F. J. WEST & H. W. DARBY.

CIRCUIT CONTROLLING DEVICE.

APPLICATION FILED JULY 8, 1912.

1,066,965.

Patented July 8, 1913.

2 SHEETS—SHEET 1.

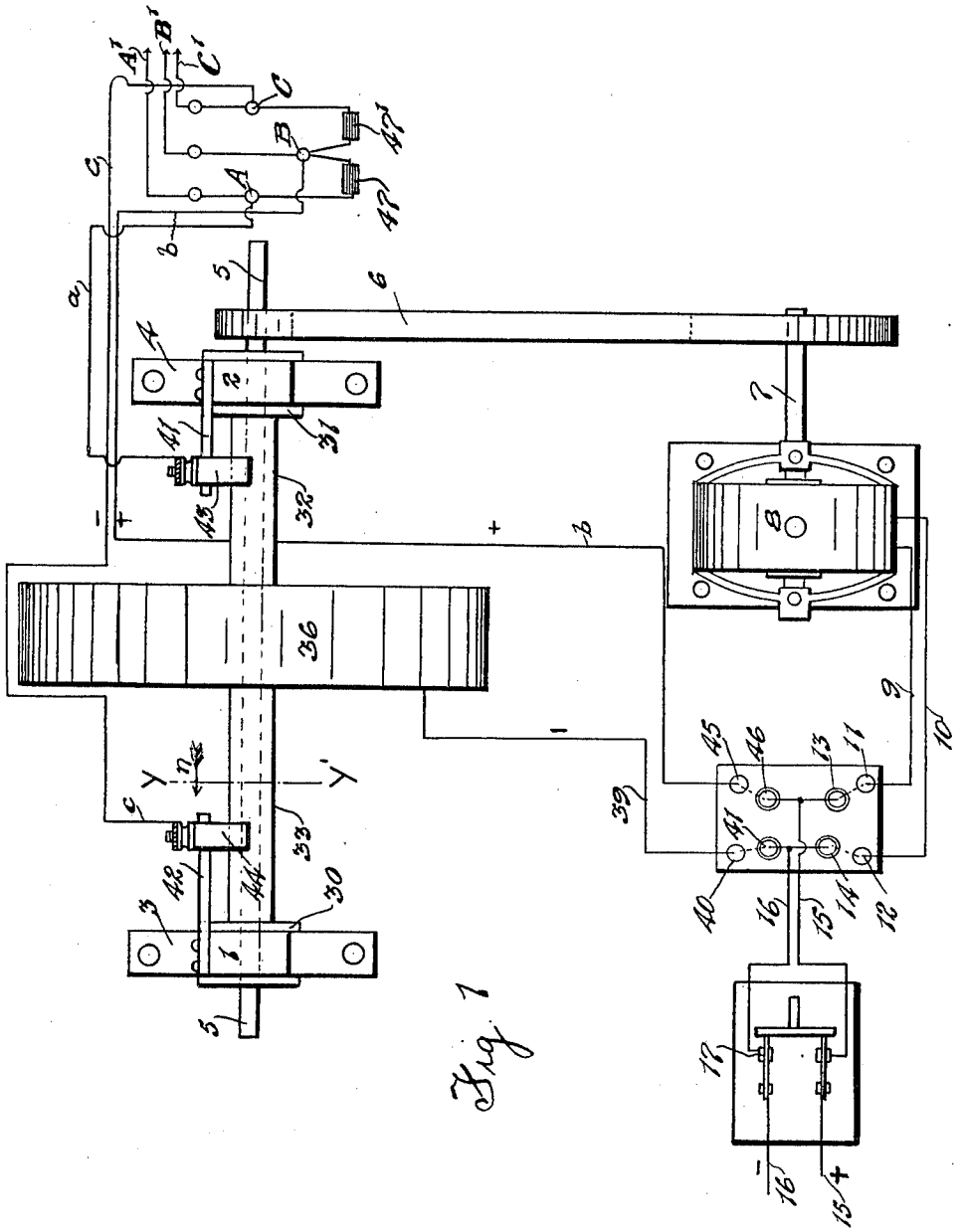


Fig. 1

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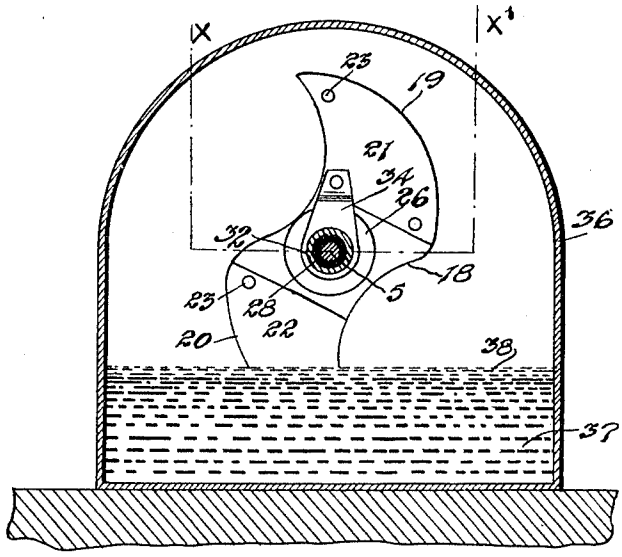


Fig. 2

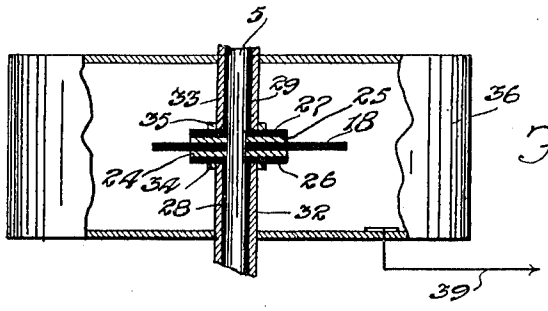


Fig. 3

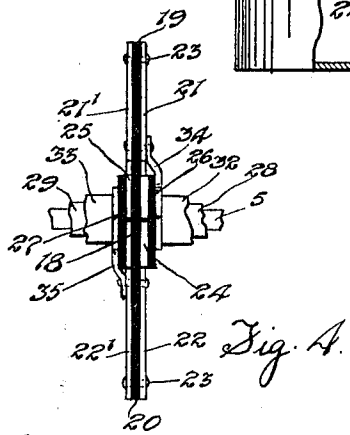


Fig. 4

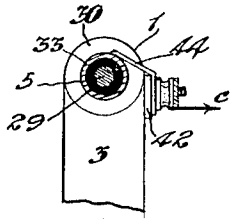


Fig. 5

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UNITED STATES PATENT OFFICE.

FREDRICK JAMES WEST AND HARRY WILLIAM DARBY, OF WINNIPEG, MANITOBA, CANADA.

CIRCUIT-CONTROLLING DEVICE.

1,066,965. Specification of Letters Patent. Patented July 8, 1913.

Application filed July 8, 1912. Serial No. 708,240.

To all whom it may concern:

Be it known that we, FREDRICK JAMES WEST and HARRY WILLIAM DARBY, of the city of Winnipeg, in the Province of Manitoba, Canada, have invented certain new and useful Improvements in Circuit-Controlling Devices, of which the following is the specification.

The invention relates to a device for controlling the making and breaking of an electrical circuit the present apparatus being particularly designed for use with electrical riveters.

The object of the invention is to provide a simple and efficient controlling device which will allow of a common central control for a number of distant instruments or tools such as riveters.

With the above object in view the invention consists essentially in the arrangement and construction of parts hereinafter more particularly described and later pointed out in the appended claims.

