

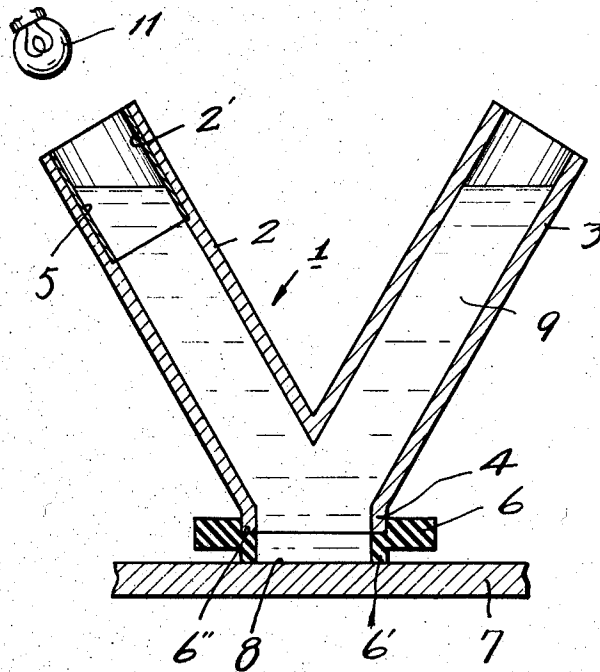
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OBSERVATION DEVICE FOR AN ELECTROLYTIC CORROSION TEST SYSTEM

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OBSERVATION DEVICE FOR AN ELECTROLYTIC CORROSION TEST SYSTEM

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6 Claims

ABSTRACT OF THE DISCLOSURE

An observation device for an electrolytic corrosion test system comprising a hollow cylindrical substantially V-shaped cell having two identical hollow cylindrical portions interconnected at the lower ends by a hollow cylindrical base portion, one of said interconnected cylindrical portions receiving and holding an electrode element in position therein; and a resilient annular gasket snugly fit around said cylindrical base portion and having a seat for the base portion and a center annular boss extending downwards from the body of said gasket, said boss being adapted to abut against an article to be tested so as to provide a fluid-tight seal between the bottom end of the boss and the surface of the article.

The present invention relates to an observation device for an electrolytic corrosion test system which is adapted to determine the anti-corrosion properties of the plating metal deposited on an article.

The so-called electrolytic corrosion test procedure has been recently developed in the United States of America and the procedure is a test procedure which can determine the anti-corrosion properties of platings deposited on articles in a very short period of time. It has been recognized that the electrolytic corrosion test procedure can determine the anti-corrosion properties on a plated article over 400 times faster than does the conventional CASS test procedure.

According to the electrolytic corrosion test procedure, a specimen to be examined such as a plated article is soaked into a bath of suitable electrolyte and the plating metal deposited on the specimen is electrolysed by the D.C. electrolysis under a predetermined positive potential using the specimen as the anode. When the electrolysis has progressed to the degree that the base metal of the specimen be exposed, the indicator contained in the electrolyte reacts with the iron of the base metal to develop a color on the base metal. The time which has elapsed until the color developed on the base metal is utilized as the measurement for determining the anti-corrosion properties of the plating metal deposited on the specimen.

However, when an electrolytic corrosion test is carried out in accordance with the above-mentioned procedure, the entire area of the base metal of the specimen is not exposed at one time, but the area or areas lying underneath a fine defect or defects present in the plating metal are first exposed and therefore, it is necessary to observe a faint color developing at such a defect area or areas by lighting up the specimen on one side from below and side.

When the above-mentioned electrolytic corrosion test is performed on a plated article having a relatively small size, such an article is soaked into the electrolytic bath contained in a transparent electrolyte tank and observed through the tank by lighting up the same on the sides and bottom thereof whereby any color developed area or areas on the article can be examined.

However, if the procedure is performed on a plated article which has a relatively large size such as the bumper

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of an automobile, the entire area of the article cannot be exposed at one time and therefore, in practice, it is necessary to cut a small specimen piece off the large plated article and then to perform the above procedure on the small specimen. However, it is obvious that preparation of such a specimen is time-consuming and requires a rather complicated step.

The object of the present invention is to provide an observation device for an electrolytic corrosion test system which can be suitably employed for determining the anti-corrosion properties of the plating metal deposited on an article having a relatively large size as well as that on an article having a relatively small size.

Another object of the present invention is to provide an observation device for an electrolytic corrosion test system which is simpler in construction and operation.

According to the present invention, there is provided an observation device for an electrolytic corrosion test system which comprises a hollow cylindrical V-shaped cell having two cylindrical arm portions interconnected at the lower ends by a hollow cylindrical base portion, one of said hollow cylindrical arm portions receiving and holding a cathode in position near the upper end; an annular gasket snugly fit around said base cylindrical portion; and a light source disposed above and in axial alignment with either one of said cell arm portions.

