hole and independent thereof, substantially as and for the purpose set forth. 10th. The bifurcated draw-head having the entering jaw provided with the opening *d*, and recess *e* having the journalling face *e*, and ribs *e*³ extending across said recess, in combination with the interlocking lever *j* urnalled in said recess across said face *e*, and having grooves *b*³ fitting over said ribs, substantially as and for the purposes set forth. 11th. The bifurcated draw-head having the entering jaw *a* provided with the opening *d*, and the journalling recess *e* having the curved faces *e*, in combination with the interlocking lever journalled in said recess and having the operating arm *b*¹ and shoulders *e*¹, substantially as and for the purposes set forth. 12th. The combination of the bifurcated draw-head, the interlocking lever journalled in the entering jaw and having the operating arm *b*¹, and the spring *g* having one or more coils *g*¹ and secured within the draw-head, and pressing against said arm *b*¹, substantially as and for the purposes set forth. 13th. The combination of the bifurcated draw-head provided with teats or lugs *g*² in the neck thereof, the interlocking lever journalled in the intering jaw thereof and provided with the operating arm *b*¹, and the spring *g* having the coils *g*¹ fitting over said teats, and extending back of said operating arm, substantially as and for the purposes set forth. 14th. In combination with a bifurcated draw-head and interlocking lever journalled therein, an operating bar supported in or on said draw-head and extending out on each side thereof, and connected with said interlocking lever, substantially as and for the purposes set forth. 15th. In combination with the bifurcated draw-head and an interlocking lever journalled therein, a sliding bar passing transversely through said draw-head and extending out on either side thereof and connected with said interlocking lever, substantially as and for the purposes set forth. 16th. In combination with the bifurcated draw-head and interlocking lever journalled therein and having the arm *b*¹, the sliding bar *k* extending transversely through said draw-head, and having slot *m* in which said arms *b*¹ fits, substantially as and for the purposes set forth. 17th. In combination with the bifurcated draw-head and interlocking lever journalled therein, the sliding bar *k* extending transversely through the draw-head and connected with the lever and provided with suitable stop apparatus engaging with the draw-head to hold the lever in its uncoupled position, substantially as and for the purpose set forth. 18th. In combination with the bifurcated draw-head having the shoulder *q* thereon and the interlocking lever journalled therein, the spring *g* and sliding bar extending through the draw-head and connected to the lever and having the shoulder *r* on the upper edge thereof, substantially as and for the purposes set forth. 19th. In combination with the bifurcated draw-head and the interlocking lever journalled therein and having the arm *b*¹, the sliding bar *k* extending through the draw-head, and having the slot *m* and lug *t*, and the pin *t*¹, substantially as and for the purposes set forth.

No. 19,029, Electric Arc Lamp.

(*Lampe Electrique à Arc.*)

Elihu Thomson, Lynn, Mass., U. S., 2nd April, 1884; 5 years.

Claim.—1st. The combination, with the device controlling the separation and feed of the carbons in an electric lamp, of main and derived circuit coils or helices acting in conjunction, to impart movement to a core or armature in the same direction, and intermediate mechanism between the core or armature and said controlling device for imparting movement thereto, in one direction, upon a moderate pull of the core or armature, and a reverse or return movement of said device upon a stronger pull and continued movement of said core or armature. 2nd. The combination, with a carbon carrier, of mechanism for lifting and controlling the feed of same, main and derived circuit coils re-enforcing one another directly or indirectly in their pull upon a core or armature, and intermediate mechanism for reversing the movement of the lifting and controlling mechanism where said core or armature has passed a certain point in its movement under the influence of the derived circuit coil. 3rd. The combination, with a lifting and releasing clutch, of main and derived circuit coils re-enforcing one another in their action upon the clutch, and intermediate reversing mechanism for causing the release of the clutch upon an increased pull due to an increased flow of current in the derived circuit coil. 4th. In an electric lamp, two solenoids or electro-magnets acting conjointly upon one or more cores or armatures, in combination with a clutch and suitable intermediate mechanism for first raising and locking said clutch upon the carrier, and afterwards lowering and releasing the same upon a continued movement of the core or armature in the same direction. 5th. The combination of a carbon carrier, main and derived circuit coils, a lifting clutch for separating the carbons by the combined and conjoint action of the direct and derived circuit coils, and means for causing the release of said carbon upon an increased action of the derived circuit coil. 6th. The combination, in an electric lamp, of a clutch, a toggle or knee joint, one or more cores or armatures connected directly or indirectly with said knee joint, and main and derived circuit helices acting directly or indirectly but conjointly upon said cores or armatures. 7th. The combination of the toggle or knee *m n*, or its equivalent, with the separating and feeding mechanism for the carbon, and two electro-magnets or solenoids exerting attracting forces in the same direction to actuate said knee or toggle joint, whereby said separating and feeding mechanism is made to adjust the carbon.

No. 19,030, Cultivator. (*Cultivateur.*)

Elliott T. Gregg, Marshall, Mich., U. S., 2nd April, 1884; 5 years.

Claim.—1st. In a cultivator, the rubber or pulverizer *d* having a series of teeth, in combination with the knife or cutter *a* connected by arms or brackets to the rubber or pulverizer, arranged and operating, so that the knife or cutter will cut slightly below the surface of the ground, and the rubber, with its teeth, will pulverize the loosened earth, for the purpose set forth. 2nd. In a cultivator, the combination of the pulverizer *d*, having teeth, of the knife or cutter *a* connected to the rubber or pulverizer by arms or brackets, a hand truck *f*, and standards or uprights *g* connecting the said pulverizer to the said truck, as and for the purpose set forth.

