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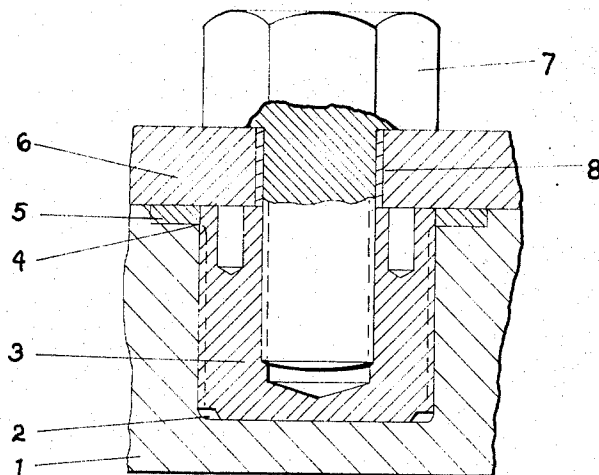


FIG. 1

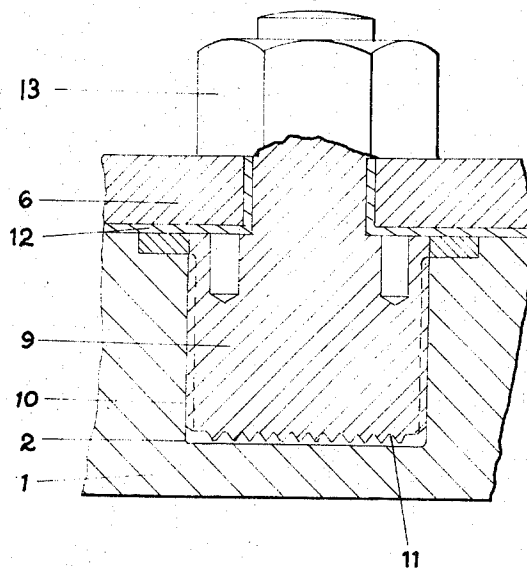


FIG. 2

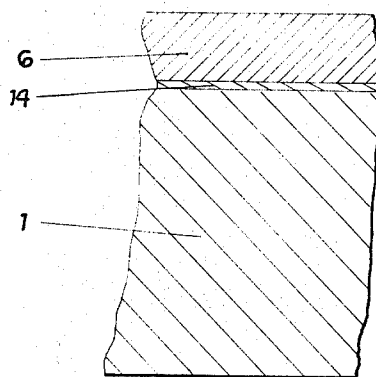


FIG. 3

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## MERCURY CATHODE ELECTROLYSIS CELL WITH NOVEL ANODE SUPPORT MEANS

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9 Claims

### ABSTRACT OF THE DISCLOSURE

A connection between an anode block and a cover plate employing chlorine-proof screw inserts in the block having bolts extending through the cover plate. A metallic layer between the cover plate and anode block is deformed when the bolts are tightened. An alternative form has a metallic layer deposited on the anode block and to this layer the cover plate is rigidly united.

### CROSS REFERENCE TO RELATED APPLICATION

Reference is made to our copending application Ser. No. 593,791, filed Nov. 14, 1966, now U.S. Pat. No. 3,445,373, and entitled Electrolysis Cell.

### BACKGROUND OF THE INVENTION

An electrolysis cell has been designed in which the anodes cover the cell, so that the use of a special cell cover becomes unnecessary. Sealing between the side-walls of the cell and the anodes, as well as between the individual anode blocks is achieved by a flexible, corrosion proof foil. A metal plate is attached to the upper side of each anode, corresponding in its dimensions approximately to the dimensions of the anode. The current connection is made directly to this metal plate so that the current is distributed evenly over the entire anode surface.

