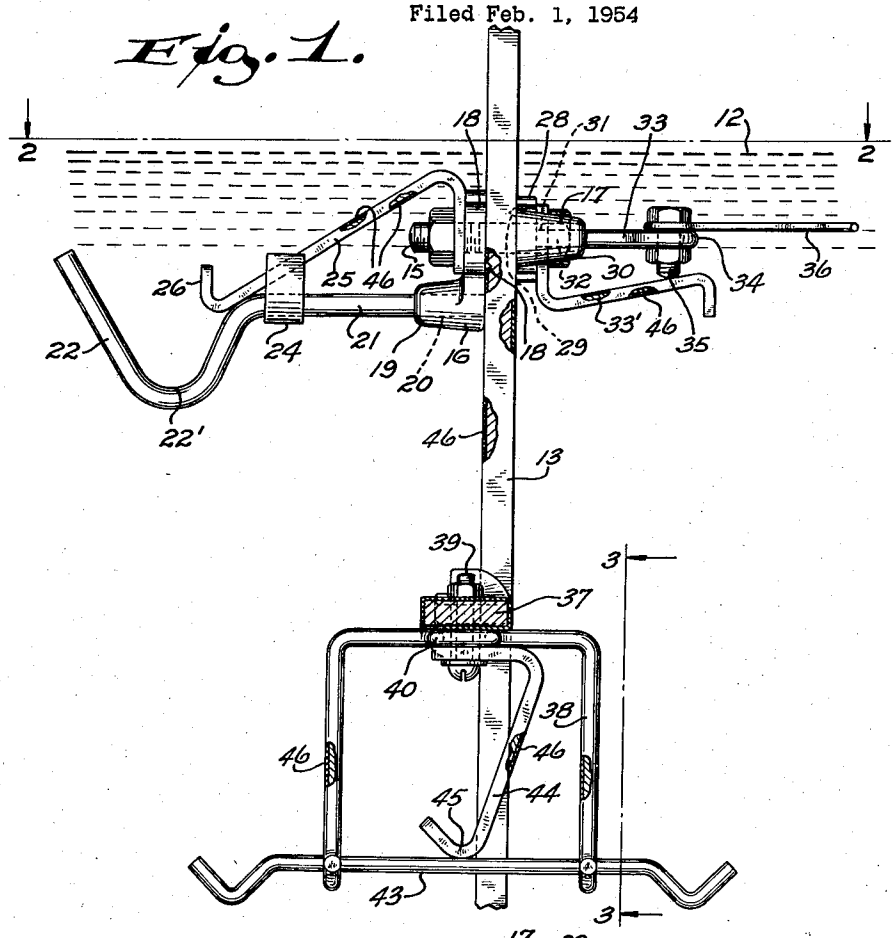
Aug. 12, 1958 S. T. STROINSKI 2,847,377

ELECTROPLATING RACKS

Filed Feb. 1, 1954

Fig. 1.



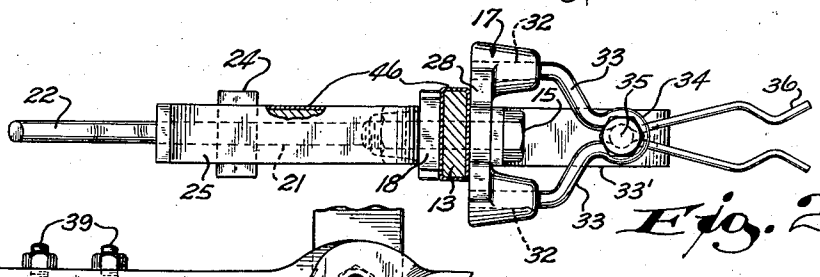


Fig. 2.

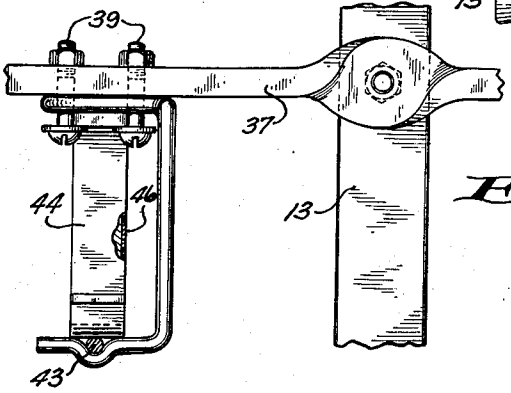


Fig. 3.

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ELECTROPLATING RACKS

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6 Claims. (Cl. 204—297)

This invention relates to improvements in electroplating racks.

In the electroplating of metal articles it has been common practice to use a spine which depends into the electroplating tank, the spine having suitable arms or stations for supporting the articles which are to be plated. The major portion of the spine and the arms is usually covered with a protective material to eliminate the deposit of plating metal thereon and to protect the metal. This covering, however, must be omitted at least at the point of engagement between the arms and the article to be plated so that suitable electric contact can be made. For this reason the article holding arms or stations or portions thereof are ultimately acted upon by the electrolyte so that eventually they can no longer be used.

