

bination, with circular bearings, each composed of circular plates inclosing an annular channel and a central circular space, the whole divided by a central channel into two equal parts, of twisting-heads each consisting of a curved plate running in the annular channel and a central guide point lying in the central opening of the bearing, and conducting the wire from a spool mounted on the head of each part, and guide rolls journaled on adjustable brackets beneath the twisting-heads, substantially as described. 13th. In a machine for forming wire strands, the combination with circular bearings, each composed of an inner and outer plate inclosing an annular channel and a central concentric opening, the whole divided into two equal parts by a diametrical channel, of twisting-heads, each consisting of a plate moving in the divided annular channel and a central guide-point having a passage for the wire, each point having a flat face which substantially coincides with the adjacent walls of the channel in the bearing when turned in the latter, spur-gears meshing with teeth on said twisting-heads, adjustable guide-rolls arranged beneath the latter to regulate the width of the strand, curved arms carrying filling-wires and having their ends from which the wires pass overhanging the diametrical channels in the bearings, and means for sweeping said arms in opposite directions at stated intervals to carry the wires through the channelled bearings and into the intersections of the cables, the edges of the curved plates on the twisting-heads being beveled or converged, substantially as described. 14th. In a machine for forming wire strands, the combination, with two circular bearings having a common central channel, of two nearly semicircular twisting-heads travelling in each circular bearing, each semi-circular part having a spool-support and being provided with a guide-point for the wire from said spool, curved arms having ways for wires forming the filling of the strands, gearing actuating the twisting-heads, and means for sweeping the curved arms in opposite directions at stated intervals to carry the filling-wires between the twisting-heads and through the channel in the bearings, substantially as described. 15th. In a machine for making wire strands, the combination, with circular bearings centrally divided by a vertical channel common to both, of twisting-heads, two of which move in each bearing, gearing driving said heads continuously, curved arms having their ends overhanging the channel in the bearings, and having the filling-wires laid in grooves in said arms, gears upon which said arms are mounted, means for giving a partial rotation to said gears in opposite directions to throw the arms periodically in opposite directions in the line of the channel dividing the bearings, a cambrake consisting of a disc on the driving shaft provided with arms at intervals, and a spring having its end resting on the edge of said disc, substantially as described. 16th. In a mechanism for forming wire strands consisting of parallel twisted cables and filling-wires, the combination, with the twisting devices, and with the vibrating arms carrying the filling-wires, of brake-shoes mounted on a support carried by a spring-raised plunger, a cam acting on said plunger, and a cam shaft geared to the main shaft of the machine to revolve therewith, whereby said brake-shoes are lowered and raised to arrest and release the said vibrating arms, substantially as described. 17th. In a mechanism for forming wire strands, the combination, with circular bearings having their axes inclined relatively to each other, of two divided or separate twisting-heads arranged in each bearing, and gears arranged upon opposite sides of the bearings and meshing with external teeth formed upon said twisting-heads, substantially as described. 18th. In a mechanism for forming wire strands, the combination, with centrally cleft circular bearings having their axes converging downwardly, of divided twisting-heads adapted to move in said bearings, and gearing meshing with teeth upon the parts of the divided heads, and having shafts arranged in parallelism with the inclined axes of the circular bearings, the lower ends of said shafts being provided with inter-meshing mitre-gears, substantially as described. 19th. In a mechanism for forming wire strands, the combination, with centrally cleft circular bearings, of divided twisting-heads adapted to move in said bearings, and having their axes inclined to converge downwardly, each part of the divided twisting-heads being provided with a spool-bracket, and gearing meshing with teeth upon the parts of the twisting-heads, substantially as described. 20th. In a mechanism for forming wire strands, the combination with centrally cleft circular bearings, of divided twisting-heads, each composed of a curved plate having a head or top and a substantially central guide-point depending from said head, both the plate and the guide-point having their edges beveled or cut away, curved plates detachably mounted upon the cleft-bearings and having inwardly-turned flanges engaging slots in the parts of the divided twisting-heads, and gearing meshing with teeth upon said parts, substantially as described. 21st. In a mechanism for forming wire strands, the combination with circular bearings, of twisting-heads moving therein to form the parallel twisted cables of the strand, and means for carrying filling-wires in opposite directions between the wires forming each cable at the points where said wires intersect to form the twist, substantially as described. 22nd. In a mechanism for forming wire strands, the combination with circular bearings, of twisting-heads carrying two wires in each bearing, and having their axes inclined to bring the points where the two parallel twisted strands are formed into suitable proximity, and means for continuously feeding said strands in substantial parallelism as they are twisted, substantially as described. 23rd. In a mechanism for forming wire strands, the combination with circular bearings, of twisting-heads carrying and inter-twisting two wires in each bearing, means for feeding said strands continu-

ously in substantial parallelism as they are twisted, and adjustable guide-rolls by which the interval between said strands may be still further diminished, substantially as described.

