CLAIMS

1. A system for feeding wire to a mesh production machine comprising:

a roller straightener (9) for wire;

a cutter (11) configured to receive wire straightened by said roller straightener;

a longitudinals storage (19) configured to receive longitudinal wires cut by said cutter (11), said longitudinals storage (19) having a number of longitudinals positions (13);

the system being **characterized by**:

a rotational unit (12) configured to rotate longitudinal wires (2) around their longitudinal axes to specified angles, said rotational unit being located at an intermediate location in the path of the longitudinal wires (2) from their production location to their welding location;

respective grippers (14), that may be actively-restraining or passively-restraining type, configured to restrain longitudinal wires (2) in the longitudinals storage (19);

a longitudinals carrier (15) configured to transfer longitudinal wires from said longitudinals storage (19) towards a welding unit (27), said longitudinals carrier (15) having grippers (17), that may be actively-restraining or passively-restraining type, configured to restrain the longitudinal wires (2) at least until their welding with a first transverse wire (6) which may be supplied via either: (*a*) a reel (20) via advancement mechanism (23), straightening mechanism (24) and cutting mechanism (25), or, (*b*) as straightened and precut transverse wire (6) fed by a feeder.

2. A system for feeding wire to a mesh production machine as claimed in claim 1, further **characterized by**:

a respective sheath (18) associated with each respective longitudinals position (13) of said longitudinals storage (19), each of said sheaths (18) respectively being in tube form that may be unitary or sectional, and at the beginning of which there is a gripper (14); and,

a gripper (71) at said rotational unit (12), said rotational unit being disposed between said cutter (11) and said longitudinals storage (19).

3. The system for feeding wire to a mesh production machine as claimed in claim 2, further **characterized in that**:

said gripper (71) of said rotational unit (12) rotates around the axis of held longitudinal wire (2) and thus also rotates the held wire to desired angle.

4. A system for feeding wire to a mesh production machine as claimed in any one of claims 2 to 3, further **characterized by**:

chains (32) having step equal to the least distance of longitudinal wires of produced mesh (3), said sheaths (18) and said grippers (14) being located on said chains (32);

sprocket wheels upon which said chains (32) rotate; and,

motor (30) and transmissions (31) driving said chains (32) so that any longitudinals position (13) may be transported to a feeding axis (1) for longitudinal wires.

5. A system for feeding wire to a mesh production machine as claimed in any one of claims 1 to 4, further **characterized by**:

mechanisms for depositing the transverse wire (6) at the welding line (5) of the welding unit (27) deposit the transverse wires (6) respectively rotated around their respective axes to selected angles, one after the other, so that the curvature of the wires (6) resulting from the transverse-wire straightener (24) with rollers is effectively negated in the produced mesh (3).

6. A process for feeding longitudinal wires to a mesh production machine comprising the steps of:

pulling wire (10) from a spool (7);

straightening (9) the pulled wire with rollers;

cutting (11) the straightened pulled wire to produce longitudinal wires (2);

depositing the longitudinal wires (2) at a longitudinals storage (19);

transferring the longitudinal wires (2) from the longitudinals storage (19) to a longitudinals carrier (15);

moving the longitudinal wires (2) towards a welding unit (27); and,

welding the wires into mesh (3) with transverse wire (6);

characterized by the steps of,

selectively rotating (12) respective longitudinal wires (2) around their respective longitudinal axes to specified angles; and,

restraining (71, 14, 17) the longitudinal wires (2) at least until their welding (26) with a first transverse wire (6) in the mesh (3).

7. The process for feeding longitudinal wires to a mesh production machine as claimed in claim 6, **further characterized in that**:

at said step of selectively rotating (12) respective longitudinal wires (2) around their respective longitudinal axes to specified angles, rotating only some of the longitudinal wires (2) to desired angles around their respective longitudinal axes so as to negate their curvature resulting from said step of straightening (9) with rollers.

8. The process for feeding longitudinal wires to a mesh production machine as claimed in any one of claims 6 to 7, **further characterized in that**:

said step of selectively rotating respective longitudinal wires (2) around their respective longitudinal axes to specified angles is made at any intermediate location in their path from their production to their welding.

