

rim during the solidifying of the tread surface, substantially as described. 2nd. The process herein described for making double plate steel wheels, which consists in filling the mold from below the rim, being filled through the plate space and overflowing the rim during the solidifying of the tread surface, and simultaneously with the congelation of the upper plate, substantially as described. 3rd. The process herein described for making double plate steel wheels, which consists in filling the mold from below and simultaneously overflowing the rim and hub during the solidifying of the tread surface and the congelation of the upper plate, substantially as described. 4th. The process herein described for making double plate steel wheels having a single plate intermediate to the rim, and the double plates which consists in filling the mold from below, and continuing the pouring to simultaneously through-flow, the plates juncture and the plate and rim juncture during the congelation and contraction of the upper plate, substantially as described. 5th. In contraction of the upper plate, the combination, with a part forming the outer wall of the mold space, and with the cope having overflow passages over the rim space, and over the hub space, of the nowel having the enclosed main runner extending from one side of the mold along under the mold space to a point beyond the hub space thereof, mold-filling passages branching vertically from the main runner to the under side of the hub space, and the pouring-head connecting with the outer end of the main runner, the whole being organized, substantially as shown, whereby the mold may be filled to overflowing and the casting fed by a continuous and unbroken stream of metal, substantially as described. 6th. In a mold for casting steel car wheels, the combination, with a part forming the outer wall of the mold space, and with the cope having overflow passages over the rim space and over the hub space of the nowel, having the enclosed main runner extending from one side of the mold along under the mold space to a point beyond the hub space thereof, mold-filling passages branching vertically from the main runner to the under side of the hub space from points beyond the terminus of the main runner, said main runner also extending beyond the mold-filling passages to form the catch-chamber, and the pouring-head connecting with the outer end of the main runner, the whole being organized, substantially as shown, whereby the mold may be filled to overflowing and the casting fed by a continuous and unbroken stream of metal entering the mold under pressure of a re-entrant action after the first infowing metal has been pocketed in said chamber, substantially as described. 7th. That improvement in the art of making steel castings, which consists in running the molten metal in a full stream through a runner located below and adjacent to the mold space, and against a reactionary abutment, and flowing the metal upward into the mold from a point before the abutment under pressure of the reaction, and through a relatively small mold-filling passage, the mold-filling current being taken from the main filling passage, the mold-filling current being taken from the main filling passage at a point back of the first infowing metal, and the first infowing metal being detained from entering the mold, substantially as described. 8th. That improvement in the art of making steel castings, which consists in running the metal through a main runner adjacent to the mold space, and against an air-cushioned abutment, flowing the metal from the main runner into the mold from a point before said cushion under pressure of the reaction thereof, and exhausing the air-cushion during the filling of the mold, substantially as described. 9th. The improved mold herein described for making steel castings, consisting in, the combination, with parts forming the top and sides of the mold space, of the nowel having a horizontal main runner extending beyond the mold-filling passage connecting said main runner with the mold space, said main runner extension being slightly vented or pervious, and adapted to retain the air for cushioning the first influx of the metal and to exhaust the air during the pouring of the mold, substantially as described. 10th. That improvement in the art of casting steel car wheels, which consists in forming the mold with top-vents arranged in two sets, one set being over the hub, and the other over the rim, pouring the mold to overflowing, and checking the flow of metal toward the rim, substantially as described. 11th. That improvement in the art of casting steel car wheels, which consists in forming the mold with top-vents arranged in two sets, one set being over the hub, and the other over the rim, pouring the mold to overflowing, checking the hub-vents after the overflow, and continuing the rim overflow after the checking of the hub overflow, substantially as described.

No. 37,323. Manufacture of Annealed Steel Wheels. (*Fabrication des roues d'acier malleable.*)

William G. Richards, Boston, Massachusetts, U.S.A., 4th September, 1891; 5 years.

Claim.—The improved method herein described of making annealed centre all-steel car wheels, which consists in casting the wheel around a core and allowing the casting to remain in the mold until solidified on the interior surface thereof, removing the wheel and core together from the mold, cutting the core from the heated interior surface of the wheel by force applied simultaneously throughout the periphery of the opening and longitudinally thereof prior to the internal solidification of the casting, and annealing the wheel.

No. 37,324. Electric Apparatus for Treating Deafness. (*Appareil électrique pour traiter la surdité.*)

George F. Webb, Jefferson, Ohio, U.S.A., 4th September, 1891; 5 years.

Claim.—1st. An apparatus of the character described, comprising a battery, a belt, an electrode supported on the belt and contacting with a person, an electrode shaped to fit the ear, and connections between the electrodes and the battery, substantially as described. 2nd. In an apparatus of the character described, the electrode 13, shaped to rest upon an ear and having an opening in one side to receive the ear, substantially as described.

No. 37,325. Apparatus for Preserving Piles.

(*Appareil pour préserver les pilotis.*)

Frank Batter, Marshfield, and George William Loggie and Alexander James McMillan, both of Empire, all in Oregon, U.S.A., 4th September, 1891; 5 years.

