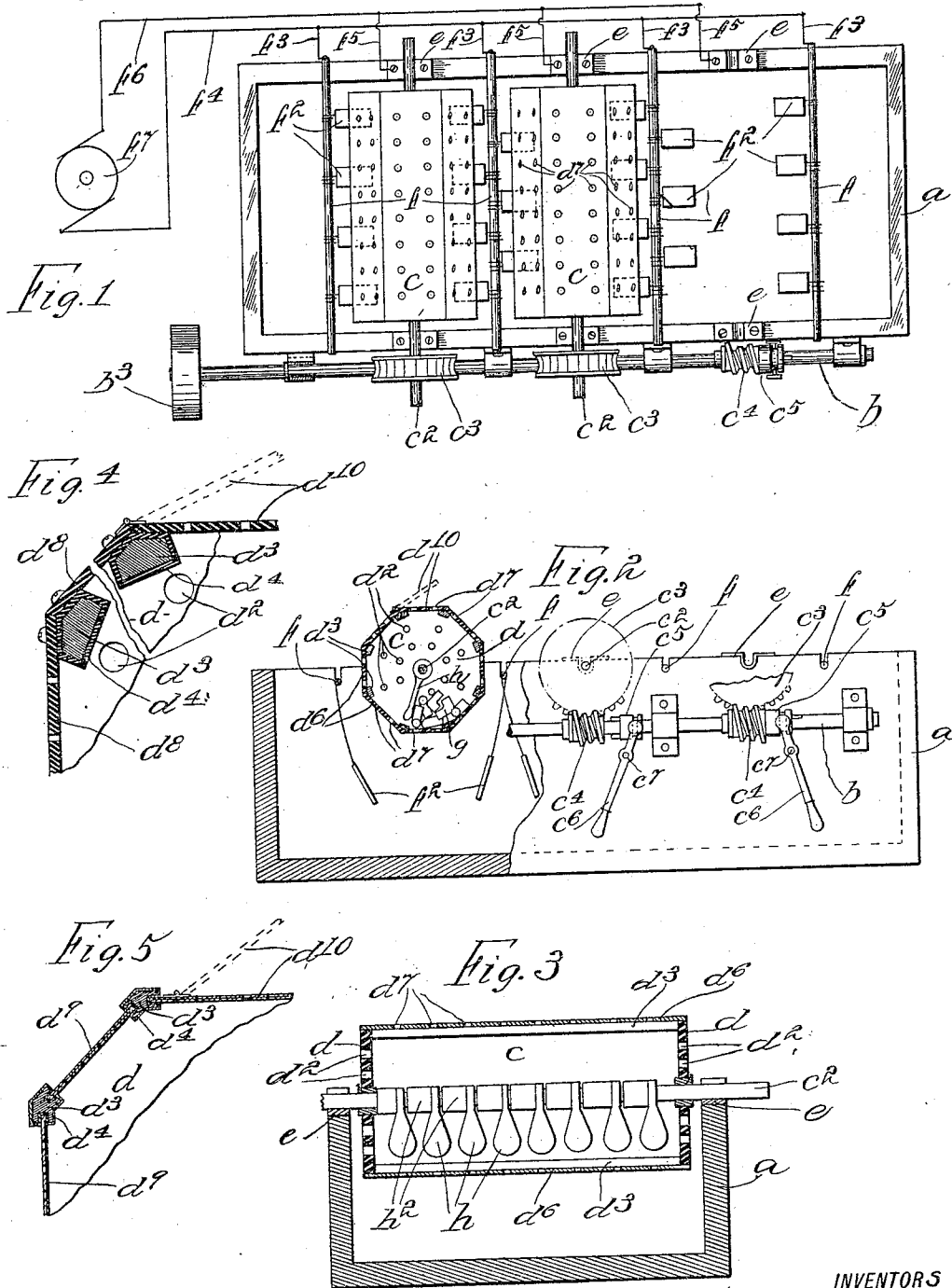


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ELECTROPLATING APPARATUS.
APPLICATION FILED AUG. 16, 1909.