### SUMMARY

It has been found that the attachment of the metal plate covering the anode surface can be designed to advantage particularly in two ways. The first way of attachment employs screwthreads embedded into the upper side of the anode block, the screw threads being of a material able to resist the attack by chlorine gases, or, having a protective cover made of such a material. Bolts extend through the metallic cover plate, which, in conjunction with the screw sockets enable the cover plate to be pressed tightly against the anode surface. When using screw inserts which are provided with a chlorine proof coating, or are impregnated with chlorine proof material, a lead coating has been found specially advantageous, because the lead coating combines intimately with the adjoining anode material when the bolts are tightened. In addition, by using the screw inserts, the cross sectional area for current passage between the input lead and the anode block is increased.

Further it is possible to provide an intermediate layer between the upper side of the anode block and the under side of the cover plate, which deforms either where the bolts are tightened or under the influence of heat in such manner that the transfer resistances for the current are decreased.

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It has been shown, that it is possible to provide the upper side of the anode block with a thin metallic covering and to solder or weld the cover plate directly to this covering. In this second method of attachment, the covering can be produced by vapor deposition, electroplating, melting or spray coating.

### BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a fragmentary sectional view of an anode block and covering plate attached thereto by a bolt and a screw insert embedded in the anode block;

FIG. 2 is a fragmentary sectional view similar to FIG. 1, in which the screw insert and bolt form a single unit; and

FIG. 3 is a fragmentary sectional view showing the covering plate secured to the anode block by an interposed layer.

### DESCRIPTION OF THE PREFERRED EMBODIMENTS

The anode block 1 of FIG. 1 is formed with screw threads 2 which threadedly receive a screw insert 3. At the upper edge of the screw thread 2 is a recess 4 which contains a sealing washer 5. After positioning the cover plate 6 upon the anode block 1, a screw 7 is inserted through the bolt hole of the cover plate and is screwed into engagement with the screw insert 3. Surrounding the bolt in the region of the cover plate 6 is an insulation 8 of chlorine proof material.

In FIG. 2 a bolt 9 is shown screwed into the screw threads 2 of the anode block 1 and this bolt is covered on its lower part by a soft metallic coating 10. The bottom end of the bolt 9 has concentric channels 11. Between the anode block 1 and the cover plate 6 is an intermediate layer 12 of a soft metal. The cover plate 6 is pressed against the anode block by means of a nut 13.

The anode block 1 of FIG. 3 is solidly attached to the cover plate 6 by means of a thin metallic layer 14 which is applied by spray coating or electroplating to the anode block and then the cover plate 6 is welded or soldered to the layer or coating 14. To increase the current transfer area and/or to increase the adhesive forces, it is possible to machine into the anode block or into the covering plate grooves, such as dove-tail grooves which receive ribs on flanges in the other part.

What we claim is:

1. In an electrolysis cell, in particular for the production of chlorine and alkali hydroxides by means of graphite anodes and a mercury cathode, an anode block, a cover plate for said block, and means for connecting said block and cover plate, said connecting means comprising conductive screw inserts embedded in the upper side of said anode block, and metallic bolts extending through said screw inserts and cover plate.

2. The organization claimed in claim 1 in which said screw inserts are chlorine proof.

3. The organization claimed in claim 1 in which said screw inserts have a chlorine proof coating.

4. The organization as claimed in claim 3 in which the chlorine proof coating comprises a deformable metal which when the inserts are tightened combines intimately with the material of said anode block.

5. The organization claimed in claim 1 in which said screw inserts are impregnated with chlorine proof material.

6. The organization as claimed in claim 1 comprising a metallic layer intermediate the upper side of said anode

block and said cover plate adapted to be deformed under the influence of pressure forces.

7. The organization as claimed in claim 1 in which said screw inserts and bolts form a single unit.

8. In an electrolysis cell, in particular for the production of chlorine and alkali hydroxides by means of graphite anodes and a mercury cathode, an anode block, a cover plate for said block, and means for connecting said block and cover plate, said connecting means comprising a metallic layer deposited upon and united with said anode block, and a rigid joint between said metallic layer and said cover plate.

9. The organization as claimed in claim 8 comprising

an integral joint between said metallic layer and said cover plate.

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