

**No. 29,450. Apparatus for Freeing, Stretching or Holding Boots and Shoes.** (*Appareil pour emboucher et étirer ou assouplir les chaussures.*)

William W. Watts, Athlone, Ireland 4th July, 1888; 5 years.

*Claim.*—1st. Apparatus for stretching or holding boots and shoes, consisting of a sole plate carrying claws to engage with the toe, and a movable grip to engage with the heel of the boot, and means for operating such grip, as shown and described. 2d. In a apparatus for stretching or holding boots and shoes, the combination, with the sole plate carrying claws to engage with the toe, and a movable grip to engage with the heel of the boot, of a clamping screw carried in an extension from sole plate and working in conjunction with a biting surface on the plate to attach same to a table or other support, as shown and described.

**No. 29,451. Two-Wheeled Vehicle.**

(*Voiture à deux roues.*)

R. Arthur Stone, (assignee of Benjamin F. Rix), Kalamazoo, Mich., U.S., 4th July, 1888; 5 years.

*Claim.*—In a vehicle, the spring-support comprising, as an integral whole, the upright body part, the right angled clip plate, the upper turned eyed end, and the lug below said end extending laterally and thence at right angles, substantially as set forth.

**No. 29,452. Corset Fastener.** (*Agrafe de corset.*)

S. Greor Doran and William Gibson, New York, N.Y., (assignees of Benjamin R. Davenport, Chicago, Ill.), U.S., 4th July, 1888; 5 years.

*Claim.*—1st. In the corset fastening herein described, a catch loop and a catch, in combination with a locking loop, the bar of which wedges between the corset steel and the catch, whereby said catch is locked in engagement with the catch loop, substantially as described. 2nd. In the corset fastening herein described, a catch loop and a catch adapted to engage therewith, in combination with an elastic strap and a loop thereon, adapted to engage and lock the catch and catch loop together, substantially as described.

**No. 29,453. Hot Water Boiler.**

(*Chaudière de calorifère à eau.*)

Eugène S. Manny, Montreal, Que., 5th July, 1888; 5 years.

*Claim.*—In a hot water boiler of the class described, the combination, with the top returning pipes M, M, passage X and water lines Y, of the water leg B, having opening P and Q, partitions D, E, and fire box A, the whole substantially as described and for the purposes set forth.

**No. 29,454. Art of Enlarging Metallic Tubes and Apparatus therefor.** (*Méthode d'élargir les tubes métalliques et appareil pour cet objet.*)

Max Mannesmann, Remscheid, Germany, 6th July, 1888; 5 years.

*Claim.*—1st. For the production and enlargement of tubes by one set of diagonally acting rolls or discs, in conjunction with a mandrel having a portion of their working surfaces convergent and the remainder divergent, so constructing and arranging the said rolls or discs that the lines  $x, x$ , drawn along the said divergent working surfaces, meet at or outside the apparent point of intersection of the lines  $y, y$ , which are hereinbefore referred to as the vertical planes of the axes of the rolls or discs, substantially as hereinbefore described and shown at Fig. 1, 2, 6 and 7 of the accompanying drawings, and for the purposes set forth. 2nd. The employment for the purpose of producing tubes and enlarging the same at one operation, of two sets of diagonally acting rolls, the rolls for effecting the enlargement of the tubes being so formed and arranged that the lines  $x, x$ , drawn along their divergent working surfaces, meet at or outside the point of intersection of the lines  $y, y$ , which are hereinbefore referred to as the vertical planes of the axes of the rolls, a mandrel being employed in conjunction with the said rolls, substantially as hereinbefore described and shown at Fig. 10 of the accompanying drawings, and for the purposes set forth. 3rd. The employment for the purpose of enlarging tubes previously produced, of one set of diagonally acting rolls in conjunction with a mandrel, the lines  $x, x$ , drawn along the divergent working surfaces of the rolls meeting, at or outside of the apparent point of intersection of the lines  $y, y$ , which are hereinbefore referred to as the vertical planes of the axes of the rolls, substantially as and for the purposes hereinbefore described. 4th. The employment for the purpose of enlarging tubes previously produced by rolls, in such a manner that a twist has been imparted to the fibre of the metal of one set of diagonally acting rolls, in conjunction with a mandrel, the lines  $x, x$ , drawn along the divergent working surfaces of the rolls, meeting at or inside of the apparent point of intersection of the lines  $y, y$ , which are hereinbefore referred to as the vertical planes of the axes of the rolls, the said rolls being inclined and revolving in opposit directions as compared with the rolls employed in the production of the tube, substantially as hereinbefore described and illustrated by Figs. 13, 14, 15 and 16 of the accompanying drawings, and for the purposes set forth. 5th. The improvement in the art of enlarging the size of a tube or hollow metallic ingot or blank, which consists of progressively compressing and simultaneously drawing the shell of a metallic tube or hollow blank upon and over the surface of a conical or conoidal mandrel, by means of diagonally acting paraboloidal or bevelled disc rolls, the working faces of which impinge upon different sides of the hollow blank or tube, and along portions of their lines of impingement adjacent to the cone of the mandrel diverge from each other, substantially as hereinbefore described. 6th. In apparatus for enlarging the sizes of metallic tubes or hollow ingots, or for transforming a solid blank or ingot into a

