Oct. 10, 1972 P. M. PAIGE 3,697,404

APPARATUS TO SUPPORT THE ELECTRODES AND BUS BARS IN AN ELECTROLYTIC CELL

Filed Jan. 29, 1971

3 Sheets-Sheet 1

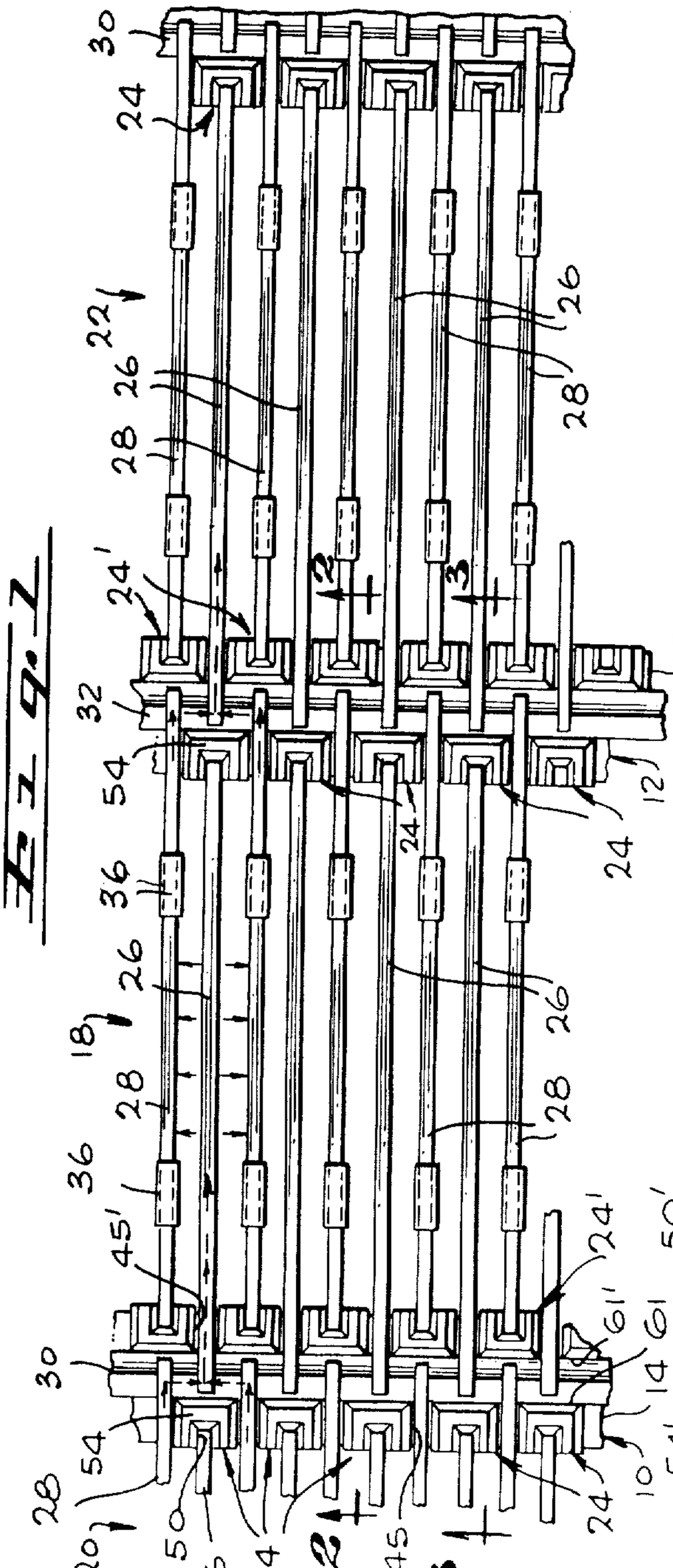

FIG. 2

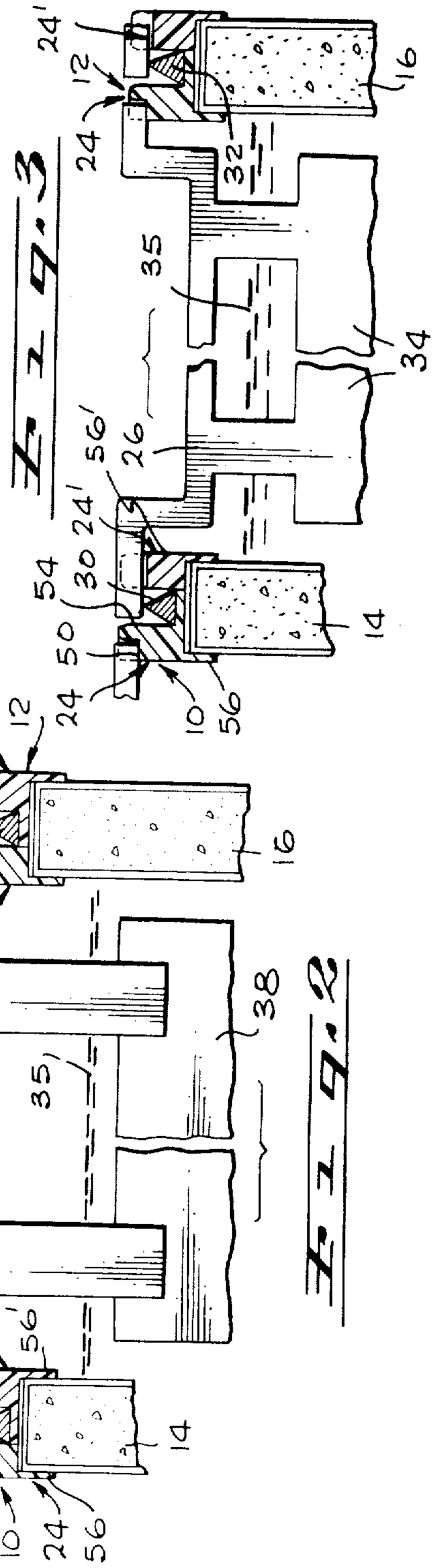

FIG. 3

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APPARATUS TO SUPPORT THE ELECTRODES AND BUS BARS IN AN ELECTROLYTIC CELL

