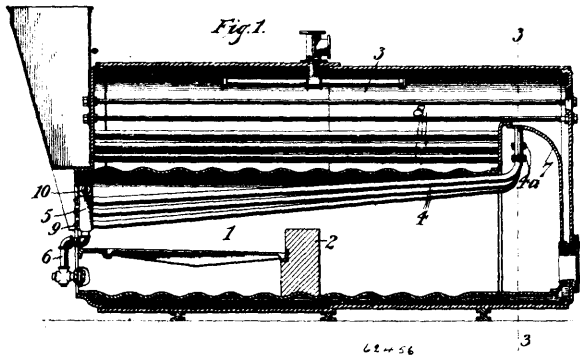
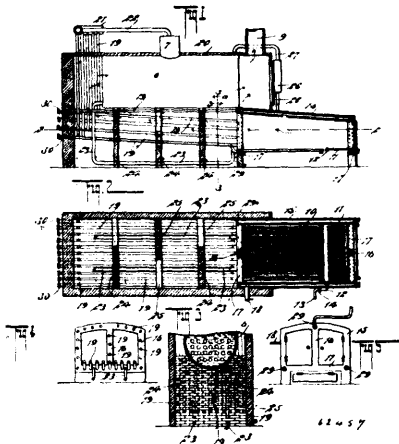


of steam, as described. 2nd. In a steam boiler having an internal furnace, the arrangement of one or more circulating pipes extended



directly and continuously through said furnace and being in communication at one end of the boiler with the lower part of the same and at the other end with an upper part of the boiler, to lift water from the lower part of the boiler at one end below the internal furnace and discharge it into an upper part of the boiler at its other end, the interior of said pipes being accessible for the purpose of cleaning them out and the pipes being removable to give access to the boiler and furnace for cleaning or repairs, as described.

No. 62,457. Boiler. (*Chaudière.*)



Robert W. Innes, Omaha, Nebraska, U.S.A., 25th January, 1899; 6 years. (Filed 12th January, 1899.)

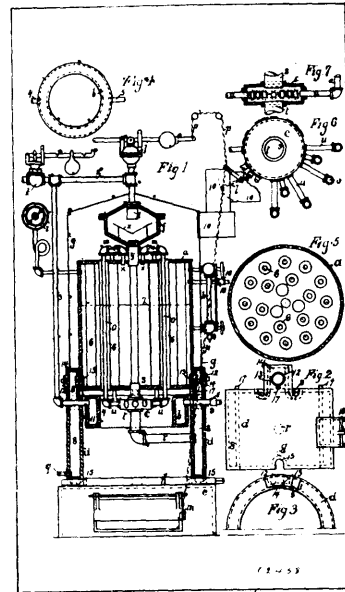
Claim.—1st. A boiler having a boiler proper, a shell inclosing the same, a furnace located at the forward end of the boiler and having a water-jacket at the top and sides thereof, a grate within the furnace, a water-beam running along the rear edge of the grate and communicating with the water-jacket, tubes running from the rear edge of the water-jacket from the rear water-beam and from the rear water-leg, the tubes passing beneath the boiler proper and running up past the rear end thereof, a header above the boiler proper with which header the said tubes communicate, a tube leading from the header to the dome of the boiler proper, and a return-tube running from the boiler proper to the furnace. 2nd. A boiler having a boiler proper, a shell inclosing the boiler proper, a furnace, the top and sides of which are formed by a water-jacket, a grate beneath the water-jacket, water-beams running transversely at the front and rear of the grate and between the sides of the water-jacket, a water-leg standing on each water-beam and joining the top of the water-jacket, tubes running from the rear water-beam from the water-jacket and from the rear water-leg, the tubes passing beneath the boiler proper and up along the rear end thereof to a point beyond the shell, a header with which the tubes communicate, a tube leading from the header to the boiler proper, and a return-tube running from the boiler proper to the furnace.

No. 62,458. Steam Generator. (*Générateur de vapeur.*)

Henry Hennig, Paterson New Jersey, U.S.A., 25th January, 1899; 6 years. (Filed 3rd October, 1898.)

Claim.—1st. The combination in a steam generating device, of a water holding case *c*, pipes *u*, connected to pipes *o*, running through boiler tubes *b*, the pipe *w*, the pipes *r* and *s*, for supplying case *c*, from water back and boiler, and the water back *d*, the boiler *a*, and their connections together, substantially as described. 2nd.

The combination in a steam heating device of an annular superheating chamber, and its connection with a separator *f*, and the



water back *d*, the boiler *a*, and their connection with each other, substantially as described. 3rd. In a steam heating apparatus, the annular superheating chamber in combination with the case *c*, pipes *u*, *o* and *w*, for the purpose of making steam quickly and superheating steam, all substantially as set forth. 4th. In a closed circulation and steam heating device the superheating device placed inside of the fire-box, consisting of an annular chamber in connection with a separator *f*, in combination with the water back *d*, boiler *a*, water heating case *c*, the water tube connection *r*, pipes *u* and *o*, substantially as and for the purpose set forth. 5th. In a steam heating and closed circulating device, a water back *d*, and boiler connected, heating case *c*, water tube *r*, small pipes *u*, *o* and *w*, in combination with steam separating case *f*, jacket *g*, an annular superheating chamber *b*, and pipes adapted for radiator connections, completing a closed circulation, substantially as described.

No. 62,459. Calcium Carbide Manufacture.

(*Fabrication de carbure de calcium.*)

Willy Joseph Hubert Lazarus, Düren, Prussia, 25th January, 1899; 6 years. (Filed 2nd August, 1898.)

Claim.—1st. The improvement in the manufacture of calcium-carbide cartridges for the production of acetylene gas which improvement consists in first impregnating the calcium-carbide with paraffine, or other cementing agent, then reducing the impregnated carbide to powder, and condensing the powder thus obtained into a compact body, substantially as and for the purpose hereinbefore described. 2nd. The improvement in the manufacture of calcium-carbide cartridges for the production of acetylene gas, which improvement consists in first impregnating the calcium-carbide with paraffine or other cementing agent, then reducing the impregnated carbide to powder, and forcing the powder into an envelope of sheet metal, and closing the filling-in end of the said envelope by a substance impermeable to water and vapours, substantially as and for the purpose hereinbefore described.

No. 62,460. Fire Proof Construction.

(*Construction à l'épreuve du feu.*)

Alphonse De Man, Detroit, Michigan, U.S.A., 25th January, 1899; 6 years. (Filed 23rd September, 1898.)

Claim.—1st. A composite slab or span comprising a body of artificial stone and a metallic strengthening member embedded therein, consisting of the flat bar *A* having twists *B* formed therein at intervals. 2nd. A composite slab or span comprising a body of artificial stone and a plurality of metallic strengthening members embedded therein, each consisting of a flat thin bar having twists formed therein at intervals, said bars being arranged on edge side by side for the purpose described. 3rd. A composite floor-span comprising a body of artificial stone and independent horizontal and double-inclined tension members embedded therein, the horizontal member being located below the neutral line and the double-inclined member extending from at or below the neutral lines in the central portion of the span diagonally upward to the ends of the span. 4th. A composite floor span comprising a body of artificial stone and metallic tension members embedded therein consisting of alternate horizontal bars located below the neutral line and double inclined