

C. E. BEGG.
WIRE NETTING WEAVING MACHINE.
APPLICATION FILED AUG. 13, 1908.

957,643.

Patented May 10, 1910.

5 SHEETS—SHEET 1.

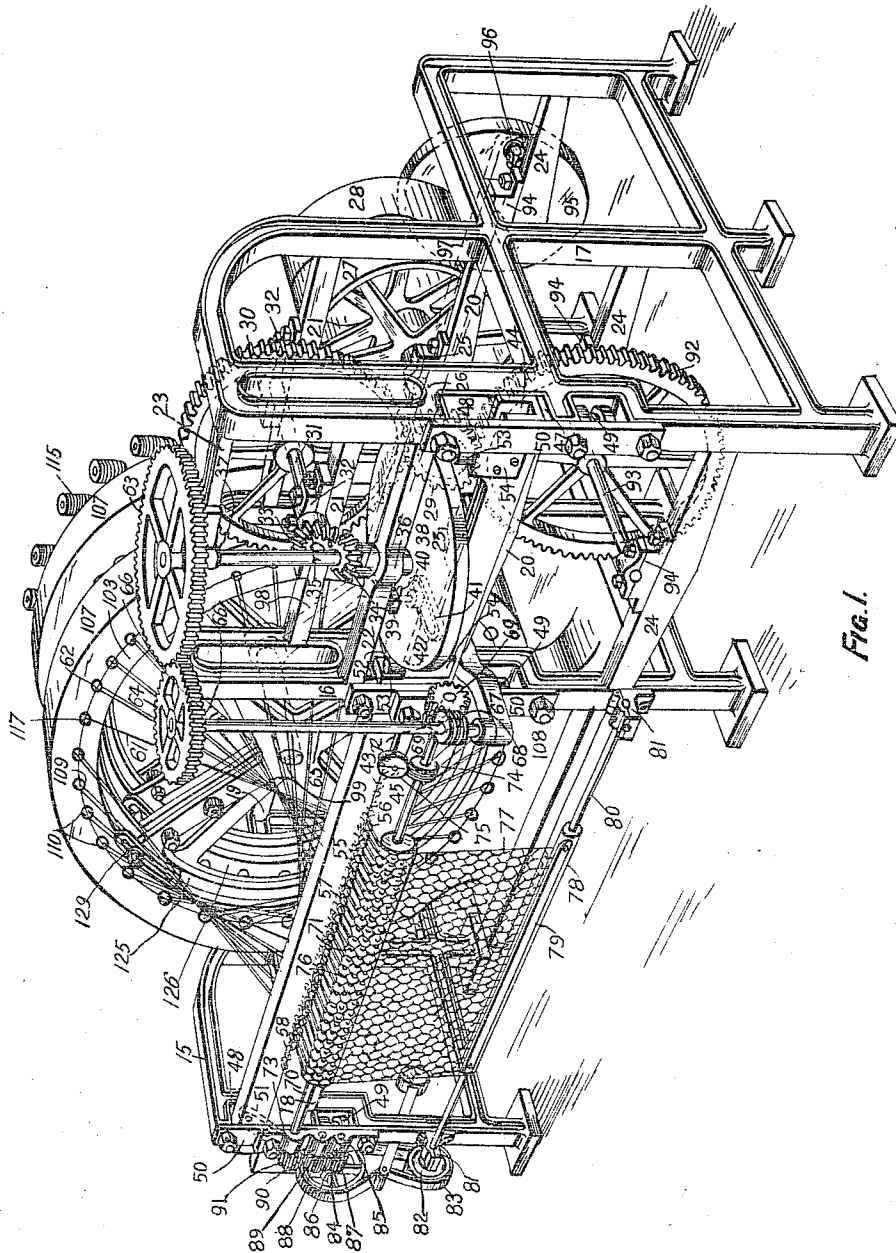


Fig. 1.