No. 19,031, Stove Grate. (*Grille de Poêle.*)

Edgar W. Anthony. Boston, Mass., U. S., 2nd April, 1884; 5 years.

Claim.—1st. In combination with a rectangular or square grate *a a*¹, constructed and adapted to be operated, substantially as and for the purposes described. 2nd. A stove or furnace provided with a rectangular or square grate, consisting of the fingered bars *a*, *a*¹, surrounding the opening B, adapted to be reciprocated as specified, and the grate C, below said opening B, capable of being tipped towards the ash pit door, and a clearing space D, between the upper surface and the lower surface of the upper grate, substantially as and for the purposes specified. 3rd. The combination, in a rectangular or square grate of the grate bars *a*, *a*¹, pivoted to each other and to the grate frame, as specified, and having fingers *a*⁵, *a*⁶, all substantially as and for the purpose described. 4th. In a square or rectangular grate, the combination of the bars *a*, *a*¹, pivoted to each other and to the grate frame, and having fingers *a*⁵, *a*⁶, the fingers of the back bar being more inclined than those of the front, all substantially as and and for the purposes described. 5th. The combination, in a square or rectangular grate, of the bars *a*, *a*¹, pivoted to each other and to the grate frame, as described, and having the fingers *a*⁵, *a*⁶, the corner or end ones of which are shaped to prevent clogging at the corners of the grate, all substantially as described.

No. 19,032. Cover and its Attachment for Sap Buckets. (*Couvercle et son Ajustage pour Seaux à Sève.*)

Richard D. Wells, East Farnham, Que., 2nd April, 1884; 5 years.

Claim.—The combination, of the cover B, constructed without flanges, with its comb or hood F, when required and its securing wire rod C, with a sap bucket, substantially as and for the purposes hereinbefore set forth.

No. 19,033. Process for the Manufacture of Dextrine, Glucose, Maltose and Grape Sugar from Wheat, Corn, etc. (*Procédé de Fabrication de la Dextrine, Glucose, Maltose et du Sucre de Raisin, avec du Blé, Maïs, &c.*)

Thomas P. Kingsford, Oswego, N. Y., U. S., 2nd April, 1884; 5 years.

Claim.—The process applicable to manufacturing dextrine, glucose, maltose, and grape sugar, herein described, which consists in soaking wheat, corn or other starch producing substance in lime water, then grinding, then treating with sulphurous acid gas, then applying nitric acid, and finally subjecting to steam pressure according to the product desired.

No. 19,034. Process for the Manufacture of Starch from Wheat, Corn, etc. (*Procédé de Fabrication de l'amidon avec du Blé, Maïs, &c.*)

Thomas F. Kingsford, Oswego, N. Y., U. S., 2nd April, 1884; 5 years.

Claim.—1st. In the art of manufacturing starch, the employment successively in the order named, of water saturated with hydrated lime, and (after grinding) sulphurous acid gas for treating starch producing substances, substantially as set forth. 2nd. The process of manufacturing starch, herein described, which consists in soaking and softening grain, or other starch producing substance in water saturated with hydrated lime, then grinding it in the presence of water, then treating the ground mass with sulphurous acid gas, and then separating the freed starch from the mass, substantially as set forth.

No. 19,035. Railway Torpedo, (*Torpille de Chemin de Fer.*)

Cyril B. Cole, Seymour, Ind., (assignee of James H. Bevington, Cleveland, Ohio,) U. S., 2nd April, 1884; 5 years.

Claim.—The combination, with a fork provided with the recess *e*, *e*¹, of a torpedo provided with the spring B, the ends of which are adapted to be secured in the recesses of the fork, substantially as set forth.

No. 19,036. Pendulum Level, (*Niveau à Pendule.*)

Charles J. Parkhurst, (Co-inventor with Albert W. Parkhurst,) North Adams, Mass., U. S., 2nd April, 1884; 5 years.

Claim.—1st. In a pendulum level, plumb or inclinometer, the shaft or pivot of the index hand connected with the pendulum shaft or pivot by multiplying bevel gears, for the purpose and substantially as described. 2nd. In a pendulum level, the combination of the index hand, the pendulum, and multiplying bevel gears connecting said pendulum and index hand, and adapting said index hand to be moved over a greater distance than the pendulum, substantially as described. 3rd. In a pendulum level, the pendulum and the index hand arranged on axes at right angles one with the other, and combined, substantially as described, whereby the index hand is made to move through an entire circle, in the movement of the pendulum, through an arc of ninety degrees. 4th. In a pendulum level, plumb or inclinometer, the pendulum suspended between elastic plates or springs, adapted to grasp and hold said pendulum at any desired point. 5th. The pendulum actuating the index hand pivoted between elastic plates or frames, adapted to hold said pendulum in any desired position, in combination with means for forcing said plates apart and freeing the pendulum, substantially as described. 6th. In a pendulum level, plumb or inclinometer, the pendulum supported between yielding side plates, in combination with the slide for separating said plates, and the plumb shaft and level for operating said slide, substantially as described. 7th. The combination, in a pendu-