

ing of an air compressing pump, a reservoir containing atmospheric air under pressure, arranged between said pump and cylinder, and a charging device for injecting an inflammable fluid, said cylinder being fitted with suitable induction and exhaust valves, combined with a link motion for operating and reversing the same, and the charging device operated by mechanism independent of said link motion. 18th. An engine, in which the agent of force is saturated air fired in successive charges in the working cylinder, provided with an air compressing pump, a reservoir or receiver for containing air under compression, and a device for saturating the air with an inflammable fluid, the working cylinder of said engine having suitable induction and exhaust valves, the induction valve being adjusted to open to admit air, separately or with an inflammable fluid, in such measured quantity to saturate a portion of the accompanying air to close at a predetermined period of each stroke, and during said closing movement to admit the required remaining portion of air and inflammable fluid, or the entire required supply of inflammable fluid separately, whereby a complete saturation of the air and inflammable fluid is delayed to take place within the working cylinder coincident with, or subsequent to the closing of induction valve. 19th. In combination with an air or gas engine, in which combustible gases are fired, a moistening receptacle or chamber with interior spraying attachment arranged to saturate the entering air preparatory to compression, for the purposes explained. 20th. In a gas engine, an air pump provided with a valve adjusted to operate coincident with cut-off mechanism, whereby the effective capacity of the air-compression pump is adapted to the point of cut-off to suit the varying load. 21st. In a gas engine, an air supply and an oil feeding device operating coincident with the cut-off mechanism, whereby the quantity of each admitted to the cylinder and the quantity of air delivered by the air pump is controlled correspondingly with the adjustment of said cut-off mechanism. 22nd. In an air pump of a gas engine, an auxiliary air passage communicating with the source of air supply and with the opposite sides of the piston, and the latter with the atmosphere, said passage being fitted with suitable valves, whereby the air pressure upon either side of the piston may be reduced or increased upon the opposite sides of said piston, for the purpose set forth.

No. 25,700. Bottle Stopper Fastening.

(*Ligature de Bouchon de Bouteille.*)

Lewis Kalling, Jr., Baltimore, Md., U. S., 12th January, 1887; 5 years.

Claim.—1st. In combination with a bottle and its stopper, a cap attached to the said stopper, slotted straps extending from the cap trunnions, which project from the neck and through the slotted straps, and a clamp pivoted to the said trunnions and adapted to be forced over the said cap, substantially as specified. 2nd. In combination with a bottle and its stopper, the cap D having the slotted straps arranged diametrically opposite to each other and provided with the stops *h*, the trunnions *a*, which project radially from the neck of the bottle and through the slotted straps, and the swinging clamp E pivoted to the said trunnions and arranged to be moved over the said cap and in contact with the said stops, substantially as specified. 3rd. In combination with a bottle and its stopper, a cap attached to the said stopper, slotted straps extending from the cap, a wire fastened around the neck of the bottle, the cap, a wire fastened around the neck of the bottle, having eyes therein, and a clamp to hold down the cap, having its ends turned in so as to pass through the slotted straps and into the eyes in the neck wire, substantially as specified.

No. 25,701. Turbine Wheel. (*Turbine.*)

Robert Cameron and John C. Lansing, Shelbourne, Ont., 12th January, 1887; 5 years.

Claim.—1st. A turbine, having a wheel contained within the casing A, with a series of vertical blades B and a series of curved blades E, the latter blades being a slight distance below the bottom edge of the blades B, in combination with the chutes *a*, designed to direct the water against the surface of the blades B, substantially as and for the purpose specified. 2nd. A turbine, having a wheel contained within the casing A, with a series of vertical blades B and a series of curved blades E, the latter blades being in such positions that lines, drawn from the bottom edge of the blades B to the top edge of the blades E, would be substantially at an angle of forty-five degrees, substantially as and for the purpose specified. 3rd. A turbine, having a wheel contained within the casing A, with a series of vertical blades B and a series of curved blades E, the latter blades being in such positions that lines, drawn from the bottom edge of the blades B to the top edge of the blades E, would be substantially at an angle of forty-five degrees, and the bottom edges of each of the blades E are contracted towards each other, so as to form a series of buckets, which will retain for a limited period the water falling into them from the blades B, substantially as and for the purpose specified. 4th. A turbine, having a plurality of chutes *a*, and provided with gates F, pivoted at *f*, and arranged to operate substantially as and for the purpose specified. 5th. A turbine, having a plurality of chutes *a*, and provided with gates F pivoted at *f*, operated as described, and having wings *h*, substantially as and for the purpose specified.

No. 25,702. Furnace for Treating Refuse.

(*Fourneau de Traitement des Déchets.*)

James Richmond and Thomas Birtwistle, Burnley, Eng., 12th January, 1887; 5 years.

Claim.—1st. Vertical slits and air passages in the side and division walls of combustion chambers, substantially as and for the purposes specified. 2nd. The means, either jointly or separately, for the purification of the gases, leaving the combustion chambers and drying sheds, substantially as specified. 3rd. Arranging the drying shed or sheds, with respect to the combustion chambers that, evolved and emerging therefrom, will pass over the drying hearth or hearths in a transverse direction to the chambers, substantially as specified.

