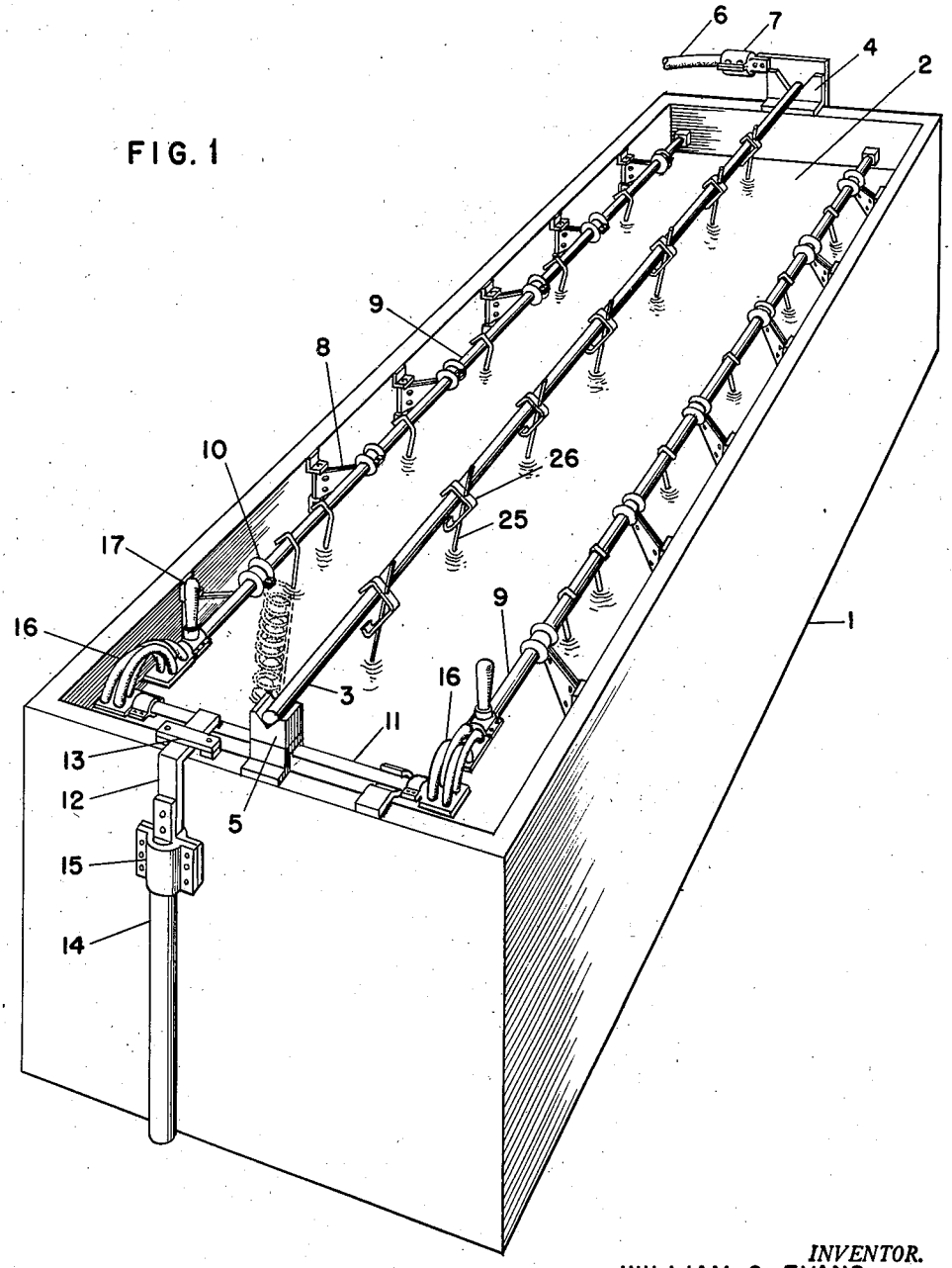
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ANODE ROD FOR PLATING TANKS