Figure 1 is a plan view of the complete apparatus. Fig. 2 represents a vertical sectional view through the well and driven shaft the contact pieces mounted on the shaft being shown in side elevation. Fig. 3 represents a horizontal sectional view through the driven shaft, the section being taken in the plane denoted by the line X—X′ Fig. 2. Fig. 4 represents a detailed side view of the driven shaft, the contact tubes and the contact pieces carried thereby. Fig. 5 represents a vertical sectional view through the driven shaft the section being taken in the plane denoted by the line Y—Y′ Fig. 1, and looking in the direction indicated by the arrow "*n*."

In the drawings like characters of reference indicate corresponding parts in each figure.

1 and 2 represent bearings formed in the upper ends of suitable insulated standards 3 and 4 which bearings receive rotatably a driven shaft 5 which shaft is connected through a drive belt 6 in the usual way with the drive shaft 7 of an electric motor 8. The feed wires 9 and 10 for the motor pass to binding posts 11 and 12 connected through fuse plugs 13 and 14 with the line wires 15 and 16.

A knife switch 17 of the usual form is inserted in the line.

Centrally on the shaft we have mounted an insulating plate 18 which provides extending wings 19 and 20 carrying each on their opposite faces pairs of contact plates 21 and 21′, and 22 and 22′, the plates of each pair being connected electrically by suitable rivets 23 passing through the wings. The insulating plate is held permanently on the shaft by lock nuts 24 and 25 immediately adjoining which we have placed insulating washers 26 and 27.

