

and revolving concentrically with one and the same shaft, and said shaft, as set forth. 3rd. The combination, with a combined stereotype separating and trimming saw, and grooving saw which is of less diameter than, and whose cutting plane is parallel with said separating and trimming saw, as and for the purpose set forth. 4th. The combination in a combined stereotype separating, trimming and grooving machine, with the saws I and J, of the reciprocating bed frame A, rock shaft M and presser plate n, substantially as set forth. 5th. The combination in a stereotype separating, trimming and grooving machine, with the saws I and J, of the rock shaft M, oscillating frames N and presser plate n, substantially as set forth. 6th. The combination in a stereotype separating, trimming and grooving machine, with saws I and J, of the reciprocating bed frame A, rock-shaft M, oscillating frames N, presser plate n and gauge-strip o, substantially as set forth. 7th. The combination in a stereotype separating, trimming and grooving machine, with the saws I and J, of the reciprocating bed frame A, rock shaft M, oscillating frames N, having eccentrics q thereon and links O, substantially as set forth. 8th. In a combined stereotype separating, trimming and grooving machine, the combination, with the saws I and J, of the bed frame A, the rock-shaft M having the uppermost segment of its periphery reduced longitudinally to the horizontal plane of the said bed plate and presser plate n. 9th. In a combined stereotype separating, trimming and grooving machine, the combination, with the saws I and J, of the feeding devices, consisting of the carrier heads B and means for moving the same transversely, substantially as set forth. 10th. In a combined stereotype separating, trimming and grooving machine, the combination, with the saws I and J, of the carrier heads B, shaft C, crank Ci, pinion c, bed frame A and rack b₂, as set forth. 11th. In a combined stereotype separating, trimming and grooving machine, the combination, with the saws I and J, of the carrier heads B, the segmental rock shaft C, crank Ci, segmental pinion c, bed frame A and racks b₂, as set forth. 12th. The combination in a stereotype separating, trimming and grooving machine, with the saws I and J, of the bed frame A, the carrier heads B, plates F, having lugs f arising from their forward ends, jaws G pivoted between said lugs and shaft g, having eccentric g₁, as set forth. 13th. The combination, with a stereotype separating, trimming and grooving machine, of the bed frame A, racks b on the transverse side pieces thereof, carrier head B, platform b thereof having lug d arising therefrom, block E, screw D and adjusting plate F₁, as set forth.

No. 31,502. Recording Thermometer.

(*Thermomètre à registre.*)

William F. Brewster, New York, N. Y., U. S., 6th June, 1889; 5 years.

Claim.—1st. In a recording thermometer, the combination, substantially as set forth, of a recording sheet, a mechanism for moving the same, a metallic thermometer with its free end connected to an arm, a stylus on said arm, a holder independent of the recording sheet, a marking medium mounted on said holder and disposed between the recording sheet and stylus, and a hammer connected with the mechanism for moving the recording sheet, and arranged to strike the stylus against the marking medium and recording sheet at stated intervals of time, whereby the recording sheet will be caused to move and receive upon it marks made by the marking mechanism and stylus, when the latter is forced against said sheet by the action of the hammer, and thus make a record of the temperature during a given period of time. 2nd. In a recording thermometer, the combination, substantially as set forth, of a recording sheet, a mechanism for moving the same, a metallic thermometer with its free end connected to an arm, a stylus on said arm, a holder independent of the recording sheet, a marking medium mounted on said holder and disposed between the recording sheet and stylus, and independent time indicating devices connected with the mechanism for moving the recording sheet, whereby the time at which a record of the temperature is being made on the recording sheet can be readily read without disturbing the holder and marking medium mounted on said holder. 3rd. In a recording thermometer, the combination, substantially as set forth, of a recording sheet, a mechanism for moving the same, a metallic thermometer, a shaft connected with the free end of said thermometer and thereby rotated, an arm secured at an angle to said shaft and provided with a stylus, a holder independent of the recording sheet, a marking medium mounted on said holder and disposed between the recording sheet and the stylus, and a hammer connected with the mechanism for moving the recording sheet and arranged to strike the stylus against the marking medium and recording sheet at stated intervals of time, whereby the recording sheet will be caused to move and receive upon it marks made by the marking medium and stylus, when the latter is forced against said sheet by the action of the hammer, and thus make a record of the temperature during a given period of time. 4th. In a recording thermometer, the combination, substantially as set forth, of a recording sheet, a mechanism for moving the same, a metallic thermometer with its free end connected to an arm, a stylus on said arm, a movable holder independent of the recording sheet, a marking medium mounted on said holder and disposed between the recording sheet and the stylus, and a hammer connected with the mechanism for moving the recording sheet, and arranged to strike the stylus against the marking medium and recording sheet at stated intervals of time, whereby the said holder can be moved from between the recording sheet and stylus, or away from said recording sheet when it is to be changed, and also return to its position for making a record. 5th. In a recording thermometer, the combination, substantially as set forth of a recording sheet, a mechanism for moving the same, a metallic thermometer with its free end connected to an arm, a stylus on said arm, a holder independent of the recording sheet and carrying a marking medium, the medium being disposed between the recording sheet and stylus, and a compound lever constructed substantially as described and connected to the mechanism for moving the recording sheet, whereby the stylus will be forced against the marking medium and recording sheet with a quick blow, and the stylus will be quickly

