Jan. 6, 1925. 1,521,871

G. DEAKIN

ROTARY SELECTOR SWITCH

Filed Sept. 7, 1922

Fig. 1.

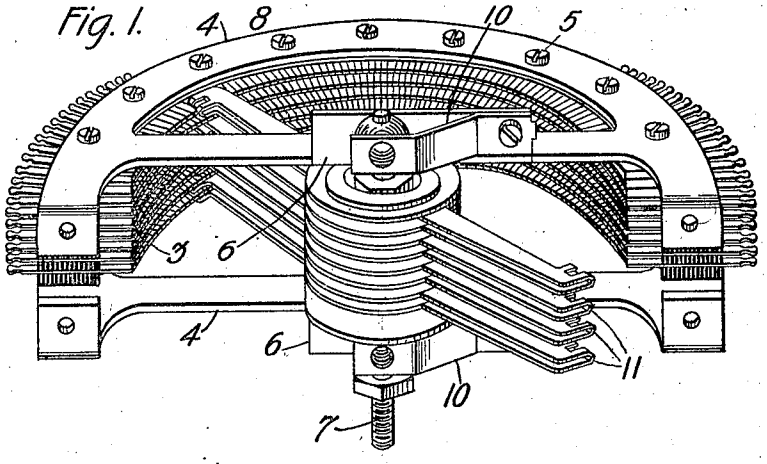


Fig. 2.

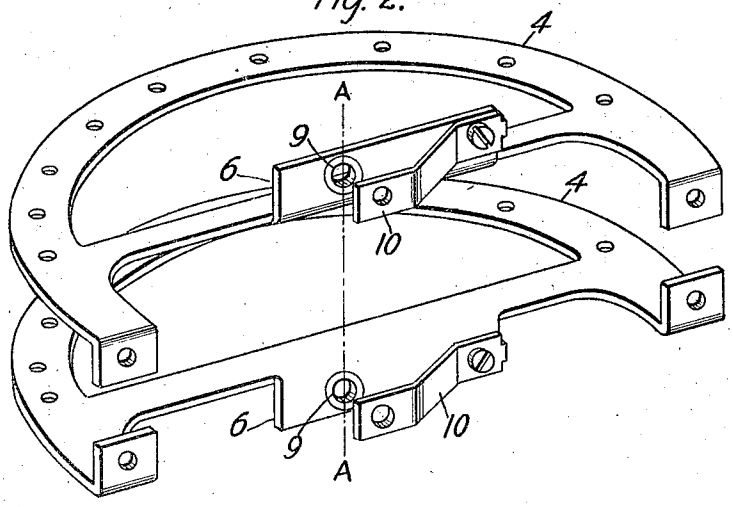
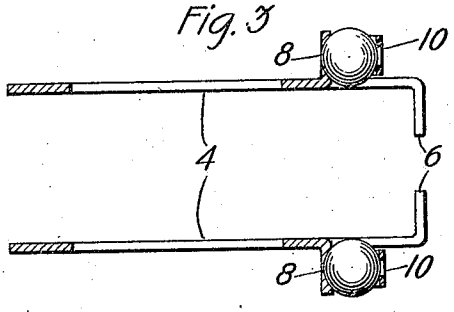


Fig. 3



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UNITED STATES PATENT OFFICE.

GERALD DEAKIN, OF ANTWERP, BELGIUM, ASSIGNOR TO WESTERN ELECTRIC COMPANY, INCORPORATED, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

ROTARY SELECTOR SWITCH.

Application filed September 7, 1922. Serial No. 586,621.

To all whom it may concern:

Be it known that I, GERALD DEAKIN, a citizen of the United States of America, residing at Antwerp, in the Kingdom of Belgium, have invented certain new and useful Improvements in Rotary Selector Switches, of which the following is a full, clear, concise, and exact description.

This invention relates to an automatic selecting switch of the rotary type adapted for use in telephone systems.

The object of this invention is to provide an improved arrangement for mounting the brush carriage of such a switch.

Heretofore, the bushings of the brush carriage were rigidly fastened on the supporting framework, but due to the distortion of said framework, during the assembly and fastening operation of said bearing on their support, it resulted in the disaligning of the bearings which effected undue strain and wear on the journals of the shaft.

In the present invention the brush carriage is provided with self-aligning bearings mounted directly on or supported by the framework of the terminal arc, whereby an accurate alignment of the bearings is automatically secured. The self-aligning bearing consists of suitable balls which are drilled to form a bearing for the rotatable shaft, the balls being seated in reamed holes drilled in the supporting framework. This drilling and reaming operation is regulated by the position of the terminal contacts of the arc with respect to the framework on which the bearings are mounted. A spring clip holds each ball firmly seated in the reamed hole while it is free to turn sufficiently to permit the balls to align themselves relative to the axis of the shaft.

The invention will be more clearly understood by reference to the accompanying drawings in which Fig. 1 represents a typical rotary switch mechanism employing the invention. Fig. 2 represents a detail of the arc framework showing the reamed holes in which the self-aligning bearings sit and Fig. 3 represents a cross section of the framework on the line AA′ of Fig. 2.

