through the body or system of the drinker during the act of drinking from the said vessel, substantially as described. 3rd. A drinking vessel, constructed of non-conducting material, having an internal electrode adapted to be brought into contact with the contents of the vessel, and an external electrode to be grasped by the hand during the act of drinking to complete the circuit through the body of the drinker, substantially as specified.

No. 32,187. Machine for Cutting and Crimping Cartridge Shells. (*Machine à tailler et ourler les étuis des cartouches.*)

George D. Hunter, Auburn, Ill., U.S., 2nd September, 1889; 5 years.

Claim.—1st. In a machine for cutting and crimping cartridge-shells, the combination of a standard or support A formed with a segment gear B upon its face, a vibratory hand lever D pivoted to said support, a pivot or stud bolt D_1 supported upon said lever and adapted to fit in a central axial recess, formed in a revolving pinion G and crimper or chuck-wheel G_1, said pinion and wheel having a circumferential groove g_1 formed intermediate thereof, and a movable plate D_2 also supported upon said lever and adapted to fit into said groove, substantially as described. 2nd. In a machine for cutting and crimping cartridge shells, the combination of a vibratory hand lever D, a cartridge carrier K mounted upon and adapted to slide transversely of the same, a grip lever M and cord l_2 connected with said carrier for moving it in one direction, and a spring N_1 arranged intermediate of said hand-lever and the outer end of said carrier for positively moving the latter in the opposite direction, substantially as described. 3rd. In a machine for cutting and crimping cartridge shells, the combination of a vibratory hand lever D, a revolving crimper G_1, or chuck-wheel H_1 mounted thereon, a cartridge carrier K, mounted and adapted to slide upon said hand-lever, a cord l_2 and grip lever M connected with said carrier for moving it in one direction, and a guide-rod N and spiral spring N_1 for moving said carrier in the opposite direction, substantially as described. 4th. In a machine for cutting and crimping cartridge-shells, the combination of the vibratory hand-lever D, a movable cartridge-carrier K, mounted and adapted to slide thereon, a grip-lever M and sheave-pulley L also mounted upon said lever, and a cord l_2 secured at one end to said carrier, and at the other end to a compound hinge-joint l_5 secured to said grip lever, substantially as described. 5th. In a machine for cutting and crimping cartridge shells, the combination of the vibratory hand-lever D, a cartridge carrier K mounted and adapted to slide thereon, a grip-lever M and sheave pulley L also mounted thereon, and a cord l_2 secured at one end to the grip-lever, and at the other end to a screw-threaded thimble l_3 fastened at the outer end of said carrier by a screw bolt, substantially as described. 6th. In a machine for cutting and crimping cartridge shells, the combination of a vibratory hand-lever D, a revoluble chuck-wheel H_1 supported thereon, gearing B and H for revolving said chuck-wheel by the movement of said lever, a cartridge-carrier K mounted and adapted to slide upon said lever, and provided with an abutment K_2 at its outer end, having an opening K_5, and a knife P supported upon said abutment, substantially as and for the purpose described. 7th. In a machine for cutting and crimping cartridge shells, the combination of a vibratory hand-lever D, a revoluble chuck-wheel H_1 mounted upon said hand-lever, a cartridge carrier K also mounted upon and adapted to slide transversely of said lever, and provided with an open abutment K_2 at its outer end, and a knife P pivoted l to said abutment and provided with a laterally-projecting guide-flange p_1 and thumb piece p_3, substantially as described. 8th. In a machine for cutting and crimping cartridge shells, a revoluble chuck-wheel H_1, provided with an encircling spring H_2, which is secured at one end to the periphery thereof, and which is free or disconnected at its opposite end and adapted to grip and firmly hold a cartridge, and prevent the same from independently turning while being revolved, substantially as described. 9th. In a machine for cutting and crimping cartridge shells, a revoluble chuck-wheel H_1, provided with an encircling spring H_2, which is secured at one end to the periphery thereof, and which is free or disconnected at its opposite end, and provided with a spur h_1 adapted to grip the rim of a cartridge and hold the same, when turned, in one direction, and to release the same, when turned, in the opposite direction, substantially as described. 10th. In a machine for cutting and crimping cartridge shells, a revoluble chuck wheel H_1, provided with an encircling spring H_2, which is secured at one end to the periphery thereof, and which is free or disconnected at its opposite end, and provided with a spur h_1 having an outwardly-inclined lip h_3, and a shoulder h_4, said spring being also provided on its lower portion with an upwardly-inclined lip h_2, substantially as and for the purpose described. 11th. In a machine for cutting and crimping cartridge shells, the combination of the standard or support A, provided with the segment gear B, the vibratory hand lever D pivoted thereto, the removable chuck-wheel H_1 and pinion H adapted to be supported upon said hand-lever, a sliding cartridge-carrier K also supported upon said hand-lever, and provided at its outer end with an abutment K_2, having a central opening K_5, a knife P pivoted adjacent to said opening, and an adjustable gauge-plate O mounted upon said carrier, substantially as and for the purpose described. 12th. In a machine for cutting and finishing cartridge shells, the combination of the standard or support A provided with the segment gear B, and also with abutment surfaces b, b located at the ends of the cogged rim of said gear, the vibratory hand-lever D pivoted to said support, and provided with a lateral extension d_3, adapted to contact with said abutment surfaces, and a pinion G or H adapted to rotate a crimper G_1, or a chuck-wheel H_1, by engagement with said segment gear and the vibration of said hand-lever, substantially as and for the purpose described.

No. 32,188. Process of Reducing Zinc Ores. (*Procédé de réduction des minerais de zinc.*)

Gustaf M. Westman, New York, N.Y., U.S., 2nd September, 1889; 5 years.

