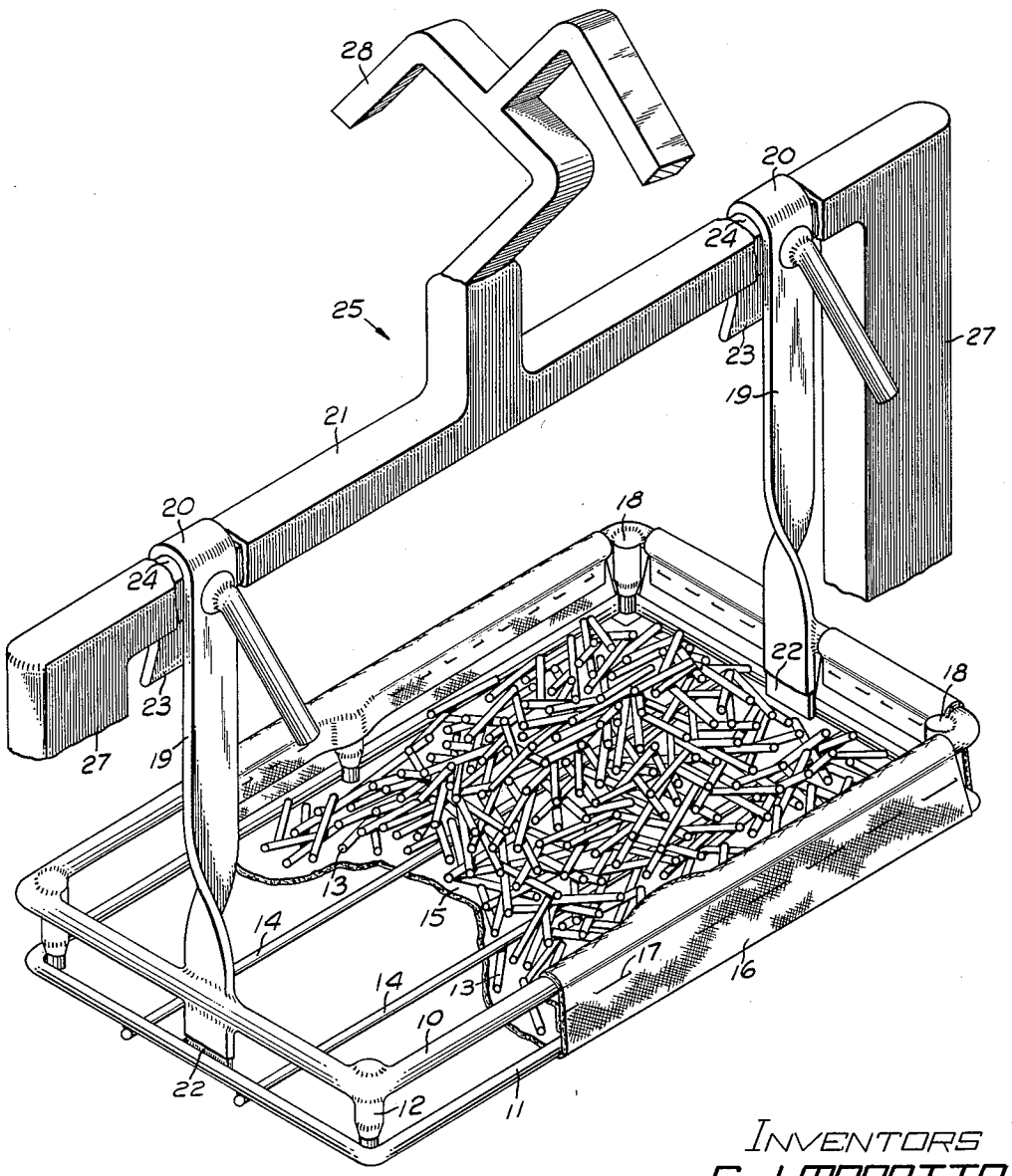
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ELECTROPLATING BASKET AND CARRIER ASSEMBLY

