arm, a transverse bar having its ends bolted to said vertical post and slotted arm, an apron hinged to this bar and provided on its inner face with a lug arranged to be acted upon by the one on the knife-plate, and a spring operatively connecting said frame and apron to hold the latter normally in a vertical position, substantially as set forth.

No. 29,317. Burner for Heating Sad Irons.

(*Réchaud de fer à repasser*)

James M. Wishart, Marion, Kan., U.S., 9th June, 1888; 5 years.

Claim.—1st. A burner consisting of the following elements, viz.: a gas generator formed of metal tubing in a coil or folds, a gas receiver containing channels, valve chamber and aperture for the passage of the gas, valve for controlling discharge of same and air space, and a gas distributor formed of a perforated tube, the whole being detachably connected together and held firmly in place in the sad iron by suitable means, all substantially as herein set forth 2nd. The combination, of block D having collar D^1 adapted to bear against rear wall of sad iron, tube E screwed into block, and cap nut E^1 adapted to be screwed on outer end of tube and bear against front wall of sad iron, as and for the purpose described.

No. 29,318. Tellurian. (*Orrery.*)

George W. Benedict and Harvey Y. Miller, College Corner, Ind., U.S., 11th June, 1888; 5 years.

Claim.—1st. A table provided with a pair of intersecting slots, a slide-block in each of said slots, an arm pivoted to each of said slide-blocks, an earth-standard and earth-model supported at the outer end of the arm, and a sun-standard and sun-model supported at the inner end of said arm, combined substantially as and for the purpose specified. 2nd. An elliptical table intersecting slots arranged in the major and minor axis thereof, a slide-block in each of the slots, an arm pivoted to both of said blocks, an earth-standard and earth-model at the outer end of said arm over the margin of the table, and a sun-standard and sun-model supported at the inner end of the arm, combined substantially as and for the purpose specified. 3rd. In a tellurian, the combination of a main arm, a sun-standard supporting a sun-model and arranged at one end of said arm, a vertical shaft arranged at the other end of the arm, an earth-model supported on said shaft, a circular boss arranged on said arm eccentrically to said shaft, an arm arranged to revolve about the shaft, a bent rod arranged to embrace the periphery of the boss and to slide in the direction of its length through the arm, and to revolve therewith, an extension of said rod removably secured thereto, and bent so as to pass over the sun-model, and a comet-model mounted on said extension, all combined and arranged to co-operate substantially as and for the purpose specified. 4th. A table provided with a pair of intersecting slots, a slide-block in each slot, a pulley fixed to one of the slide-blocks, an arm pivoted to both of said slide-blocks, a sun-standard and a sun-model supported at the inner end of said arm, an earth-standard journalled at the outer end of the arm, an earth-model supported by the earth-standard, a pulley secured to the journal upon which the earth-standard is mounted, and a belt engaging said two pulleys, combined and arranged to co-operate substantially as and for the purpose specified. 5th A pivoted main arm, a sun-standard and sun-model supported at the inner end of said arm, an earth-standard and earth-model supported at the outer end of said arm, and a laterally projecting arm, as Q, serving as a means for attaching said sun-standard to its support, combined substantially as and for the purpose specified 6th. The table provided with a pair of intersecting slots, the slide-blocks in said slots, the main arm pivoted to both of said slide-blocks, the vertical shaft journalled in the outer end of the said main arm, the earth-model mounted on said shaft, a pair of sprocket wheels, one of which is secured to one of the said sliding blocks so as to bear a fixed relation thereto, and the other of which is secured to said shaft the belt passing around and connecting said wheels, the vertical shaft journalled near the inner end of the main arm, and carrying a third wheel which is also actuated by said belt, the sun-standard having a laterally projecting arm which is secured to said vertical shaft, and the sun-model mounted on said sun-standard, all combined and arranged to co-operate substantially as specified. 7th. The table provided with a pair of intersecting slots, the slide-blocks in said slots, the main arm pivoted to both of said slide-blocks, the vertical shaft journalled in the outer end of the main arm, the earth-standard adjustably secured to said shaft, the earth-model, a pair of sprocket wheels, one of which is secured to one of the said sliding blocks so as to bear a fixed relation thereto, and the other of which is secured to said shaft, the belt passing around and connecting said wheels, the moon arm pivoted on the shaft so as to turn easily thereon, the moon-standard connected with the moon arm so as to revolve therewith, and the moon-model mounted on said standard, all combined and arranged to co-operate substantially as and for the purpose specified. 8th. In a tellurian, the combination of a vertical shaft, an earth-model supported on said shaft, a circular boss arranged eccentrically to said shaft, an arm arranged to revolve about the shaft, a bent rod arranged to embrace the periphery of the boss, and to slide in the direction of its length through the arm, and to revolve therewith, and a moon-model mounted on the upper end of the rod all arranged to co-operate, substantially as and for the purpose specified.

No. 29,319. Cork Extractor. (*Tire-bouchon.*)

Raymond B. Gilchrist, Peoria, Ill., U. S., 11th June, 1888; 5 years.