Witnesses

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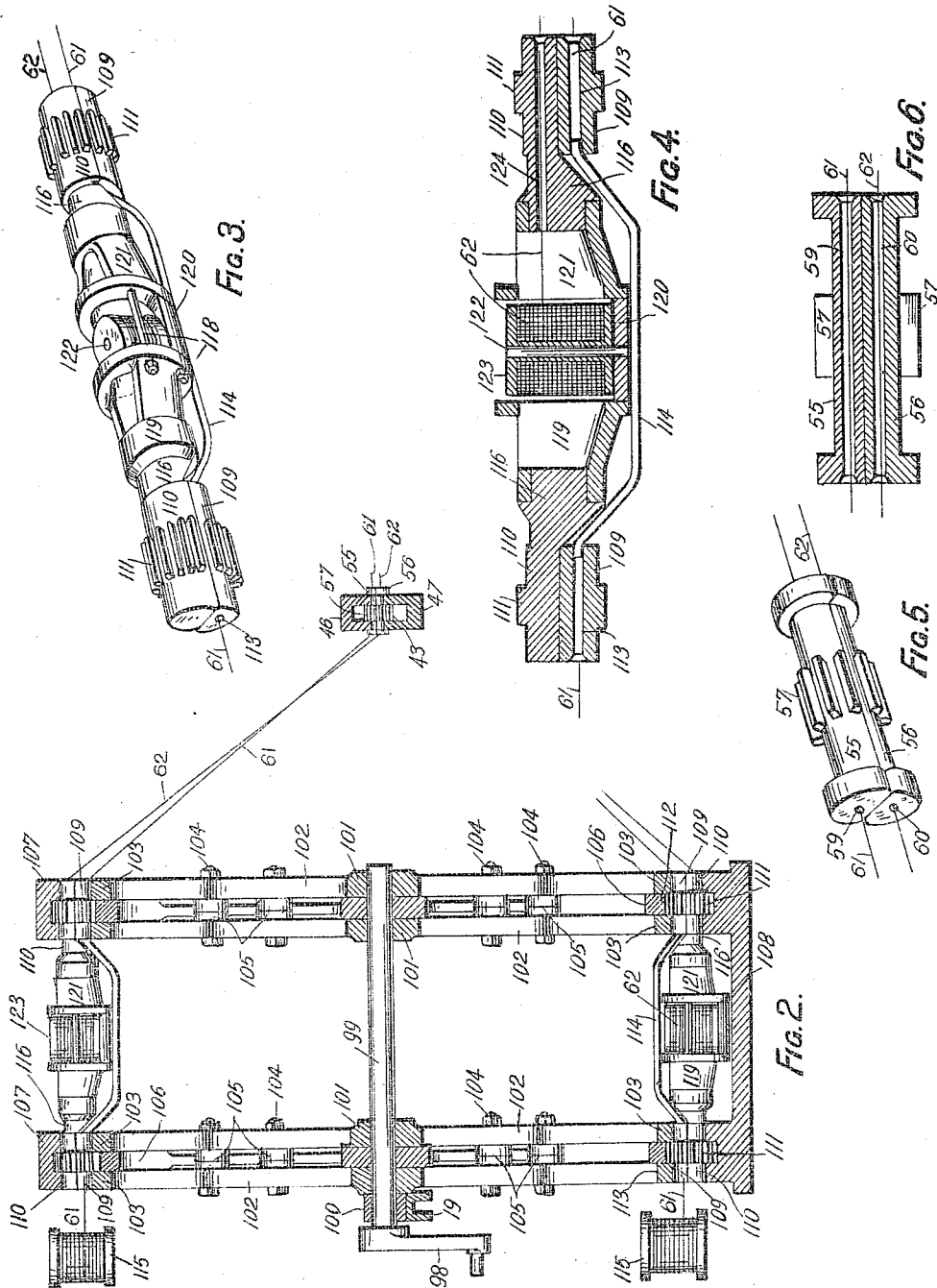
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5 SHEETS—SHEET 2.