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FIG. 1



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FIG. 2

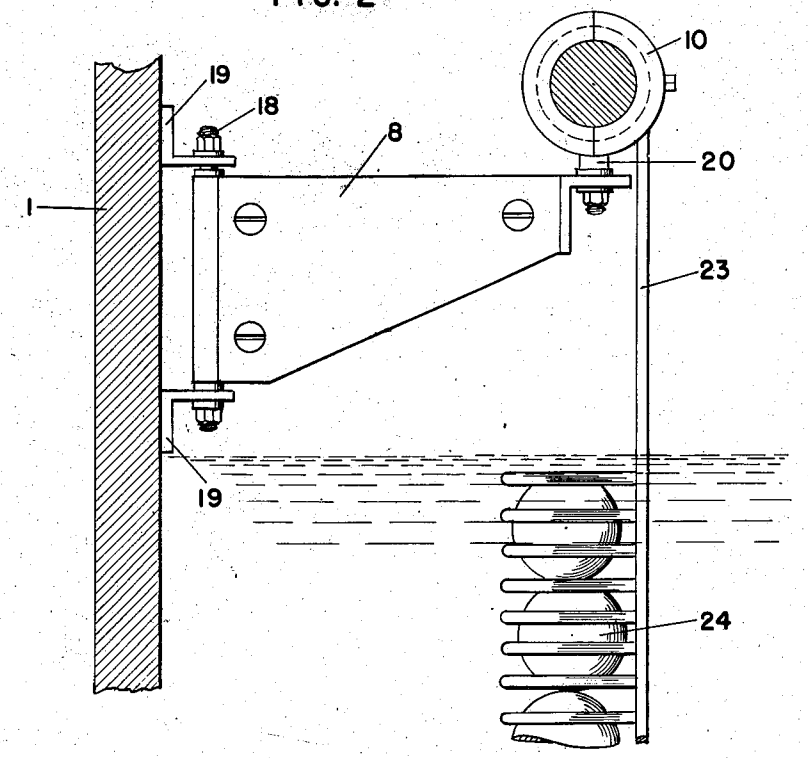
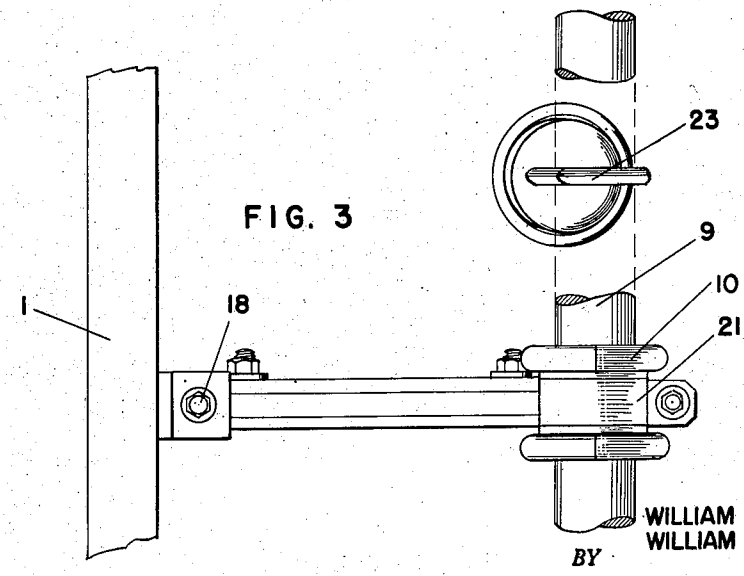


FIG. 3



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ANODE ROD FOR PLATING TANKS

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4 Claims. (Cl. 204—297)

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The invention herein described relates to an improvement in plating tanks and is particularly directed toward an improvement in the mounting of the anode rods on the tanks.