Claim.—The herein described process of reducing zinc ores, consisting of subjecting the zinc ores in mixture with coal to the action of highly heated carbonic oxide, condensing the zinc from the outgoing carbonic oxide, and subsequently reheating and returning the gas through the charge, substantially as shown and described.

No. 32,189. Vacuum Evaporating Apparatus. (*Appareil evaporatoire à vide.*)

Homer T. Yaryan, Toledo, Ohio, U.S., 2nd September, 1889; 5 years.

Claim.—1st. In combination with a heating cylinder of an evaporating apparatus, the inclosed evaporating coils composed of tubes having their ends connected by closed return bends or cells, so as to form continuous closed conduits from their inlet to their outlet ends, and a feed pipe connecting with the inlet end of each coil, whereby liquid to be evaporated may be subjected to an increased length of heating surface without danger of overflowing, till it is properly heated and discharged at the outlet end of the coil. 2nd. The heating cylinder of an evaporating apparatus containing evaporating tubes set in tube sheets at each end, in combination with a return bend head provided with intersecting partitions forming cells to connect the ends of the tubes applied to the inlet end of the cylinder, the liquid supply-pipes piercing such head, and a separating chamber connecting with the cylinder at the discharge end of the tubes for receiving the heated liquid and vapor. 3rd. In combination with the heating cylinder of an evaporating apparatus, a separating chamber connecting with one end thereof, the sets of evaporating coils inclosed in the heating cylinder and each opening into the separating chamber at one end, and a feed supply pipe connecting with the inlet end of each coil, for the purpose described. 4th. In combination with the heating cylinder containing evaporating tubes set in the tube-sheets at each end, the return-bend heads provided with intersecting partitions forming cells to connect the ends of the tubes and form sets of coils, for the purpose described. 5th. In combination, with the heating cylinder containing evaporating tubes set in the tube-sheets, the return-bend head C_1 provided with intersecting partitions c forming cells and openings c_1 for connecting the supply pipes, and the return-bend head T having partitions x, and outlet openings t_{11}, for the discharge of liquid. 6th In combination with a heating cylinder, the horizontal coils composed of sets of two or more connected tubes extending through the heating cylinder, and a contracted liquid feed duct connecting with the inlet end of each coil, whereby a reduced number of feed-ducts are required, and whereby the size of the ducts may be increased so as to avoid the danger of their being clogged with solid matter. 7th In combination with the evaporating coils and inclosing heating cylinder, the externally-arranged manifold and contracted liquid-feed ducts connecting with the inlet ends of the coils, for the purpose described. 8th. In combination with the series of evaporating coils, the liquid feeding apparatus consisting of a pump, a suction pipe connecting it with a feed-box, and having an automatic valve, a manifold and contracted liquid ducts connecting therewith and with the inlet ends of the coils, whereby each coil of the series may be fed by a single pump with the desired quantity of liquid. 9th. In a vacuum evaporating apparatus, the combination, with an evaporator of any one effect and degree of vacuum, of a liquid transfer pipe leading therefrom past one or more of the successive effect evaporators to an evaporator beyond having a greater degree of vacuum that the intervening evaporator or evaporators for securing the advantage of a better vacuum to facilitate the transfer and circulation of liquid from one evaporator to the other. 10th. In a vacuum evaporating apparatus, a primary evaporator and a connected liquid-feed pump, in combination with a transfer pipe for partially reduced liquid leading from such evaporator past one or more of the succeeding evaporators to the feed-pipe of an evaporator having a greater degree of vacuum than the intermediate evaporator, whereby improved feed and circulation of liquid are secured. 11th. In a multiple-effect vacuum evaporating apparatus, a primary evaporator having a separating chamber in combination with a liquid feed pump connecting with the inlet end of the evaporator, a liquid transfer pipe for partially reduced liquid leading from the separating chamber of the primary evaporator past the second evaporator to the inlet end of the third evaporator of the series, a vapor pipe connecting each evaporator with the next one in succession from the first to the last, and an exhaust device connecting with the last evaporator of the series, for the purpose described. 12th. In a multiple effect vacuum evaporating apparatus, a series of evaporators each having a separating chamber, a series of vapour pipes connecting the evaporators in successive order from first to last, and an exhaust device connecting with the last evaporator of the series, in combination with a liquid feed pump connecting with the inlet ends of the first and second evaporators of the series, and a liquid transfer pipe leading from each separating chamber past the next succeeding evaporator into the inlet end of the third evaporator from the starting point throughout the series, for the purpose of securing the advantages of a greater number of degrees of vacuum, for facilitating the flow and circulation of partially reduced liquid from one evaporator to the other, whereby an increased number of evaporators may be used in a series and more economical results secured. 13th. A separating chamber provided with numerous small open-ended tubes and an arresting plate placed near their discharge ends for separating liquid or solid matter from the vapor arising from the liquid being evaporated. 14th. In combination with a separating chamber A_1 having the evaporating coils discharging into one end, the tube-sheet r placed near such end and carrying open tubes n, and arresting-plate h_1 placed in front of the discharging ends of tubes n for the purpose described. 15th. A catch-all chamber E_1 having tube-sheet o placed near its vapor-inlet end, and carrying open tubes extending to near it opposite end plate, and outlet pipe d_1 extending back from the rear end plate, and connecting with outlet vapor-pipe D_1, for the purpose described. 16th. In combination with two or more vacuum evaporators, each composed of a heating chamber containing evaporating tubes or coils, and a separating chamber, the catch-all chambers containing small tubes, and arresting-plates, and connected with the vapor-pipes leading from each separating chamber to the heating chamber of the adjacent evaporator, for the purpose described. 17th. In a multiple effect vacuum evaporating apparatus, the combination, with the last two evaporators of the series, and their separating chambers, as A^3 and A^4, of the liquid transfer pipe S, con-