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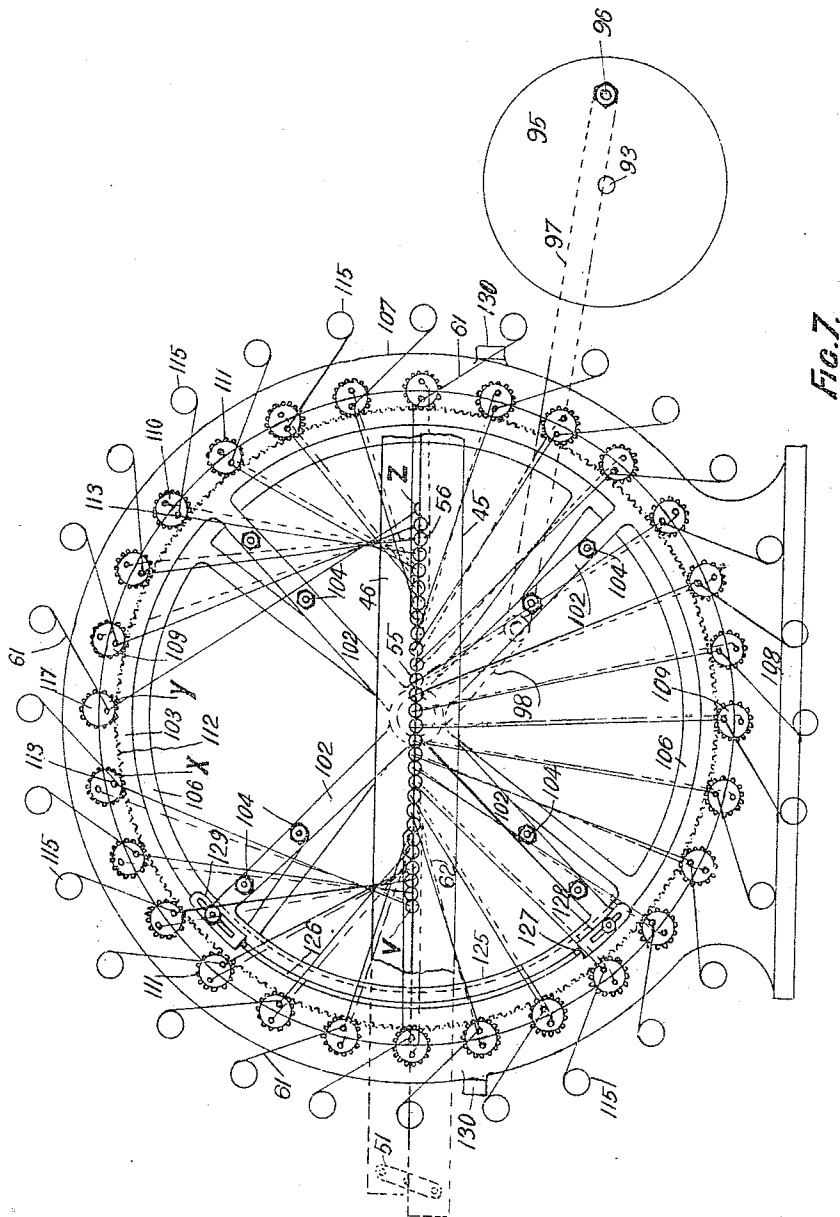


Fig. 7.

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5 SHEETS—SHEET 4.

