on said strip adapted to be folded over the overlapping contiguous end of the split band, substantially as and for the purpose described. 2nd. In a tree protector, the combination with a split band provided with a circumferential groove in its upper edge, a packing secured in said groove, a metallic strip folded over and secured to one end of the band, and ears formed on said strip adapted to fold over and bind the other overlapping contiguous end of the split band, substantially as and for the purpose described.

No. 41,839. Manufacture of Barbed Wire.

(*Fabrication du fil de fer barbelé.*)

John Drennan Curtis, Worcester, Massaschusetts, U.S.A., 6th February, 1893; 6 years.

Claim.—1st. In the manufacture of barbed wire of the class described, the method of forming and applying the barbs, which consists in wrapping or coiling the free end of a continuous barb wire around a fence strand after two of the barb points or prongs have been cut and formed on said wire and before the complete severance of the barb from the main wire, and then severing the barb from the wire to form the last barb point or prong, substantially as set forth. 3nd. In the manufacture of barbed wire of the class described, the method of forming and applying the barbs, which consists in first, partly severing the barb from the main wire to form some of the barb points or prongs; second, wrapping or coiling the free end of the partly severed barb around one of the fence strands; and third, completely severing the barb from the main wire to form the last barb point or prong, substantially as set forth. 3rd. In machinery for making barbed wire of the class described, the combination with fence strand feeding mechanism, and barb wire feeding mechanism, of mechanism for cutting the barb from the body of the wire and forming barb points or prongs thereon, and a coiling spindle arranged and timed in its movement relatively to the cutting mechanism so as to coil the central portion or body of the barb around one of the fence strands, after the barb has been partly severed from the main wire in the operation of forming some of the prongs or points, and before the cutting mechanism operates to completely sever the barb from the wire to form the last barb point or prong, substantially as set forth. 4th. In machinery for making barbed wire of the class described, the combination of fence strand feeding mechanism, barb wire feeding mechanism, a series of cutters by which the successive cuts needed to form the points or prongs and sever the barb from the wire are made, and a coiling spindle which operates to coil the body or central portion of the barb around one of the fence stands after the cutters preceding the last one have done their work and before the last cutter has severed the barb from the main barb wire, substantially as set forth.

No. 41,840. Meter for Water. (*Compteur à eau.*)

John Thomson, Brooklyn, New York, U.S.A., 6th February, 1893; 6 years.