A general object of the invention is to provide a construction wherein there are readily removable stations which are removably held in position on the rack by a novel spring arrangement, the spring arrangement also assuring good electrical contact.

A more specific object of the invention is to provide a construction as above described wherein there are socket members removably secured to the spines and wherein the novel spring arrangement holds the arms or stations in proper position in the sockets and also insures a good pressure contact between the portion of the arm which is in the socket and the metal of the socket through which electricity may travel.

A further object of the invention is to provide an improved plating rack wherein the stations can be readily replaced with different type stations depending upon requirements.

A further object of the invention is to provide an improved electroplating rack wherein the the stations can be removed or replaced without the use of tools.

With the above and other objects in view, the invention consists of the improved electroplating rack, and all of its parts and combinations, as set forth in the claims, and all equivalents thereof.

In the accompanying drawings, illustrating preferred embodiments of the invention, in which the same reference numerals designate the same parts in all of the views:

Fig. 1 is a side elevational view of a fragment of a spine showing types of removable stations thereon;

Fig. 2 is a sectional view taken along the line 3—3 of Fig. 1 looking down on the upper group of stations; and

Fig. 3 is a sectional view taken along the line 3—3 of Fig. 1.

In an electroplating process of the type with which the present invention is concerned, it is customary to use a suitable tank containing an electrolyte **12** and to have a spine **13**, preferably of copper, suspended in the electrolyte. It is also customary to have the spine suspended from a cathode, and there is also the usual anode which includes a bar of the plating metal.

Held to the spine **13** at a selected point in its length by a nut and bolt **15** is a casting **16** forming a station supporting member and there may also be another casting **17** on the opposite side of the spine, also forming a

station supporting member. These castings are preferably formed of bronze, and are adapted to be below the level of the electrolyte.

The casting **16** is generally L-shaped in side elevation and includes a base **18** having one or more points **18'** projecting from its back and digging into the metal of the spine. The casting **16** also includes an outwardly projecting socket portion **19** having a bore **20** which forms a seat for removably receiving the inner end of a work supporting arm or station part **21**. The station part **21** may be formed of flat or round bar stock of any suitable conducting metal but is shown as round. The station part **21** may also be made in a variety of forms.

The station part **21** is shown with a hook-shaped outer end **22** on which a piece of pipe to be plated may be placed, or from which items may be suitably suspended. Where there is a single hook such as the hook **22**, it is preferably provided with an upwardly projecting U-shaped member **24** which embraces the sides of a deflectable metal band spring **25** to prevent the hook from rotating. The spring **25** has its inner portion bent downwardly to parallel the spine and secured in position by the nut and bolt **15**. The main portion of the spring is downwardly inclined and has an upturned outer end **26** which bears forcibly and resiliently against the station part **21** to hold it in the socket, and to also cause a pressure engagement between the bore **20** of the socket and the portion of the arm which is within the socket so as to insure a good electrical contact. The spring is preferably formed of Phosphor bronze.

Another type of station is shown coacting with the casting **17**. This casting **17** has a base portion **28** also having one or more points **29** which dig into the metal of the spine. The casting **17** includes two outwardly projecting socket portions **30** having bores **31** for receiving the inner ends **32** of an insert portion **33** of a station. The insert includes an intermediate eye **34** through which a bolt **35** extends, the latter detachably securing one or more article holding station portions **36** in position. The portion **36** illustrated is formed of spring wire and may be used to hold nuts, washers, or the like which are to be plated.

Also on the spine there is illustrated a cross-spine **37** which supports a plurality of stations **38** by means of bolts **39** which extend through eye portions **40** of the station. The stations include spaced lower legs **38** which are bent laterally outwardly as at **41**. Intermediate portions of these latter parts are bent to provide recesses or seats **42** for a removable and readily replaceable article-holding station portion **43**. The latter is detachably held in position by a band spring **44** which has its upper end secured by the bolt **39**, and which has its lower portion upturned as at **45** to bear downwardly on the station portion **43** and to hold the same firmly in its seats **42**. The stations **38** are, of course, adapted to be below the level of the electrolyte **12**.

In order to prevent wasteful deposit of the plating metal, the spines as well as the connected castings **16** and **17** and the connected station portions **38** are dipped in a suitable coating material **46** of a type which will electrically insulate and protect the coated parts from the bath, and which is also capable of resisting attack from the acid of the bath. The bolts **15** and **39** have, of course, been tightened to provide good electrical contact between the spine and the supporting portions which are clamped thereto by the bolts. In this connection the points **18** and **29** which dig into the spine improve this contact.

Station parts such as the portions **21** may either be used bare or may be dipped separately in the coating material before use but, if dipped, the insulating material must be scraped off of the inner end where the sta-

tion stem is within the bore 20 of the socket. In addition, the coating material must be scraped off of the supporting portion of the hook at 22' so that the article to be plated will contact bare metal and make a good electrical connection.