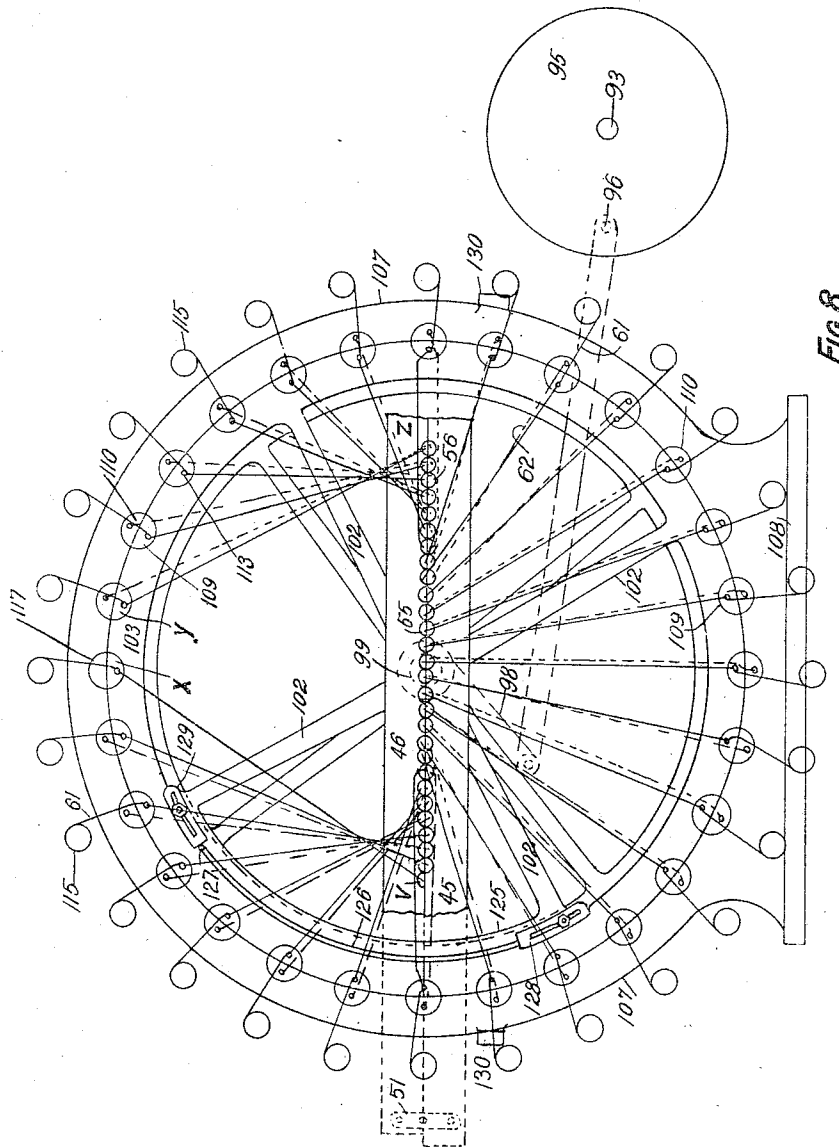


Fig. 8.

Witnesses

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5 SHEETS—SHEET 5.

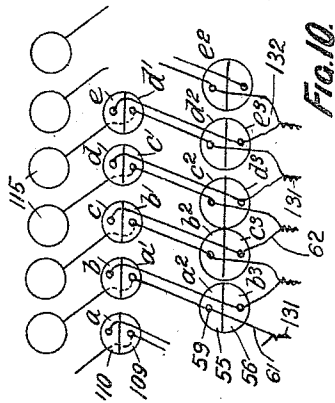


Fig. 10.

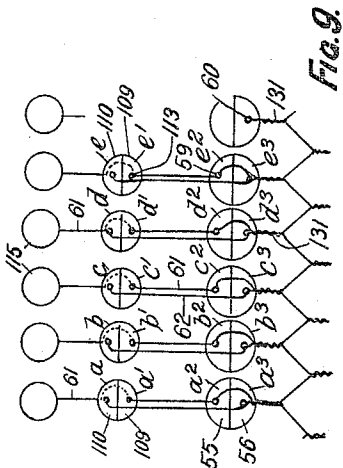


Fig. 9.

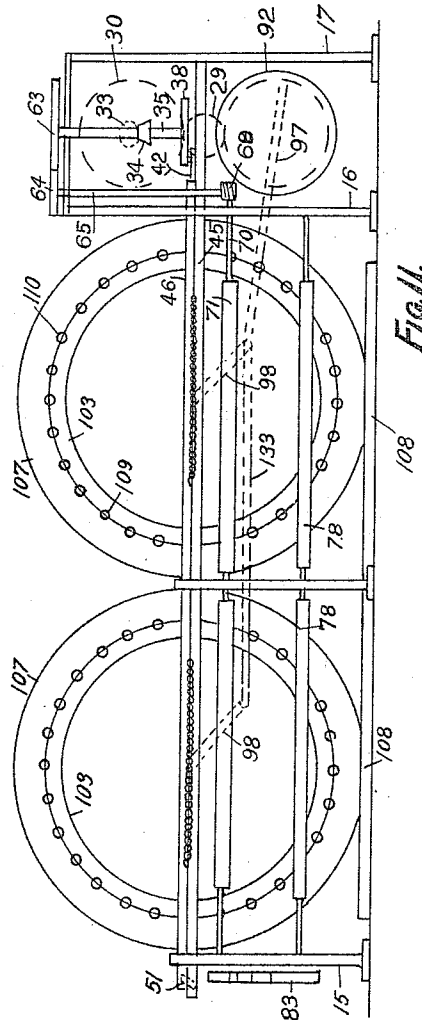


Fig. 11.