In the conventional plating tank, the work to be plated is secured on racks supported from the work rod usually extending along the center line of the tank. The anode rods which support the anode material baskets in the plating solution usually extend down each side of the tank. The current is conducted to the work rod and to the anode rods by suitable electrical connections. For some sizes and shapes of parts, it is necessary to space the anode rod and anode material at one distance relative to the parts to be plated, and for other shapes and sizes of parts being plated, the spacing of the anode relative to this work must be varied. In a production installation, the anode rod may consist of a copper bar or tube some 2 inches in diameter and 16 feet long which supports several hundred pounds of anode material. The ends of the anode rod are supported at the ends of the tank and one end usually rests upon a copper bus bar which affords the electrical connection to the anode rod. In order to adjust such an anode relative to the work rack, it has been the practice to lift one end of the rod and then the other, toward or away from the work rack. The electrical connection is broken each time the adjustment is made. This cut and try method requires the exertion of considerable physical effort to move the anode rod with its heavy load, to a position where a uniform and even textured deposition of metal is obtained in a reasonable time. The lack of facilities to make the necessary adjustment easily and quickly, without interrupting the flow of current, usually result in an increased plating time, and for large irregularly shaped parts, the metal deposited on the surface is not uniform and very apt to be of a coarse uneven texture.

By this invention an adjustable anode rod is provided which permits faster plating of irregularly shaped parts.

Another object of the invention is the provision of an adjustable anode rod which may be quickly and positively adjusted to accommodate several types of plating work without electrically disconnecting it from the source of power.

Another object of this invention is the improvement in a plating tank whereby the anode rods are adjustable to give a more even disposition and finer texture of the plating material.

Another object of the invention is the increased electrical efficiency of plating by reason of adjustable anode rods, in that, by adjusting the anode and work to the proper spacing, the proper current intensity will be achieved and the power will be more efficiently used. The plating bath will not be exhausted so rapidly.

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Further and other objects will become apparent from the description of the accompanying drawings which form a part of this disclosure and in which like numerals refer to like parts.

In the drawings:

Figure 1 is a perspective view of a plating tank showing the installation of adjustable anode rods along the sides of the plating tank.

Figure 2 is a fragmentary view partly in section showing the bracket supporting the adjustable anode rod.

Figure 3 is a fragmentary view showing a plan view of the bracket for supporting the anode rod.

The plating tank illustrated in Figure 1 shows a typical installation for mass-production plating of metal parts. An elongated tank 1 is provided, usually a rectangular structure, which contains a plating bath 2. A work rod 3 is centrally located and extends over the tank and is supported by blocks 4 and 5 over each end of the tank. These blocks are usually of a V-block construction so that the work rod and the work in the racks secured thereto, may be lifted by an overhead crane into and out of the plating bath. One V-block 5 would be of insulating material and the electrical connection for this work rod would be through contact with V-block 4, which is connected to a suitable source of electrical power by cable 6 and terminal 7. Along each side of the tank are secured brackets 8 which support anode rods 9 in a position generally parallel to the sides of the tank. These rods are supported on the brackets and insulated therefrom by insulators 10. Across the end of the tank, a bus bar 11 interconnects anode rods 9 electrically, and connects them to a source of power through a connecting bus bar 12. Insulating block 13 spaces the bus connector 12 from contact with the tank. Cable 14 through a connector 15 supplies current to the bus bars from the source of power. A flexible connection between bus bar 11 and anode rods 9, having large current carrying capacity, is achieved by a plurality of cables 16 serving as jumpers from the end of the bus bar to the adjacent end of the anode rods. Any type of flexible cable may be used, that will permit relative motion between members 9 and 11 but afford high current carrying capacity between the members. Handles 17 are secured on the ends of anode rods 9 for the purposes of adjusting the spacing of the anode rod relative to the work rod.

The adjustment of the anode rods is accomplished by the articulated construction of bracket 8 shown in detail in Figure 2. Brackets 19 are secured to the wall of the tank by welding or any other suitable means and support bracket 8 through pivot 18. At the outer end of bracket 8 there is a fitting 20 pivotally secured thereto, which supports an annular clamp 21. An insula-

tor 10 is mounted in said clamp which surrounds and supports the anode rod 9. This insulator is formed in two halves so that it may easily be installed around the rod and clamped in place on the end of the bracket by clamp 21. Anode baskets 23 are hooked over and supported on anode rod 9. This basket contains the metal 24, in the form of balls or chunks, desired to be deposited on the parts to be plated. Any type of anode may be used supported by anode rod 9. The electrical current, of course, is transmitted through rod 9 and the hook on baskets 23, and through the baskets to the plating material and then to the plating bath. The work to be plated is supported in any suitable manner on racks 25 and hooks 26 from work rod 3.