#### No. 38,204. Rotary Harrow. (*Herse rotative.*)

Robert King, Bluevale, Ontario, Canada, 3rd February, 1892; 5 years.

*Claim.* 1st. The combination of the double tree A, having a row of eye bolts B, the draw-rolls C C engaging said eye bolts at the converging end of said rods, a yoke K, connected at the ends to the diverging ends of the draw-rolls and the harrow sections connected to the draw-rolls by an axle J, entering the hub of said harrow sections, as set forth. 2nd. The combination, with two harrow sections rotating horizontally, of the yoke K, having an eye at both ends, the draw-rolls C C having an end extending rearwardly of the hub of the harrow sections and passing through said eyes, and provided with a key or pin to maintain connection, and an axle J, passing through a hole in the draw-rolls and entering the bore of the hub, whereby the harrow sections are yoked together, as set forth. 3rd. A rotary harrow consisting of a hub T, spokes L, and wheel rim E, having braces G connecting the spokes and wheel rim and teeth D, at the intersection of said braces with the spokes and rim, as set forth.

#### No. 38,205. Tobacco Drier. (*Séchoir à tabac.*)

William Birchett Marks, Petersburg, Virginia, U.S.A., 3rd February, 1892; 5 years.

*Claim.* 1st. A drying apparatus, consisting of a wheeled truck having at each corner an upwardly projecting locking block, and a series of trays each composed of the side and end walls having their upper edges cut away to form spaces for the circulation of air, parallel separated slats secured to the lower edges of the side pieces, parallel longitudinal bars secured to the end pieces and extending beneath the extremities of the slats, and the vertically projecting locking blocks rising from the tray at the corners thereof to engage the inner surface of the side end pieces of a superimposed tray, whereby a column of the trays can be locked together and to the wheeled truck, substantially as described. 2nd. A tobacco drying tray, consisting of side and end pieces having their upper edges cut away to form spaces for the circulation of air, parallel separated slats secured to the lower edges of the side pieces, a central longitudinal stringer attached to the end pieces and extending beneath the slats, the parallel longitudinal bars secured to the end pieces and extending beneath the extremities of the slats, and the vertically projecting lugs or locking blocks rising above the end corners of the tray to engage the inner surfaces of the side and end pieces of a superposed tray, substantially as described. 3rd. A tobacco drying tray, consisting of side and end pieces having their upper edges cut away to form spaces for the circulation of air, parallel separated slats secured to the lower edges of the side pieces, the parallel longitudinal bars attached to the end pieces and extending beneath the extremity of the separated slats and the posts or blocks attached to the inner surface of the side and end pieces at the corners of the tray, and each formed with a locking lug rising above the uppermost edges of the side and end pieces to engage the inside surfaces of the side and end pieces of a superposed tray, substantially as described.

#### No. 38,206. Water Jet Condenser.

(*Condenseur à jet d'eau.*)

Ernst Korting, of Hanover, Prussia, 3rd February, 1892; 5 years.

*Claim.* 1st. In a water jet condenser, the combination with the steam pipe *f*, the water induction pipe *e* and water education pipe *g*, of the water jet nozzle *a* fixed to pipe *e*, the condensing tube *c* having the steam passages *d*, the receiving nozzle *b* communicating with pipe *g* and movable lengthwise in the tube *c* and means for shifting the nozzle *b*, substantially as described. 2nd. In a water jet condenser, the combination with the steam pipe *f*, the water induction pipe *e* and the water education pipe *g*, of the water jet nozzle *a* fixed to pipe *e*, the receiving nozzle *b* communicating with pipe *g* and movable lengthwise, means for shifting the nozzle *b*, the auxiliary nozzle *n* directed into nozzle *a*, the pipe *g* for supplying a fluid to nozzle *n*, valve *m* placed in pipe *g*, and a connection between the said valve and the receiving nozzle *b* whereby the valve is opened when nozzle *b* is pushed towards the nozzle *a*, substantially as specified.

#### No. 38,207. Apparatus for Watering Cattle.

(*Appareil pour abreuver le bétail.*)

John Allis, Lowville, New York, U.S.A., 3rd February, 1892; 5 years.

*Claim.* 1st. In an apparatus for supplying water to animals the supply tank A, main pipe C, with its branches E, E, carrying the individual fountains D, D, and the regulating overflow and drainage pipe J, as set forth and described. 2nd. In an apparatus for supplying water for animals, the automatically opening and closing valve T, actuated by the parts R, M, L, and float K, in combination with the ventilating stand pipe S, as shown and set forth. 3rd. The adjustable regulating and drainage pipe J, arranged to allow of partial rotation of the elbow H, upon the end of the main pipe C.