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UNITED STATES PATENT OFFICE.

COLIN ERLE BEGG, OF MOSMAN, SYDNEY, NEW SOUTH WALES, AUSTRALIA.

WIRE-NETTING-WEAVING MACHINE.

957,643.

Specification of Letters Patent. Patented May 10, 1910.

Application filed August 13, 1908. Serial No. 448,310.

To all whom it may concern:

Be it known that I, COLIN ERLE BEGG, a subject of the King of Great Britain and Ireland, residing at "Rosherville" Boyle Street, Mosman, Sydney, in the State of New South Wales, in the Commonwealth of Australia, have invented certain new and useful Improvements in Wire-Netting-Weaving Machines, of which the following is a specification.

This invention relates to improvements in wire-netting weaving machines and its purpose is to dispense with the tube cases and connections at present used and consequently with the necessity for the special coiling lathe.

The invention consists broadly in substituting for the bottom rack with its pinions and slides a double combination circular rack with pinions and circular slides and channels, placed in such positions that each pinion in the one set will have a corresponding pinion in the other set opposite to it. The pinions are made in halves, the outside halves of the one set and the corresponding halves of the other set each supporting between them a bobbin holder containing a bobbin. The wires from these bobbins pass through their front supporting pinions, thence through the bottom halves of the pinions on the straight rack. A second set of bobbins is placed behind the circular racks, and the wires from them pass through tubes or guides which connect the inside halves of the pinions on one of the circular racks with the corresponding halves on the other circular rack, thence through the top halves of the pinions on the straight rack. The straight rack with its pinions and slides, is placed in front of the circular rack, and the pinions instead of being placed vertically as in the present machines are placed horizontally. The circular rack is operated from the main shaft by suitable connections and the straight rack is operated as in the present machines. The pinions in the straight rack are simplified by the elimination of the cones which with my construction become unnecessary. But in order that my invention may be more clearly understood reference will now be made to the accompanying drawings in which:—

Figure 1 is a perspective view of this improved machine. Fig. 2 a cross central vertical section through both the circular

and straight racks. Fig. 3 a perspective view of the bobbin carrier. Fig. 4 a longitudinal central section thereof. Fig. 5 a perspective view of the half pinion used in the straight rack. Fig. 6 a longitudinal central section thereof. Figs. 7 and 8 are diagrammatic views of the circular and straight racks showing the threading of wires through the pinions. Figs. 9 and 10 are diagrammatic views showing the action of the feeding wires. Fig. 11 a diagrammatic view of the method of construction and coupling of a double machine.

The framing of the machine consists of end frames 15 and 17 and an intermediate frame 16, the frames 15 and 16 being held together by longitudinal bars 18 and 19 and the frames 16 and 17 by cross bearers 20, 21, 22, 23 and 24.

The cross bearers 20 have plumber blocks 25 for the spindle 26 of the fast and loose pulleys 27 and 28. Fastened to this spindle 26 is the toothed wheel 29 gearing with toothed wheel 30 on spindle 31 having bearings in plumber blocks 32 secured to the cross bearers 21. On the end of this spindle 31 is a miter wheel 33 gearing with miter wheel 34 on the vertical spindle 35 in bearings 36 and 37, the former being in the cross bearer 22 and the latter secured to cross bearer 23.