It can readily be seen from the above description of the structure that if small parts are held on a work rack substantially on the center line of the tank that by means of the handle 17, the anode rods can be pulled outwardly from the wall to the proper spacing for the correct current flow to give a fine and even distribution of metal plate over the surface of the part. By pulling the handle 17 toward the forward end of the tank shown in Figure 1, the rod with a load of several hundred pounds can easily be moved as the only resistance to motion is the friction of the pivots in the hinged brackets. The flexible connection 16 between the anode rod 9 and bus bar 11 permits the movement of the anode rod without breaking electrical connection so that spacing adjustments may be made for different types of work by reading the current on a meter and by setting the spacing for optimum efficiency of plating. If bulky parts are to be plated or if the parts have member extending laterally of the center line of the tank, the spacing of the anode rods from the work can then be adjusted as well as the spacing of the anode baskets on the rod, to give the desired even and fine texture distribution of metal on such parts. In a production set-up, where the work rods are loaded in some remote part of the plating room and brought to one of several tanks by an overhead crane, the desirability of being able to lower the loaded work rod into place in the tank and quickly and easily adjust the anode rods for optimum plating efficiency is readily apparent.

It is to be understood that certain changes, alterations, modification and substitutions can be made without departing from the spirit and scope of the appended claims.

We claim as our invention:

1. An anode-rack suspension for an elongated electro-plating tank having a work-supporting rod extending along the middle of the tank, comprising a plurality of parallel brackets of equal length spaced longitudinally along one side wall of the tank and each having one end pivoted on a vertical axis to said side wall, a conductive anode-rack-supporting rod extending longitudinally of said tank, and means including an insulator arranged between said anode-rack-supporting rod and the other end of each bracket for pivotally supporting said anode-rack-supporting rod for movement relative thereto about a vertical axis, whereby said anode-rack-supporting rod may be moved relative to the side wall of the tank, toward and away from the work-supporting rod to regulate the plating of the work supported thereby.

2. An anode-rack suspension for an elongated electro-plating tank having a work-supporting rod extending along the middle of the tank, comprising a plurality of parallel brackets of equal length spaced longitudinally along one side wall of the tank and each having one end pivoted on a vertical axis to said side wall, a fitting pivotally mounted on a vertical axis on the other end of each bracket, an insulator carried by each fitting, and a conductive anode-rack-supporting rod extending longitudinally of said tank and supported by said insulators whereby said anode-rack-supporting rod may be moved relative to the side wall of the tank, toward and away from the work-supporting rod to regulate the plating of the work supported thereby.

3. An anode-rack suspension for an elongated electro-plating tank having a work-supporting rod extending along the middle of the tank, comprising a plurality of parallel brackets of equal length spaced longitudinally along one side wall of the tank and each having one end pivoted on a vertical axis to said side wall, an insulator pivotally mounted on a vertical axis on the other end of each bracket, a conductive anode-rack-supporting rod extending longitudinally of said tank and supported by said insulators, a bus bar connected to a power source and rigidly carried by said tank, and a flexible current carrying connection between said bus bar and said anode-rack supporting rod whereby said anode-rack-supporting rod may be moved relative to the side wall of the tank, toward and away from the work supporting rod to regulate the plating of the work supported thereby.

4. An anode-rack suspension for an elongated electro-plating tank having a work-supporting rod extending along the middle of the tank, comprising a plurality of parallel brackets of equal length spaced longitudinally along one side wall of the tank and each having one end pivoted on a vertical axis to said side wall, an insulator pivotally mounted on a vertical axis on the other end of each bracket, a conductive anode-rack-supporting rod extending longitudinally of said tank and supported by said insulators and a handle rigid with said anode-rack-supporting rod whereby said anode-rack-supporting rod may be moved relative to the side wall of the tank, toward and away from the work-supporting rod to regulate the plating of the work supported thereby.

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