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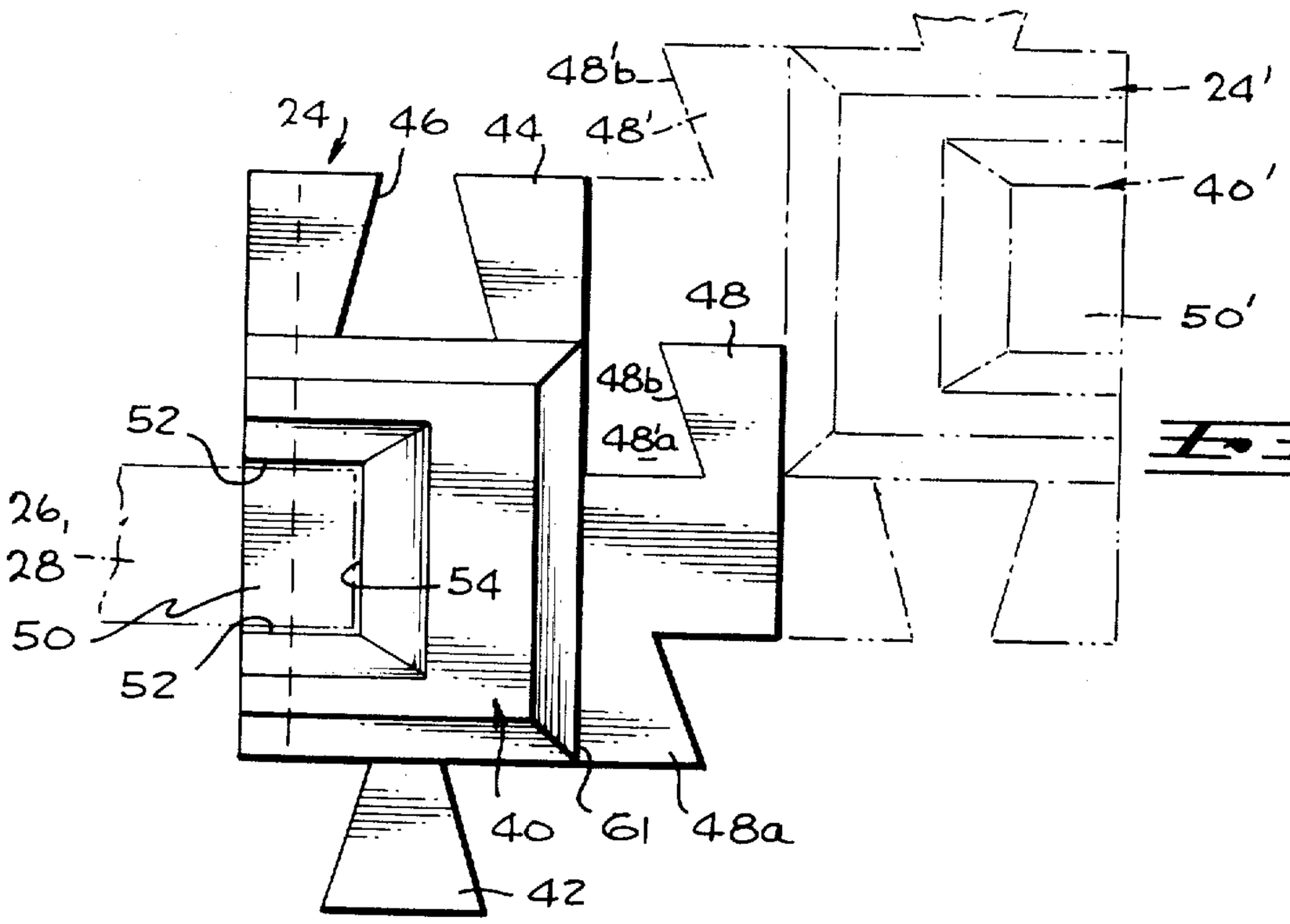