950,068.

Patented Feb. 22, 1910.



WITNESSES:
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To all whom it may concern:

Be it known that we, NATHAN S. EMERY and BENJAMIN W. GILCHRIST, both citizens of the United States, and residing at Woodhaven, in the county of Queens and State of New York, have invented certain new and useful Improvements in Electroplating Apparatus, of which the following is a specification, such as will enable those skilled in the art to which it appertains to make and use the same.

This invention relates to electroplating apparatus, and the object thereof is to provide an improved apparatus of this class which may be conveniently manipulated in the process of electroplating articles of various kinds and classes, and which may also be used as an apparatus for polishing various articles; and with these and other objects in view the invention consists in an apparatus of the class specified, constructed as hereinafter described and claimed.

The invention is fully disclosed in the following specification of which the accompanying drawing forms a part, in which the separate parts of our improvement are designated by suitable reference characters in each of the views, and in which:—

Figure 1 is a plan and diagrammatic view of our improvement when used as an electroplating apparatus. Fig. 2, a sectional side view thereof. Fig. 3, a cross sectional view. Fig. 4, a sectional end view of a rotatable drum which forms a part of the apparatus, and Fig. 5, a view similar to Fig. 4 but showing a modification.

In the practice of our invention we provide an oblong tank *a* at one side of which is mounted a longitudinal shaft *b*, and said shaft *b* is provided at one end with a belt wheel or pulley *b*¹ and may be rotated by power applied thereto in any desired manner, or said shaft may be turned by hand if desired. The tank *a* is open at the top and mounted therein, transversely thereof are a plurality of equally spaced drums *c* two of which are shown, and bearings for another of which are also shown. The drums *c* are mounted on shafts *c*² which extend longitudinally thereto and said shafts are preferably composed of copper and the shafts *c*² are provided at one end with worm gear wheels *c*³ which mesh with corresponding worm gears *c*⁴ loosely mounted on the shaft *b* and said shaft is provided with clutch devices

*c*⁵ which are longitudinally movable thereon and adapted to engage the worm gears *c*⁴ and the clutches *c*⁵ may be moved longitudinally of the shaft *b* by means of levers *c*⁶ pivoted to the side of the tank *a* at *c*⁷ and engaging the clutches *c*⁵ in the usual manner.

The body portions of the drums *c*, in the construction shown in Figs. 2 to 4 inclusive, are composed of end members *d* formed of insulating material and preferably provided with perforations or apertures *d*², and parallel frame bars or rods *d*³ composed of metal and covered with insulating material *d*⁴ as clearly shown in Fig. 4, and said parallel bars or rods *d*³ may be connected with the end members *d* in any desired manner, and in the construction shown in Figs. 2 and 3 the bars or rods *d*³ are inclosed by wrappers or casings *d*⁵ of celluloid, rubber or other insulating material, provided between the bars or rods *d*³ with perforations or apertures *d*⁷.

In the construction shown in Fig. 4 we provide panels *d*⁸ which may be connected with the bars or rods *d*³ in any desired manner and which are composed of metal completely covered with and insulated by celluloid, rubber or other suitable insulating material, and in this case the drum *c* consists of end members *d* the parallel rods or bars *d*³ and the panels *d*⁸.

In the construction shown in Fig. 5 the drum *c* consists of the end members *d* and panels *d*⁹ consisting of metal frame members covered with celluloid, rubber or other suitable insulating material, the rods or bars *d*³ in this form of construction being grooved to receive said panels.

In all the forms of construction, the drums *c* are provided with a door *d*¹⁰ which may be opened and closed when desired, and through or by means of which the material or articles to be plated may be passed into and removed from said drums.

