Claims

1. A wire coating device comprising:

a chamber having an electrolytic fluid therein, said chamber arranged to allow the passage of a wire through said chamber;

a magnetising device for applying a magnetic field to said wire;

at least one anodic electrode within said chamber;

a cathodic electrical connection in electrical communication with said wire;

a grit supply for introducing a supply of metal coated grit into the chamber;

wherein the wire is arranged to magnetically attract the metal coated grit, with the anodic electrode and cathodic wire arranged to electrolytically apply a metal coating to said wire to encase said metal coated grit;

a recycling system for recycling the electrolytic fluid;

said recycling system including a recycling tank having an internal surface with rounded curves at corners and edges of said surface; and

said recycling tank in fluid communication with said chamber.

2. The wire coating device according to claim 1, wherein the grit includes diamond particles and the metal includes nickel.

3. The wire coating device according to claim 1 or 2, wherein said chamber is oriented vertically and the metal coated grit is introduced proximate the top of said chamber.

~~4. The wire coating device according to any one of claims 1 to 3, further including a recycling system for recycling the electrolytic fluid;~~
~~said recycling system including a recycling tank having an internal surface with large radius curves at corners and edges of said surface;~~
~~said recycling tank in fluid communication with said chamber.~~

~~5. A pulley array for guiding a wire, the pulley array comprising:~~
~~three pulleys arranged such that corresponding pulley axles are arranged in a triangular pattern within a common plane;~~
~~a first and third of said pulleys being electrically conductive and in electrical communication with an earth;~~
~~the second pulley having electrically insulative material in a groove for engaging said wire;~~
~~wherein the pulleys are sequential arranged, along path of said wire, from the first to second to third pulley.~~

~~6. The device according to claim 5, wherein at least one pulley of said pulley array includes a mercury attachment comprising liquid mercury, said mercury attachment arranged to electrically connect rotating parts of said pulley with said wire.~~

7. A tank module for allowing the passage of a wire, the tank module comprising:

a weir at opposed ends, said weir having a slot for placing the wire, said slot having a width sufficient to allow the passage of said wire, and;

pulley arrays according to claim 5 to 6 at said opposed ends for electrically isolating said module.

8. The tank module according to claim 7, further including a pair of air shields, each proximate to either an entry and exit point of said wire;

each air shield comprising a nozzle assembly arranged to radially direct an air supply to said entry or exit at a sufficient flow rate to repel fluid from said entry or exit.

9. The tank module according to claim 7 or 8, further including at least one anodic electrode within said tank module proximate to a path to be followed by said wire;

said module containing an electrolytic fluid

a cathodic electrical connection in electrical communication with said wire;

wherein the anodic electrode and cathodic wire arranged to electrolytically apply a metal coating to said wire.

~~10. A tensioning unit for maintaining a tension in a wire engaged with said tensioning unit, the tensioning unit comprising:~~

~~a lever assembly comprising a first lever arm arranged to engage said wire from a wire drum, said lever assembly configured to move in response to a force corresponding to dynamic tension within said wire;~~

~~a driving member operable with said movement for varying the extent of speed for operating said wire.~~

~~11. The device according to claim 10, wherein the lever assembly includes a second lever arm comprising one or more counter-weights arranged to vary the dynamic tension for operating said wire.~~

~~12.~~4. A system for coating wires comprising:

a first wire coating device according to any one of claims 1 to 3~~4~~ for applying a metal and metal coated grit to said wire; and

a second wire coating device within a tank module ~~according to any one of claims 7 to 9~~, said second wire coating device arranged to apply a metal coating over said metal and metal coated grit.

5. The system according to claim 4, wherein the tank module comprises:

a weir at opposed ends, said weir having a slot for placing the wire, said slot having a width sufficient to allow the passage of said wire; and

pulley arrays at said opposed ends for electrically isolating said module.

6. The system according to claim 5, wherein the tank module further includes a pair of air shields, each proximate to either an entry and exit point of said wire;

each air shield comprising a nozzle assembly arranged to radially direct an air supply to said entry or exit at a sufficient flow rate to repel fluid from said entry or exit.

7. The system according to claim 5 or 6, wherein the tank module further includes at least one anodic electrode within said tank module proximate to a path to be followed by said wire;

said module containing an electrolytic fluid

a cathodic electrical connection in electrical communication with said wire;

wherein the anodic electrode and cathodic wire arranged to electrolytically apply a metal coating to said wire.

~~13.~~8. The system according to claim 4~~12~~, further comprising a pulley array ~~according to any one of claims 5 to 6~~for guiding a wire, the pulley array comprising:~~.~~

three pulleys arranged such that corresponding pulley axles are arranged in a triangular pattern within a common plane;

a first and third of said pulleys being electrically conductive and in electrical communication with an earth;

the second pulley having electrically insulative material in a groove for engaging said wire;

wherein the pulleys are sequential arranged, along path of said wire, from the first to second to third pulley.

9. The system according to claim 8, wherein at least one pulley of said pulley array includes a mercury attachment comprising liquid mercury, said mercury attachment arranged to electrically connect rotating parts of said pulley with said wire.

~~14.~~10. The system according to any one of claims 4 to 9~~12 or 13~~, further comprising a tensioning unit ~~according to claims 10 to 11~~ for maintaining a tension in a wire engaged with said tensioning unit, the tensioning unit comprising:~~.~~

a lever assembly comprising a first lever arm arranged to engage said wire from a wire drum, said lever assembly configured to move in response to a force corresponding to dynamic tension within said wire;

a driving member operable with said movement for varying the extent of speed for operating said wire.

11. The system according to claim 10, wherein the lever assembly includes a second lever arm comprising one or more counter-weights arranged to vary the dynamic tension for operating said wire.

~~15. A method for coating wires, the method comprising the steps of:~~

~~guiding said wire to a first wire coating device;~~

~~applying a metal and metal coated grit to said wire;~~

~~guiding said wire to a second wire coating device; and~~

~~applying a metal coating over said metal and metal coated grit.~~

~~16. The method according to claim 15, wherein the metal and metal coated grit application step includes the steps of:~~

~~applying a magnetic field to said wire;~~

~~introducing a mixture of electrolytic fluid and metal coated grit into the first coating device;~~

~~guiding said wire through the first coating device comprising at least one anodic electrode while applying an electrical connection to said wire and anodic electrode.~~

~~17. The method according to claim 15 or 16, wherein the guiding steps include the step of guiding said wire from a first to second to third pulley, said pulleys having corresponding pulley axles in a triangular pattern within a common plane.~~