angle to the horizontal. The roller 60 rotates around the axis 62 so that the surface 64 of the roller is in contact with the optical fiber 32 and generates a friction force D of which one component C_T is horizontal. The horizontal component C_T therefore causes twisting of the optical fiber 32 i.e. spinning of the fiber 32 (around its main axis Y vertical thereto);

- a second guide pulley 78 positioned downstream of the twisting roller 60 of the fiber 32.

Although this device known in the prior art effectively allows twisting to be generated within the fiber 32, criticisms have been leveled against it.

The generated twists have a tendency to propagate upstream but also downstream as far as the winding of the fiber. The fiber is then wound with these twists, which gives rise to inner forces making it difficult and even impossible to wind the fiber and also causing deterioration of the wound fiber over the long term.

Embodiments~~It is therefore one objective~~ of the present invention seek to provide an optical fiber guide device which allows the overcoming of this disadvantage.

More specifically, embodiments~~the objective~~ of this invention seek~~is~~ to provide an optical fiber guide device allowing twists to be generated within the said fiber which propagate upstream of the fiber, but to reduce or limit propagation of the twists downstream.

According to an aspect of the present invention, there is provided~~For this purpose, the invention concerns~~ an optical fiber guide device intended to be mounted on a vertical tower for fabricating~~drawing~~ optical fiber, the fiber being generated from a furnace located at the top part

of the tower and moving~~travelling~~ vertically downwards relative to the tower, the guide device being positioned downstream of the furnace, the device comprising:

- a first guide pulley;

- at least one surface for twisting the fiber positioned~~fiber twisting surface located~~ downstream of the first guide pulley;

- a second guide pulley positioned~~located~~ downstream of the at least one ~~fiber twisting~~ surface twisting the fiber; and

- a deflecting pulley;

the distance between the first guide pulley and the at least one fiber twisting surface being greater than the distance between the at least one fiber twisting surface and the second pulley~~.~~;

~~Preferably,~~ the device being characterised in that it further ~~concerns~~ comprises a second ~~twisting~~ surface for twisting the optical fiber, wherein the two twisting surfaces of the optical fiber are~~being~~ the two sidewalls of a groove formed in one same twisting pulley.

Advantageously, but optionally, embodiments of the invention comprise~~s~~ at least one of the following additional characteristics:

- the ratio between the distance between the first guide pulley and the at least one fiber twisting surface and the distance between the at least one fiber twisting surface and the second pulley is between 2 and 20;

- the second pulley and the deflecting pulley are merged;

- the device comprises two optical fiber twisting surfaces arranged in succession;

CLAIMS

1. An optical fiber guide device ~~(2)~~ intended to be mounted on a vertical tower ~~(T)~~ for fabricating optical fiber ~~(2)~~, the fiber being generated from a furnace ~~(18)~~ located at the top part of the tower ~~(T)~~ and moving vertically downwards relative to the tower ~~(T)~~, the guide device ~~(1)~~ being positioned downstream of the furnace ~~(18)~~ and comprising:

- a first guide pulley ~~(10)~~;
- at least one surface ~~(1220~~ for twisting the fiber ~~(2)~~ positioned downstream of the first guide pulley ~~(10)~~;
- a second guide pulley ~~(14)~~ positioned downstream of the at least one surface ~~(1220)~~ twisting the fiber ~~(2)~~; and
- a deflecting pulley ~~(16)~~,

the distance ~~(C)~~ between the first guide pulley ~~(10)~~ and the at least one fiber twisting surface ~~(1220)~~ being greater than the distance ~~(D)~~ between the at least one fiber twisting surface ~~(1220)~~ and the second pulley ~~(14)~~;
the device being characterized in that it further comprises a second surface ~~(1222)~~ for twisting the optical fiber ~~(2)~~ wherein the two twisting surfaces ~~(1220, 1222)~~ of the optical fiber ~~(2)~~ are the two sidewalls of a groove formed in one same twisting pulley ~~(122)~~.

2. The device according to claim 1, wherein the ratio between the distance ~~(C)~~ between the first guide pulley ~~(10)~~ and the at least one fiber twisting surface ~~(1220)~~ and the distance ~~(D)~~ between the at least one fiber twisting surface ~~(1220)~~ and the second pulley ~~(14)~~ is between 2 and 20.

3. The device according to one of claims 1 and 2 wherein the second pulley ~~(14)~~ and the deflecting pulley ~~(16)~~ are merged.

4. The device according to one of claims 1 to 3 wherein the two twisting surfaces ~~(1220, 1222)~~ of the optical fiber ~~(2)~~ are arranged in succession.

5. The device according to one of claims 1 to 4 wherein the angle separating the two twisting surfaces ~~(1220, 1222)~~ is between 50° and 120°.

6. The device according to one of claims 1 to 5 wherein the diameter of the twisting pulley ~~(122)~~ and the diameter of the second pulley ~~(14)~~ have the same value.

7. The device according to one of claims 1 to 6 wherein the twisting pulley ~~(122)~~ is arranged on the arm of a servomotor ~~(120)~~ so that the rotational axis of the pulley can be controlled in rotation around a horizontal axis ~~(Z)~~.

8. The device according to claim 7 wherein the servomotor ~~(120)~~ is arranged on a slide connection so that the rotational axis of the pulley can be controlled in horizontal translation relative to the tower ~~(T)~~ for fabricating the optical fiber ~~(2)~~.

9. The device according to claim 7 or 8 wherein the servomotor ~~(120)~~ comprises a command unit ~~(1202)~~ capable of controlling the rotation of the pulley's rotational axis in accordance with at least one of the following modes, the position of the rotational axis of

the pulley ~~(122)~~ being characterized by an angle β relative to a horizontal axis ~~(X)~~;

- the angle (β) is fixed over time;
- the angle (β) has a square wave of variable width over time but of fixed amplitude;
- the angle (β) has a square wave of variable width over time and of randomly variable amplitude;
- the angle (β) has a variable sinusoidal pulse over time but of fixed amplitude;
- the angle (β) has a variable sinusoidal pulse over time and of variable amplitude.