Fig. 4

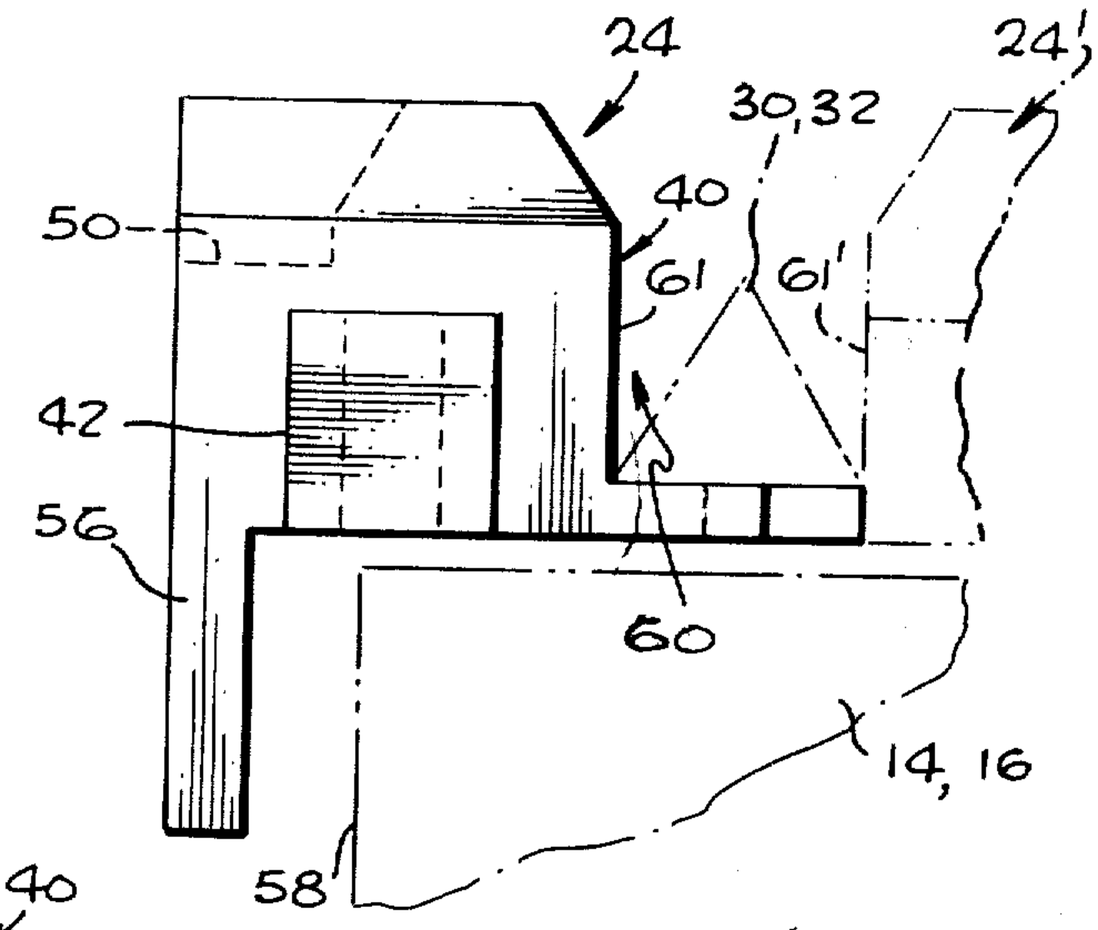

Fig. 5

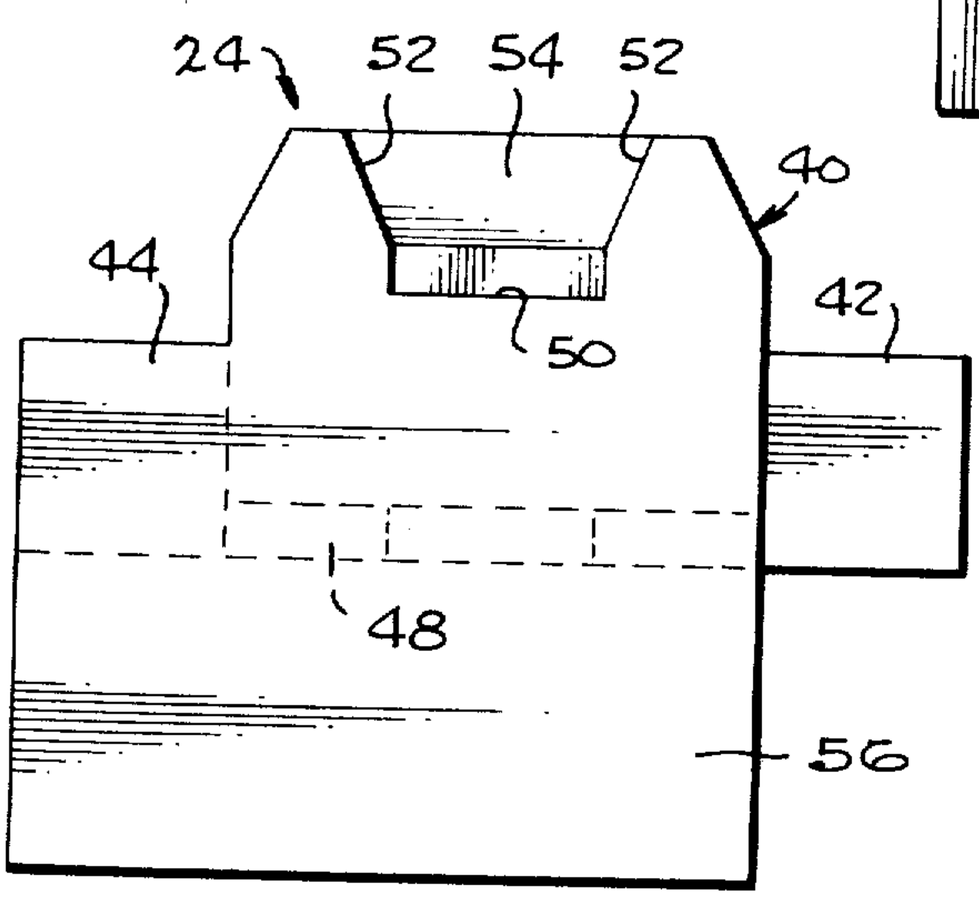

Fig. 6

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APPARATUS TO SUPPORT THE ELECTRODES AND BUS BARS IN AN ELECTROLYTIC CELL