9. The process for feeding longitudinal wires to a mesh production machine as claimed in any one of claims 6 to 8, **further characterized in that**:

said step of restraining the longitudinal wires (2) until their welding in the mesh (3) includes restraining the longitudinal wires at least until their welding with the first transverse wire (6) of the mesh.

10. The process for feeding longitudinal wires to a mesh production machine as claimed in any one of claims 6 to 9, **further characterized in that**:

said step of restraining the longitudinal wires (2) until their welding in the mesh includes actively restraining the longitudinal wires with grippers (71, 14, 17) from their production until their welding.

11. The process for feeding longitudinal wires to a mesh production machine as claimed in any one of claims 6 to 10, **further characterized in that**:

said step of restraining the longitudinal wires (2) until their welding in the mesh includes passively holding the longitudinal wires by frictional restraint from their production until their welding.

12. A process for feeding longitudinal wires to a mesh production machine as claimed in any one of claims 6 to 11, **further characterized by** the step of:

rotating transverse wires (6) around their respective axes to selected angles so that the curvature of the wires (6) resulting from a transverse-wire straightener (24) with rollers is effectively negated in the produced mesh (3).

13. A process for feeding longitudinal wires to a mesh production machine as claimed in any one of claims 6 to 12, **further characterized by** the steps of:

providing parallel supplies of longitudinal wires (2) coming from additional reels (40), pulling mechanisms (8), straighteners (9), cutters (11); and,

supplying more than one longitudinal wire (2) to the longitudinals storage (19) at corresponding locations.

14. A process for feeding longitudinal wires to a mesh production machine as claimed in any one of claims 6 to 12, **further characterized by** the steps of:

providing longitudinal wires (2) from more than one reel (40), being straightened and advanced by respective units;

converging the wires (2) towards the feeding line (1) of the longitudinals storage (19); and,

making automated selection of the wire to fill the location (13) for longitudinal wire (2) to be subjected to filling.

15. A rotational unit comprising:

a gripper, said gripper having restraining tools (71);

the rotational unit **characterized by**:

said restraining tools (71) have an opening on the side to permit wire removal in a direction of a plane of wires (2) at a longitudinals storage (19);

a cylinder for activating said restraining tools (71) to hold wire (10); and,

a bearing (76) and plate (75) upon which said gripper is seated, said bearing (76) having an opening in its side in the direction of the plane of longitudinal wires (2) at the longitudinals storage (19); and,

said gripper being rotatable around an axis of the held wire to also rotate the held wire to desired angle.

CLAIMS

1. A system for feeding wire to a mesh production machine comprising:

a roller straightener for wire;

a cutter configured to receive wire straightened by said roller straightener;

a longitudinals storage configured to receive longitudinal wires cut by said cutter, said longitudinals storage having a number of longitudinals positions;

the system being **characterized by**:

a rotational unit having an activatable gripper, said rotational unit being configured to rotate cut longitudinal wires around their longitudinal axes to specified angles, said rotational unit being located at an intermediate location in the path of the longitudinal wires from their production location to their welding location;

respective grippers, that may be actively-restraining or passively-restraining type, configured to restrain longitudinal wires in the longitudinals storage;

a longitudinals carrier configured to transfer longitudinal wires from said longitudinals storage towards a welding unit, said longitudinals carrier having grippers, that may be actively-restraining or passively-restraining type, configured to restrain the longitudinal wires at least until their welding with a first transverse wire which may be supplied via either: (*a*) a reel via advancement mechanism, straightening mechanism and cutting mechanism, or, (*b*) as straightened and precut transverse wire fed by a feeder.

2. A system for feeding wire to a mesh production machine as claimed in claim 1, further **characterized by**:

a respective sheath associated with each respective longitudinals position of said longitudinals storage, each of said sheaths respectively being in tube form that may be unitary or sectional, and at the beginning of which there is a gripper; and,

said rotational unit being disposed between said cutter and said longitudinals storage.

3. A system for feeding wire to a mesh production machine as claimed in any one of claims 1 or 2, further **characterized by**:

chains having step equal to the least distance of longitudinal wires of produced mesh, said longitudinals positions being located on said chains;

sprocket wheels upon which said chains rotate; and,

motor and transmissions driving said chains so that any longitudinals position may be transported to a feeding axis for longitudinal wires.

4. The system for feeding wire to a mesh production machine as claimed in any one of claims 1 to 3, further **characterized in that**:

Said activatable gripper of said rotational unit rotates around the axis of held longitudinal wire and thus also rotates the held wire to desired angle.