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FIG. 1



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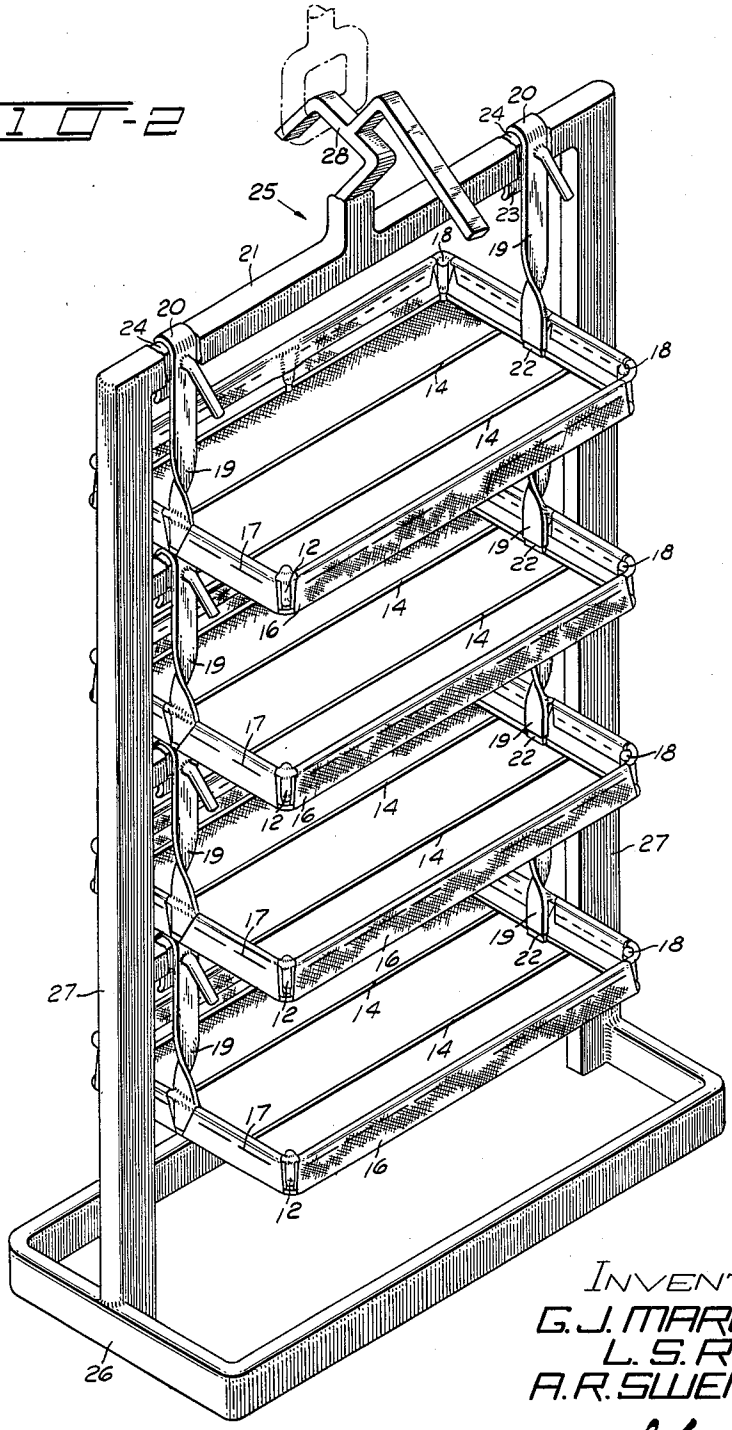
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FIG-2



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3,000,806
ELECTROPLATING BASKET AND CARRIER ASSEMBLY

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2 Claims. (Cl. 204—297)

This invention relates to a plating basket and particularly to an improved basket for holding small, fragile piece parts for electroplating.

