plete decomposition of the steam is obtained. 7th. The process of manufacturing gas, which consists in first highly superheating steam, then decomposing said steam by passing it through heated iron, scrap or similar metal, and then through one or more bodies of incandescent fuel, substantially as described. 8th. The process of manufacturing gas, which consists in first highly superheating steam then decomposing said steam by passing it through heated iron, scrap or similar metal, thereby oxidizing said scrap, and then through one or more bodies of incandescent fuel and of alternatively reducing the oxidized scrap to a metallic condition by subjecting it to the action of nascent carbonic oxide, thereby enabling the continued use of said scrap without removal from the apparatus, substantially as described. 9th. The process of manufacturing gas, which consists in first highly superheating steam, then decomposing said steam by passing it through heated iron scrap or similar metal, then through heated refractory material, and then through one or more bodies of incandescent fuel, substantially as described. 10th. The process of manufacturing illuminating gas, which consists in first highly superheating steam, then decomposing said steam by passing it through heated iron scrap or similar meal, then through one or more bodies of incandescent or highly heated fuel, and of then enriching said gas by mingling with it the vapour of a hydrocarbon, and of finally fixing the gas by passing it in conjunction with said hydrocarbon vapour through a heated fixing chamber, substantially as described. 11th. The process of manufacturing illuminating gas, which consists in first highly superheating steam, then decomposing said steam by passing it through heated iron, scrap or similar metal, then through one or more bodies of incandescent or highly heated fuel, then enriching the gas so produced by adding to it the products of distillation of soft coal, of finally adding to said mixture the vapor of a hydrocarbon and of then fixing said gas and vapour by passing them through a heated fixing chamber, substantially as described. 12th. The three fuel chambers connected by a common base and consisting of two side decomposing chambers, each having an inlet for steam or other gaseous fluid near its top, and the central distilling chamber having a gas outlet near the top, for the purpose described. 13th. In combination with a fuel chamber of a gas apparatus, a steam superheating and decomposing chamber having one or more bodies of iron scrap, on its lower support S, and having a body of refractory brick work above the iron scrap, as and for the purpose described. 14th. In a gas generating apparatus, a steam superheating and decomposing chamber having two or more perforated arches with iron scrap on the lower arch, and loosely laid brick work on the upper arch and having a steam inlet pipe at the top and an outlet pipe below the lower arch, for the purpose described. 15th. In a gas generating apparatus, a steam superheating and decomposing chamber having perforated supporting arches, a tube passing through such arches, means for closing the tube, a steam inlet pipe and an outlet pipe, connected as described. 16th. In combination, with a gas generator, two or more fixing chambers united to a common base as shown and each chamber having a valved outlet pipe for the purpose described. 17th. In combination with the fuel chamber of a gas apparatus, a fuel charger having a charge chamber, and a storage chamber and a double tilting gate *b* having shafts or arbors provided with intermeshing pinion wheels and an operating lever, for the purpose described. 18th. In a gas apparatus, the gas eduction pipe having an enlarged head containing a valve recess, a pivoted or hinged valve therein having a ground face and fitting upon a ground seat, for the purpose described. 19th. The combination of the vertical stand pipe having a lip or rim *n*11 forming valve-seat valve *n* hinged or pivoted in the pipe and means for operating the valve, for the purpose described, 20th. In combination with the distilling chamber, the gas chamber H and the contained coils of steam superheating pipes connecting with the steam superheating and decomposing chambers, for the purpose described.

No. 24,496. Process and Apparatus for the Manufacture of Gas. (*Procédé et Appareil de Production du Gar.*)

John Hanlon and Heyward G. Leavitt, New York, N.Y., U.S., 15th July, 1886; 5 years.

Claim.—1st. The process of generating illuminating gas, which consists in continuously heating the generating retorts, and by means of the waste or partially burned gaseous products alternately heating internally two fixing chambers, first one and then the other, generating gas continuously in the retorts, and fixing it continuously in the fixing chambers alternately the heating up of one chamber with fixing gas to the other chamber, as described. 2nd. The process of continuously generating gas, which consists in heating the retorts externally, and continuously supplying steam and oil to them, as described, and fixing the resulting gas by passing it through one or the other of two fixing chambers which are alternately heated. 3rd. The process of generating gas, which consists in superheating steam, passing it down through a body of charcoal where it is decomposed, passing the resulting gas up through the vaporizing chamber where oil is admitted, thereby intimately mingling gas and oil vapor, and carrying the latter from the retort and then forming a fixed gas by passing the mixture of gas and vapor through the heated chamber. 4th. The combination of the producer A, and connected retort chamber built in one structure, and the contained vertical retort. 5th. The combination of the heating gas producer, the connected retort chamber and retorts, and the gas fixing chamber connected internally with the retort chamber and one or more of the retorts, whereby it may be heated by waste gaseous products from the retort chamber and then serve for fixing gas, as described. 6th. The combination of the retort chamber and contained retorts, means for heating them, a fixing chamber connected both with the retort chamber and the retorts, and a valve on each connecting pipe, whereby hot gaseous products may be passsed from the retort chamber to the fixing chamber for heating the latter, and when such products are shut off illuminating gas may be passed into such chamber to be fixed, as described. 7th. The combination of the retort chamber and one or more contained retorts, with two fixing chambers, connecting pipes from the retort chamber and from the retorts to both fixing chambers, and reciprocating valves on all the pipes, whereby heating gas may be conducted to one chamber, while illuminating gas to be fixed may be conducted to the other chamber and the flow of each kind of gas changed from one chamber to the other, as described. 8th. In combination with a continuous gas generator, two fixing chambers and pipes having connected reciprocating valves connecting the generator with such chambers, and means for admitting heating gas to each chamber. 9th. In combination with two fixing chambers, two inlet pipes for heating gas having a pair of connected reciprocating valves, two inlet pipes for illuminating gas also having a pair of connected reciprocating valves, and a pair of connected stopper valves in the stacks, for the purpose described. 10th. The vertical retort having an opening at top and bottom, and having a vertical partition provided with an opening at its lower end. 11th. The vertical retort having an opening and lid at each end, a vertical partition having an opening, a steam inlet pipe connecting with one chamber, an oil inlet pipe connecting with the other chamber, and a gas outlet pipe leading from the oil vaporizing chamber.