4th. Forming crevices or perforations in the drying hearths for the admission of atmospheric air to the refuse, as hereinbefore described. 5th. Constructing the drying hearth or hearths stepwise to ensure a better circulation of air beneath the refuse.

No. 25,703. Metallic Lathing and Foundation therefor. (*Claire-Voie Métallique et Fondation.*)

James W. Kensett, Newport, R.I., U.S., 12th January, 1887; 5 years.

Claim.—1st. A lathing foundation, having a series of parallel grooves or depressions, provided at intervals with lath-supporting loops or eyes, that are continuous from end to end and extend across said grooves, substantially as described. 2nd. A corrugated metallic lathing foundation, having integral loops or eyes for supporting the laths, substantially as described. 3rd. A metallic lathing foundation formed with a series of parallel grooves or depressions, each provided at intervals with lath supporting loops, the loops in one groove alternating with those in adjacent grooves, substantially as described. 4th. A metallic lathing foundation, having a series of parallel corrugations and intervening grooves or depressions, provided with integral lath supporting loops, that are continuous from end to end and extend across said grooves or depressions, substantially as described. 5th. The combination, with a metallic lathing foundation, having a series of parallel corrugations and intervening grooves provided with integral loops, of metallic laths lying in said grooves and supported by said loops, substantially as described.

No. 25,704. Car-Coupling. (*Attelage de Chars.*)

Charles D. Wooley, Walden, N.Y., U.S., 12th January, 1887; 5 years.

Claim.—1st. In a car-coupling, the combination, with a coupling-pin suspended from a guide-arm pivotally secured to the head of the coupling-pin, and adapted to swing therewith and limit the tilting motion of the pin when engaged by the approaching link, substantially as set forth. 2nd. In a car-coupling, the combination, with a coupling-pin, provided with a shoulder-bearing at the base of its head, of a vibrating guide-arm pivotally secured to the coupling-pin between the said shoulder and point of suspension, and adapted to engage the shoulder and thereby limit the tilting motion of the pin, substantially as set forth. 3rd. In a car-coupling, the combination, with a gravity coupling-pin adapted to retain one end of the link within the draw-head, of a vibrating arm pivotally secured to the head of the coupling-pin, and means for increasing or diminishing the pressure of said arm on the end of the link, and thereby elevating or depressing the free end of the link, substantially as set forth. 4th. In a car-coupling, the combination, with a rock-shaft provided with an arm adapted to operate the coupling-pin, of a handle, arm or lever for rocking the shaft, and a lock for securing the shaft against rotation, and hence the pin from uncoupling, substantially as set forth. 5th. In a car-coupling, the combination, with the draw-head provided with the slots in its upper and under sides, and the coupling-pin with its shoulders, of the guide-arm pivotally secured to the coupling-pin and draw-head, and the rock-shaft with its operating arm, connected with the pin by a link, the whole constructed and operating substantially as set forth.

No. 25,705. Rein Holder. (*Accroche-Rênes.*)

Lucius S. Tambling, San Francisco, Cal., U. S., 12th January, 1887; 5 years.

Claim.—1st. The combination, with the rein-holding block having an opening, of the spring-actuated clamp-block located in said opening and adapted to receive the reins and the rope, for the purpose set forth. 2nd. The combination, with the rein-holding block having an opening, of the clamp block located therein, and the pivoted lever L, as set forth.

No. 25,706. Process and Apparatus for Washing, Condensing and Absorbing Gases and Manufacturing Chemical Products. (*Procédé et Appareil pour Laver, Condenser et Absorber les Gaz et Fabriquer les Produits Chimiques.*)

Eugen B. Ritter and Charles Kellner, Goers, Austria, 12th January, 1887; 5 years.

Claim.—1st. The herein described method of condensing, absorbing or washing gases consisting in cooling them, and then conducting them continually through a series of closed vessels, through which liquid is conducted in the reverse direction of the gases, substantially as shown and described. 2nd. In an apparatus for condensing, washing and absorbing gases, the combination, with a cooler having pipes through which gases can be conducted, of a series of absorption vessels connected with each other and with the cooling pipes, and of pumps for conveying liquids into the absorption vessels, substantially as shown and described. 3rd. In an apparatus for condensing, washing and absorbing gases, the combination, with a horizontal trough containing the pipes through which liquids can be conducted, of a series of connecting vertical cylindrical vessels connected with each other and with the pipes passing through the trough, substantially as shown and described. 4th. In an apparatus for condensing, washing and absorbing gases, the combination, with a series of vertical cylindrical vessels having swinging outlet pipes at the top, and fixed inlet-pipes at the bottom, of upright pipes extending upward from said fixed outlet-pipes, concentric with the centres of rotation of the upper outlet-pipes of two adjacent cylindrical vessels, substantially as shown and described. 5th. In an apparatus for condensing, washing and absorbing gases, the combination, with a series of vertical cylindrical vessels having gas outlet-pipes at the top, gas inlet-pipes at the bottom, vertical pipes connecting the upper outlet-pipes of one cylinder with the bottom inlet-pipes of the other cylinder, and an inlet-pipe for the liquids at the top of each cylinder, and an outlet-pipe for the liquids at the bottom of each cylinder, sub-