tube and then enlarging said tube, the combination of a mandrel with diagonally acting paraboloidal or bevelled disc rolls, the opposed portions of the working faces of which adjacent to the mandrel are divergent, substantially as and for the purposes hereinbefore set forth. 7th. Diagonally acting reducing rolls, proportioned and adjusted for developing a tubular formation in a solid metallic blank or ingot passed endwise between their working faces, in combination with two diagonally acting enlarging paraboloidal or bevelled disc rolls arranged on different sides of a conoidal mandrel, and having opposed portions of their working faces divergent as hereinbefore described, and shown in the accompanying drawings. 8th. In diagonal rolling apparatus, two paraboloidal or bevelled disc rolls, substantially such as described, the opposed portions of the working faces of which converge and then become divergent, in combination with an interposed mandrel, as and for the purposes hereinbefore set forth. 9th. The improvement in the art of producing and enlarging tubes from solid billets or blanks, which consists in first progressively reducing the diameter of the blank by the impingement upon it of diagonally acting reducing rolls having their working faces of portions thereof convergent, and then aided by the impingement upon it of diagonally acting paraboloidal or bevelled disc rolls having their working faces or portions thereof divergent, pressing it against a lower the surface of a mandrel placed between the divergent working faces of said rolls, whereby during a single passage between the rolls the blank is made to resume the form of a tube, and such tube is gradually enlarged, substantially as hereinbefore described. 10th. In diagonal rolling apparatus, the combination of a mandrel with two paraboloidal or bevelled disc rolls between which the mandrel is interposed, the said rolls being mounted upon converging shafts, and having the outer portions of their working faces in the form or approximately in the form of frustra of cones, the apices of which intersect, or nearly intersect, a line which is perpendicular to the axial line of the mandrel, and which is at or near the line of intersection of those planes passing through the axes of the rolls, which have their intersection perpendicular to the axial line of the mandrel, as and for the purpose hereinbefore set forth. 11th. The process of producing tubes from solid or hollow blanks, by passing the same between diagonally acting rolls in such a manner that they are first acted on by the converging surfaces of the rolls, and then pass between the divergent surfaces, in connection with which is arranged a mandrel, whereby the twist imparted to the fibres of the metal by the converging surfaces is preserved or increased, substantially as hereinbefore described. 12th. In diagonally acting rolling mills, two or more rolls, each of which is carried between two bearings, and has its working surface or a portion thereof divergent along the line of impingement upon the blank, and has such divergent portion either cylindrical or of the largest diameter at the edge of final contact, substantially as hereinbefore described. 13th. The combined process of producing and enlarging tubes by means of two sets of diagonally acting rolls, the first set giving to the metal a twist of fibre, such twist being either preserved or increased during the passage of the tube through the second set of rolls, substantially as hereinbefore described.

**No. 29,455. Sectional Pulley.**

(*Poulie sectionnelle.*)

Atwater E. Brackett, Kingston, Ont., and Gardner T. Eames, Racine, Wis., U.S., 6th July, 1888; 5 years.

*Claim.*—1st. A sectional pulley having a divided hub C provided with raised bearings D, as set forth. 2nd. A sectional pulley having a divided hub C, and arms B integrally cast with each section, said arms provided with points K and secured to rim A of the pulley by bolts M, as set forth. 3rd. A pulley having a sectional rim secured to radial arms enlarged at their ends, and having points K, said sections having disks L at the joint, as set forth. 4th. A sectional pulley consisting of a divided rim A secured to arms B by bolts M, said arms cast integrally with a half hub C, and said half hubs secured together by bolts G, as set forth. 5th. The combination, in a sectional pulley having a divided hub provided with bearings D, of the removable and interchangeable bushings E, as set forth.

**No. 29,456. Manufacture of Steel and Iron.**

(*Fabrication de l'acier et du fer.*)

George G. Mullins, Los Angeles, Cal., U.S., 6th July, 1888; 5 years.

*Claim.*—The process of purifying and improving iron or steel, by the introduction to the melted mass of metal either from crude ore or cast metal, at the proper degree of heat, of pulverized silica, which consists in adding silica when the metal is at a suitable white heat, then subsequently working the mass by puddling, or otherwise, in any form of furnace whatever, then finally working the metal in the usual manner, substantially as and for the purpose described.

**No. 29,457. Cooking Stove.** (*Poêle de cuisine.*)

Joseph C. Thibeault, Victoriaville, Que., 6th July, 1888; 5 years.

*Retenu.*—La combinaison, dans un poêle de cuisine, du foyer A ayant les côtes et le fond en grillage B, le dessous en grillage mobile, et les registres C, sur par la clef à bascule D, avec les fourneaux E, placés de manière à ce que la chaleur passe tout autour, les réchauds F, le cendrier G, le conduit inférieur H, et le tuyau postérieur I et le crot J entre le tuyau postérieur et le foyer, le tout arrangé tel que décrit et pour les fins indiquées.

**No. 29,458. Treatment of Bones and animal Waste or Refuse generally, for rendering the same more suited for Fertilizing purposes, and for Obtaining Gelatine, Glue and Size.** (*Traitement des os et les matières animales en général pour les convertir en engrais et en tirer la gélatine et la colle.*)

Amos H. Hobson, Westminster, Eng., 6th July, 1888; 5 years.