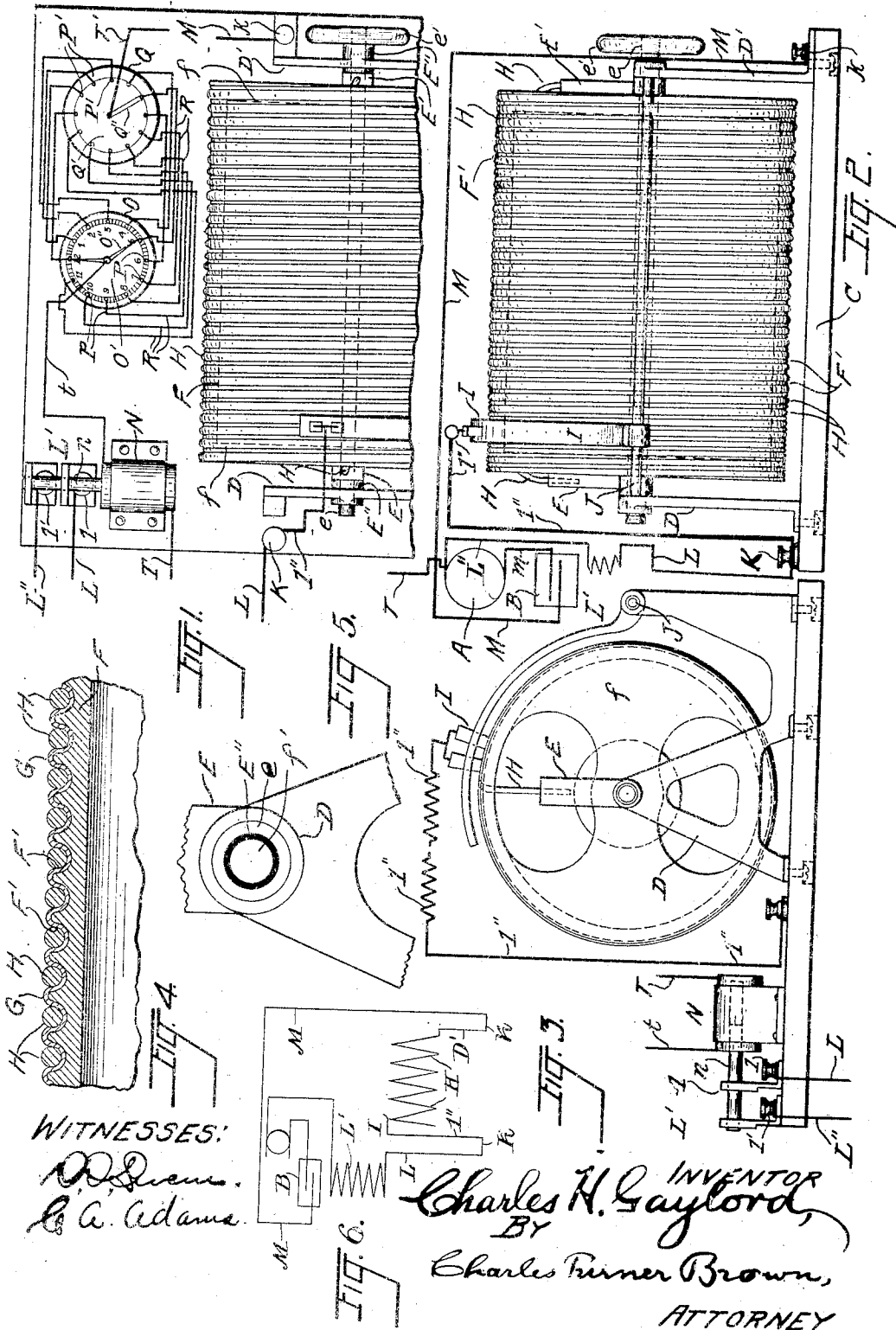


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 ADJUSTABLE AUTOMATIC RHEOSTAT.
 APPLICATION FILED SEPT. 6, 1910.

1,038,342.

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WITNESSES:
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ADJUSTABLE AUTOMATIC RHEOSTAT.

1,038,342.

Specification of Letters Patent. Patented Sept. 10, 1912.

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To all whom it may concern:

Be it known that I, CHARLES H. GAYLORD, a citizen of the United States, and a resident of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Adjustable Automatic Rheostats, of which the following, when taken in connection with the drawing accompanying and forming a part hereof, is a full and complete description, sufficient to enable those skilled in the art to which it pertains to understand, make, and use the same.

This invention relates to the art of electroplating.

The object of the invention is to obtain a device whereby the quantity of current used in the electroplating bath may be determined.

A further object of the invention is to obtain a device of the kind named which will be simple in construction, easy to operate, not liable to get out of order, and economically made.

Further objects are set forth in the mechanisms included within the terms of the claims hereinafter recited.

In the drawing referred to Figure 1 is a top plan view of one side of the device embodying this invention; and Fig. 2 is a side elevation of said device, with an electric generator and a plating bath diagrammatically shown; and Fig. 3 is an end elevation of the device; Fig. 4 is a section, on an enlarged scale, of a portion of the resistance coil and a portion of its surrounding cylinder, forming elements of the device. Fig. 5 is an elevation, on an enlarged scale, of one end of one of the standards of the device, with adjacent parts, and Fig. 6 is a diagrammatic view of the electric circuit of the device.

Similar letters refer to similar parts throughout the several views.

A is an electric generator of the kind usually employed to generate the current in the plating bath of an ordinary electroplating outfit, and B is said bath.

C is the base on which the several elements of the device embodying the invention are mounted. I have made base C of slate.

D, D', are standards attached to base C. Standards D, D', are electrically insulated from each other.

