

sides and concave corners, and formed with vertical T-shaped slots within the plane of the sides and without the vertical axis of the head, and formed with curved back faces, and an adjustable bit clamping device, consisting of separate upper and lower sections formed with inner side flanges and curved backs to set within the slots and corners of the vertical slots of the head, and exterior dovetailed clamping-claws to hold the bits in position against the faces of the head, and provided with a clamping-screw through both sections set within the slots of the head, substantially as described and for the purpose stated. 8th. A cutter-head, provided with pin holes in the bottom thereof, arranged in the direction of the line of bevel of the cutting-bits, for the reception of gauge-supporting pins, substantially as described and for the purpose stated. 9th. In combination, with a cutter-head formed with pin holes in the bottom thereof and a cutting-bit secured to the head, and a gauge comprised of a shank and a graduated blade set at right angles to each other, and provided with projecting pins fixed in the shank, said pins being arranged to register with and set within the pin holes in the bottom of the cutter-head, substantially as described and for the purpose stated. 10. The cutter-head gauge herein described, consisting of the gauge E₂, formed of the blade I, having graduated measurements indicated thereon, and the shank 2, provided with projecting pins 5, 6, substantially as described.

No. 22,049. Duplex Steam Engine.

(Machine à Vapeur Double.)

Milan W. Hall, Plainfield, N.J., U.S., 9th July, 1885; 5 years.

Claim.—1st. A duplex steam engine consisting of the combination with the cylinder and piston of each engine, of a single steam-actuated valve for each engine, and with steam passages leading from the cylinder of each engine across to the valve-chest of the other engine, arrange and operating substantially as set forth, whereby the valve of each engine is actuated directly by steam taken from the cylinder of the other engine. 2nd. The combination of two steam cylinders, two inclosed steam-actuated valves, steam passages extending each from the cylinder of one engine to the valve of the other, and exhaust passages extending each from the valve of one engine through the valve of the other to the exhaust passages from the cylinder, substantially as set forth. 3rd. The combination of two steam-engines having inclosed steam-actuated valves, with steam passages, each extending from the cylinder of one engine through the valve of that engine to the valve-piston chamber of the other engine, in order to shift the valve of the latter, and exhaust passages leading from each valve-piston chamber to the exhaust, substantially as set forth. 4th. The combination of two steam engines having inclosed steam-actuated valves, with steam passages, each leading from the cylinder of one engine through the valve of that engine to the valve-chest of the other engine, in order to shift the valve of the latter, and exhaust passages, each leading from the valve-chest of one engine through the valve of the other engine to the exhaust, substantially as set forth. 5th. A duplex steam engine wherein the two engines reciprocally control each other by means of steam-actuated valves, constructed with steam passages and exhaust passages extending from opposite sides of the valve-operating piston or plunger of each engine to the cylinder of the other engine in such manner, as described, that the "back-pressure" in the cylinder shall be conducted equally to opposite sides of the valve-operated piston or plunger, and consequently will be balanced and impotent to move the piston or plunger prematurely, all substantially as set forth. 6th. The improved construction of duplex steam-engine, consisting of the cylinders, the steam-chests, and the valves, in combination with a plate G arranged between the steam-chests and the cylinders, with grooves on top and bottom of this plate, forming the several steam passages for actuating the valves, substantially as described.

No. 22,050. Combined Thill-Coupling and Anti-Rattler for Vehicles. (Arron de L'arronière à Compensation.)

Harbert K. Forbes, Columbus, Ohio, U.S., 9th July, 1885; 5 years.

Claim.—1st. In a thill-coupling, the clip ears B₁, B₂, one of which is screw-threaded, as described, and both provided with projections b, in combination with the threaded bolt E, substantially as and for the purposes set forth. 2nd. In a thill-coupling, the combination, with the clip ears one of which is screw-threaded, said ears having the projection b, of the pointed bolt E, the metallic piece D, a rubber cushion and transverse supporting plate C, substantially as described and for the purpose set forth.

No. 22,051. Universal Watch and Jeweller's Tool. (Outil Universel pour Horloger-Bijoutier.)

John Hunter, Kingston, Ont., 9th July, 1885; 5 years.

Claim.—1st. The combination of bracket a, on frame A, and also frame A, substantially as and for the purpose hereinbefore set forth. 2nd. The combination of nut n, tension o, screws m, m, disk i, screw r, spool e, guide rollers d, d, sleeve j, collar h, collar g, spring l, box k, screw x, collar u, bit p, spindle f, substantially as and for the purpose hereinbefore set forth. 3rd. The combination of hanger V, screws R, r, S, centre bracket Z with screws Q, C, slot X, disk V, thumb nuts H and M, disk k, nut L, nut J, and feed rod J, screw O, guide G, bolt B with e, washers r with nut c, spring D, extension bar y, substantially as and for the purpose hereinbefore set forth.

No. 22,052. Process and Apparatus for the Manufacture of Cellulose and Secondary Products. (Procédé et Appareil pour la Fabrication de la Cellulose et des Produits Secondaires.)

Alexander Mitcherlich, Munden, Germany, 9th July, 1885; 5 years.

