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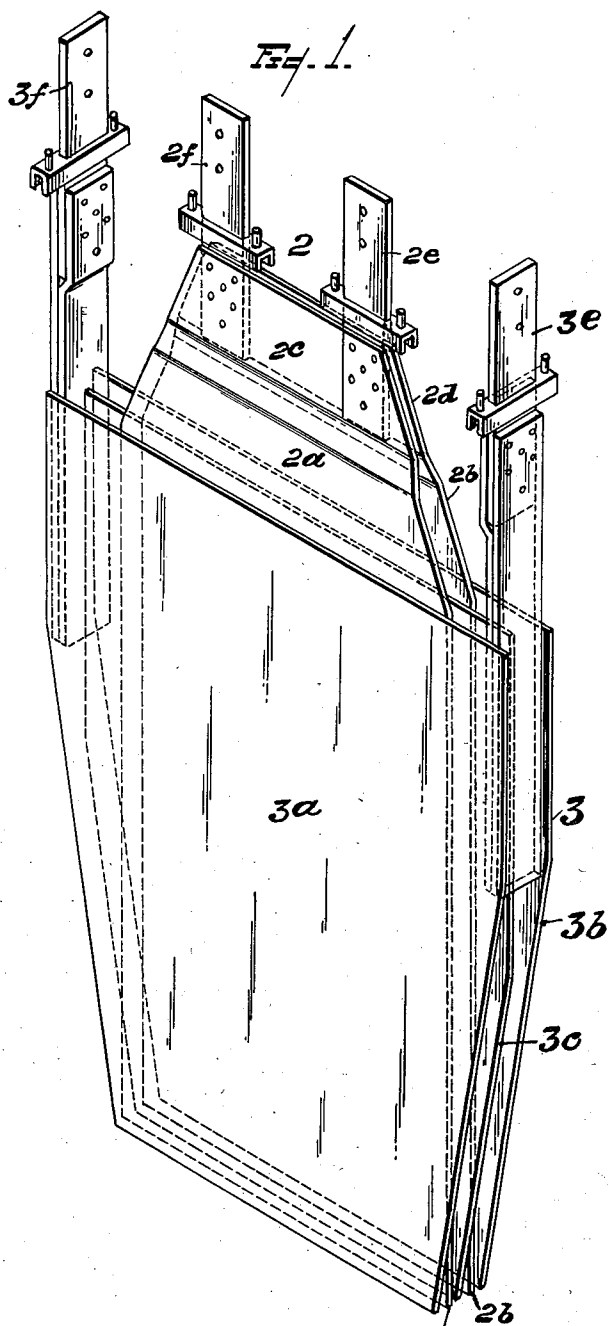
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2,018,703

ELECTROLYTIC CELL

Filed March 13, 1935

4 Sheets-Sheet 1



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Oct. 29, 1935.

