CLAIMS

1. Device (10) for inserting artificial grass strand parts (62) in the ground, the device comprising:
   - a frame (12) which is configured to support the various parts of the device,
   - a plurality of spools (14) with artificial grass strands (60) wound thereon,
   - at least one drum (16A, 16B) which is mounted rotatably on the frame and rotates about a substantially horizontal rotation axis (51), wherein the drum is configured to receive a plurality of artificial grass strands which are unwound from the spools and to rotate these artificial grass strands with the movement of the drum, wherein the drum comprises a plurality of clamps (50A, 50B, 50C, 50D, 50E, 50F) which, viewed in side view, are arranged around the rotation axis (51), wherein the clamps rotate with the drum, wherein the clamps are configured to hold an artificial grass strand part (62) of each artificial grass strand clamped between a front clamp and a rear clamp, viewed in the direction of rotation, and to allow the artificial grass strand parts to rotate with the drum,
   - at least one cutting device (36) for cutting through the artificial grass strands, so that the clamped artificial grass strand parts (62) are cut off from the rest of the respective artificial grass strands,
   - at least one insertion device (70) which comprises a plurality of insertion pins (72) and at least one actuator (74), wherein the actuator inserts the insertion pins into the ground over a depth (H1),

   characterized in that the drum is configured to rotate the series of artificial grass strand parts (62) to below the insertion device, wherein the insertion device (70) is configured to insert the artificial grass strand parts which have been rotated to below the insertion device into the ground.

2. Device according to claim 1, wherein during operation, the device performs a cycle, wherein the cycle comprises a rotation period and a stationary period, wherein:
   - in the rotation period, the drum is rotated over a cycle angle (β), wherein a series of artificial grass strand parts is positioned below the insertion device and a new series of artificial grass strand parts is clamped, and
   - in the stationary period, the front series of artificial grass strand parts is released by the clamps and inserted in the ground by the insertion device.

3. Device according to any of the preceding claims, wherein viewed in side view, the drum has 4, 5, 6, 7 or 8 clamps.

4. Device according to any of the preceding claims, wherein - viewed in side view and measured along the path which is defined by the clamps and any guides - the clamps are placed at mutual intervals of 30 to 50 cm apart, in particular 35 - 45 cm apart, more particularly at intervals of 38 - 42 cm apart.

5. Device according to any of the preceding claims, wherein the insertion pins are located in the drum.

6. Device according to any of the preceding claims, wherein the drum is configured to keep a stock of at least one series of cut artificial grass strand parts.

7. Device according to any of the preceding claims, wherein each clamp is configured to hold at least 50 artificial grass strands, and for this the clamp has at least the same number of clamp shoes (82).

8. Device according to any of the preceding claims, wherein each clamp (50) comprises a series of front shoes (51A) and a series of rear shoes (51B), in particular one front shoe and one rear shoe for each of the at least fifty tracks, wherein a gap (57) is defined between the front shoes and the rear shoes, wherein the cutting device (36) is configured to make a cut through the artificial grass strands in the gap so that the front shoes hold the rear ends of the cut artificial grass strand parts (62) and the rear shoes hold the front ends of the artificial grass strands (60).

9. Device according to any of the preceding claims, wherein the clamps (50) are pre-tensioned by means of a spring force element, wherein the artificial grass strands are automatically clamped when placed in the clamp without further action being required for this, and wherein the device comprises a clamp actuator which deactivates the two clamps (50), which hold the artificial grass strand part (62) to be inserted below the insertion device (70), prior to insertion of the artificial grass strand parts by the insertion device.

10. Method for inserting artificial grass strand parts in a ground, the method comprising:
- providing a device according to any of the preceding claims,
- moving the device forward over the ground to a location and stopping the device at this location,
- bringing a series of artificial grass strand parts (62) to below the insertion device (70) by rotation of the drum (16A, 16B), wherein the series of artificial grass strand parts is clamped between a front clamp (50A) and a rear clamp (50B), viewed in side view and in relation to the rotation direction of the drum,

- stopping the drum, and
- inserting the artificial grass strand parts in the ground by the insertion device.

11. Method according to claim 10, wherein when viewed in side view, the clamps are located at mutual distances of 30 - 50 cm, in particular 35 - 45 cm apart, more particularly 38 - 42 cm apart.

12. Method according to any of the preceding method claims, wherein:
- the device (10) is moved to a location on the ground and the device is then stopped,
- a series of artificial grass strand parts (62) which is held by two clamps is cut, and
- by rotation of the drum, the artificial grass strand parts are positioned in the insertion position below the insertion device, and
- the drum is then stopped, and
- the insertion device then inserts the artificial grass strands in the ground by inserting the insertion pins in the ground, wherein the artificial grass strand parts are carried by the insertion pins.

13. Method according to any of the preceding method claims, wherein the device during operation performs a cycle, wherein the cycle comprises a rotation period and a stationary period, wherein:
- in the rotation period, the drum is rotated through a cycle angle, wherein a series of artificial grass strand parts is positioned below the insertion device and a new series of artificial grass strand parts is clamped, and
- in the stationary period, the front series of artificial grass strand parts is released by the clamps and inserted in the ground by the insertion device.

14. Method according to any of the preceding method claims, wherein the clamps are first brought to a loose state by means of a clamp actuator prior to insertion of the insertion pins, so that the series of artificial grass parts which is in the insertion position is no longer clamped by the clamps.

15. Method according to any of the preceding method claims, wherein the artificial grass strands are cut before they are positioned below the insertion device.