In the plating of fragile parts, such as terminals for carbon resistors, conventional tumbling barrels cannot be utilized without causing injury to the parts. Also, standard type metallic mesh baskets used in the art are unsatisfactory because the electrical shielding between the mesh and the parts makes it necessary to manually agitate or shake the parts periodically to insure complete plating thereof. Furthermore, since the baskets are good conductors of electrical current, great variations in the thickness of the electrodeposit are obtained from part to part due to the variations in the current in different portions of the basket. Further, not only are the parts unevenly plated but excessive amounts of metal are deposited on the basket itself which is undesirable.

The principal object of this invention is the substantial elimination of electrical shielding in the plating of small, fragile piece parts.

A further object is a plating basket of very simple construction wherein the accumulation of plating metal on the basket is minimized.

Accordingly the basket has an open frame covered with a porous insulating material impervious to the plating solution with a plurality of spaced conductors extending along the bottom of the basket so as to make electrical contact with the parts therein. Insulated supporting hooks are electrically and structurally connected to the frame and uninsulated portions on the hooks make electrical connection to a source of current when the basket is placed in the plating solution.

Other objects and a fuller understanding of the invention may be had by referring to the following description and claims taken in conjunction with the accompanying drawings in which:

FIG. 1 is an isometric view of the basket embodying the invention; and,

FIG. 2 shows a plurality of baskets supported on a carrier for transporting in a plating system.

With reference to the drawings, a preferred embodiment of the invention is illustrated as being incorporated in an open flat basket substantially rectangular in form having a metallic frame which includes an upper rim **10** and lower rim **11** rigidly held in fixed relationship to each other by a plurality of metal posts **12** mounted in each corner of the frame and at intermediate positions along the longer sides. The posts are insulated throughout except for the portions attached to the rims. Electrical conductors **14**, extending longitudinally across the bottom portion of the frame, are welded at each end to the lower rim **11**. It is noted that the frame can be of any configuration and the metal utilized be any good electrical current conductor, such as, brass, steel, copper or stainless steel, the latter being preferred. The conductors **14** are of such small dimension, for example 16 gage wire, that their arcuate surfaces make only a point contact with the cylindrically shaped parts **13** thereon so as to produce no substantial shielding.

A porous mesh fabric covering **15**, stretched over the outer surfaces of the bottom and sides of the frame, is

folded over the upper rim **10** and secured to the inner surface of the side covering **16** by staples **17** or other fastening means to insulate the rim **10**. The covering used is a fabric of woven monofilament plastic fibers of such composition as polyethylene, glass, Orlon, or such other fabrics or materials which have dielectric properties and are resistant to the acids, alkalis, and temperatures commonly encountered in plating operations. The mesh openings may vary in size depending on the dimensions of the parts to be plated.

Preferably, polyethylene fabric is utilized to cover the frame in order that it may be tautly fitted thereon. This is accomplished by securing the fabric on the frame and then heat shrinking it at an approximate temperature of 150° F. for about ten minutes. Thus, with the usage of a minimum amount of wire to support a taut fabric covering, a simple, sturdy plating basket is obtained. It is noted that the notch openings **18**, defined by the side coverings **16** at the corner posts of the frame, provide an additional drainage area for expediting the removal of solution in the basket when it is lifted from the various liquid containers.

A pair of supports **19** mounted to the inner surface of the rims **10**—**11**, preferably by welding, extend upwardly and terminate in hooks **20** for supporting the basket on the upper transverse member **21** of a carrier **25** transporting the basket through the various solutions of the plating operation. The surfaces of the supports **19** are entirely insulated with rubber or the like, except for their bottom portions **22** and the inner surface **23** of the hooks contacting the uninsulated portion **24** of the member **21**.