Claim.—1st. In the process of treating wood, or other vegetable

fibrous material in the manufacture of cellulose, which consists in subjecting the comminuted fibrous material to the action of steam at a temperature of about 100° C, to drive the air out of the fibre cells without discolouring the fibres thereof, substantially as described. 2nd. In the process of treating wood or other fibrous vegetable substances in the manufacture of cellulose, which consists in subjecting the material to the action of a dissolving or digesting agent, first at a gradually increasing and then at a gradually decreasing temperature, the latter varying from about 108° C to 118° C, and inversely to dissolve out the incrustating component parts of the fibres, and completing the operation by eliminating the dissolving or digesting agent, as described. 3rd. In the manufacture of cellulose from fibrous materials, treating the same with a dissolving or digesting agent, consisting of a solution of sulphurous acid, free from polythioic acid salts, substantially as and for the purpose specified. 4th. In the manufacture of cellulose from fibrous vegetable substances, the herein-described process of treatment, which consists in first eliminating the air from the fibre cells of the material by means of steam or about at the temperature specified, subjecting the so-prepared material to the action of a solution of sulphurous acid at a gradually increasing temperature, varying from about 108° C to about 118° C, testing the solution from time to time by means of ammonia, to ascertain the progress of the reduction, and when found complete gradually reducing the temperature from about 118° C back to about 108° C, and simultaneously therewith driving off the reducing dissolving or digesting solution, as described for the purpose specified. 5th. The herein-described boiler, provided with a lining not affected by the dissolving or digesting solutions employed, and in combination therewith, of steam radiators arranged in series and connected with the source of steam supply, substantially as described for the purpose specified. 6th. The combination, with the boiler casing, of a protective lining composed of lead foil and a resinous adhesive compound, as described. 7th. The combination, with the boiler casing, of a protective lining composed of lead foil connected therewith by means of a resinous or bituminous cement, and a lining of refractory porcelain-like brick, substantially as described for the purpose specified. 8th. The combination, with the boiler and a steam conduit thereof, of the coupling consisting of a metallic flanged tube C, provided with a lead lining and having its outer end formed conical interiorly, the nut N, the packing conus G and the nut N₁, substantially as described. 9th. The combination, with a coupling C N N₁ G, constructed as described, of the tubular bent muff O, provided with a stop cock and a thermometer, manometer and level indicator contained therein, substantially as and for the purpose specified.

No. 22,053. Reaper and Mower Knife Sharpener. (Remouleur de Couteau de Faucheuse Moissonneuse.)

Henri Bernir (Co-inventor with Paul Lair), Lotbinière, Que., 13th July, 1885; 5 years.

Claim.—1st. In a machine for sharpening the cutters of mowers and reapers, the cam-disk E, secured to the spindle of the driving wheel D, and arranged to operate the bell-crank F by its edge sliding between the pins c, c, as shown and described. 2nd. The bell-crank F, pivoted to the frame A provided with the pins c, c, and connected by the link d, with the lever G, which is rigidly secured to the rock-shaft H, substantially as set forth. 3rd. The combination of the driving wheel D, cam-disk E, bell-crank F provided with the pins c, and connected by the link d to the lever G with the rock shaft H, arm g, rod f and jaws e, substantially as shown and described.

No. 22,054. Elevator. (Ascenseur.)

The Tewksbury Automatic Elevator Company, Middletown, N. Y., (assignee of George C. Tewksbury and Frank M. Reynolds, Newark, N.J.), U.S., 13th July, 1885; 5 years.

Claim.—1st. In combination with the mechanism of the elevator, of the shaft A having projections k, of the rack sleeve G and collars upon the shaft, as f and g, set at a distance from the sleeve, and mechanism between said rack sleeve and the shifting bar, substantially as described. 2nd. In combination with the automatic stop apparatus, of an elevator, a rack connection between the shaft which carries the stop projections and the belt shifting bar, said bar having limited movement in relation to the rack, as and for the purpose set forth. 3rd. In an elevator and in combination with automatic stop mechanism, an indicator connected to said mechanism by means of rope h or equivalent connection, said indicator being attached to the car and adapted to turn over a graduated scale and adjust the stop mechanism, substantially as described. 4th. The wheel or pulley mounted on a suitable shaft within the car of an elevator and connected by a rope or equivalent device to the automatic stop mechanism, an index finger mounted loosely on the same shaft, and a pawl and ratchet whereby said finger is connected to shaft, substantially as described. 5th. The combination, in an elevator, of the automatic stop mechanism, and a hand mechanism, substantially as described. 6th. In combination with the shifting bar C, the shaft H provided with stops or projections adapted to be brought into line with the moving projections connected to the drum and intermediate gearing, whereby motion of the shaft is communicated to the bar, and with the hand rope and wheel connected to the said bar C, substantially as described. 7th. The combination, in the described elevator, of the shaft H and counter-weight M. 8th. The combination, in the described elevator, of the hand wheel N, the rope and means for connecting the rope with the shifting bar C, substantially as described.

No. 22,055. Rotary Engine. (Machine Rotatoire.)

John Moffet and Frank A. Lowe, New York, N.Y., U. S., 13th July, 1885; 5 years.

Claim.—1st. In a rotary engine, the combination, with a vertically elongated shell or casing having steam inlet and exhaust passages formed in the ends and sides, of stationary cams secured to the inner sides of the casing heads, a shaft, passed through the centre of said cams and journaled in the casing heads, a slotted cylinder secured to said shaft and sliding piston-blades supported in said cylinder with