Inserts such as the insert 33 are preferably coated separately with the insulating material after the station portion 36 has been attached thereto. Before the sockets are used the coating material must, of course, be punctured to expose the outer ends of the socket bores.

The station portions 38, together with the springs 44 are preferably coated after they have been connected to the cross-spine 37. The removable station part 43 may be uncoated. With this type of station it is preferred to scrape away the coating material on the portion 45 of the spring which bears against the station portion 43 so that the electrical circuit is completed through the spring to the cross-spine 37.

In use of the rack, after stations of the type shown at 21 become no longer fit for further use, they can be quickly removed without the use of tools and replaced. Furthermore, they can be easily replaced with a different type of station. When stations of the type shown at 33—36 become no longer fit for further use the insert portion 33 may be withdrawn from the socket and the portions 33 and 36 may either be replaced completely or a new station part 36 may be replaced on the old insert part 33. In addition, various other types of stations may be interchangeably supported on the bolt 35. When the station portions 43 become no longer fit for further use they may be easily removed and replaced.

It is apparent that all forms of stations include portions which are removably held in position by the tension of band spring members. It is further obvious that in all forms of stations the springs not only serve to hold the station portions in position, but also insure a good electrical connection between the station and associated parts. For example, the spring 25 causes the inner end of the station 21 to bear tightly against the bore 20 of the socket, and the spring 33' causes the inner ends of the insert 33 to bear tightly against the bores 31 to make a good electrical connection. In addition, the spring 44 not only holds the removable station portions 43 in the seats 42, but also provides a resilient pressure contact between the bared portion of the spring and the center of the station portion 43 so that a good electrical circuit is completed through the spring.

Various changes and modifications may be made without departing from the spirit of the invention, and all of such changes are contemplated, as may come within the scope of the claims.

What is claimed is:

1. In a plating rack having a metallic spine adapted to extend into an electrolyte, a station supporting member having a base secured to said spine in a position to be below the level of the electrolyte and having spaced sockets projecting from said base, a band spring having one end secured to said spine and having a part which extends away from the spine and which has a deflectable pressure exerting end, a metal article-holding station member having spaced inner ends slidably supported in electric circuit completing position in said sockets and having means at its other end for engaging the article to be plated to support the latter and make electrical contact therewith, said deflectable end of the spring being located to resiliently press against said article-holding station part to prevent accidental displacement from the sockets and to improve the circuit completing engagement therein.

2. In a plating rack having a metallic spine adapted to be extended into an electrolyte, a station supporting member having a base secured to said spine in a position to be below the level of the electrolyte and having at least one socket, an insert having an inner end slidably supported in electric circuit completing position in said socket, a metal article holding station member, means for removably attaching the latter to the outer end of said insert, and a band spring having one end secured to said spine and having a part which extends away from the spine and which has a deflectable pressure exerting end located to resiliently press against said insert from beneath its outer end.

3. In a plating rack having a metallic spine adapted to be extended into an electrolyte, a station supporting member having a base secured to said spine in a position to be below the level of the electrolyte and having at least one socket, an insert having an inner end slidably supported in electric circuit completing position in said socket, a metal article holding station member, means for removably attaching the latter to the outer end of said insert, and a band spring having one end secured to said spine and having a part which extends away from the spine and which has a deflectable pressure exerting end located to resiliently press against said insert at the point of connection between the insert and article holding station member.

4. In a plating rack having a metallic spine adapted to be extended into an electrolyte, a station supporting member having a base secured to said spine in a position to be below the level of the electrolyte and having spaced sockets, an insert having spaced inner ends slidably supported in electric circuit completing position in said sockets, said insert having an eye at its outer end, a metal article holding station member, and means removably attaching the latter to the eye at the outer end of said insert.

5. In a plating rack having a metallic spine adapted to be extended into an electrolyte, a station supporting member having a base secured to said spine in a position to be below the level of the electrolyte and having spaced sockets, an insert having spaced inner ends slidably supported in electric circuit completing position in said sockets, said insert having an eye at its outer end, a metal article holding station member, means removably attaching the latter to the eye at the outer end of said insert, and a band spring having one end secured to said spine between said sockets and having a part which extends away from the spine and which has a deflectable pressure exerting end located to resiliently press against said insert.

6. In a plating rack having a metallic spine adapted to be extended into an electrolyte, a station supporting member having a base secured to said spine in a position to be below the level of the electrolyte and having spaced sockets, an insert having spaced inner ends slidably supported in electric circuit completing position in said sockets, said insert having an eye at its outer end, a metal article holding station member, means removably attaching the latter to the eye at the outer end of said insert, and a band spring having one end secured to said spine between said sockets and having a part which extends away from the spine and which has a deflectable pressure exerting end located to resiliently press against said insert, there being a common securing means between said sockets for securing the spring in position and for securing the base to the spine.

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