5. A system for feeding wire to a mesh production machine as claimed in any one of claims 1 to 4, further **characterized by**:

mechanisms for depositing the transverse wire at the welding line of the welding unit deposit the transverse wires respectively rotated around their respective axes to selected angles, one after the other, so that the curvature of the wires resulting from the transverse-wire straightener with rollers is effectively negated in the produced mesh.

6. A system for feeding wire to a mesh production machine as claimed in any one of claims 1 to 5, further **characterized by**:

said activatable gripper has restraining tools;

said restraining tools have a side opening configured to permit wire removal in a direction of a plane of longitudinal wires at said longitudinals storage;

a cylinder for activating said restraining tools to hold wire; and,

a bearing and plate upon which said activatable gripper is seated, said bearing having an opening in its side in the direction of the plane of longitudinal wires at said longitudinals storage.

7. A process for feeding longitudinal wires to a mesh production machine comprising the steps of:

pulling wire from a spool;

straightening the pulled wire with rollers;

cutting the straightened pulled wire to produce longitudinal wires;

depositing the longitudinal wires at a longitudinals storage;

transferring the longitudinal wires from the longitudinals storage to a longitudinals carrier;

moving the longitudinal wires towards a welding unit; and,

welding the wires into mesh with transverse wire;

characterized by the steps of,

actively restraining by gripping and then selectively rotating respective longitudinal wires around their respective longitudinal axes to specified angles; and,

restraining the longitudinal wires at least until their welding with a first transverse wire in the mesh.

8. The process for feeding longitudinal wires to a mesh production machine as claimed in claim 7, **further characterized in that**:

at said step of actively restraining by gripping and then selectively rotating respective longitudinal wires around their respective longitudinal axes to specified angles, rotating only some of the longitudinal wires to desired angles around their respective longitudinal axes so as to negate their curvature resulting from said step of straightening with rollers.

9. The process for feeding longitudinal wires to a mesh production machine as claimed in any one of claims 7 to 8, **further characterized in that**:

said step of actively restraining by gripping and then selectively rotating respective longitudinal wires around their respective longitudinal axes to specified angles is made at any intermediate location in their path from their production to their welding.

10. The process for feeding longitudinal wires to a mesh production machine as claimed in any one of claims 7 to 9, **further characterized in that**:

said step of restraining the longitudinal wires until their welding in the mesh includes actively restraining the longitudinal wires with grippers from their production until their welding.

11. The process for feeding longitudinal wires to a mesh production machine as claimed in any one of claims 7 to 10, **further characterized in that**:

said step of restraining the longitudinal wires until their welding in the mesh includes passively holding the longitudinal wires by frictional restraint from their production until their welding.

12. A process for feeding longitudinal wires to a mesh production machine as claimed in any one of claims 7 to 11, **further characterized by** the step of:

rotating transverse wires around their respective axes to selected angles so that the curvature of the wires resulting from a transverse-wire straightener with rollers is effectively negated in the produced mesh.

13. A process for feeding longitudinal wires to a mesh production machine as claimed in any one of claims 7 to 12, **further characterized by** the steps of:

providing parallel supplies of longitudinal wires coming from additional reels, pulling mechanisms, straighteners, cutters; and,

supplying more than one longitudinal wire to the longitudinals storage at corresponding locations.

14. A process for feeding longitudinal wires to a mesh production machine as claimed in any one of claims 7 to 12, **further characterized by** the steps of:

providing longitudinal wires from more than one reel, being straightened and advanced by respective units;

converging the wires towards the feeding line of the longitudinals storage; and,

making automated selection of the wire to fill the position for longitudinal wire to be subjected to filling.

15. A rotational unit comprising:

a gripper, said gripper having restraining tools;

the rotational unit **characterized by**:

said restraining tools have an opening on the side to permit wire removal in a direction of a plane of wires at a longitudinals storage;

a cylinder for activating said restraining tools to hold wire;

a bearing and plate upon which said gripper is seated, said bearing having an opening in its side in the direction of the plane of longitudinal wires at the longitudinals storage; and,

a motor rotating said gripper around an axis of the held wire to also rotate the held wire to desired angle, said motor driving a first gear via a second gear and sprocket wheels.