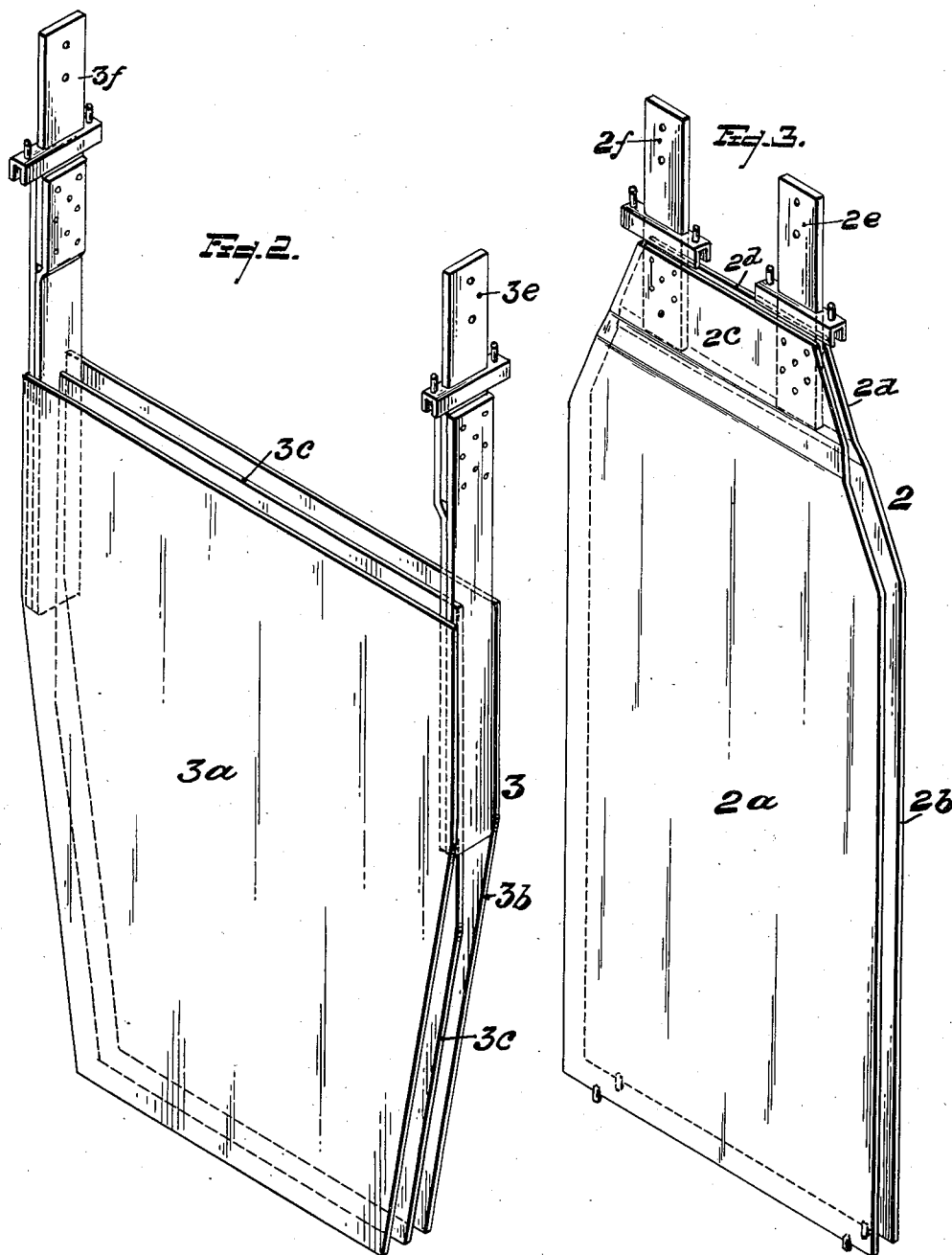
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4 Sheets-Sheet 2