Electrical contact to the parts within the basket is obtained from a source of current (not shown) passing through the hook **28** of a carrier **25**, member **21**, basket hook **20**, supports **19**, uninsulated lower rim **11**, conductors **14** and the various uninsulated portions of the frame and piece parts in contact therewith. The rim **11** acts as a guard ring for preventing overplating of the parts as a substantial portion of the plating current passes therethrough. With this arrangement, sufficient current passes through the parts and substantially all the shielding is eliminated. Agitation of the parts is not required, and greater uniformity of the electrodeposit on the parts is attained. It is noted that this basket is applicable for usage in any electroplating process employing aqueous solutions and that cleaning of most deposits accumulating on the stainless steel frame and conductors can be removed easily by dipping the basket into an acid bath, such as nitric acid, without causing any injury to the polyethylene fabric.

Due to the fact that this type basket can be completely immersed in electrolytic solutions without the accumulation of excessive metal thereon and since no agitation is required to avoid shielding, it is economically feasible to load the parts in a plurality of baskets and transport them simultaneously on a carrier through various alkalis, cleaning operations, acid dips, electroplating solutions, rinsing solutions, and drying solutions on automatic plating machines. As shown in FIG. 2, a preferred type carrier **25** comprises a rectangular base **26** having a pair of longitudinal side members **27** extending upwardly and disposed by a plurality of transverse members **21** mounted therebetween. The uppermost member **21** has a carrier hook **28** attached thereto for holding the carrier on the automatic plating machine (not shown). The carrier is fully insulated with a dielectric material such as rubber, except for the hook **28** and those portions of the members **21** in contact with the inner surface of the basket hooks **20** providing the necessary current to all the baskets thereon.

Although this invention has been described with a certain degree of particularity, it is understood that the present disclosure has been made only by way of example and

that numerous changes in the details of construction and the combination and arrangement of parts may be resorted to without departing from the spirit and scope of the invention as hereafter claimed.

What is claimed is:

1. In a plating system, the combination of a carrier and a plurality of baskets supported thereon, each basket comprising an open frame, a taut porous fabric of insulating material impervious to the solution covering the frame and constituting the sole support for parts placed in the basket while permitting the solution to have full access to substantially all the surfaces of the parts while the parts remain in a fixed position on the fabric during the plating operation, a conductor connected to the frame and extending along the bottom surface of the basket and being of such small dimension as to produce substantially no shielding on the parts in electrical contact therewith, metal supporting hooks having an uninsulated inner surface and insulated portions attached to the frame, the carrier comprising an insulated base, a pair of insulated upwardly extending supports mounted on the base, a plurality of insulated lateral members disposed between the supports and connected thereto, each member having uninsulated contacting areas in contact with the uninsulated inner surfaces of the hook portions for the passage of current therethrough, and means for supporting the carrier and passing therethrough current to parts in baskets supported on the lateral members.

2. In a plating system, the combination of a carrier and a plurality of baskets supported thereon, each basket comprising a substantially rectangular metal frame having

an upper and lower rim, a plurality of metal posts mounted on the rims and supporting said rims in fixed relationship to each other, said posts being insulated excepting the exposed bottom portion thereof mounted to the lower rim, a taut porous fabric of insulating material covering the bottom outer surface of the lower rim, extending upwardly along the lateral surfaces of the frame and having a portion folded over the upper rim, means for securing the folded over portion to the lateral inner surface of the fabric, at least one conductive wire extending within the basket and mounted to opposing sides of the lower rim, a pair of supporting hooks mounted on the frame, being substantially insulated excepting the bottom portion thereof mounted to the lower rim and the inner surface of the hooks, the carrier comprising an insulated base, a pair of insulated upwardly extending supports mounted on the base, a plurality of insulated lateral members disposed between the supports and mounted thereon, each member having uninsulated contacting areas in contact with the uninsulated inner surfaces of the hook portions for the passage of current therethrough, and means for supporting the carrier and passing therethrough current to parts in baskets supported on the lateral members.

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