G. E. HENRY.

ELECTRIC CONTROLLER CRANK.

APPLICATION FILED DEC. 1, 1911.

1,027,129. Patented May 21, 1912.

Fig. 1.

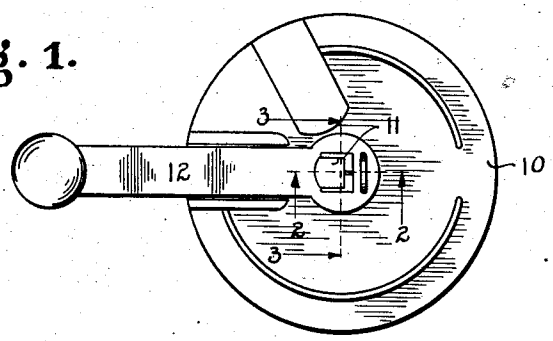


Fig. 2.

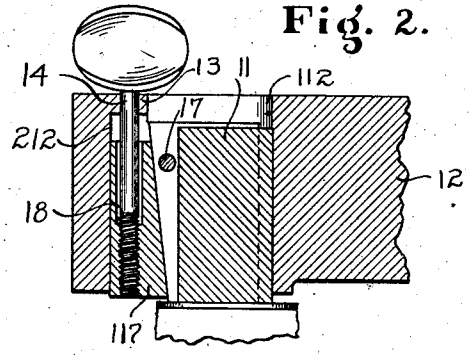


Fig. 3.

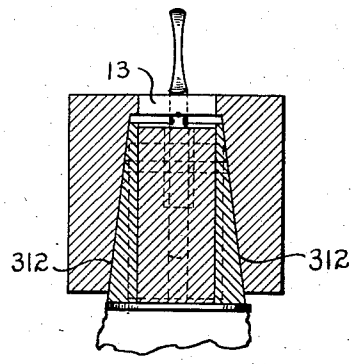


Fig. 4.

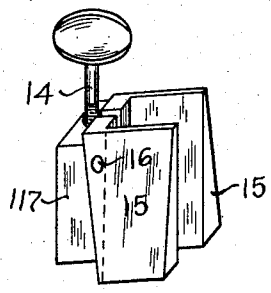
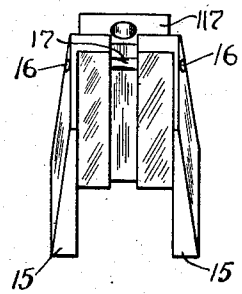


Fig. 5.



WITNESSES:

A. H. Edgerton.

O. M. McLaughlin

INVENTOR.

George E Henry.

BY V. H. Lockwood

ATTORNEY.

COLUMBIA PLANOGRAPH CO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

GEORGE E. HENRY, OF VINCENNES, INDIANA.

ELECTRIC-CONTROLLER CRANK.

1,027,129. Specification of Letters Patent. Patented May 21, 1912.

Application filed December 1, 1911. Serial No. 663,323.

To all whom it may concern:

Be it known that I, GEORGE E. HENRY, of Vincennes, county of Knox, and State of Indiana, have invented a certain useful Electric-Controller Crank; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings.

The object of this invention is to improve the connection between the upper end of the controller shaft of an electrical controller, such as is used in electrical street cars and the motorman's crank.

It is understood by those familiar with the art that the segments and contact fingers in controllers, or means employed for closing and breaking the circuits, are arranged so as to close or break the circuit step by step for increasing the supply of electricity to the motor of the car. In order that the step by step circuits may be properly made or broken, the controller shaft must be handled or positioned with absolute accuracy. Any play or looseness of movement, or failure to move it far enough or not far enough would interfere with the proper circuits and render the operation of the controller unsatisfactory and uneconomical. The upper end of the controller shaft is formed usually with angles, and a crank has heretofore been employed which fits upon it. The constant movement of the crank to and fro on the rectangular corners of the upper end of the controller shaft causes wear of those corners as well as the corners of the crank socket, and, therefore, play. Furthermore, it is difficult to make a crank socket fit tightly on the upper end of the controller shaft. If it fits tightly enough to prevent play of parts, it will be so tight that it cannot be so well put on or taken off the upper end of the controller shaft.

Hence, the object of this invention is to provide means in connection with the socket of the controller crank so that it can be readily put on or taken off the upper end of the controller shaft and can be wedged thereon so tightly that there can never be any possible play or looseness or wear of the parts.

The nature of the invention will be understood from the following description and claims and the accompanying drawings.

In the drawings Figure 1 is a plan view of a controller. Fig. 2 is a section through the upper end of the controller shaft and the inner end of the crank on the line 2—2 of Fig. 1 and showing the parts in their position while in use. Fig. 3 is a section on the line 3—3 of Fig. 1 and at a right-angle to the section shown in Fig. 2. Fig. 4 is a perspective view of the wedges and screw. Fig. 5 is also a perspective view of the same from a different viewpoint.