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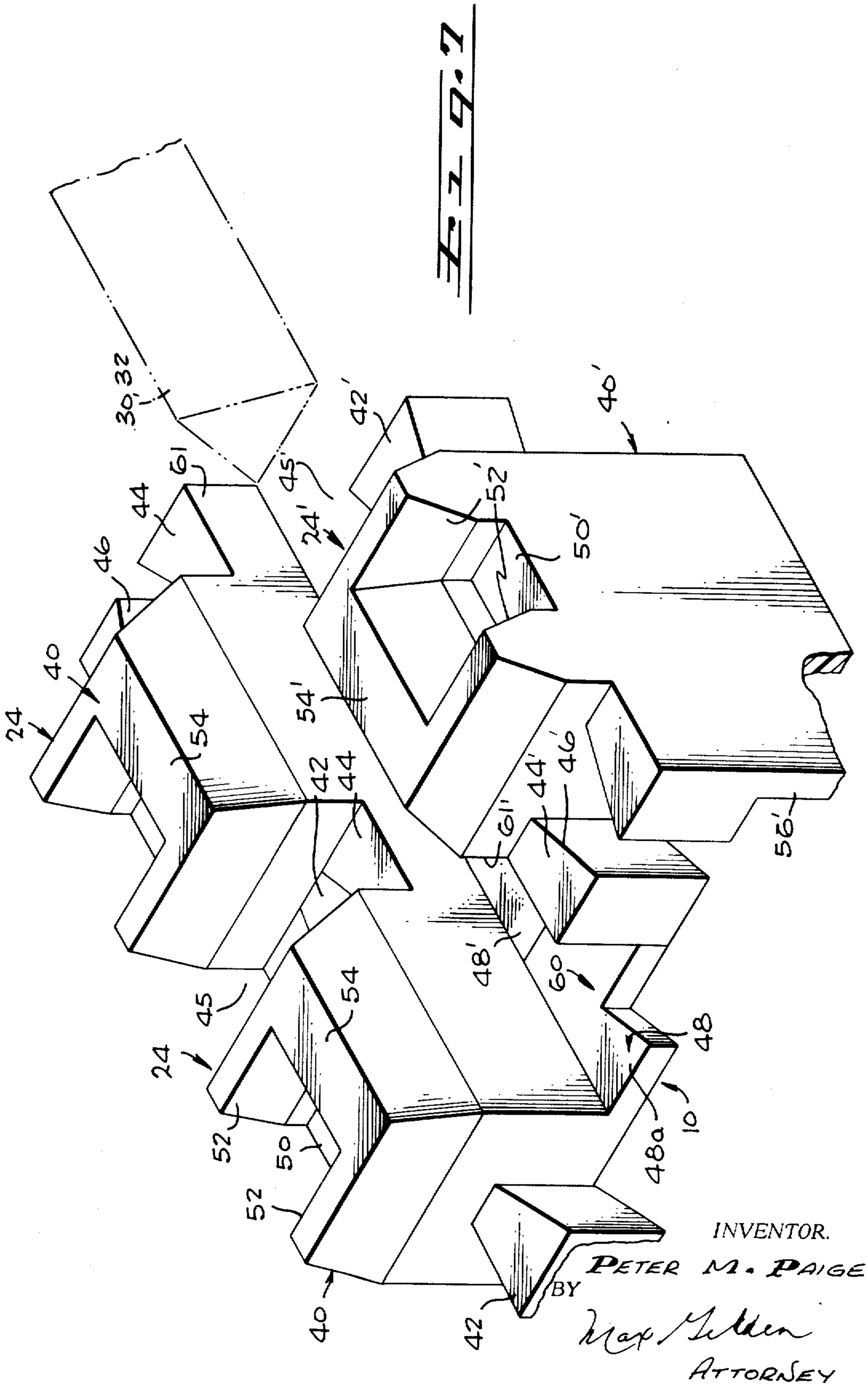
FIG. 7



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3,697,404

APPARATUS TO SUPPORT THE ELECTRODES AND BUS BARS IN AN ELECTROLYTIC CELL

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Int. Cl. C23b 5/70
U.S. Cl. 204—267 14 Claims

ABSTRACT OF THE DISCLOSURE

Electrolytic cell apparatus comprising as an essential feature a capping board formed of a plurality of interlocking, e.g., plastic molded, units forming a structure designed to be supported on the walls of electrolytic tanks, and to support a series of anodes, cathodes and bus bars in operable relation, each of such units including a body portion with a seat and extending dovetail members which interlock adjacent units. Anode and cathode hanger bars rest at one end on the seats of the capping board and are supported at their opposite ends on a bus bar between aligned interlocking units of the capping board.

This invention relates to electrolytic cell apparatus, and is particularly concerned with novel simplified structure for mounting and suitably positioning the anode and cathode hanger bars, which respectively support the anodes and cathodes in the electrolytic cells, and the anode and cathode bus bars for contact with the respective anode and cathode hanger members, to complete the circuit in the electrolytic cells, and to electrolytic cell apparatus comprising a plurality of cells or tanks, and including said novel structure mounted on the walls of the respective cells.

In electrolytic cells, e.g., of the type used in copper electrowinning, a large number of cells is generally employed, each cell containing a relatively large number of anodes and cathodes supported in the electrolytic cells by anode and cathode hanger members or bars, a source of electrical energy being supplied to the anodes and cathodes in series through the entire electrolytic cell apparatus.

Electrolytic cell apparatus of this type generally requires means mounted on the relatively long opposite walls of the respective electrolytic cells for properly supporting and positioning the respective anode and cathode hanger bars so as to accurately space the anodes and cathodes in the respective cells, and to maintain the anode hanger bars and the cathode hanger bars in contact with their respective anode and cathode bus bars, while at the same time maintaining said anode and cathode hanger bars insulated from each other. Heretofore, a large number of individual supporting members for each of the anode and cathode hanger bars, together with relatively complex means for maintaining the anode hanger bars and cathode hanger bars in contact with their respective bus bars, have been utilized. This has resulted in high initial costs for equipment of this type in electrolytic cells, together with the relatively high cost of maintenance of this relatively complex equipment.

U.S. Pat. 2,443,112 illustrates one form of prior art apparatus of the type described above for use in electrolytic cells. In this patent, there is provided cone or mushroom shaped metal protrusions on one end of each hanger bar, which wedge together to provide electrical continuity. A plurality of slotted electrical insulating electrode spacer members or strips serve to support the other end of the hanger bars so as to space the electrodes in the tanks. The structure of this patent, particularly

the cone-shaped contact means thereof, is complex, employing a plurality of insulating strips for supporting the hanger bars, which must be fitted together or attached in some manner. Further, the device of the patent requires removal of all cathodes before removal of the anodes.

The device of the present invention on the other hand, employs interlocking insulating support members for the hanger bars, insulating the anode and cathode hanger bars and positively locating the anode and cathode hanger bars not only lengthwise in the electrolytic cells or tanks, but also transversely across the tank, and provides means for positioning anode and cathode bus bars in a simplified manner in proper position so that only the anode and cathode hanger bars contact the respective anode and cathode bus bars, and avoiding the complication of the use of the cone-shaped contact members of the above patent.

