

neering the separating chambers together, and a liquid discharge pipe leading directly from the last separating chamber of the series, whereby the finished liquid of the two chambers may be mingled, cooled and discharged together. 18th. In a multiple effect evaporating apparatus, the combination, with the last two evaporators, of the series, and their separating chambers, of a liquid transfer pipe connecting the two separating chambers, a liquid discharge or tail-pipe leading from the last separating chamber, a connected tail-pump for drawing off the liquid, and a vapor exhaust device also connecting with the last separating chamber, for the purpose described. 19th. In a multiple effect vacuum evaporating apparatus, the last two evaporators, of the series and their separating chambers, in combination with liquid supply pipes connecting with the inlet ends of the evaporators, an exhausting device connecting with the last separating chamber, and a liquid transfer pipe connecting the two separating chambers, whereby the finished liquids of the two may be mingled, cooled to the same temperature, and together subjected to the vaporizing effect of the exhausting device preparatory to discharge from the apparatus.

No. 32,190. System of Electrical Distribution. (*Mode de distribution électrique.*)

Marmaduke M. M. Slattery, Fort Wayne, Ind., U.S., 2nd September, 1889; 15 years.

Claim.—1st. In a system of electrical distribution and in combination, an alternating current dynamo, and converters electrically connected with the main line conductors in multiple arc, and organized to transform the current in the main conductors into currents of less potential and greater quantity in the secondaries, each converter made with a primary coil containing such length of wire exposed to magneto-electric induction, that when operated by the dynamo with which it is to be used with its secondary current open, the electrical pressure and counter pressure in its primary circuit shall be equal with incandescent lamps or other translating devices in the secondary circuits, substantially as and for the purposes set forth. 2nd. In a system of electrical distribution and in combination, an alternating current dynamo, and converters organized to transform the current in the main conductors into currents of less potential and greater quantity in the secondaries electrically connected with the main conductors in multiple arc, the dynamo and the converters of the system so adjusted to each other by mutual adaptation of their magnetic fields and the length of wire upon the armature of the dynamo, and the primary coils of the converters respectively, that when supplied with the full normal current of the dynamo, the secondary circuits of the converters being open, the electrical pressure and counter-pressure in their primary circuits shall be equal with incandescent lamps or other translating devices in the secondary circuits, substantially as and for the purposes set forth. 3rd. In a system of electrical distribution and in combination, an alternating current dynamo, and converters organized to transform the current in the main line conductors into currents of less potential and greater quantity in their secondaries, and electrically connected with the main conductors in multiple arc, each converter containing in its primary coil, a length of wire exposed to effective magnetic induction substantially equal to the electrical or circuit length of wire exposed to like effective magnetic induction upon the armature of the dynamo operating the system with incandescent lamps or other translating devices in the secondary circuits, substantially as and for the purposes set forth. 4th. In a system of electrical distribution, and in combination, an alternating current dynamo, and converters organized to transform the current generated by the dynamo into currents of less potential and greater quantity at or near the points of consumption, electrically connected with the main line conductors in multiple arc, and having their primary circuits constantly closed, each converter adapted to the dynamo operating the system by making its primary coil of such length, that when supplied with its full proportion its share of the entire normal current of the machine, its secondary circuit being open, the electrical pressure and counter-pressure in its primary circuit shall be equal, with translating devices in the secondary circuits of the converters to be cut out of the circuit when not in use without the introduction of any resistance in the place of them, substantially as and for the purposes set forth. 5th. In a system of electrical distribution, and in combination, an alternating current dynamo and converters organized to transform the current generated by the dynamo into currents of less potential and greater quantity at or near the points of consumption, electrically connected with the main line conductors in multiple arc, and having their primary circuits constantly closed, and their secondary circuits constantly open, except when, and as closed through translating devices at work, each converter containing a soft-iron core weighing substantially one pound for each twenty-five Watts normally produced by the system by making its primary coil of such length, that when supplied with its full proportionate share of the entire normal current of the machine, its secondary circuit being open the electrical pressure and counter-pressure in its primary circuit shall be equal, with incandescent lamps or other translating devices in the secondary circuits, substantially as and for the purposes set forth. 6th. In a system of electrical distribution, and in combination, an alternating current dynamo, and converters organized to transform the current generated by the dynamo into currents of less potential and greater quantity at or near the points of consumption, electrically connected with the main line conductors in multiple arc, and having their primary circuits constantly closed, and their secondary circuits constantly open except when and as closed through transforming devices at work, each converter containing a soft-iron core weighing substantially one pound for each twenty-five Watts, normally produced in the secondary circuit, and containing in its primary coil a length of wire exposed to effective magnetic induction substantially equal to the electrical or circuit length of wire exposed to like effective magnetic induction on the armature of the dynamo, operating the system with incandescent or other translating devices in the secondary circuits, substantially as and for the purposes set forth.

No. 32,191. Swimming Machine.

(*Machine pour nager.*)

Jean Malo, Montréal, Qué., 2nd September, 1889; 5 years.

Résumé.—1o. Dans une machine à nager, la combinaison du ressort S, les flotteurs F, la tige T et le plateau N, tel que décrit pour les fins mentionnées. 2o. La combinaison de la pièce A, B, la tige T, et l'arbre de couche C, avec figure F, tel que décrit pour les fins mentionnées. 3o. La combinaison de l'arbre de couche C, roue R et hélice H, et les manivelles m, m, le tout tel que décrit pour les fins mentionnées.

