliable and efficient in use.

With the foregoing and other objects in view, which will become more fully apparent as the nature of the invention is better understood, the same consists in the novel features of construction, combination and arrangement as will be hereinafter more fully described, illustrated in the accompanying drawing and defined in the appended claims.

In the drawing:—

Figure 1 is a central, vertical section through a switch embodying the features of the invention; and

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

Referring in detail to the specific embodiment of the invention illustrated in the drawing, 10 designates a vertically disposed drive shaft which may be driven in any suitable manner and which is illustrated in the present instance as comprising the armature shaft of a synchronous electric motor, designated generally as 11, having pole pieces 12, 12 with which cooperate a disk-like armature 13 fixed on said shaft 10.

The pole pieces 12, 12 extend upwardly at opposite sides of the shaft 10 and constitute switch frame side elements which are spanned a suitable distance above the armature 13 by an insulating support in the form of a plate or disk 14 of fibre or suitable material having a central opening 15 through which the shaft 10 extends.

Mounted on the shaft 10 above the armature 13 and below the insulating plate or disk 14, prefer-

ably for rotation relative to said shaft 10 and suitably insulated therefrom, as by means of an insulating bushing 16, is a block or disk 17 of electrical conducting material which rests upon a washer 18 of felt or other suitable material disposed upon the top of the armature 13, whereby said block or disk is frictionally driven with the shaft 10 and the armature 13 and at the same time is insulated from said armature.

Formed in the block or disk 17 is a plurality of radial channels 19 which are evenly spaced angularly and which have downwardly and inwardly inclined bottom walls 20, while disposed within said channels are small rollers 21 which approximate in length the width of the channels and which, because of the downward and inward inclination of the bottom walls 21 of the channels, tend constantly to roll downwardly and inwardly towards the shaft 10 under the influence of gravity.

The channels 19 open through the top and through the periphery of the block or disk 17, and the rollers 21 are retained within said channels by means of a cover 22 of inverted cup-shape which fits snugly and frictionally over the disk or block 17.

The block or disk 17 and the cover 22 are centrally recessed to accommodate a pair of spaced apart contact members 23, 23 of substantially semi-circular shape which are carried by and depend from the insulating support 14 into the path of inward movement of the rollers 21, whereby, when the block or disk 17 is at rest, said rollers engage said contact members and, through the block or disk 17, electrically connect said contact members with each other. When however, the block or disk 17 is rotated, centrifugal force causes the rollers 21 to move outwardly away from the contact members 23, 23 and said members thereby are electrically disconnected.

It is understood, of course, that the contact members 23, 23 constitute the terminals of a circuit *a— α* to be controlled so that when the block or disk 17 is at rest the circuit is closed and when said block or disk is being rotated at or above a predetermined rate of speed the circuit is maintained open.

As indicated this circuit control is of special utility when incorporated in the clock alarm circuit illustrated in my former Patent No. 1,838,069.

While the contact members 23, 23 may be fastened to the support 14 in any suitable man-

ner, they preferably are provided with tongues 24 which extend through openings in the support 14 and which are bent downwardly against the top of said support to secure said contact members thereto.

The washer 18 of felt or other suitable material affords, as aforesaid, a frictional driving connection between the armature 13 and the block or disk 17 so that the latter is started smoothly even though the shaft 10 is started suddenly, and, as is apparent, since the rollers 21 simply rest on the block or disk 17 and do not rub or wipe against any part during rotation of said block or disk, the switch in operation is not subjected to any frictional load, which is of great importance in certain installations of the switch as, for example, where it is employed to control a clock alarm circuit.

Without further description it is thought that the features and advantages of the invention will be readily apparent to those skilled in the art, and it will of course be understood that changes in the form, proportion and minor details of construction may be resorted to, without departing from the spirit of the invention and scope of the appended claims.

I claim:—

1. An electric switch for clock alarm and similar circuits comprising an electrically conductive disk rotatable in a horizontal plane, said disk having a plurality of circumferentially spaced radial channels opening through the top and through the periphery thereof, electrically conductive rolling bodies in the form of disks disposed in said channels, the top surfaces of the walls defining the bottoms of said channels being inclined downwardly and inwardly whereby said rolling bodies tend constantly to roll inwardly towards the center of the disk, a cover of inverted cup-like form frictionally engaged over said disk to retain said rolling bodies in said channels, said cover having a central opening and said disk being centrally recessed in alinement with said cover opening, a fixed support, and a pair of substantially semi-circular contact elements carried by said fixed support and depending therefrom through the opening in the cover into the central recess in the disk into the path of inward movement of the rolling bodies.

2. An electric switch for clock alarm and similar circuits comprising an electrically conductive member rotatable in a horizontal plane, cir-

cumferentially spaced electrically conductive rolling elements supported by said member for radial movement relative thereto, the member having downwardly and inwardly inclined surfaces on which said rolling elements rest whereby they tend constantly to roll inward, and a pair of fixed circumferentially spaced contact members disposed in the path of inward movement of said elements and against which said elements are adapted for engagement to complete the circuit when the rotary member is at rest, said rolling elements being movable outwardly away from said contact members by centrifugal force to maintain the circuit open during rotation of said rotatable member.

3. An electric switch for clock alarm and similar circuits comprising an electrically conductive disk rotatable in a horizontal plane, said disk having a plurality of circumferentially spaced radial channels, the bottoms of said channels being inclined downwardly and inwardly, electrically conductive rolling bodies disposed in said channels, the disk being centrally recessed, and a pair of fixed circumferentially spaced substantially semi-circular contact elements extending into said recess and against which the rolling bodies are adapted to roll under the influence of gravity to close the circuit through said contacts when the disk is at rest, said rolling bodies being movable outward in their channels by centrifugal force when the disk is rotated at a predetermined rate of speed to maintain the circuit normally open.

4. An electric switch for clock alarm and similar circuits comprising an electrically conductive disk rotatable in a horizontal plane, said disk having a plurality of circumferentially spaced radial channels opening through the top and through the periphery thereof, electrically conductive rolling bodies disposed in said channels, the disk being centrally recessed, a pair of fixed circumferentially spaced substantially semi-circular contact elements extending into said recess, means whereby the rolling bodies tend constantly to roll inward against said contacts to complete the circuit therethrough, said rolling bodies being maintained spaced outwardly from said contacts by centrifugal force during normal rotation of the disk whereby the circuit normally is maintained open, and a cover carried by and engaged over said disk to retain the rolling bodies in the channels thereof.

THOMAS RAYMOND ARDEN.