According to the invention, a device termed herein a "capping board" is provided for use in electrolytic cells, avoiding the disadvantages of prior art apparatus such as that disclosed in the above patent, such capping board being designed to be mounted in fixed position on the walls of electrolytic tanks for efficiently supporting, spacing and insulating the conductive anode and cathode hanger members, and the respective anodes and cathodes in the cells, and for suitably supporting the bus bars for the anode and cathode hanger members. Such capping board is composed basically of a plurality of interlocking like units which dovetail together, each individual unit, preferably molded from plastic, including a body portion with a seat and extending dovetail members which interlock with adjacent units. Each of the capping boards preferably is designed with two rows of such interlocking units, the anode and cathode hanger bars resting in the seat portion of such units, and the bus bars being supported each in the space provided on the capping board between the two rows of aligned units.

The seats of the respective units on each capping board, mounted on opposite walls of each of the electrolytic cells, receive and support one end of each of the respective anode and cathode hanger bars, the other ends of said hanger bars being in contact with and being supported by their respective anode and cathode bus bars.

As will be clearly seen from the description of the preferred embodiment of the invention described below, the capping board structure of the invention accurately spaces the anode and cathode hanger bars and their respective anodes and cathodes in the electrolytic cells, and insulates them from each other, and serves to compel contact of the anode hanger bars and cathode hanger bars, with their respective anode and cathode bus bars, while preventing the anode hanger bars from contacting the cathode bus bars, and preventing the cathode hanger bars from contacting the anode bus bars.

By designing the capping board employing the above noted interlocking units for supporting the hanger bars and a bus bar in positive fixed relation to obtain the results noted above, there is provided a simplified support structure for the hanger bars in the electrolytic cells, and for the bus bars thereof, while permitting utilization of the simple type of knife bus bars, thereby substantially reducing not only the initial cost of such equipment in electrolytic cells, but the cost of maintaining such equipment.

The invention will be understood more clearly from the description below of a preferred embodiment of the invention, taken in connection with the accompanying drawings, wherein:

FIG. 1 is a plan view illustrating the electrolytic cell apparatus according to the invention, employed for supporting the anode and cathode hanger bars and their

respective anodes and cathodes in a plurality of electrolytic cells, and for placing said hanger bars in contact with their respective bus bars to provide electrical continuity throughout all of the cells in series;

FIG. 2 is a longitudinal sectional view taken on line 2—2 of FIG. 1;

FIG. 3 is another longitudinal section taken on line 3—3 of FIG. 1;

FIG. 4 is a plan view of one of the interlocking units of the capping board structure of the invention;

FIG. 5 is a side elevation of the interlocking unit of FIG. 4, showing the mounting of said unit on the wall of an electrolytic cell;

FIG. 6 is a front elevation of the unit of FIG. 4, showing the seat formed in the body portion of the unit for receiving the ends of the anode and cathode hanger bars; and

FIG. 7 is an isometric view of a plurality of said interlocking units in assembled position, showing the formation of a pair of aligned rows of such units of which the capping board is comprised, with an intermediate longitudinal space provided by the interlocking members between the aligned rows, for securely supporting and locating a bus bar between said aligned rows.

Referring to FIGS. 1 to 3 of the drawing, numerals **10** and **12** are capping boards according to the invention mounted on the opposite walls **14** and **16** of an electrolytic cell, indicated at **18**, there being a plurality of like electrolytic cells such as adjacent cells indicated at **20** and **22** in the illustrated electrolytic cell system.

Each of the capping boards **10** and **12** are of the same construction, each of such capping boards comprising a plurality of interlocking units **24** aligned in one row along one side of the capping board and a plurality of identical interlocking units **24'** aligned parallel to the first row of units **24**, along the opposite side of the capping board. As will be described more fully below, the units **24** and **24'** of the capping board, are designed to support one end of a plurality of alternately spaced parallel conductive metal anode hanger bars **26** and conductive metal cathode hanger bars **28** in the respective electrolytic cells such as **18**, the opposite ends of such anode and cathode hanger bars being supported on anode and cathode bus bars **30** and **32** which rest on the capping boards **10** and **12**, respectively, as described more fully below.

The anode hanger bars **26** serve to support the respective anodes **34** in the electrolyte **35** of the electrolytic cells such as **18**, and the cathode hanger bars **28** are connected by means of metal straps **36** to cathodes **38** suspended in the electrolyte **35**, the respective anodes and cathodes and the respective anode hanger bars and cathode hanger bars being suitably spaced and insulated from each other, by means of the capping boards **10** and **12**, as described in greater detail hereinafter.

In the present embodiment, the capping board structure of the invention is employed in a plurality of electrolytic cells utilized for electrowinning copper, the anodes **34** being lead anodes, and the cathodes **38** being copper cathodes, and the electrolyte **35** being a copper sulfate solution. In the electrolytic process, copper is deposited from the copper sulfate solution on thin copper cathodes, the thickened copper cathodes being removed at intervals and replaced by fresh thin copper cathodes.

Referring now particularly to FIGS. 4 to 6 of the drawing, each of the units **24** of the capping boards **10** and **12** is formed of a molded body portion **40** having outwardly extending dovetail members **42** and **44**, member **44** having a groove **46** and member **42** being in the form of a tongue, each of said body portions **40** also carrying a Z-shaped side member **48**, members **42**, **44** and **48** all integrally attached to the body portion **40**. In the top of the body portion **40** is provided a seat **50** formed of sides **52** and an end member **54**. As previously noted, and also pointed out in greater detail hereinafter, one end of either an anode hanger bar **26** or of a cathode hanger bar **28** is received in the seats **50** of the capping board units **24** for support thereof, as illustrated by the dotted line in FIG. 4. It will be noted that there is also integrally provided on the body portion **40** of each of the units **24** a depending flange **56** which is adapted to make contact with one side **58** of a side wall **14** or **16** of an electrolytic cell.