No. 32,192. Rock Drill and Analogous Machines. (*Foret de mine et machines simi. laires.*)

Abraham J. Sypher, Iron Mountain, Mo., U.S., 3rd September, 1889; 5 years.

Claim.—1st. A steam rock-drill or analogous machine having a cylinder A, provided with a cushioning steam-passage in addition to the passages which lead from the valve-chamber to the cylinder, and used for supplying the steam to the cylinder for driving the piston, said cushioning steam-passage being independent of said other steam-passages, substantially as described. 2nd. The combination of the valve-chamber, the cylinder, the passages F, F₁, the port I, the passage H, and the piston having the two recesses d, d₁, substantially as described. 3rd. The combination of the cylinder A having the cushioning steam-passage H, as described, and the piston having two recesses d, d₁, substantially as and for the purpose described. 4th. The combination of the valve-chamber, the port I, the cushioning steam-passage H, as described, and the piston having the two recesses d, d₁, substantially as described. 5th. The combination of the cylinder and the piston, said cylinder having the port I, and the passages K, K₁, and said piston having the recesses d and d₁, substantially as and for the purpose described. 6th. The combination of the cylinder, the valve-chamber, the valve, and the piston, said cylinder having the port I, said valve-chamber having the valve-seat, and the spaces b₁₅, b₁₆, said valve having the disks e, e₁, said piston having the recesses d, d₁, and said cylinder and valve-chamber together having the ports K, K₁, substantially as described. 7th. The combination of the valve-chamber, the valve-seat, the spaces b₁₅, b₁₆, the recesses e, e₁, substantially as and for the purpose described. 8th. The combination of the valve-chamber, the valve-seat, and the valve, said chamber having the inlet b, the exhaust-outlet b₁, the live-steam outlet b₁₂, the recesses and spaces b₇, b₈, b₉, b₁₀, b₁₁, b₁₃, b₁₄, b₁₅, b₁₆, and said valve consisting of the stem and the four disks, substantially as described. 9th. The combination of the valve-chamber having the bridges b₃, b₄, b₅, b₆, with the longitudinally-moving valve having the stem and the disks e, e₁, the steam-inlet b, and the passages F, F₁, substantially as described. 10th. The combination of the valve-chamber having the recesses b₇, b₈, b₉, b₁₀, b₁₁, b₁₃, b₁₄, the bridges b₄, b₅, and the outlet b₁, with the longitudinally-moving triple-spool valve, and the ports F, F₁, substantially as described. 11th. The combination of the valve-chamber having the spaces and recesses b₇, b₈, b₁₀, b₁₁, b₁₃, b₁₄, b₁₅, b₁₆, the bridges b₄, b₅, and the outlet b₁, with the longitudinally moving triple-spool valve, and the ports F, F₁, substantially as described.

No. 32,193. Stencil Drum. (*Tambour à patron.*)

Jane Parish, Leicester, Eng., 3rd September, 1889; 5 years.

Claim.—1st. In a stencil drum, the combination of the polygon frame, and the stencil strip or plates secured thereto. 2nd. In a stencil drum, the combination of the polygon frame, the stencil strip or plates secured thereto, and an inking device, all substantially as shown and described and set forth in the drawing hereunto annexed.

No. 32,194. Manufacture of Sheet Metal.

(*Fabrication du métal en feuille.*)

Edwin Norton, (co-inventor with John G. Hodgson), Maywood, and Oliver W. Norton, Chicago, Ill., U.S., 3rd September, 1889; 5 years.

Claim.—1st. The process or improvement in the art of manufacturing sheet metal in continuous strips, consisting in pouring molten metal in a continuous unbroken stream between two rollers or wheels revolving together, with a space between them equal to the thickness of the sheet metal to be produced, and at a sufficiently great surface speed to offer no obstruction to the flowing stream of molten metal, and thus pass the same between the rollers as fast as it flows, and without permitting the molten metal to collect in a body above and between the rollers, substantially as specified. 2nd. The process or improvement in the art of manufacturing sheet metal, consisting in pouring molten metal in a thin, wide, flat stream between, and in contact with, two smooth revolving chilling rollers, and in a direction tangential to both said rollers, and while said rollers revolve together with a space between them equal to the thickness of the sheet metal to be produced, and at a surface speed equal to or exceeding the velocity of the flowing stream of molten metal, substantially as specified. 3rd. The apparatus or machine for manufacturing sheet metal, consisting in a pair of smooth revolving chilling rollers or wheels, with a space between their peripheries at their meeting line equal to the thickness of the sheet metal to be produced, and a pouring nozzle or vessel having a discharge opening or slot at its lower end or bottom directly above, and extending parallel to said space between the peripheries of said rollers, so that the stream of molten metal issuing from said pouring nozzle or vessel may flow in a direction tangential to both said rollers, substantially as specified. 4th. The combination of two revolving chilling rollers, a pouring nozzle above and between them, and means for driving or revolving said rollers at a greater surface speed than the velocity of the flowing stream of molten metal, substantially as specified. 5th. The combination, with a pouring nozzle or vessel having a long narrow discharge opening, of a pair of chill-