relieved from the pressure of the hammer portion of said lever, and the stylus be left free to be moved by the bi-metallic thermometer, and a clearer and more nearly correct record be made. 6th. In a recording thermometer, the combination, substantially as set forth, of a recording sheet, a mechanism for moving the same, a metallic thermometer with its free end connected to an arm, a stylus on said arm, a movable holder independent of the recording sheet, said holder moving on a knife blade spring joint, a marking medium mounted on said holder and disposed between the recording sheet and the stylus, and a hammer connected with the mechanism for moving the recording sheet, and arranged to strike the stylus against the marking medium and recording sheet at stated intervals of time, whereby the said holder can be moved from between the recording sheet and stylus, or away from said recording sheet when it is to be changed, and also return to its position for making a record, and when so moved said holder will be held in either of two positions by the action of the knife blade joint. 7th. In a recording thermometer, the combination, substantially as set forth, of a recording sheet, a support for such sheet, mechanism for moving the recording sheet to make a record, and a movable connection between the recording sheet support, and the mechanism for moving the recording sheet to make a record, whereby the recording sheet with its support can be moved to connect or disconnect the recording sheet support to or from the mechanism for moving the recording sheet. 8th. In a recording thermometer, the combination, substantially as set forth, of a recording sheet, a mechanism for moving the same, a metallic thermometer with its free end connected to an arm, a stylus on said arm, a holder independent of the recording sheet and carrying a marking medium, the medium being disposed between the recording sheet and stylus, a compound lever, constructed substantially as described, and connected to the mechanism for moving the recording sheet, and a buffer spring, whereby the compound lever is more quickly moved away from the arm connected to the bi-metallic thermometer, and a more perfect record is made. 9th. In a recording thermometer, the combination, substantially as set forth, of a recording sheet, a mechanism for moving the same, a metallic thermometer with its free end connected to an arm, a stylus on said arm, a marking medium disposed between the stylus and recording sheet, and a hammer connected to the mechanism for moving the recording sheet, one portion of which is forked or split, substantially as described, whereby the recording sheet and its support is permitted to move between such forked portions, while the hammer is operated by the mechanism for moving the recording sheet.

No. 31,503. Manufacture of Copper.

(*Traitement du cuivre.*)

Percy C. Gilchrist, London, Eng., 6th June, 1889; 5 years.

Claim.—The purification and treatment of copper and copper matter, in basic or neutrally lined vessels in the presence of a basic slag, substantially as set forth.

No. 31,504. Suspender. (*Bretelle.*)

Burkhard Goodman, New York, N. Y., U. S., 6th June, 1889; 10 years.

Claim.—1st. As an improved article of manufacture, a suspender consisting of shoulder straps formed of warp cords or threads, interlaced or interwoven with braids or threads to form ventilating interstices or reticulations, having adjustable buckles carrying tabs, and a rear tab centrally secured thereto, substantially as described. 2nd. As an improved article of manufacture, a suspender consisting of shoulder straps formed of elastic warp cords, interlaced with braids to form ventilating interstices or reticulations having adjustable buckles carrying tabs, and a rear tab centrally secured thereto, substantially as described.

No. 31,505. Manufacture of Watch Cases.

(*Fabrication des boîtes de montres.*)

Frederic Ecaubert, Brooklyn, N. Y., U. S., 6th June, 1889; 5 years.

Claim.—1st. The annular die A having upon its interior surface a screw thread, in combination with the die or chuck G having a face 2 adjacent to the screw thread of the die A, and a suitable roller for pressing the sheet metal of the watch case center, lid or bezel against the screw threaded portion of the die A, and forming a screw thread thereon between the face 3 of the die A and the face 2 of the die G, substantially as set forth. 2nd. The annular die A having a screw thread upon its interior portion, and a face at 3, in combination with the die or chuck G having a face 2 adjacent to the screw thread, the ring die D for forming the ornament or pattern upon the outer surface of the watch case center, and a roll for pressing the sheet metal of the watch case center into contact with the surface of the annular dies A and D, substantially as set forth. 3rd. The combination, with the annular die A having a screw thread upon its interior face and the die G, of the annular die D, the die E, having annular grooves and the chuck E and the series of rolls applied successively as described for pressing the metal of the watch case center into the annular dies and thickening and folding over such metal, substantially as set forth. 4th. The combination, with a die having a screw threaded interior surface, of a roll having a cylindrical surface and acting against the inner surface of the sheet metal of the watch case, lid, or other article to force such metal outwardly into the screw thread, substantially as set forth. 5th. A die having a screw threaded interior surface, and otherwise of the shape of the interior of the watch case center, bezel or lid, in combination with a roll having a cylindrical portion to act against the metal to force it into the screw thread, and peripheral ribs to press the metal into the other portions of the die, substantially as set forth. 6th. The combination, with an annular die having a screw threaded interior surface, a roller to act within the sheet metal article and press the same outwardly into the screw thread of the die, substantially as set forth. 7th. The combination, with a roll for rolling the interior of a watch case center, of a die having an interior surface corresponding to the exterior surface of the watch case center, and including one or more flat diagonal planes 13 against which the flat for the hinge is formed, substantially as set forth.