The units **24** including the interlocking members **42**, **44** and **48** carried thereon can be readily molded from a suitable plastic, e.g., injection molded from polypropylene or any other suitable plastic such as polystyrene, cellulose acetate, cellulose acetate-butyrate, and the like. Although plastic molded units are preferred due to their ease of fabrication and low cost, such units can be formed of any insulating, preferably moldable material, including molded ceramics as well as molded plastics.

Referring now particularly to FIG. 7, and also again to FIG. 1, there is shown the interlocking or dovetailing of the units **24**, and an identical series of units **24'** to form the capping board structure **10** or **12** according to the invention. The structural components of units **24'** are represented in the drawing by primed numbers corresponding to the numbers of the same components of units **24**. It is seen that a unit **24** is interlocked with a pair of adjacent interlocking units **24** by means of the tongue and groove elements **42** and **44**, to form an aligned row of the units **24** on the capping board **10**, with a space **45** provided between the adjacent body portions **40** of such units, to receive and locate an end portion of an anode or cathode hanger bar **26** or **28**, as seen in FIG. 1, while a like aligned interlocking parallel, spaced series of units **24'** identical to units **24** is formed, the units **24** of the first aligned series of units being dovetailed and interlocked with the second series of aligned units **24'** through the tongue and groove arrangement **48***a* and **48***b* of the side member **48**, of each of the units **24** with a like tongue and groove arrangement **48'***a* and **48'***b* on side members **48'** formed on the units **24'** of like construction as the units **24**. It will be seen that this arrangement of the units **24** in one row and the units **24'** in the adjacent row of the capping board, places the units **24'** in a direction opposite units **24**, and also staggers the units **24'** with respect to the units **24**, and also providing seats **50'** and intermediate spaces **45'** for proper location of the anode hanger bars **26** and the cathode hanger bars **28**, so that they contact the anode and cathode bus bars, respectively, in each electrolytic cell, e.g., **18**, as seen in FIG. 1 and described more fully below. Since the units **24** and **24'** are identical it will be understood that units **24** and **24'** are interchangeable and can be used in either of the aligned rows of units **24** or **24'**, constituting a feature of this construction.

It will thus be seen in FIGS. 1 and 7 that the seats **50** of the aligned row of plastic molded units **24** are disposed in a direction opposite to the staggered seats **50'** of the aligned row of units **24'**, the end members **54** of the seats in the first row of units **24** being disposed adjacent the end members **54'** of the second row of aligned units **24'** for a purpose described more fully below.

The dovetailing or interlocking of the two rows of aligned molded units **24** and **24'** to form the capping board **10**, provides a space **60** (see FIG. 7) between the adjacent walls **61** and **61'** of the two rows of units **24** and **24'**, which securely receives and locates the bus bar, which can be of conventional triangular shape, and composed, e.g., of copper, such as anode bus bar **30** or cathode bus bar **32**, between the two rows of units **24** and **24'**, such bus bar resting on the seat formed by the interlocked side members **48** and **48'** of the units **24** and **24'**. Thus, as seen in FIG. 1, one of the capping boards **10** resting on the wall **14** of the electrolytic cell **18** carries the anode bus bar **30**, and the other capping board **12** mounted on the wall **16** of the cell carries the cathode

bus bar **32**, in each case disposed between the two parallel aligned rows of molded units **24** and **24'** of the capping board.

As clearly seen in FIGS. 2 and 3, each of the capping boards **10** and **12** is securely positioned on their respective side walls **14** and **16** of the electrolytic cell by contact of the depending flanges **56** of each of the aligned units **24** with one side of a cell wall, e.g., **14**, and by contact of the similarly provided depending flanges **56'** of the aligned row of units **24'** with the opposite side of the tank wall, e.g., **14**.

Again referring particularly to FIG. 1 of the drawing, it will be seen that the ends of the anode hanger bars **26** and the ends of the cathode hanger bars **28** are supported in the seats **50** and **50'** of the respective units **24** and **24'** of the capping boards mounted on the walls of each of the adjacent electrolytic cells **18**, **20** and **22**, with the opposite ends of the anode hanger bars **26** being in contact only with the anode bus bars, e.g., anode bus bar **30** along one side wall of the cell **18**, and the opposite ends of the cathode hanger bars **28** being only in contact with the cathode bus bars, e.g., cathode bus bar **32**, along the opposite side wall of the cell **18**. It will thus be seen that in each cell, and referring particularly to cell **18**, one end of each anode hanger bar **26** is supported in a seat **50** of one of the capping board units **24**, the other end of each of the anode hanger bars being supported on the knife edge of the anode bus bar **30**, while one end of each of the cathode hanger bars **28**, is similarly supported in one of the seats **50'** of units **24'**, while the opposite end of each of the cathode hanger bars is supported on the knife edge of the cathode bus bar **32**.

A similar arrangement of the anode and cathode hanger bars and anode and cathode bus bars is provided in each of the other cells of the system, e.g., cells **20** and **22**, except that in each adjacent cell the anode bus bar, e.g., **30** of cell **18**, is the cathode bus bar of the adjacent cell **20**, and the cathode bus bar, e.g., **32** of cell **18**, is the anode bus bar of the other adjacent cell such as **22**.

It is also noted that the anode hanger bars **26** of all of the cells, e.g., **18**, **20** and **22**, are in longitudinal alignment with each other, and the cathode hanger bars **28** of all of the cells are in longitudinal alignment with each other.