Claim.—1st. The main castings forming the disc chamber, frustums mounted in said disc chamber, a disc supported in said frustums, a chamber below the lower frustum, and a vertical inlet between the channel and disc chamber, substantially as described. 2nd. The main casings forming the spherical contour of the disc chamber, the casings being divided on a medium line of the chamber, the lower casing being provided with the inlet and outlet channels and the chamber below the frustum, the upper casing being provided with a vertical inlet, the frustums supported in the casings, and the disc supported in the frustums, substantially as described. 3rd. The combination, of the main casing forming the spherical contour of the disc chamber, the concentric flanges to the casings, a recess in one or both of said flanges, the inner and outer face bearing surfaces, and the gum rubber gasket,, the gasket having a cross section substantially equal to the cross section of the recess, but normally of less breadth than the recess, substantially as described. 4th. The combination, of the main casings forming the disc chamber, the frustums mounted in the disc chamber, and disc supported therein, the chamber below the lower frustum, the vertical inlet and the curved section connecting the inlet and the chamber, the construction and arrangement being such that the discharge from the curved section into the vertical inlet is outside of the sweep of the disc, substantially as described. 5th. The combination, of the main casings forming the disc chamber, the frustums and disc mounted therein, the vertical inlet, and the horizontal chamber in the lower casing whereby the movement of the water through the horizontal chamber is in a direction substantially opposite to its delivery into the disc chamber, substantially as described. 6th. The combination, of the main casings forming the spherical contour of the disc chamber, of the detachable frustums, cylindrical bearings and stop shoulders formed in the disc chamber supporting the frustums, whereby the frustums are adapted to be applied from the interior of the disc chamber, substantially as described. 7th. The combination with the disc and diaphragm, of the separate controlling abutment, substantially as described. 8th. The combination with the disk, of the diaphragm, and a notch in the disc opposite to the diaphragm, and a separate controlling abutment co-operating with said notch, substantially as described. 9th. The disc ball having openings and a central partition, substantially as described. 10th. The disc having grooves in its surface, substantially as described. 11th. The ball having grooves in its surface, substantially as described. 12th. The combination of the free controlling block, and its cylindrical journal bearing, with the disc spindle, disc and frustums, the block being free to adapt itself vertically to the position of the spindle, substantially as described. 13th. The combination of the free controlling block, and its cylindrical journal bearing, with the disc spindle, disc and frustums, the block being free either to revolve with the spindle by frictional contact or to remain stationary, substantially as described. 14th. The combination of the intermediate gear and the hubs formed thereon, the differential gears having annular grooves and the piston, substantially as set forth. 15th. The combination of the free differential gear connected to the stuffing box spindle, the fixed differential gear directly secured to the casing, the annular grooves in the differential gears, the intermediate gear freely mounted in the grooves and the pinion, substantially as described. 16th. The dial pointers, having one edge straight and the other edge curved, the said pointer not reaching out to the numerals, substantially as specified. 17th. The combination, with the dial, of pointers having one edge straight terminating in points and the other edge curved, the extremity not reaching out to the numerals, substantially as specified. 18th. A valve device having piston sections and a valve adapted to reciprocate in a valve casing having chambers, one an end chamber connected to the main inlet chamber, another and intermediate chamber connected to a separate controlling chamber which receives the discharge from the measuring mechanism, and a final chamber communicating with the main outlet chamber, the piston in the first chamber being of less area than that in the intermediate chamber, the valve being actuated by the pistons to open and close the communication with the outlet chamber, substantially as described. 19th. The combination of a positive pressure piston acting in a chamber connected to the main inlet chamber, a controlling chamber, a negative piston, of greater area than the positive piston, acting in a chamber connected to the controlling chamber, and a valve acting in a chamber connected to the main outlet chamber, the said valve controlling the communication with the outlet chamber, substantially as described. 20th. A differential piston having one end exposed to the pressure of the main inlet chamber, and its other end arranged to receive pressure from a controlling chamber receiving the discharge from the measuring mechanism, the area of the piston which receives pressure from the controlling chamber being greater than that of the end exposed to the main inlet chamber, and a valve acting in the outlet chamber to vary the proportional area of the discharging ports according to the variations of pressure in the several said chambers, substantially as described. 21st. The combination, in a meter, of a series of chambers and pistons moving therein, and a controlling chamber receiving a limited portion of the fluid, one piston receiving the pressure of the inlet chamber, another piston receiving the pressure from the controlling chamber, and a valve controlling the entire discharge to the outlet, substantially as described. 22nd. The combination, with the measuring mechanism, main casing, differential piston valve and valve casing, of the main inlet chamber, the controlling chamber and the main outlet chamber, the arrangement and construction being such that the main inlet chamber is connected to the measuring mechanism and to the lesser piston area, the controlling chamber being connected to the greater piston area to the outlet from the measuring mechanism and a valve port in the valve casing, while the main outlet chamber is connected by a series of ports, controlled by a valve to the main inlet chamber and to the controlling chamber, substantially as described. 23rd. The combination, with the main inlet chamber, the inlet and outlet channels of the measuring mechanism, the controlling chamber and the valve casing chambers, of the valve device provided with a differential piston, one end connected to the main inlet chamber, the other end the section of greater area connected to the controlling chamber, and the valve acting in a ported cylinder, substantially as described. 24th. A valve device, having a differential piston and a valve, each operating in separate chambers, when both the measured and the inferred volumes pass through but one of the chambers, substantially as described. 25th. A valve device, having a differential piston and a valve, each operating in separate chambers, one of said chambers receiving and displacing from and to the main inlet chamber, another of said chambers receiving and displacing from and to the controlling chamber, while the third chamber receives from both the main inlet chamber and the controlling chamber, but delivers into the main outlet chamber, substantially as described. 26th. The combination of the negative piston 23, valve casing chambers J, H, and the main outlet chamber F, with a connecting channel, as 28, between chambers J and F, for the purpose of making the pressure within the said chamber J, negative to chamber H, substantially as described. 27th. The combination, with the differential pistons, valve casing, main inlet chamber and controlling chamber, of the valve directly connected to the differential pistons and actuated thereby to vary the area of the discharging ports, substantially as described. 28th. The combination, with the valve, valve casing, main inlet chamber and controlling chamber, of the series of valve ports disposed radially in a single transverse plane of the valve casing, substantially as described. 29th. The valve and valve casing, having a series of valve ports disposed radially in a single transverse plane of the casing, the disposal and construction being such that the entire flow of both the measured and the inferred volumes is delivered through the said valve ports from outside to inside of the valve casing, substantially as described. 30th. The combination of the spring with the differential piston, the valve and the valve casing,