Claim.—1st. A device for treating piles after they have been driven, consisting of the sectional casing adapted to be fitted around the pile, a means for locking the sections together and producing tight joints, a steam boiler and pipes leading therefrom, pipes whereby steam may be admitted into the upper part of the casing, other pipes through which the water is forced out from the interior of the casing, tanks containing a preservative solution, and pipes through which a solution or protective coating may afterward be applied to the surface of the pile below the water line, substantially as herein described. 2nd. A device for treating piles or other timbers after they have been placed in position, consisting of a casing adapted to tightly fit the said piles or other timbers, the said casing being adapted to hold in contact with the said piles or other timbers, steam, hot water or other hot liquid, substantially as herein described. 3rd. The casing, consisting of two sections having longitudinal flanges hinged together with staples and locking-wedges, a conical top flange at the upper end of the casing adapted to surround a pile, a packing fitted to said flange, and the links and wedge-shaped bars, whereby said packing is forced into place to make a tight joint, substantially as herein described. 4th. The combination of a hinged sectional casing for surrounding the pile, and having the locking and packing devices, whereby tight joints are made pipes, whereby steam or preservative liquid is introduced within the casing around the pile, vertical guides fixed within the casing, a sectional frame having slides moving in said guides, nozzles fixed to said frame, with their discharge ends directed toward the pile, and pipes whereby said nozzles are supplied with steam while being moved up and down so as to expose the surface of the pile to steam jets, substantially as herein described. 5th. The combination of a casing for surrounding the pile, the vertical guides with slides and frame, carrying the steam-jet nozzles, pulleys fixed at top and bottom within the casing, and chains passing around said pulleys and connected with the slides so that they and the nozzles may be moved up and down within the casing, substantially as herein described.

No. 37,326. Ball Bearings. (*Coussinet à boule.*)

George Frederick Simonds, Fitchburg, Massachusetts, U. S. A., 5th September, 1891; 15 years.

Claim.—1st. A ball bearing, comprising two rings or annular pieces adapted to be removably attached respectively to a rotating body, and a part in or upon which the said body rotates, said rings having surfaces concentric with each other, and plane surfaces parallel to each other and at right angles to the concentric surfaces, and spherical rollers or balls located in an annular space or channel between said concentric and plane surfaces, and bearing at diametrically opposite points against and rolling upon one pair of such surfaces, and retained in place by the other pair thereof, substantially as described. 2nd. In a ball bearing, the combination of a rotating body, a ring or annular piece detachably secured thereto, and having a surface concentric therewith, a plane surface at right angles to the said concentric surface, a non-rotating body, a ring or annular piece detachably secured thereto, and having a surface concentric with the rotating body, and a plane surface parallel to the plane surface of the other ring, and spherical rollers, or balls located between said rings to bear at diametrically opposite points against and roll upon one pair of the said surfaces, and which are retained in place by the other pair of surfaces, substantially as described. 3rd. In a ball bearing, a pair of removable rings or annular pieces having between them an annular space or channel which is square in transverse section, and which is formed by a pair of concentric surfaces, and a pair of plane surfaces at right angles to the said concentric surfaces, the outer ring being adjustable upon the inner ring, and balls which are situated in the said channel and which bear at diametrically opposite points against and roll upon one of the said pairs of surfaces, and are retained in place by the other pair thereof, substantially as described. 4th. In a ball bearing, the combination, with the rotating and non-rotating parts, of pairs of rings arranged side by side, the rings of each pair being detachably secured one to the rotating and the other to the non-rotating part, and each ring being L-shaped in cross section, and having a surface concentric with the rotating part, and a plane surface at a right angle to such concentric surface, and balls located between the rings of each pair in an annular space or channel formed by the said concentric and plane surfaces thereof, substantially as described. 5th. A ball bearing, composed of a circular series of balls inclosed by two L-shaped rings, so constructed and arranged that it may be used to receive either radial or longitudinal pressure, substantially as described. 6th. A bearing comprising an inner ring or annular piece provided with an external flange, and fixed on a shaft at one side of the collar thereon, a similar ring or annular piece fixed on the said shaft at the other side on the said collar, outer rings or annular pieces, each provided with an internal flange, and spherical rollers or balls arranged between the said inner and outer rings, substantially as described. 7th. A bearing, comprising an inner ring or annular piece provided with an external flange and fixed on a shaft at one side, of a collar thereon, a similar ring or annular piece fixed on the said shaft at the other side of the said collar, outer rings or annular pieces each provided with an internal flange and adjustable longitudinally upon the corresponding inner ring, and means for adjusting the outer rings on both sides of the said collar, substantially as above specified. 8th. In a ball bearing, the combination of the separate removable rings or annular pieces adapted to be respectively attached to a rotating part, and a non-rotating part, and each provided with concentric surfaces and plane surfaces at right angles to the said concentric surfaces, and the annular or circular series or group of balls located in the annular channel between said rings, and bearing at diametrically opposite