In this arrangement it is seen that the capping boards **10** and **12** of the invention, with their aligned rows of units **24** and **24'** arranged in staggered relation, each locates the ends of the anode hanger bars **26** of one electrolytic cell **18**, and the adjacent aligned ends of the anode hanger bars of the adjacent cells, e.g., **20** and **22**, so as to prevent contact of the respective ends of these hanger bars with each other, by means of the insulating end member **54** of the units **24**, and to compel contact of the opposite ends of such anode hanger bars with the anode bus bar, e.g., **30**, and similarly such capping board arrangement locates the adjacent aligned ends of the cathode hanger bars **28** of the adjacent cells **18**, **20** and **22**, by means of the end members **54'** of the units **24'**, so as to prevent contact of the respective ends of these hanger bars with each other, and to compel contact of the opposite ends of the cathode hanger bars **28**, with the cathode bus bar, e.g., **32**. Such insulation of the adjacent ends of the aligned anode hanger bars of the adjacent cells, and insulation of the aligned cathode hanger bars of the adjacent cells, prevents shorting out of the cells.

The aligned rows of spaced units **24** and spaced units **24'** on the capping board also serves to insulate the adjacent ends of the alternate cathode and anode hanger bars of each of the cells, whereby sufficient space at **45** (see FIG. 7) is provided between each of the adjacent units **24** in one aligned row of such units, and sufficient space **45'** is provided between each of the adjacent units **24'** of the other row of such aligned units to permit passage of the end portion of either a cathode hanger bar **28**, or of an anode hanger bar **26** between the units **24** or between the units **24'**, for contact with their respective cathode and anode bus bars in each cell, while insulating such hanger bars from the adjacent anode hanger bars, or from the adjacent cathode hanger bars, in the same cell.

It is accordingly seen that the capping board structure of the invention, mounted on adjacent walls of the individual electrolytic cells of an electrolytic cell unit comprised of a plurality of such individual cells, accurately spaces the cathodes and anodes in the same cell, locates the cathode and anode hanger bars of one cell and the anode and cathode bars of adjacent cells to compel their contact with their respective anode and cathode bus bars in each cell, locates the anode and cathode hanger bars of one cell and the cathode and anode hanger bars of adjacent cells to prevent contact with the bus bar of opposite polarity, and to insulate them from it, and insulates the anode and cathode hanger bars of one cell from each other and also insulates the anode and cathode hanger bars in adjacent cells from each other.

As a result of the functioning of the capping board structure to accomplish the above purposes, electric current flow from a single source of current, e.g., a D.C. rectifier, is efficiently provided as indicated by the arrows in FIG. 1, by maintaining a suitable voltage drop, e.g., of about 2 volts between the respective adjacent cells in succession, e.g., between cells **20**, **18** and **22**, and by providing a suitable voltage drop across each individual cell, e.g., a voltage drop of about 2 volts across the anode and cathode hanger bars of cell **18**, to provide efficient electrolytic flow through the cell electrolyte, and from one cell to an adjacent cell. Thus, current from the cathode hanger bars **28** of cell **20** flows to knife bus **30**, the cathode bus bar of cell **20**, which is also the anode bus bar **30** of cell **18**, to the anode hanger bars **26** of cell **18**, the anodes **34** of cell **18**, through the electrolyte **35** in cell **18** to the cathodes **38** of cell **18**, to the cathode hanger bars **28** of cell **18**, to the cathode bus bar **32** of cell **18**, which is also the anode bus bar of cell **22**, to the anode hanger bars **26** of the next adjacent cell **22**, and so on, through each successive electrolyte cell of the system in series.

While in the preferred embodiment described above, the aligned units **24** are identical to the aligned units **24'**, units **24'** can be of a construction different from units **24**, provided that such units embody the above described interlocking or dovetailing features and the other structural features described above with respect to units **24** and **24'**.

Although the capping board structure of the invention has been described with respect to its use in a copper electrowinning electrolytic cell system, it will be understood that the capping board structure hereof can be employed to similar advantage in any type of electrolytic or electrowinning cell system.

From the foregoing, it is seen that the invention provides novel and simplified means for suitably supporting anodes and cathodes in electrolytic cells, and for suitably insulating anode and cathode hanger bars from each other and to provide efficient contact of such anode and cathode hanger bars with their respective anode and cathode bus bars. Further, the capping board structure of the invention positively locates the respective hanger bars not only lengthwise of the electrolytic cells but also transversely across the cells, and permits facile removal of anodes and cathodes in any order from the cells or tanks.

It will be understood that various modifications and adaptations of the invention can be made within the spirit of the invention, and hence the invention is not to be taken as limited except by the scope of the appended claims.

I claim:

1. Electrolytic cell apparatus comprising a plurality of electrolytic cells each containing alternating anodes and cathodes, cathode and anode conductive hanger mem-

bers connected to and supporting said anodes and cathodes, respectively, in said cells, a capping board structure mounted on each of the opposite walls of each of said electrolytic cells for supporting said anode and cathode hanger members and said anodes and cathodes in predetermined spaced relation, with said anodes and cathodes insulated from each other, said capping board comprising a plurality of individual spaced apart units, each said unit including a body portion having a seat and extending dovetail members which interlock with adjacent said units, one end of said anode and cathode hanger members resting in the seats of said body portion, anode and cathode bus bars supported on respective said capping board structures mounted on opposite sides of the respective electrolytic cells, the opposite ends of said anode and cathode hanger members resting on said anode and cathode bus bars, respectively.

2. Electrolytic cell apparatus as defined in claim 1, said units of said capping board being plastic molded units and of like construction, and arranged to form a pair of aligned spaced substantially parallel rows of said units along the top of each of said walls of said electrolytic cells, the body portions of each of said units in said respective rows being spaced apart, said body portions and the seats in the body portions of one of said rows being staggered with respect to said body portions and the seats in the body portions of the other row of said units, the seats of said one row being disposed in a direction opposite from the seats of the other row, said anode and cathode bus bars each being supported and securely located between said aligned rows of said units on said respective capping boards.