E, E', are arms which are respectively

provided with hubs *e*, *e'*, and said hubs are rotatably mounted in standards D, D'; each of said arms being in electric connection with the standard in which it rotates. Arm D' forms an electric terminal as will be hereinafter shown.

E'' (Fig. 5), are rings of insulating material which are respectively forced into axial apertures in the hubs *e* and F is a cylinder provided with heads *f* at its ends, each of said heads having a hub *f'* which fits into the ring E'' of insulating material. The arms E, E', together with the cylinder F are thus rotatably mounted in the standards D while joined together so as to retain at all times the same relative position. Cylinder F is provided with spiral groove F' extending around it and from one end thereof to the other.

G is a covering of non-conducting material applied to the periphery of cylinder E. I have made cylinder E of cast iron and covering G of granite ware as it is termed.

H is an electric conducting wire laid in spiral groove F' and electrically connected to standards D, D', by attaching it to the arms E, E', at its ends. The hub *e* of arm E' is provided with hand wheel *e'* which is rigidly attached thereto so that said arm together with cylinder F and arm E may be rotated by the turning of said hand wheel. This rotation is to determine the amperes delivered by the generator through cutting out or putting in portions of the resistance coil or rheostat formed by the wire H.

I is a brush of electric conducting material, mounted on rod J. Rod J is mounted in standards D, D'. Brush I is in electric contact with the wire H, and is movable on the rod J from one end thereof to the other. K, *k*, are electric terminals on base C.

L is an electric conducting wire connected at one end to the generator A, and at the other end to a terminal of switch L'.

L'' is a wire from the remaining terminal of switch L' to terminal K, and L''' is an electric conducting wire connected at one end to the terminal K and at the other end to the brush I. The wire H is electrically connected at one end thereof to the terminal *k*, through arm E' and standard D'.

M is an electric conducting wire connected at one end to the terminal *k* and at the other end to one of the electrodes of bath B,

and m is a wire connected at one end to the other electrode of bath B and at the other end to the generator A.

N is an electro-magnet coil and n is the armature of coil N. The coil N and its armature n forms a solenoid. The armature n when withdrawn from the coil N electrically connects the terminals l , l' of switch L' , and when said armature n is drawn into the coil N, (upon an electric current flowing through said coil) it is thereby disconnected from one of said terminals to open the switch. When no current is passing through the coil N the switch L' may be closed, but when a current is flowing through said coil, the armature n is drawn from electrical contact with terminal L , thereby opening said switch; and said switch is held open so long as said coil is energized.

O is a clock, provided with the face O' and hour hand O''.

P, P', are electric terminals on face O' of the clock O.

Q is a register provided with a dial Q' corresponding with the face O' of clock O in appearance and provided with hand Q''.

P', P', are terminals on the dial Q'.

R, R, are electric conducting wires which are respectively connected at one end to the terminals P on face O', and at the other end to a corresponding terminal P' on the dial Q'.

T is a wire attached at one end to generator A and at the other end to the coil N, and t is a wire attached at one end to the coil N, and at the other end to hand O'' of face O' of clock O.

T' is a wire attached at one end to hand Q'' and at the other end to generator A. When the hand O'' and the hand Q'' are both in electric contact with the terminals which are connected by a given wire R an electric circuit is established from the generator A over wire T to and through the coil N, thence over wire t to hand O'', over said hand to the terminal with which said hand is in electrical contact, from said terminal over wire R to a corresponding terminal P', from said terminal over hand Q'' to wire T' and over said wire T' back to the generator A. The flowing of an electric current over the last above described circuit energizes the coil N and its armature n is drawn thereinto, thus withdrawing it from terminal l' of switch L' . The switch L' is in the circuit which comprises generator A, wire L, switch L' , wire l' , terminal K, wire l'' , brush I, resistance coil H, arm E', standard D', terminal l , wire M, bath B, and wire m to the generator A.

By turning the hand wheel e' the cylinder F is turned, and the brush I is moved along on its rod J through said brush coming in contact with the flange separating the several turns of the spiral groove F'. The brush I may, also, be moved by hand along its rod J to be brought into contact with the wire H at any desired point. By making the cylinder F rotatable and the brush I non-rotatable, any desired length of the resistance coil H may be cut out of the circuit, and any desired number of amperes of current utilized in the plating bath B.

I claim:—

1. A base, standards on the base, arms respectively provided with hubs, and said hubs rotatably mounted in the standards, a cylinder provided with a peripheral spiral groove, a spirally wound resistance coil mounted in said groove to turn with said arms, a non-rotatably mounted brush in electric contact with one turn of the wire of said coil, and in mechanical contact with said spiral groove, terminals on said base, and electric conductors from one of said terminals to one end of said coil and from the other of said terminals to the brush, all arranged so that the turning of said arms, cylinders and spirally wound resistance coil constitute a rotatable adjustment which varies the length of said wire between said brush and the terminal connected to the end of the wire.

2. A base, standards on the base, arms respectively provided with hubs and said hubs rotatably mounted in the standards, and one of said arms in electrical conducting contact with one of said standards, a cylinder, rotatably mounted in said standards, a hand wheel attached to one of said ends, said cylinder provided with a peripheral spiral groove, a covering of electrical non-conducting material to said cylinder, a resistance coil consisting of a spirally wound wire in the groove on said cylinder, one end of said wire attached to the arm which is in electrical contact with the standard, a rod mounted to be parallel to the axis of the cylinder, a brush movably mounted on said rod, and said brush in contact with one turn of the wire of said coil and with said spiral groove, terminals on the base, a wire connecting one of said terminals with the one of said standards which is in electrical contact with one of said arms, and a wire connecting the remaining terminal with said brush.

CHARLES H. GAYLORD.

In the presence of—

CHARLES TURNER BROWN,
CORA A. ADAMS.