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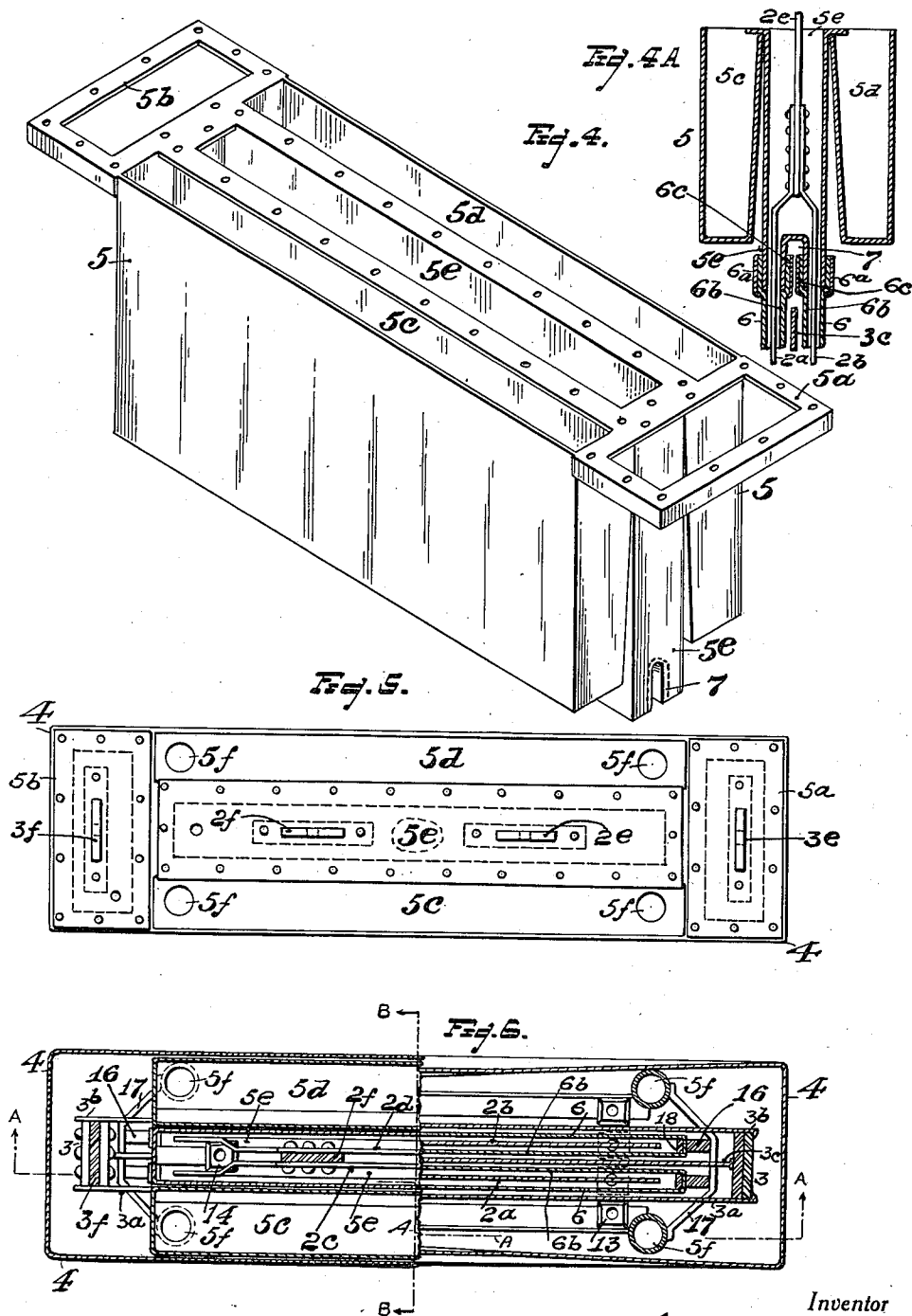
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4 Sheets-Sheet 3