In detail, 10 represents the casing of the controller and 11 is the upper end of the controller shaft. These parts are made in the usual form, and the usual form of the upper end of the controller shaft is to have two parallel sides and a third side connecting the two parallel sides at right-angles, and a fourth convex side. In other words, the upper end of the controller shaft is rectangular in cross section excepting that one side is convex and projects into a corresponding concavity in the socket of a crank or handle 12 of the controller. Heretofore the upper end of the controller shaft has been of uniform thickness, and likewise the socket of the controller crank of uniform diameter or width. But in the present construction the socket of the controller crank is changed. The concave side 112 of said socket is absolutely vertical as heretofore, and the side 212 opposite the convex side 112 is also truly vertical as heretofore, see Fig. 2, but the other two sides 312 are inclined or beveled, as shown in Fig. 3; that is, the width of the socket diminishes from bottom to top so as to wedge over the wedges hereinafter described. The socket is wider between the surfaces 112 and 212 than the upper end 11 of the controller shaft, as shown in Fig. 2, and the crank is provided with a bridge 13 spanning the upper part of the socket adjacent the surface 212. This leaves an opening, however, at the upper end of the socket greater than the dimensions of the upper end of the controller shaft. This bridge is provided with a hole through

which the thumb screw 14 extends downward.

Three wedges are provided, two of them 15 being similar and arranged together to embrace three of the sides of the upper end of the controller shaft 11, that is, all of the sides except the convex side of the upper end of the controller shaft. Hence each wedge 15 is L-shaped transversely, that is, has two sides at a right-angle to each other, one side substantially entirely enveloping one side of the upper end of the controller shaft, and the other side of the shaft only partially enveloping the adjacent side of the upper end of the controller shaft, and these two wedges 15 are provided with horizontal holes 16 which register with each other and receive a loose connecting pin 17. That pin lies loosely in said holes, as shown in Fig. 5, and it cannot escape when it is in place in the socket of the controller crank because of the walls of the latter. The wedges 15 are beveled two ways, that is, the wider sides are thicker at the bottom than the top, while the narrower sides are thicker at the top than at the bottom, as indicated in Fig. 4 by dotted lines. The wedges 15 when in place are immovable or not expected to move. There is, however, a movable wedge 117 thicker at the bottom than at the top and lying between the surface 212 of the crank socket, and the narrower sides of the two wedges 15. Since said sides of the latter two wedges are wider at the top than at the bottom, it is obvious that if the wedge 117 be drawn upwardly when it is in place, as shown in Fig. 2 by the screw 14, the wedge 17 will not only move up slightly with reference to the wedges 15, but the head of the screw will force down the crank on the wedges 15 so that the socket of the crank will fit tightly against the lateral surface of the wedge 15, and the wedge 117 will wedge the three wedges in the other direction against the surfaces 112 and 212 of the socket of the crank. This will clamp the crank very tightly on the upper end of the controller shaft and make so secure a union that there will be absolutely no play of parts, no more than if the crank 12 and controller shaft 11 were integral.

The crank is removed by loosening the screw 14 and then the crank is lifted off the upper end of the controller shaft, and while thus separated, the wedges will remain in place in the socket of the crank as long as the screw 14 is in place. If the screw be taken out, then the wedges can be removed. Hence the motorman can carry this crank around the same as the old-fashioned crank without losing any of the parts. It might be added that the wedge 117 is provided with a vertical hole 18 through it for the screw 14, the lower portion of that hole being threaded and the upper portion preferably not threaded, as indicated in Fig. 2, although the foregoing detail and some of the other details of construction are not absolutely necessary to the essential operation of the improvement.

The similar and oppositely arranged wedges when tightened in position firmly clamp the controller shaft on two opposite sides, and the L-shaped portions are firmly pressed against the third flat side of the controller shaft, and the concave side of the socket of the crank drawn firmly against the convex side of the controller shaft by means of the end wedge and thumb screw. In this manner the controller shaft is rigidly and permanently clamped on all four sides, so that when used in connection with an automotoneer, controller, or any controlling regulating device, it is impossible to move the controller crank without causing an accurate corresponding movement both of the controller and the regulator, together and in unison.

I claim as my invention:

1. An electrical controller crank provided with a socket for the upper end of a controller shaft partially bridged at the top near one side thereof and with two opposite side walls beveled to make the socket wider at the bottom than at the top, a vertical headed screw projecting through said bridge, a wedge lying against one side of the socket of the crank and below the bridge and into which said screw enters, said wedge increasing in thickness from top to bottom, and another wedge structure in the crank socket and engaging the two beveled side walls thereof and the portions of said wedge structure adjacent said beveled walls increasing in thickness from top to bottom and the other side portion of said wedge structure diminishing in thickness from top to bottom and engaging the first-mentioned wedge, substantially as set forth.

2. An electrical controller crank provided with a socket for the upper end of a controller shaft partially bridged at the top near one side thereof and with two opposite side walls beveled to make the socket wider at the bottom than at the top, a vertical headed screw projecting through said bridge, a wedge lying against one side of the socket of the crank and below the bridge and into which said screw enters, said wedge increasing in thickness from top to bottom, two other similarly formed wedges in said crank socket, each of said last-mentioned wedges having one portion engaging one of the beveled walls of the crank socket and increasing in thickness from top to bottom, and another portion at right-angles to said first-mentioned portion which di-

minishes in thickness from top to bottom and lies against the first-mentioned wedge, said two lateral wedges having horizontal holes in them registering with each other, and a pin in said holes for loosely connecting said two similar wedges.

In witness whereof, I have hereunto affixed my signature in the presence of the witnesses herein named.

GEORGE E. HENRY.

Witnesses:
FRANK MORGAN,
JENCIE HARRISON.