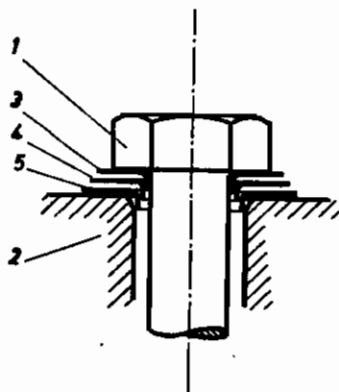


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METALLIC CORROSION PROTECTION
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ALIEN PROPERTY CUSTODIAN

METALLIC CORROSION PROTECTION

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Magnesium and its alloys at their combination with heavy metals show a tendency to strong decomposition, especially in presence of moisture with acid- or base content.

The reason for this decomposition is an electrolytic proceeding. Magnesium has a comparatively high electric solution potential in comparison to the heavy metals, especially to iron, so that a combination of these metals in presence of acid- or base content moisture acts as an electrolytic decomposition cell.

The electrolytic solution potential (H=0) amounts for: Fe=-0.43, Zn=-0.76, Mn=-1.1, Al=-1.45, Mg=-1.87. Between Mg and Al for instance a potential difference would therefor exist of 0.42 volt, between Mg and Mn of 0.77 volt, between Mg and Zn of 1.11 volt, between Mg and Fe of 1.44 volt. As experience has shown the little difference of 0.42 volt between Mg and Al is not prejudicial. A potential difference of less than 0.5 volt is practically harmless. Only in presence of stronger acids or bases this little potential difference may lead to slow decomposition.

The invention utilizes this knowledge and divides a high potential difference resulting for any metal combination into a row of smaller potential differences of preferably not above 0.5 volt. This subdivision takes place by interposition of one or several other metals of corresponding potential. For the combination Fe=Mg which most frequently occurs in practice, for instance at the connecting of electron parts with steel parts, a three substance-metal is selected

as intermediate layer according to the invention, for instance in the combination



In this succession consist between the succeeding layers potential differences of 0.3; 0.34; 0.35; 0.42 volt. The claim of a potential difference of below 0.5 volt is therefore satisfied.

To carry out such a set of metals as decreasing potential set may be effected in various manners.

If for instance an electron element has to be fixed by a steel screw, a washer of three layers, for instance Al-Mn-Zn, is sufficient for the required protection. The different layers may be produced as separate discs or as coatings on the adjacent metal, (galvanized, plated, fire metallized, squirted). The screw may be for instance galvanized, the electron part plated with pure aluminium and then only a layer of Mn may be interposed between them, or two or all three intermediate layers are plated the one on the other. The correct succession of the individual metals is material in any case.

The drawing illustrates such a multi-layer corrosion protection on a screw connection. Between the steel screw 1 and the screwed-on electron part 2, three protecting layers 3, 4, 5 are interposed in the stated succession Zn-Mn-Al.

The employment of such metal layers instead of non-metal insulating layers has the advantage of greater strength against pressing through or rubbing through.

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