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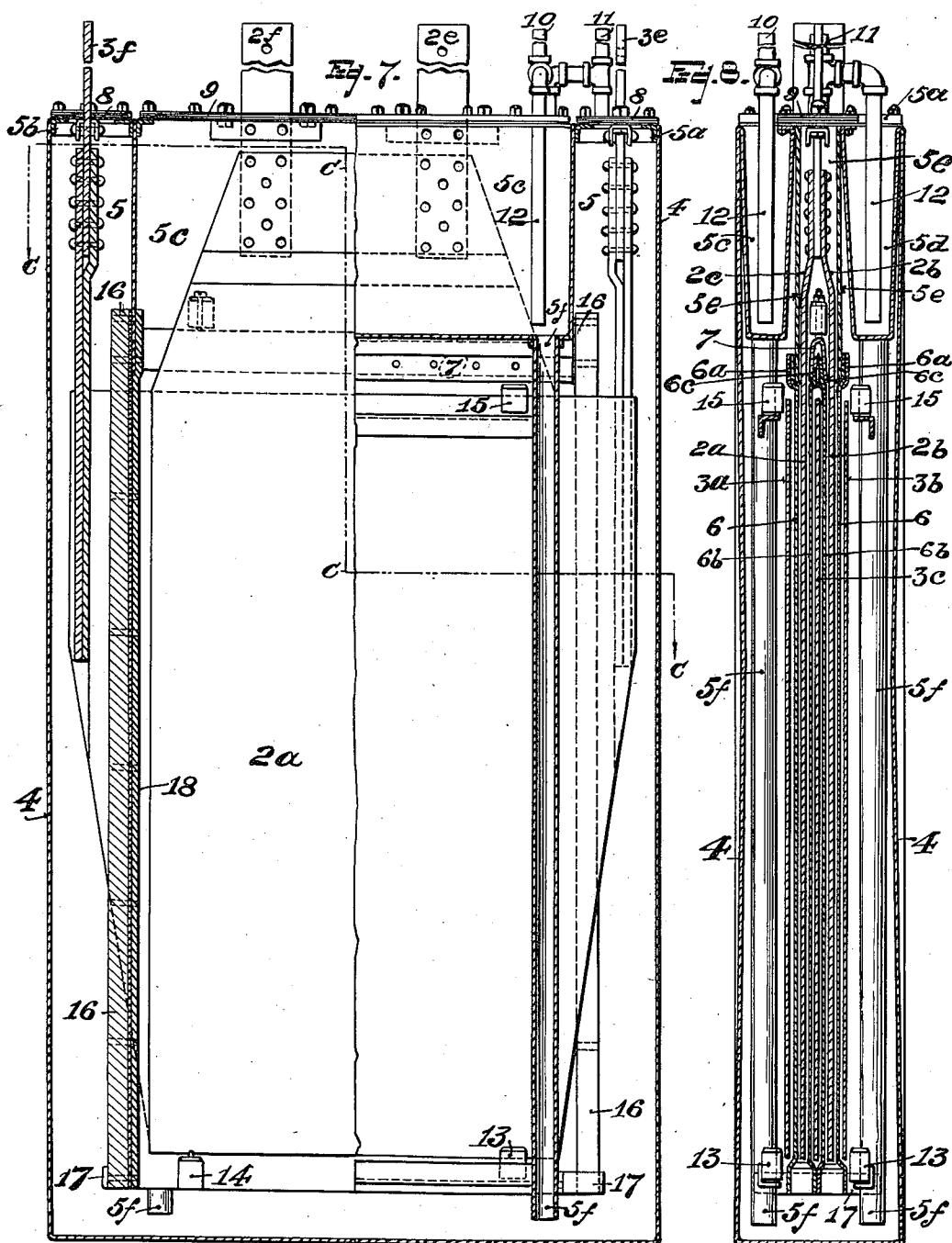
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4 Sheets-Sheet 4



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UNITED STATES PATENT OFFICE

2,018,703

ELECTROLYTIC CELL

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Application March 13, 1935, Serial No. 10,854

1 Claim. (Cl. 204—5)

My invention relates to electrolytic cells and an object of my invention is to provide a cell for producing oxygen and hydrogen gas in which the anode and cathode is each made up of a multiple of plates assembled in such a manner as to form rigid electrodes, and which is cheap to make, convenient to assemble, and efficient in its operation.

I secure this object in the construction illustrated in the accompanying drawings in which:—

Figure 1 is a perspective view of the electrodes assembled in their relative position.

Figure 2 is a perspective view of one of the electrodes which I shall call the cathode or negative.

Figure 3 is a perspective view of the other, or positive electrode, which I shall call the anode.

Figure 4 is a perspective of the cell head.

Figure 4A is a detail cross-section at the center of Figure 4.

Figure 5 is a plan view of the assembled cell with the covers and off-take pipes removed.

Figure 6 is a plan view in section on the broken line C, C, C, C, of Figure 7.

Figure 7 is a sectional elevation on the broken line A, A, A, of Figure 6.

