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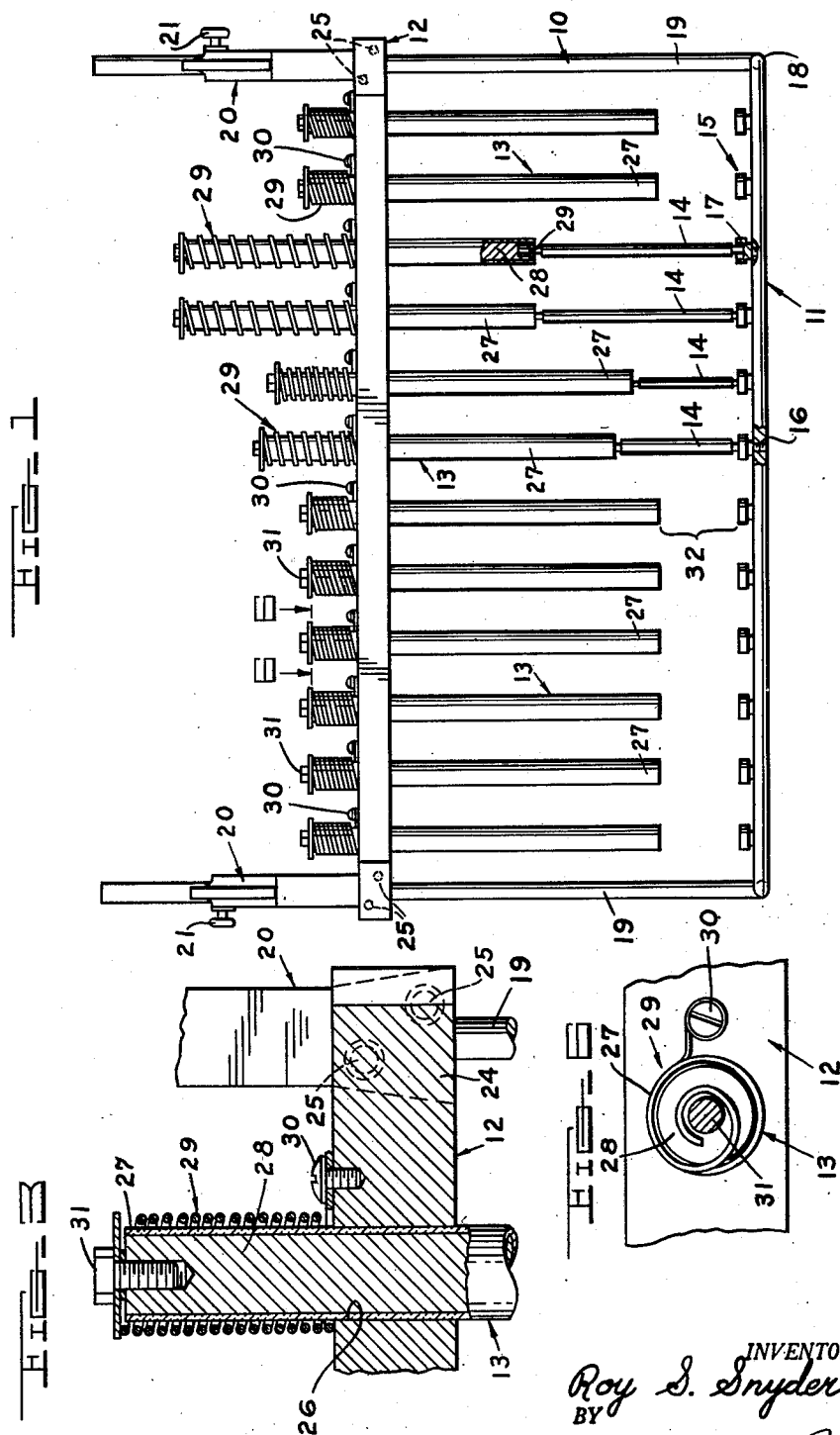
R. S. SNYDER