The shafts of the drums *c* are provided with suitable metal bearings or keepers *e* secured in or to the tops of the sides of the tank *a* and in practice we also mount transversely at the top of the tank, rods *f* and from which are suspended the anodes *f*², and feed wires *f*³ are connected with the rods *f* and with a circuit wire *f*⁴, and other feed wires *f*⁵ are connected with the bearings or supports *e* of the shafts *c*² and with another circuit wire *f*⁶ and the said wires

f^4 and f^6 are connected with a dynamo, or other generator, or source of electricity as shown at f^7 .

In the process of electro plating, the tank 5 a is filled or partially filled with a suitable solution in the usual manner, the character of this solution, or the ingredients thereof, depending on the results desired, as for instance, silver plating, nickel plating or the like. The articles to be plated are then 10 placed in the drum c as shown at g in Fig. 2 and said drums are rotated by turning the shaft b . The operative part of this process will be the same as when other apparatus of 15 this class is employed, but with my improvement all the drums c may be rotated or operated at the same time by throwing the clutch devices e into an engagement with the worm gears e^4 , or one or more of said drums may 20 be operated as desired.

In the use of this apparatus as a polisher or "tumbler" the tank a is filled or partially filled with a polishing liquid in the usual manner, the articles to be polished are placed 25 in the drums c , and the electric circuit wires are disconnected from the apparatus and the rods f and anodes f^2 are removed from the tank and the drums c are rotated in the same manner as when the apparatus is used 30 in the process of electroplating. The shafts c^2 of the drum c are also provided with the usual dangles h which are spaced thereon by collars or sleeves h^2 in the usual manner, but these dangles are used only in the 35 process of electroplating, and in the operation of polishing they are removed from the drums.

The drums c are detachable from the tank a , or may be detached when desired, and 40 from the foregoing description it will be seen that our improved apparatus is of the same general form and operation as other apparatus of this class, our improvement relating particularly to the method of oper- 45 ating the drums c and the construction of said drums, and our invention is not limited to the particular construction herein shown and described and various changes therein and modifications thereof may be made 50 within the scope of the appended claims without departing from the spirit of our invention or sacrificing its advantages.

The object of making the drums c in the manner herein described is to give addi- 55 tional strength thereto and make the same more strong and durable; and by mounting said drums in the manner described and by

means of the gearing employed for rotating the same, either of said drums may be detached or removed from the tank at any 60 time for the purpose of examining the contents thereof, or for any other purpose without interfering with the operation of the other drums, and many other advantages will suggest themselves to anyone skilled in 65 the art to which our invention relates.

Having fully described our invention what we claim as new and desire to secure by Letters Patent is:—

1. In an apparatus of the class described, 70 a tank, a shaft mounted horizontally at one side of said tank, and provided with a plurality of worm gears loosely mounted thereon, clutch devices movable longitudinally of said shaft and adapted to engage 75 said gears, and a plurality of drums mounted transversely of the top of said tank and the shafts of which are provided with worm gear wheels which operate in connection with the worm gears on said shaft, said drums be- 80 ing composed of end members of insulating material and a frame work of metal covered with insulating material and perforated.

2. In an apparatus of the class described, 85 a tank, a shaft mounted horizontally at one side of said tank, and provided with a plurality of gears loosely mounted thereon, clutch devices movable longitudinally of said shaft and adapted to engage said gears, 90 and a plurality of drums mounted transversely of the top of said tank and provided with gears which are adapted to operate in connection with the gears on said shaft.

3. In an apparatus of the class described, 95 a tank, a shaft mounted horizontally at one side of said tank, and provided with a plurality of gears loosely mounted thereon, clutch devices movable longitudinally of said shaft and adapted to engage said gears, 100 and a plurality of drums mounted transversely of the top of said tank and provided with gears which are adapted to operate in connection with the gears on said shaft, said drums being removable from said tank. 105

In testimony that we claim the foregoing as our invention we have signed our names in presence of the subscribing witnesses this 14th day of August 1909.

NATHAN S. EMERY.

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Witnesses:

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