Figure 8 is a section indicated by the line B—B, of Figure 6.

In Figure 1, 2 indicates the anode as a whole. It is made up of two plates 2a and 2b parallel throughout the greater portion of their area, but bending toward each other toward their tops, and then bending and extending in adjacent parallel portions 2c and 2d. 2e and 2f are rectangular flat bars symmetrically located, spaced apart, and secured between the portions 2c and 2d of the electrode 2 and constituting terminals thereof.

3 indicates the cathode as a whole. It is made up of three parallel plates 3a, 3b, 3c, united at their lateral edges by pairs of rectangular metal strips lying flat upon each other and extending vertically between the outer plates 3a and 3b, in a plane at right angles thereto, their edges being united by said plates. The plate 3c extends between said pairs of plates and is united thereto at its lateral edges. 3e and 3f are rectangular bars having their lower ends secured between the constituent plates of said pairs constituting together with said plates the cathode terminals.

The plates 2a, 2b, 3a, 3b, 3c, are disposed in adjacent equally spaced parallel relation as shown in Figure 1.

4, in Figures 5, 6, 7, and 8, is the tank or container for the electrolyte, closed at the bottom and open at the top.

5 (Figure 4) is the cell head, adapted to fit upon the mouth of the container or tank 4. This includes the frameworks 5a and 5b at the ends, the filling receptacles 5c and 5d at its sides between said frameworks, and the intermediate rectangular tube 5e between said receptacles, open at its upper and lower ends. This construction constitutes a tubular construction that is a strong support for cell parts and that may be made of thin sheet metal. The edges are turned over to constitute stiffening and strengthening flanges that also afford means for attaching the covers.

5f, 5f, 5f, 5f, are filling tubes extending from the lower ends of the receptacles 5c, 5d, and opening downward near the bottom of the tank 4.

6, 6, are asbestos diaphragms, secured at 6a, 6a, (Figure 8) to the lower edges of the tube 5e and extending downward between the plates 2a—3a, and 2b—3b.

6b—6b, are asbestos diaphragms suspended at their upper edges at 6c, to extend downward between the plate 3c and the plates 2a and 2b. The adjacent vertical edges of the asbestos diaphragms 6 and 6b are joined so as to form passages for the gas to the oxygen chamber 5e.

7 is a tube of inverted U-shape in cross-section extending centrally between the end walls of the tube 5e and opening through said end walls. The upper edges of the asbestos diaphragms 6b, 6b are secured to the lower edges of the tube 7.

8—8 are insulating covers for the enclosed portions of the frameworks 5a and 5b, and 9 is a similar cover for the upper end of the tube 5e. The electrodes 2e—2f extend through the cover 9 and are secured thereto to hold the plates 2a and 2b in their proper position, and the electrodes 3e, 3f pass through the covers 8—8 and are secured thereto to position the plates 3a, 3b, and 3c.

10 is the oxygen off-take, and 11 is the hydrogen off-take. From each of said off-takes a pipe 12 extends into a receptacle 5c—5d to a point of sufficient distance below the surface of the distilled water therein to constitute a safety seal.

13, 14, and 15 indicate glass insulating blocks.

16—16 are vertical bars supported by braces 17—17 extending from the tubes 5f. The diaphragms 6 and 6b are bound to the inner edges of the bars 16, by strips 18 riveted or otherwise secured to said bars.

The upper ends of the filling tubes 5f are sealed by the distilled water in the receptacles 5c, 5d.

The electrodes uniting each set of plates are spaced from each other, thus holding the plates firmly in their relative positions and affording firm supports for each unit.

Having thus described my invention, what I claim is:

In an apparatus of the kind described, the combination of an electrode including a plurality
5 of parallel plates secured together at their upper edges; and a second electrode consisting of a

plurality of parallel plates secured together at their side edges, said electrodes being adapted to be placed with their plates in parallel registering adjacent relation.

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