No. 24,497. Fire-Proof Structure.

(*Construction Réfractaire.*)

William H. Lovett de la Penotiere, Victoria, B. C., 15th July, 1886; 5 years.

Claim.—1st. The lumber A, with one broad edge *e* and one narrow edge *f* for building purposes, substantially as and for the purposes described. 2nd. The combination of pieces of lumber A, laid one on another horizontally or side by side perpendicularly, with the broad edges *e* projecting beyond the narrow edges *f*, so as to form dovetail grooves for the purpose of holding mortar on the walls, partitions and other parts of buildings, substantially as and for the purposes hereinbefore set forth.

No. 24,498. Hand Embroidery Machine.

(*Machine à Main pour la Broderie.*)

Silas A. Scofield, Morenci, Mich., U.S., 16th July, 1886, 5 years.

Claim.—1st. In an embroidering machine, substantially as set forth, the bar C having the curved needle, the eye *k* and shoulders *n*, *n* formed integral. 2nd. In an embroidering machine, the combination of the bar C, its curved needle having longitudinal slot *z* and shoulders *n*, *n* formed integral, the thread and guide holder mounted on said bar, the handle B having the longitudinal slot and plates *a*1, *a*1, the bar C, its tuck holder and plates E, E with springs formed integral, as and for the purposes set forth. 3rd In an embroidering machine, the combination of the bars C, C1, the handles A, B, the channel R, the plates E, E having springs formed integral, as and for the purposes specified. 4th In an embroidering machine, the combination of the handle B carrying the bar C having curved needle and shoulders *n*, *n*, formed integral, the handle A carrying the bar C1 its curved loop-holder, the set-screw *c*, its end adapted to meet the face of the bar C1, and the spring plates E, E joining the bars C, C1, together with the springs *r*, *r* working in a channel formed in the handle B, substantially as specified.

No. 24,499. Medicinal Compound for Whooping Cough, etc. (*Composition Medécinale pour la Coqueluche, etc.*)

John B. Leduc, Hull, Que., 16th July, 1886; 5 years.

Claim.—The herein-described medicinal compound to be used for the cure of whooping cough, colds, Bronchitis, Asthma, Diphtheria, Pneumonia, Inflammation of the Lungs, and Pulmonary Consumption, Consisting of Waters, Gold Thread, Catnip, (Nepeta Cataria), Golden Rod, Granulated Sugar, Cochineal, Red Spruce, Gum, and High Wines, in the proportions specified.

No. 24,500. Stringholder for Musical Instruments. (*Cheville d'Instruments de Musique.*)

John D. Loppention, Pittsburg, Penn., U.S., 16th July, 1886, 5 years.

Claim.—A string-holder for musical instruments composed of a plate, part of which is lengthwise, divided into arms to which the strings are to be attached, and the remaining undivided part pierced for a knob on the instrument to pass through, as described

No. 24,501. Chromosphere or Optical Toy.

(*Chromosphère ou Jouet Optique.*)

Homer A. Plimpton, Chicago, Ill., U.S., 16th July, 1886, 5 years.

Claim.—1st. A spherical body having divisions, each of which has a prime colour, and the divisions arranged on the surface of the ball, substantially as described, so that the colour of one or more divisions will disappear, or blend with the colour of another division or divisions when the ball is revolved, thus producing colour shades and tints different from those of the prime colours, as set forth. 2nd. A spherical body having a number of divisions of different sizes and forms, each division having a colour distinct from the others and arranged substantially as described, so that when the sphere is revolved, a series of bands or stripes of different shades relative to each other will appear, said bands having no existence when said sphere is at rest, as set forth. 3rd. As a new article of manufacture, an optical top consisting of a sphere or ball having divisions, each of which has a prime colour, and the divisions arranged on the surface of the ball, substantially as described, and central apertures passing through said ball and a spinning cord upon which said ball is mounted, as set forth.

No. 24,502. Wire Fencing. (*Clôture Métallique.*)

Edward C. Jones, Hamilton, Ont., 16th July, 1886, 5 years.

Claim.—1st. In a wire fence, the double portable post A formed