CLAIMS

1. Device (10) for inserting artificial grass strand parts (62) in the ground, the device comprising:
   - a frame (12) which is configured to support the various parts of the device,
   - a plurality of spools (14) with artificial grass strands (60) wound thereon,
   - at least one drum (16A, 16B) which is mounted rotatably on the frame and rotates about a substantially horizontal rotation axis (51), wherein the drum is configured to receive a plurality of artificial grass strands which are unwound from the spools and to rotate these artificial grass strands with the movement of the drum, wherein the drum comprises a plurality of clamps (50A, 50B, 50C, 50D, 50E, 50F) which, viewed in side view, are arranged around the rotation axis (51), wherein the clamps rotate with the drum, wherein the clamps are configured to hold an artificial grass strand part (62) of each artificial grass strand clamped between a front clamp and a rear clamp, viewed in the direction of rotation, and to allow the artificial grass strand parts to rotate with the drum,
   - at least one cutting device (36) for cutting through the artificial grass strands, so that the clamped artificial grass strand parts (62) are cut off from the rest of the respective artificial grass strands,
   - at least one insertion device (70) which comprises a plurality of insertion pins (72) and at least one actuator (74), wherein the actuator inserts the insertion pins into the ground over a depth (H1),

   wherein the drum is configured to rotate the series of artificial grass strand parts (62) to below the insertion device, wherein the insertion device (70) is configured to insert the artificial grass strand parts which have been rotated to below the insertion device into the ground.

2. Device according to claim 1, wherein during operation, the device performs a cycle, wherein the cycle comprises a rotation period and a stationary period, wherein:
   - in the rotation period, the drum is rotated over a cycle angle (β), wherein a series of artificial grass strand parts is positioned below the insertion device and a new series of artificial grass strand parts is clamped, and
   - in the stationary period, the front series of artificial grass strand parts is released by the clamps and inserted in the ground by the insertion device.

3. Device according to any of the preceding claims, wherein viewed in side view, the drum has 4, 5, 6, 7 or 8 clamps.

4. Device according to any of the preceding claims, wherein - viewed in side view and measured along the path which is defined by the clamps and any guides - the clamps are placed at mutual intervals of 30 to 50 cm apart, in particular 35 - 45 cm apart, more particularly at intervals of 38 - 42 cm apart.

5. Device according to any of the preceding claims, wherein the insertion pins are located in the drum.

6. Device according to any of the preceding claims, wherein the drum is configured to keep a stock of at least one series of cut artificial grass strand parts.

7. Device according to any of the preceding claims, wherein each clamp is configured to hold at least 50 artificial grass strands, and for this the clamp has at least the same number of clamp shoes (82).

8. Device according to any of the preceding claims, wherein each clamp (50) comprises a series of front shoes (51A) and a series of rear shoes (51B), in particular one front shoe and one rear shoe for each of the at least fifty tracks, wherein a gap (57) is defined between the front shoes and the rear shoes, wherein the cutting device (36) is configured to make a cut through the artificial grass strands in the gap so that the front shoes hold the rear ends of the cut artificial grass strand parts (62) and the rear shoes hold the front ends of the artificial grass strands (60).

9. Device according to any of the preceding claims, wherein the clamps (50) are pre-tensioned by means of a spring force element, wherein the artificial grass strands are automatically clamped when placed in the clamp without further action being required for this, and wherein the device comprises a clamp actuator which deactivates the two clamps (50), which hold the artificial grass strand part (62) to be inserted below the insertion device (70), prior to insertion of the artificial grass strand parts by the insertion device.

10. Method for inserting artificial grass strand parts in a ground, the method comprising:
- providing a device according to any of the preceding claims,
- moving the device forward over the ground to a location and stopping the device at this location,
- bringing a series of artificial grass strand parts (62) to below the insertion device (70) by rotation of the drum (16A, 16B), wherein the series of artificial grass strand parts is clamped between a front clamp (50A) and a rear clamp (50B), viewed in side view and in relation to the rotation direction of the drum,

- stopping the drum, and
- inserting the artificial grass strand parts in the ground by the insertion device.

11. Method according to claim 10, wherein when viewed in side view, the clamps are located at mutual distances of 30 - 50 cm, in particular 35 - 45 cm apart, more particularly 38 - 42 cm apart.

12. Method according to any of the preceding method claims, wherein:
- the device (10) is moved to a location on the ground and the device is then stopped,
- a series of artificial grass strand parts (62) which is held by two clamps is cut, and
- by rotation of the drum, the artificial grass strand parts are positioned in the insertion position below the insertion device, and
- the drum is then stopped, and
- the insertion device then inserts the artificial grass strands in the ground by inserting the insertion pins in the ground, wherein the artificial grass strand parts are carried by the insertion pins.

13. Method according to any of the preceding method claims, wherein the device during operation performs a cycle, wherein the cycle comprises a rotation period and a stationary period, wherein:
- in the rotation period, the drum is rotated through a cycle angle, wherein a series of artificial grass strand parts is positioned below the insertion device and a new series of artificial grass strand parts is clamped, and
- in the stationary period, the front series of artificial grass strand parts is released by the clamps and inserted in the ground by the insertion device.

14. Method according to any of the preceding method claims, wherein the clamps are first brought to a loose state by means of a clamp actuator prior to insertion of the insertion pins, so that the series of artificial grass parts which is in the insertion position is no longer clamped by the clamps.

15. Method according to any of the preceding method claims, wherein the artificial grass strands are cut before they are positioned below the insertion device.