2,523,973

PLATING RACK

Filed Dec. 23, 1946

2 Sheets-Sheet 1



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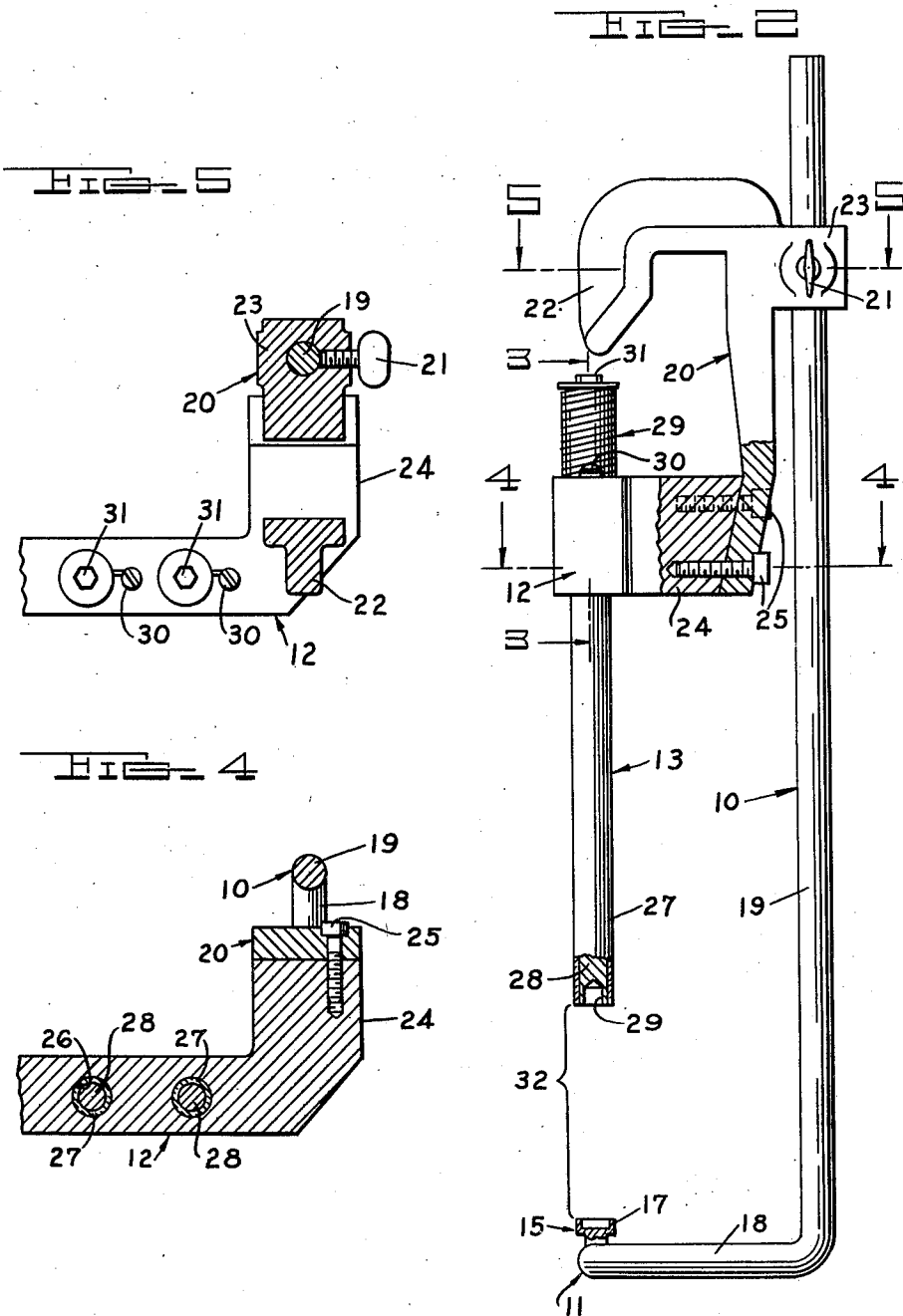
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PLATING RACK

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2 Claims. (Cl. 204—297)

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This invention relates generally to work holding racks and refers more particularly to improvements in racks for holding parts during plating processes.

