

CLAIMS

1. Steam-cleaning apparatus (11) for cleaning bipolar plates comprising:
 - a detergent-applying station (13);
 - 5 - a steam-cleaning station (15);
 - a suction station (17);
 - a drying station (19);
 - movement members (21) defining a transport line (23) for transporting bipolar plates (100) through said stations (13, 15, 17, 19);

10 characterized in that the movement members (21) comprise at least one belt feed assembly (25), located below relative to the transport line (23), and at least one roller compression assembly (27), located above relative to the transport line (23), said belt feed assembly (25) and said roller compression assembly (27) cooperating with each other to cause rectilinear feeding of the plates (100) through said stations (13, 15, 17, 19) along a feeding plane (29).

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2. Apparatus according to claim 1, wherein said steam-cleaning station (15) and said suction station (17) comprise a common cleaning and suction chamber (31), and said stations (15,17) define, in combination, a corresponding cleaning and suction integrated station (33).
- 20 3. Apparatus according to claim 2, wherein said apparatus comprises at least one pair of detergent-applying stations (13) and at least one pair of cleaning and suction stations (33), said stations (13, 33) being alternated with each other, and the detergent-applying stations (13) being arranged upstream of the cleaning and suction stations (33).
- 25 4. Apparatus according to claim 1 or 2 or 3, wherein said belt feed assembly (25) comprises a motor-driven conveyor belt (35) equipped with a pair of upper rollers (37a,37b), one of which (37b) is a motor-driven roller and the other one (37a) is an idle roller, and a lower idle roller (37c), wherein a belt (39) is provided around said rollers (37a, 37b, 37c), the rollers (37a, 37b, 37c) of said feed assembly (25) being arranged horizontally with their respective rotation axes mutually
30 parallel and perpendicular to the rectilinear direction of feeding of the plates (100) on the feeding plane (29) so as to define a substantially horizontal portion of said belt (39) for transporting the plates (100) along the feeding plane (29).

5. Apparatus according to claim 4, wherein the rotation axes of the rollers (37a, 37b, 37c) of said feeding assembly (25) intersect an imaginary plane located perpendicularly to said axes, substantially at the vertices of an equilateral triangle.

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6. Apparatus according to claim 4 or 5, wherein said roller compression assembly (27) comprises idle rollers (41) arranged with their respective rotation axes mutually horizontal and mutually parallel and perpendicular to the rectilinear direction of feeding of the plates (100) on the feeding plane (29), said idle rollers (41) of the compression assembly (27) being susceptible to take a proximal configuration relative to the belt feed assembly (25) cooperating with said compression assembly (27) and a distal configuration relative to said belt feed assembly (25), the passage from said proximal configuration to said distal configuration and vice versa being obtained by means of an actuator (43), for example, of the pneumatic, hydraulic or electromechanical type.

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7. Apparatus according to claim 4 or 5 or 6, wherein said roller compression assembly (27) comprises idle rollers (41) arranged with their respective rotation axes mutually horizontal and mutually parallel and perpendicular to the rectilinear direction of feeding of the plates (100) on the feeding plane (29), said rollers (41) of the compression assembly (27) being susceptible to take a proximal configuration relative to the belt feed assembly (25) cooperating with said compression assembly (27) and a distal configuration relative to said belt feed assembly (25), said compression assembly (27) being supported by elastic means (45) capable of causing passage of said rollers (41) from said distal configuration to said proximal configuration and to oppose, with their elastic resistance, the passage from said proximal configuration to said distal configuration.

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8. Apparatus according to claim 6 and 7, wherein said movement members (21) comprise a plurality of belt feed assemblies (25) and a corresponding plurality of compression assemblies (27), the passage from said proximal configuration to said distal configuration and vice versa being obtained by means of an actuator (43) in the first and last of said compression assemblies (27), and the passage from said distal configuration to said proximal configuration being obtained by means of elastic means (45) in the intermediate compression assemblies (27).

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9. Apparatus according to claim 3, wherein downstream of the detergent-applying stations (13) and

downstream of the cleaning and suction (33) there is provided a liquid removal station (47) comprising a liquid removal chamber (49) housing a pair of compressed-air diffusers (51), capable of generating a flow of compressed air of the laminar type, i.e., essentially an air blade directed against the surfaces of the opposite faces of the plates (100) that are passing through
5 said liquid removal station (47).

10. Apparatus according to claim 3 or 9, wherein downstream of the liquid removal station (47) there is provided a drying station (19) comprising a drying chamber (55) equipped with heated air diffusers (57), a first diffuser being located above relative to the region at which the plates (100)
10 pass through said drying chamber (55), and a second diffuser being located below relative to the region at which the plates (100) pass through said drying chamber (55).