3. Electrolytic cell apparatus as defined in claim 2, said seat of each of said units being formed in the upper end of the body portion of each of said units, said seat having sides and an end member, the end members of said seats of said respective aligned rows of said units of each said capping board being disposed adjacent each other, one end of the respective anode hanger members in each of said electrolytic cells being disposed in the seats of one of said parallel rows of units of one of said capping boards mounted on one wall of said cell, the opposite end portions of said anode hanger members being positioned between adjacent body portions of one of said parallel rows of units of said other capping board mounted on the other wall of said cell, and resting on said anode bus bar of said other capping board, one end of the respective cathode hanger members in said electrolytic cell being disposed in the seats of one of said parallel rows of units of said other capping board, the opposite end portions of said cathode hanger members being positioned between adjacent body portions of one of said parallel rows of units of said one capping board, and resting on said cathode bus bar of said one capping board, the respective anode hanger members of said cells being in longitudinal alignment, and the respective cathode hanger members of said cells being in longitudinal alignment, the aligned anodes of said cells and the aligned cathodes of said cells being insulated from each other by the end members of said seats receiving the ends of said anode hanger members and the ends of said cathode hanger members.

4. Electrolytic cell apparatus as defined in claim 3, one end of the respective cathode hanger members in one adjacent electrolytic cell being disposed in the seats of the other parallel row of said units of said one capping board mounted on said one wall of said first mentioned electrolytic cell, and one end of the respective anode hanger members in the other adjacent electrolytic cell being disposed in the seats of the other parallel row of said units of said other capping board mounted on said other wall of said electrolytic cell.

5. Electrolytic cell apparatus as defined in claim 3, including means mounting each of said capping boards in fixed position on a wall of said electrolytic cells.

6. Electrolytic cell apparatus as defined in claim 3, said interlocking dovetail members of said units of said capping board comprising a pair of outwardly extending tongue and groove end members and a tongue and groove side member, said tongue and groove end members of each of said units interlocking with the groove and tongue end members of like said units and forming one of said aligned rows of said units on said capping board, and the like second aligned row of said units being interlocked with said first row of said units by said tongue and groove side members of the respective adjacent units of said two aligned rows of said units, the respective units of said one aligned row being staggered with respect to the adjacent units of said second aligned row, one of said anode and cathode bus bars being supported on said interlocked side members of said units between said two aligned rows of said units.

7. Electrolytic cell apparatus as defined in claim 6, said units each containing a depending integral flange member, said flange members of said units of said one of said aligned rows of units of said capping board being disposed in contact with one side of a wall of said electrolytic cell supporting said capping board, said flange members of said units of said second aligned row of said units being disposed in contact with the opposite side of said cell wall and maintaining said capping board in fixed position on said wall.

8. Electrolytic cell apparatus as defined in claim 1, said interlocking dovetail members of said units of said capping board comprising a pair of outwardly extending tongue and groove end members and a tongue and groove side member, said tongue and groove end members of each of said units interlocking with the groove and tongue end members of like said units and forming one aligned row of said units on said capping board, and a like second aligned row of said units, said second row of units being interlocked with said first row of said units by said tongue and groove side members of the respective adjacent units of said two aligned rows of said units, the respective units of one said aligned row being staggered with respect to the adjacent units of said second aligned row, one of said anode and cathode bus bars being supported on said interlocked side members of said units between said two aligned rows of said units.

9. Electrolytic cell apparatus as defined in claim 8, said units each containing a depending integral flange member, said flange members of said units of said one of said aligned rows of units of said capping board being disposed in contact with one side of a wall of an electrolytic cell supporting said capping board, said flange members of said units of said second aligned row of said units being disposed in contact with the opposite side of said cell wall and maintaining said capping board in fixed position on said wall.

10. Electrolytic cell apparatus as defined in claim 1, including means for mounting said capping board in fixed position on a wall of one of said electrolytic cells.

11. Electrolytic cell apparatus comprising a capping board structure adapted to be mounted on the opposite walls of a plurality of electrolytic cells for supporting the anode and cathode hanger members and the anodes and cathodes in predetermined spaced relation, with said anodes and cathodes insulated from each other, said capping board comprising a plurality of individual spaced apart units, each said unit including a body portion having a seat and extending dovetail members which interlock with adjacent said units, said units of said capping board being arranged to form a pair of aligned spaced substantially parallel rows of said units, the body portions of each of said units in said respective rows being spaced apart, said body portions and the seats in the body portions of one of said rows being staggered with respect to said body portions and the seats in the body portions of the other row of said units, the seats of said

one row being disposed in a direction opposite from the seats of the other row.

12. Electrolytic cell apparatus as defined in claim 11, such units of said capping board being plastic molded units and of like construction, said seat of each of said units being formed in the upper end of the body portion of each of said units, said seat having sides and an end member, the end members of said seats of said respective aligned rows of said units of each said capping boards being disposed adjacent each other.

13. Electrolytic cell apparatus as defined in claim 12, said interlocking dovetail members of said units of said capping board comprising a pair of outwardly extending tongue and groove end members and a tongue and groove side member, said tongue and groove end members of each of said units interlocking with the groove and tongue end members of like said units and forming one of said aligned rows of said units on said capping board, and the like second aligned row of said units being interlocked with said first row of said units by said tongue and groove side members of the respective adjacent units of said two aligned rows of said units, the respective units of said one aligned row being staggered with respect to the adjacent units of said second aligned row, said units each containing a depending integral flange member for contact with one side of a wall of an electrolytic cell to support said capping board.

14. Electrolytic cell apparatus as defined in claim 11, said interlocking dovetail members of said units of said capping board comprising a pair of outwardly extending tongue and groove end members and a tongue and groove side member, said tongue and groove end members of each of said units interlocking with the groove and tongue end members of like said units and forming one aligned row of said units on said capping, board, and a like second aligned row of said units, said second row of units being interlocked with said first row of said units by said tongue and groove side members of the respective adjacent units of said two aligned rows of said units, the respective units of one said aligned row being staggered with respect to the adjacent units of said second aligned row.

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