One of the objects of this invention is to provide a compact, relatively simple, work holding rack capable of being readily inserted into and removed from the plating bath as a unit with the work in assembled relation therewith.

Another object of this invention is to provide a rack capable of supporting parts to be plated such, for example, as elongated tubes or rods with the opposite ends respectively connected to the electric plating circuit so that current flows to both ends of the parts and assures the production of a uniform thickness of plate on the parts.

A further object of this invention is to provide a plating rack of the above general type characterized in that it is self-adjusting and will accommodate parts of widely varying length.

The foregoing as well as other objects will be made more apparent as this description proceeds, especially when considered in connection with the accompanying drawings, wherein:

Figure 1 is a front elevational view of a plating rack constructed in accordance with this invention;

Figure 2 is a side elevational view of the rack shown in Figure 1;

Figures 3, 4 and 5 are sectional views respectively taken substantially on the lines 3—3, 4—4 and 5—5 of Figure 2;

Figure 6 is a sectional view taken on the plane indicated by the line 6—6 of Figure 1.

The work holding rack forming the subject matter of this invention is particularly adapted to support articles while the latter are being plated by any one of the well-known electrolytic processes. However, the work holding rack is not necessarily limited to the above specific application, as it may be advantageously used in practically all instances where it is necessary to support articles in predetermined positions during treating of the latter.

With the above in view, reference is now made more in detail to the drawing, wherein it will be noted that the reference character 10 indicates a rack for supporting a plurality of articles in predetermined relative positions. The rack 10 comprises a bottom bar 11, a top bar 12 and article clamping mechanism 13 carried by the top bar 12. The bottom bar 11 is shown as being cylindrical in cross sectional area, and is formed of a material having good electrical conducting characteristics,

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such for example, as copper. The length of the bar 11 depends to a great extent on the number of articles to be accommodated by the rack 10 and upon the lateral spacing required between the articles.

For the purpose of illustrating the present invention, let it be assumed that the articles to be supported on the rack 10 are in the form of elongated rods or tubes 14. The lower ends of the articles 14 are respectively positioned on the bar 11 by abutments 15 formed of a material having electrical conducting characteristics and secured to the rod 11 in spaced relation to each other lengthwise of the rod. In detail the abutments 15 are provided with threaded shanks 16 for threadably engaging tapped bores or openings formed in the bar 11, and the upper ends of the abutments are formed with cup-shaped retainers 17 for respectively receiving the lower ends of the articles 14.

The opposite ends of the rod 11 are bent to form laterally extending portions 18, and the latter portions are bent to provide upwardly extending parts 19. A hanger 20 is supported for vertical sliding movement on each of the parts 19 and are respectively secured to the parts 19 by wing-nuts 21. Thus the elevation of the hangers 20 relative to the bottom bar 11 may be readily varied by merely manipulating the wing nuts 21. In detail the hangers are formed of a material having good electrical conducting characteristics, and each hanger is fashioned with an inverted hook-shaped portion 22. In practice the hook-shaped portions 22 are adapted to be engaged with a buss-bar of a suitable electro-plating apparatus not shown herein. In any event the hook shaped portions of the hangers are formed with laterally extending lugs 23 having openings therethrough for slidably receiving the vertical parts 19 of the bottom bar 11 and the wing nuts 21 are threaded into openings formed in one side of the lugs in positions to enable the inner ends of the wing nuts to engage the parts 19. Upon reference to Figure 2 of the drawings, it will be noted that the hangers 20 are positioned on the parts 19 directly above the laterally extending portions 18 of the bar 11.

The top bar 12 is also formed of a material having good electrical conducting characteristics and the opposite ends of the top bar are formed with laterally extending projections 24. The projections 24 are detachably secured to the respective hangers 20 by studs 25. Thus the top bar 12 is carried by the hangers 20 and is vertically adjustable relative to the bottom bar 11 as a unit

with the hangers 20. The top bar 12 corresponds in length to the bottom bar 11 and is positioned by the hangers 20 directly above the bottom bar 11. Referring now to Figure 1 of the drawings, it will be noted that the top bar 12 is formed with a plurality of openings 26 respectively positioned in alignment with the abutments 15 on the bottom bar 11.