Keyed at the lower end of the vertical spindle 35 is a crank-disk 38 having an adjustable crank pin 39 in slot 40, and working in a slot 41 in the T-piece 42, bolted to the tooth-rack 43 which slides in the lower channel-groove 44 of the straight rack composed of two U-shaped channels 45 and 46 (hereinafter termed the slides). The former rests upon blocks 47 within spaces 48, has level adjusting set screws 49 and is held in said spaces 48 by plates 50. The upper slide 46 is connected to the lower slide 45 by a rocking arm 51 so that a sliding motion is imparted to both slides simultaneously, but in opposite directions, when the cam-notch 52, on the crank disk 38 comes into contact with either of the rollers 53 on brackets 54 (secured to the lower slide 45).

Between the two slides 45 and 46 are circular apertures wherein the pinions have bearings, said pinions consisting of two halves 55 and 56 and also teeth 57 engaging with the teeth 58 (in the tooth rack 43). These half pinions 55 and 56 (see Figs. 5 and 11)

and 6) have longitudinal passages 59 and 60 respectively terminating in flaring mouths, for the respective wires 61 and 62 from the circular rack hereinafter described.

5 The upper slide 46 is provided with an extra half-pinion.

Keyed to the upper end of the vertical spindle 35 is a tooth-wheel 63 gearing with the tooth-wheel 64 on vertical spindle 65 (which has its bearings in the brackets 66 and 67). At the lower end of this spindle 10 is a worm-wheel 68 gearing with pinion 69 on spindle 70 of the peg roller 71 and has bearings 73; also a worm wheel 74 operating 15 the measuring mechanism 75.

The peg roller has pegs 76 the spacing being proportionate to the required mesh of the netting. The netting 77 passes from roller 71 on to roller 78, the end of said 20 netting being clamped thereto by a clamp piece 79, thus the netting is wound upon the roller 78, which is supported by a spindle 80 having bearings in the brackets 81 and on the one end of which is a pulley 82 25 over which passes a belt 83, overlying a pulley 84 on spindle 85 having a bearing 86. On the spindle 85 is also keyed a pinion 87 gearing with gear wheel 88 on spindle 89 in bearing 90 and again gearing with gear 30 wheel 91 on the spindle 70 of the peg roller.

Gearing with tooth-wheel 29 is another 92 on spindle 93 having bearing in plumber blocks 94 (on a cross bearer 24) and on the 35 back end of which is a crank disk 95 having an adjustable crank pin 96 for the connecting rod 97 of a crank 98 on spindle 99 which in turn has bearing in a plumber block 100 on the longitudinal bearer 19, and 40 also in the bosses 101 of radial arms 102 provided with circular cheeks 103 in pairs (hereinafter termed the circular slides). Between each pair, bolted together by bolts 104, is a tooth-wheel 106, keyed to the spin- 45 dle 99. These circular slides fit within concentric channels 107. The pinions (consisting of two halves 109 and 110) have bearings in the slides and channels and have teeth 111 gearing with the teeth 112 of the 50 tooth-wheels 106.

The inner half-pinion 109 in each rack is pierced by a longitudinal passage 113, terminating in a flaring mouth, and bridging 55 between each pair of the half-pinions in alinement, is the tube 114 (as shown in Fig. 4.) If considered preferable a guide rod provided with suitable eyes could be substituted for this tube. The wires 61 from the bobbins 115 on the wall-frame pass 60 through the passages 113 and tubes (or eyes) 114 to the half-pinions 55 in the upper slide 46. The inner half-pinions 109 correspond with the half-pinions in the upper slide 46. The outer half-pinions 110 have 65 circular projections 116 in alinement with

one another, which support a bobbin carrier consisting of three pieces 119, 120 and 121 bolted together by bolts 118. The center piece 120 has a vertical spindle 122 for the bobbin 123 carrying a wire 62 passing 70 through the piece 121 into a passage 124 in the outer half pinion 110 (nearest to that facing the straight rack). The circular slides 103 have each a lip 125 provided with a circular slot 126 for a pin 127 secured to 75 the tooth-wheel 106 for the purpose hereinafter described, and the effective length of this circular slot 126 is determined by the positions of the stop pieces 128 and 129.

The concentric channels 107 have lugs 130 80 bolted to the frames 15 and 16.