The above and other objects and attendant advantages of the present invention will be more apparent to those skilled in the art from a reading of the following detailed description of a preferred embodiment thereof in conjunction with the accompanying drawing.

The drawing is a vertical section view of a preferred form of observation device for an electrolytic corrosion test system constructed in accordance with the present invention.

The present invention will be now described referring to the sole figure of the accompanying drawing in which a preferred form of observation device for an electrolytic corrosion test system according to the present invention is shown in a vertical section. The observation device generally comprises a hollow substantially V-shaped cell 1 having two identical hollow cylindrical portions 2 and 3 which are interconnected at the open lower ends by a hollow cylindrical base portion 4. The cylindrical portion 2 is provided with a cylindrical recess 2' in the inner periphery covering a certain distance from the open upper end thereof and a hollow cylindrical cathode 5 is received and held in the recess by any suitable manner. An annular gasket 6 formed of soft and resilient material such as rubber is snugly fit around the base portion 4 and the gasket has a hollow cylindrical center boss 6' extending vertically and downwards and having substantially the same diameter as that of the cell base portion 4. The annular gasket 6 is further provided with an annular recess 6'' in the inner periphery extending from the upper edge down to a substantially midpoint of the height or thickness of the gasket and the recess has substantially the same diameter as that of the cell base portion 4 for snugly receiving substantially the entire base portion therein. The hollow cylindrical center boss 6' of the gasket 6 serves as a packing when the observation device is operated for its intended purpose as will become more clear hereinbelow.

In operation, a specimen to be tested such as a plated article 7 is horizontally placed on a suitable flat support means (not shown) with the plated side 8 (which is to be tested) disposed top and then the above-mentioned cell 1 is placed on the plated article 7 with the bottom end of the gasket center boss 6' seating on the article. Then, the cell 1 is pressed down and held in the pressed position by a suitable means such as a spring (not shown) so as

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to cause the bottom end of the gasket boss 6' to positively abut against the plated article side 8 whereby the boss may serve as a packing to provide a fluid-tight seal between the article side and the boss lower end for prevention of leakage of electrolyte to be received in the cell 1. Thereafter, electrolyte 9 is poured into the cell 1 to a predetermined level therein. The system including the cell 1 and plated article 8 is connected to a suitable D.C. power source (not shown) and in such a case, the cylindrical element 5 serves as the cathode while the plated article 8 serves as the anode.

In the figure, reference numeral 11 denotes a light source which may be positioned outwardly of and in axial alignment with either one of the two hollow cylindrical portions 2 and 3 and the light source is adapted to direct a ray of light upon the upper side 8 of the plated article 7. In the illustrated embodiment, the light source 11 is disposed outwardly of and in axial alignment with the cylindrical portion 2 and the lit side 8 of the plated article 7 is observed from a suitable point outwardly of and in axial alignment with the other cylindrical portion 3 through the portion. With the above arrangement, any fine color-developed spot on the plated article side 8 can be clearly observed.

When an electrolytic corrosion test operation is performed by incorporating the above-mentioned observation device into any prior art electrolytic corrosion test system, such a test can be selectively effected on any limited small area of a plated article having a relatively large size without the necessity for cutting a small section including such an area to be tested off the large article.

It will be understood that various modifications and variations on the embodiment of the invention as disclosed and illustrated herein may be resorted to without departing from the scope of the concept of the present invention. Therefore, the scope of the invention should be limited only to the scope and proper interpretation of the claims appended hereto.

Having thus described certain forms of the invention in some detail, what is claimed is:

1. An observation device for an electrolytic corrosion test system which comprises a hollow, substantially V-shaped body, said hollow body including two arm portions interconnected at their lower ends by a substantially vertical base portion, one of said arm portions including

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cathode reception means near its upper end, cathode means within said cathode reception means, and a light source disposed above and in axial alignment with one of said arm portions.

2. The invention as claimed in claim 1 further including means for said base portion adapted to snugly fit about said base to provide a fluid seal between the periphery of said base and the surface upon which said base rests.

3. The invention as claimed in claim 1 wherein the periphery of said body portion is substantially cylindrical.

4. The invention as claimed in claim 3 further including a substantially annular gasket adapted to snugly fit about said base portion.

5. An observation device for an electrolytic corrosion test system as claimed in claim 4 in which said annular gasket is formed of a resilient material and has an annular recess formed in the inner periphery extending from the upper end to a substantially midpoint of the height or thickness of the gasket and a center boss extending downwards from the lower edge of the gasket for abutting against the upper surface of a specimen the anticorrosion properties of which are to be examined.

6. An observation device for an electrolytic corrosion test system as claimed in claim 5 in which said annular recess has substantially the same diameter as that of said cell hollow base portion for providing the seat for the base portion and said center boss is adapted to provide a fluid-tight seal when the boss is abutted against said upper surface of the specimen.

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