The work clamping mechanism 13 is supported by the top bar 12 for sliding movement in directions toward and away from the bottom bar 11. In detail the work clamping mechanism 13 comprises a plurality of tubes 27 of insulating material corresponding in number to the number of abutments 15 and respectively slidably supported in the openings 26 through the top bar 12. In addition to the tubes 27, the work clamping mechanism 13 comprises a corresponding number of rods 28 respectively secured in the tubes 27 and formed of a material having good electrical conducting characteristics. The lower ends of the rods 28 are formed with recesses 29 for respectively receiving the upper ends of the articles 14 to be plated.

The rods 28 are electrically connected to the top conductor bar 12 by coil springs 29 respectively surrounding the upper end portions of the tubes 27 and having the lower ends seated on the top of the bar 12. As shown particularly in Figure 6 of the drawings, the lower end of each coil spring 29 is secured to the conductor bar 12 by a fastener element 30 and the upper ends of the coil springs are respectively secured to the corresponding ends of the rods 28 by fastener elements 31. Thus it will be noted that the coil springs not only serve as an electrical conductor between the rods 28 and top conductor bar 12, but in addition, yieldably urge the clamping rods 28 and associated tubes 27 in a direction toward the abutments 15 to effectively clamp the parts 14 therebetween.

It also follows from the above that the parts 14 are not only capable of being readily assembled on the rack, but in addition, parts of widely varying length may be accommodated without actually vertically adjusting the top conductor bar 12 relative to the bottom bar 11. Generally speaking, any part having a length greater than the length indicated by the numeral 32 in Figure 1 and less than the distance between the two conductor bars may be effectively secured to the rack without changing the setting of the top conductor bar 12 on the vertical parts 19. It will further be noted that since the bars 11 and 12 are electrically connected together and to a source of electrical energy, current flows to opposite ends of the parts 14 being plated, and accordingly, a more uniform application of the plating on these parts is effected.

What I claim as my invention is:

1. A plating rack comprising vertically spaced top and bottom substantially horizontal electric current carrying bars, a plurality of abutments secured to the bottom bar at points spaced lengthwise of the bottom bar and respectively en-

gageable with the lower ends of the parts to be plated, a corresponding number of tubes of electrical insulating material extending through openings formed in the top bar in axial alignment with the abutments for sliding movement in directions toward and away from the abutments said tubes having portions disposed above and below said top bar, an electric current carrying rod secured in and extending axially of each tube and having the lower ends respectively engageable with the upper ends of the parts to be plated, electrically conductive, coil springs respectively surrounding the ends of the tubes extending above the top bar and having the lower ends seated on the top bar, and means respectively securing the opposite ends of the springs to the upper ends of the rods and to the top bar so as to yieldably urge said rods in a direction toward said abutments, and means for connecting said current carrying bars to a source of electric current.

2. A plating rack comprising a substantially horizontal electric current carrying bar having the opposite end portions extending upwardly, a hanger of electrical conducting material slidably supported on each of the end portions, means for releasably clamping the hangers to the end portions, a second substantially horizontal current carrying bar having the opposite ends respectively attached to the hangers and having a plurality of openings therethrough spaced from each other lengthwise of the latter bar, tubes of electrical insulating material respectively slidably supported in the openings, portions of said tubes extending above and below said second current carrying bar, electric current carrying rods extending axially of and secured in the tubes and movable with the latter, means electrically connecting the rods to the second bar including coil springs respectively surrounding the ends of the tubes projecting above the second bar and seated on the latter, means respectively connecting the opposite ends of the springs to the upper ends of the rods and to the second bar, and means on the first bar cooperating with the lower ends of the rods to yieldably clamp parts to be plated therebetween.

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