In operation the wires 61 from the bobbins 115 pass through the tube 114 and half-pinion 109 (in Figs. 9 and 10, a^1, b^1, c^1, d^1, e^1 , etc.) thence to half-pinion 55 (in Figs. 9 and 85 10 a^2, b^2, c^2, d^2, e^2 , etc.) on to the peg roller 71. The wires 62 from the bobbins 123 pass through the half-pinions 110 (in Figs. 9 and 10 a, b, c, d , etc.) thence through the half-pinions 56 (in Figs. 9 and 10 a^3, b^3, c^3, d^3, e^3 , etc.) on to the peg roller 71. The pinions in the circular racks are revolved (as many times as the number of twists required to be imparted to the wire) by virtue of the 95 tooth-wheels 106 being set in motion by the crank 98 of connecting rod 97 of crank disk 95 on spindle 93 through the gear wheels 92 and 29 (the latter on driving spindle 26 of driving pulley 27). Simultaneously the pinions in the straight rack are also cor- 100 respondingly revolved by virtue of the tooth-rack 43 set in motion by the T-piece 42, operated by the crank pin 39 of crank disk 38 and miter wheels 34 and 33, gear wheel 30, and gear wheel 29 of driving 105 spindle 26 of driving pulley 27. The wires 61 and 62 are then twisted as at 131 (see Fig. 9). This accomplished, the pin 127 having moved along the circular slot 126 and by the time it reaches the stop piece 129 110 (see Fig. 8) the pinions have made their required number of revolutions; the said pin 127 then moves the circular slides 103 forward, thereby moving the inner half-pinions 109 (a^1, b^1, c^1, d^1, e^1) along to their 115 succeeding half pinions 110, so that the half pinions a^1, b^1, c^1, d^1, e^1 come under the half pinions b, c, d, e , (see Fig. 10).

Simultaneously with the action of the pin 127 the cam-notch 52 engages with the roller 120 53 together with the rocker arm 51 thus moving the slides 45 and 46 so that the half-pinions (b^3, c^3, d^3, e^3) come underneath the half-pinions a^2, b^2, c^2, d^2, e^2 , (see Figs. 9 and 10). This spreads the wire 61 and 62 as 125 shown at 132 after having been twisted (as shown at 131 in Fig. 10). The pinions then make another similar number of revolutions twisting the wires 61 and 62 and are then moved back, thus spreading the wires ready 130

to be again twisted (as shown in Fig. 9). Simultaneously with this action the pinions in the circular racks are correspondingly revolved. This being done the pins 127 engage with the stop-pieces 128 (see Fig. 7) and move the half pinions back again to their former positions. Thus it will be seen that wires 61 and 62 between the two racks are prevented from entangling. The idle pinion 117 operates alternately with the half pinions marked *x* and *y* in Figs. 7 and 8, known as the selvage wire pinions, also the half-pinions marked *v* and *z* in the straight rack. At the same time while the pinions are being operated the peg roller 71 is also revolved, thereby drawing the wires through the pinions and as the netting is woven it is wound upon the roller 78 thus forming a roll. It can be removed when desired by loosening the clamp piece 79 and the spindle 80 being removed from the bearing brackets 81.

The above is one method of threading the wires. There are other methods equally suitable which will suggest themselves to any person skilled in the trade of wire-weaving.

Fig. 11 shows the manner in which a double machine is connected up. The construction of the driving mechanism and of the straight and circular racks is similar to those hereinbefore described with the addition of an extra connecting rod 133 between the cranks 98.

What I claim and desire to secure by Letters Patent is:—

1. In a wire weaving machine, a base, a shaft supported by the base, a plurality of connected pairs of wheels journaled on the shaft and spaced apart from each other, each of said pairs of wheels having on its peripheral surface alined transverse grooves, a fixed rim encircling each wheel and provided with transverse grooves normally registering with the grooves of the wheel, pinions each composed of half sections, each half section having a longitudinal passage therethrough, a circular rack on the shaft between each pair of wheels and engaging the pinions, a pair of plates on one side of the wheel and provided on their adjacent edges with registering grooves, pinions supported by the grooves, each of said pinions consisting of half sections having longitudinal openings, and means for reciprocating the plates longitudinally of each other.