Referring to the drawings, the terminal arc arranged on any suitable mounting (not shown), comprises a bank of terminal contacts 3 of well known form held together between plates 4 by means of screws or bolts 5. Flanges 6 are formed on or attached to the plates 4 central to the arc for the purpose of providing a bearing support for the brush carriage shaft 7 which revolves in spherical shaped bearings 8 seated in reamed holes 9, bored in the flanges 6. The balls 8 each have a diametrical hole therethrough to receive and form a bearing for the shaft 7. Spring clips 10 press upon the balls 8 and hold them firmly in their seats while at the same time permitting them to turn sufficiently to align themselves relative to the axis of the shaft. The holes 9 are bored and reamed with respect to the arc, these operations being most conveniently performed when the arc is held in a jig which ensures that the common axis of the bearings 8 when seated in the reamed holes is exactly central with respect to the arc.

Such a construction provides a switch mechanism which may be assembled without other than ordinary care and at the same time assures a perfect alignment of the brushes and the terminal contacts. Further the brush carriage or bearings or both may be freely interchanged without the necessity of making careful adjustment to ensure their concentricity. By deflecting the spring clips 10 sufficient clearance is provided for removing the spherical-shaped bearings 8 from their seats 9 to permit them to be slipped off the shaft 7 which, being unsupported, allows the shaft and brush carriage to be removed from the structure.

It is to be understood that while only one type of switch has been shown the invention is applicable to any rotary switch mechanism employing a brush carriage revolving in a bearing, without in any way departing from the broad idea herein disclosed.

What is claimed is:

1. In an adjustable bearing, the combination of a shaft with a ball perforated to slidably support said shaft within its perforation, a supporting member having a socket shaped hole drilled therein to provide a seat for said ball, and a resilient member for retaining said ball in said seat to permit said ball to be rotated to align its perforation with the axis of rotation of said shaft while retained in said seat.

2. In a bearing, the combination of a shaft, a ball perforated and adapted to slidably support said shaft within its perforation, a supporting member having a socket shaped bearing drilled therein to support

said ball, and a resilient member for retaining said ball in said socket shaped bearing adapted to be deflected to permit said ball to be removed from said socket shaped bearing and displaced from said shaft.

3. In a bearing, the combination of a shaft, a ball perforated and adapted to slidably support said shaft within its perforation, a supporting member having a socket shaped bearing for said ball drilled therein and which prevents the longitudinal movement of said ball on said shaft and a resilient member for retaining said ball in said socket shaped bearing.

4. In an adjustable bearing, the combination of a shaft, a ball perforated and adapted to slidably support said shaft within its perforation, a supporting member having a socket shaped bearing to support said ball drilled therein in angular relation to the axis of rotation of said shaft and a resilient member for retaining said ball in said socket shaped bearing.

5. In a self-adjusting bearing, the combination of a rotatable shaft, perforated balls slidable thereon, supporting members having bearings for the balls in the form of socket shaped holes drilled therein in angular relation to the axis of rotation of said shaft and in alignment with each other, and a resilient member for retaining each of said balls in its bearing, said balls being rotatable in their bearings to align their respective perforations with the axis of rotation of said shaft.

6. In a mechanical device, a shaft, bearings for supporting said shaft, each of said bearings consisting of a perforated sphere adapted to slidably support said shaft within its perforation, supporting members each having a socket shaped hole drilled therein to provide a seat for each of said bearings, and a resilient member mounted on each of said supporting members for retaining each of said bearings in its respective seat, said bearings adapted to be adjusted while retained in their seats to align their perforations so that said shaft can be inserted through said bearings without any distortion of said shaft or the placing of undue strain upon its journals.

7. In a bearing, the combination of a rotatable shaft, perforated balls adapted to slidably support said shaft within their perforations, supporting members, bearings in the form of socket shaped holes drilled in said supporting members, resilient members for retaining said balls in their respective bearings and adapted to be deflected whereby said shaft and said bearings may be easily removed for replacement.

8. In a mechanical device, a rotatable shaft, adjustable bearings comprising perforated balls adapted to slidably support said shaft, supporting members, bearings for said balls formed by drilling a socket shaped hole in each of said supporting members in angular relation thereto and in angular relation to the axis of rotation of said shaft, and resilient members for retaining said balls in their respective bearings and cooperating with the bearings drilled in said supporting members to entirely support said balls and shaft.

9. In a bearing, the combination of a shaft, perforated balls slidable thereon, supporting members having bearings for said balls in the form of socket shaped holes drilled therein in angular relation thereto and in angular relation to the axis of rotation of said shaft, and resilient members for retaining said balls in their respective bearings, said resilient members each having a hole drilled therein adapted to embrace a portion of said balls and cooperating with the bearings of said balls to entirely support said balls and shaft.

In witness whereof, I hereunto subscribe my name this 18th day of August, A. D., 1922.

GERALD DEAKIN.