Claim.—1st. A cork extractor comprising a cork-screw having a screw-threaded extension, a sliding nut engaging the threads on the extension, a rack gearing with a pinion on the cork-screw, an operating lever acting during a portion of its throw to raise the cork-screw, substantially as described 2nd. A cork extractor comprising a cork-screw having a screw-threaded extension having the slot, a sliding nut engaging the threads on the extension, a rack, a pinion interposed between the extension and the rack, and having a spline entering the slot in the extension, and an operating lever acting during a portion of its movement to raise the cork-screw, substantially as described 3rd. A cork extractor comprising a cork-screw having a screw-threaded extension, a nut engaging the threads on the extension, a rack operating upon the extension for imparting rotary motion to the cork-screw, an operating lever having the projection, and the lifting arm connected to the said projection and to the cork-screw, substantially as described. 4th. A cork extractor comprising a cork-screw having a screw-threaded extension, a screw-threaded portion engaging the extension, a rack operating upon the extension for imparting motion to the cork-screw, an operating lever having the projection, the raising arm connected to the said projection, and to the extension of the cork-screw, and the spring connected to the rack and to the base of the extractor, substantially as described. 5th. In cork-extractor, the combination of a suitable cylinder, a nut perpendicularly movable therein, an axially and perpendicularly movable screw operatively set within said nut, provided at one end with a cork-screw, and at its other end with an extension or stem, a pinion located upon said stem, an operating lever pivotally held to said cylinder, a rack carried by said lever, which meshes with said pinion, operative to impart rotary motion to said pinion, and therethrough to actuate said cork-screw, and a lifting arm connected with said lever, and stem adapted through the action of said lever to perpendicularly move said cork-screw, all arranged and adapted to be operated substantially as herein described. 6th. In cork extractors, the combination of a suitable cylinder, a nut perpendicularly movable therein, a cork-screw carried fixedly by a screw set in said nut, and susceptible of longitudinal and rotary motion therein, a spring within said cylinder interposed between the cap thereof and said nut, operative to exert a tensional strain perpendicularly upon said nut, a pinion carried by an extension or stem of said screw which is free to move longitudinally therethrough, and operative to be rotated thereby, a lever pivoted to said cylinder, a rack carried by said lever which meshes with said pinion, adapted through the to-and-fro movement respectively of said lever, to actuate said cork-screw through its forward and reverse longitudinally and rotary movements, and a lifting arm connected with said lever, and screw-stem adapted through the action of said lever to move said cork-screw longitudinally, all arranged and adapted to be operated substantially as set forth.

No. 29,320. Submarine Photographic Apparatus. (*Appareil photographique sous-marin.*)

Joseph l'Etoile and William A. Allan, Ottawa, Ont., 11th June, 1888; 5 years.

Claim.—1st. In a photographic apparatus, the combination, with a camera, of a shutter or disk, an electric motor for imparting motion to said shutter, and a generator for energizing the electric motor. 2nd. In combination with a camera, a shutter or disk, an electric motor for imparting motion thereto, a pawl or detent to engage the said disk or shutter, and an electromagnet adapted to actuate said pawl or detent. 3rd. In combination with a camera, a box or casing secured thereto, a shaft journalled in the box and adapted to receive sensitized paper, an electric motor connected with the shaft, a generator, and a connection between the generator and the motor. 4th. In combination with a camera, a box or casing secured to the rear end thereof, a shaft journalled in said box or casing provided with a notched disk, and adapted to receive sensitized paper, a pawl or detent adapted to engage the notched disk, an electromagnet for withdrawing the detent or pawl out of engagement with said disk, and an electric motor for imparting motion to the shaft, all substantially as shown. 5th. In combination with a camera having a box or casing, a shaft journalled therein and adapted to receive sensitized paper, an electric motor adapted to impart motion to the shaft, an electrically operated detent adapted to control the rotation of the shaft, a shutter, an electric motor for turning said shutter, and an electrically operated detent adapted to control the movement of the shutter. 6th. In an apparatus for taking submarine photographs, the combination with a box or casing divided into two or more water-tight compartments, of a lens secured within an opening in the bottom of each of said compartments, a photographing apparatus located in one of said compartments, and an electric light located in the other compartment, or compartments, all substantially as shown. 7th. In combination, with a box or casing provided with a central chamber, and having a camera located in said chamber, one or more chambers surrounding the central chamber, and light giving bodies located in the surrounding chambers. 8th. In combination with the box or casing provided with the separated chambers, a lens located in an opening in the bottom of each chamber, plates F of glass, secured upon the outer face of the casing directly over the lenses, and a rim or flange D surrounding the openings, all substantially as shown. 9th. In combination with a box or casing divided into compartments, and having in the bottom of each compartment a lens, a plate of glass upon the outer face of each of the lenses, a ring G resting upon said plate and fitting within a projecting rim or flange D surrounding the openings in the bottoms of the chambers, the said ring being secured in position by means of cement, or other waterproof material. 10th. In combination with the box or casing A, provided with a central compartment C, and side compartments B, B, a block I secured in the bottom of each compartment, and having an opening to receive a lens, posts or uprights secured to said blocks I, a camera secured to the uprights within the chamber C, and lights or lamps secured to the uprights within the chambers B. 11th. In an apparatus, substantially such as shown, the combination, with the base block I, the uprights J secured thereto, a cross-bar or support K adapted to slide upon the uprights J, J, and an electric lamp L carried by said cross-bar. 12th. In an apparatus, substantially such as shown, the combination, with the base board I and the uprights J, J, of the lamp L adjustably supported by said uprights, and a reflector N also adjustably supported upon said uprights. 13th. In combination with a watertight box or casing provided with a photographing apparatus, and with light giving bodies, a cable composed of wires insulated from each other but connected with their respective mechanisms, and a switch-board provided with a series of switches, each adapted to control its particular mechanism. 14th. In combination with a sub-