2. In a wire weaving machine, a base, a shaft supported by the base, a plurality of connected pairs of wheels journaled on the shaft and spaced apart from each other, each of said pairs of wheels having on its peripheral surface alined transverse grooves, a fixed rim encircling each wheel and provided with transverse grooves normally registering with the grooves of the wheels, pinions each composed of half sections, one sec-

tion of each pinion being arranged in a groove of the wheel and the other in a groove of the rim, each of said half sections having longitudinal passages therethrough, and means for moving the wheels with respect to the rims.

3. In a wire weaving machine, a base, a shaft supported by the base, a plurality of connected pairs of wheels journaled on the shaft and spaced apart from each other, each of said pairs of wheels having on its peripheral surface alined transverse grooves, a fixed rim encircling each wheel and provided with transverse grooves normally registering with the grooves of the wheel, pinions each composed of half sections, one section of each pinion being arranged in a groove of the wheel and the other in a groove of the rim, each of said half sections having longitudinal passages therethrough, and means for moving the wheels with respect to the rims, said wheels having segmental slots, for the purpose set forth, and means for varying the effective length of the slots.

4. In a wire weaving machine, a base, a shaft supported by the base, a plurality of connected pairs of wheels journaled on the shaft and spaced apart from each other, each of said pairs of wheels having on its peripheral surface alined transverse grooves, a fixed rim encircling each wheel and provided with transverse grooves normally registering with the grooves of the wheels, pinions each composed of half sections, one section of each pinion being arranged in a groove of the wheel and the other in a groove of the rim, each of said half sections having longitudinal passages therethrough, and means for moving the wheels with respect to the rims, said wheels having segmental slots, means engaging the slots for moving the wheels to shift the sections supported thereby, and means for varying the effective length of the slots.

5. In a wire weaving machine of the class set forth, a wheel provided with transverse grooves, a rim encircling the wheel and also provided with transverse grooves and adapted to register with the grooves of the wheel, said wheels having segmental slots, means engaging the slots for moving the wheels whereby to shift the same, and means for varying the effective length of the slots.

6. In a wire weaving machine, of the class set forth, a wheel provided with transverse grooves, a rim encircling the wheel and also provided with transverse grooves and adapted to register with the grooves of the wheel, said wheels having segmental slots, and means engaging the slots for moving the wheels whereby to shift the same.

7. In wire weaving machines of the class set forth, the combination and arrangement of pinions having teeth 111, gearing with 120

teeth 112, in a circular tooth-rack 106, keyed to an axle 99, operated by the crank of a connecting rod 97 of a crank disk 95, set in motion by the driving mechanism, substantially as herein described and illustrated in the drawings.

8. In wire weaving machines of the class set forth, the combination and arrangement of a circular tooth-rack 106, positioned between circular slides 103 having arms 102 bolted together by bolts 104, and having bosses 101 bearing loosely upon an axle; substantially as herein described and illustrated in the drawings.

9. In wire weaving machines of the class set forth, the combination and arrangement of circular slides 103 having lips 125 containing a curved slot 126 for the passage of a pin 127 attached to a circular tooth-rack 106, substantially as herein described and illustrated in the drawings.

10. In wire weaving machines of the class set forth, the combination and arrangement of a curved slot 126, whose effective length is determined by adjusting blocks 128, and 129 determining the travel of a pin 127, sub-

stantially as herein described and illustrated in the drawings.

11. In wire weaving machines of the class set forth, the combination and arrangement of a circular tooth-rack 106, having a pin 127, working in a slot 126, contained in circular slides 103, imparting motion to said circular slides; substantially as herein described and illustrated in the drawings.

12. In a wire weaving machine of the class set forth, a circular rack provided with a slot, and means for varying the effective length of the slot for the purpose set forth.

13. In a wire weaving machine of the class set forth, a circular rack provided with a slot, means for moving the rack, means operated by the slot for reversing the movement of the rack, and means for varying the effective length of the slot for the purpose set forth.

Signed at Sydney, New South Wales, this sixth day of July 1908.

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