28 and 29 are insulating tubes slipped on the shaft 5 and fitting tightly on the same, which tubes have their inner ends butted up against the washers 26 and 27 and their outer ends butted up against insulating washers 30 and 31 located against the inner faces of the standards 1 and 2.

Brass tubes 32 and 33 are slipped tightly over the insulating tubes 28 and 29 and have their inner and outer ends butting against the same washers as the tubes 28 and 29.

The contact plates 21 and 22 carry brackets 34 and 35 having their outer ends riveted to the respective plates and their inner ends firmly fastened in any suitable way to the tubes 32 and 33 respectively.

This arrangement is such that the pair of plates 22 and 22′ is electrically connected with the tube 33 and the pair of plates 21 and 21′ is electrically connected with the tube 32, the plates and tubes 32 and 33 being insulated from the shaft 5. The insulating plate 18 and adjoining parts are housed within a well 36 having the walls thereof formed from any suitable insulating material.

The well contains a body of mercury 37 having a liquid such as oil 38 poured on the top thereof. The pairs of contact plates 21 and 21′, and 22 and 22′ are adapted to dip into the mercury as the shaft rotates and thereby alternately connect the tubes 32 and 33 with the mercury.

The oil is utilized to avoid sparking as the contacts pass out of the mercury.

A wire 39 makes electrical contact with the mercury and passes to a binding post 40 connected through a fuse plug 41 electrically with the line wires 16.

The standards 3 and 4 carry insulating supports 41 and 42 on which we have mounted brushes 43 and 44 bearing on the tubes 32 and 33 respectively.

A, B and C are binding posts located in any suitable place adjoining the apparatus

and "*a*" is a wire connecting the binding post A with the brush 43.

"*b*" is a wire connecting the binding post B electrically with a binding post 45 connected through a fuse plug 46 with the line wire 15 and "*c*" is a wire connecting the binding post C with the brush 44.

A carbon or other such like resistance 47 is shunted across or inserted between the binding posts "A" and "B" and a similar carbon or such like resistance 47′ is shunted across or inserted between the binding posts B and C.

Lead wires A′, B′ and C′ are connected with the respective binding posts A, B and C which lead wires pass to a tool such as a riveter.

In order to make the operation of the apparatus better understood it is here explained that the riveter or such like instrument controlled by this apparatus is considered as supplied with sets of magnetic coils which have to be alternately energized. One set of the magnetic coils in actual practice would be inserted between the wires A′ and B′ while the other set would be inserted between the wires B′ and C′. Imagining such a tool connected to the wires A′, B′, and C′ which it will be understood would need to be long enough to reach to the place where the tool is to be used, it will readily be seen that upon the shaft 5 being rotated by the shaft 7 the circuit will be alternately opened and closed through the wires "*a*", "*b*" and "*c*" "*b*", "*b*" being considered as the common positive side of the line, these latter wires in each instance communicating with the common negative wire 39 directly connected with the negative line wire 16.

The resistances 47 and 47′ prevent sparking when the contact plates 21, 21′ and 22 and 22′ dip out of or into the mercury.

What we claim as our invention is:—

1. A circuit controlling device comprising an insulated mercury well, a wire leading from the well, and a rotatably mounted and suitably insulated shaft, means for rotating the shaft, an insulating plate extending from the shaft and rotatable therewith, pairs of contact plates carried by the latter plate and adapted to successively dip into the mercury when the shaft is rotated, insulating tubes mounted on the shaft at the opposite sides of the insulating plate and extending beyond the well, contact tubes containing the insulating tubes and extending beyond the well and electrically connected to said contact plates, suitably supported insulated brushes bearing on the respective contact tubes and wires passing from the brushes, as and for the purpose specified.

2. A circuit controlling device comprising a suitably insulated mercury well, a plurality of independent binding posts, supply wires, one of said wires leading to the mercury well and the other of the wires leading to one of the binding posts, a rotatably mounted suitably insulated shaft, means for rotating the shaft, an insulating plate rotatable with the shaft and contained within the well, pairs of contact plates carried by the insulating plate and designed to successively dip into the mercury, metallic tubes carried by the shaft and insulated therefrom, said tubes extending beyond the well on either side of the insulating plate, bars connecting the respective pairs of contact plates with the respective tubes, suitably mounted and insulated brushes bearing continuously on the respective tubes and wires leading from the brushes to the other of the binding posts, as and for the purpose specified.

Signed at Winnipeg this 26 day of June, 1912.

FREDRICK JAMES WEST.
HARRY WILLIAM DARBY.

In the presence of—
G. S. ROXBURGH,
R. FOSTER.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."