

CLAIMS

1. Device (10; 100) for a first steel tube (20) designed to be secured on a portion (22) of said tube used in a tubular column for oil & gas, energy, or storage applications, said device (10; 100) comprising :
5 - a substantially cylindrical envelope (11; 111) extending along a longitudinal axis (A1; A'1) and designed to surround the portion (22) of the first steel tube (20), said envelope forming an open ring so that a circumferential gap (J1; J2) subsists between two free ends (11c, 11d; 11c, 11d) of said envelope (11; 111); and
10 - a locking mechanism (16; 116) fixed to the envelope (11; 111) in the vicinity of the circumferential gap (J1; J2) and configured to bring the free ends (11c, 11d; 11c, 11d) of the envelope (11; 111) closer to each other in a locked position.
- 15 2. Device (10; 100) according to claim 1, wherein the locking mechanism (16; 116) comprises a locking lever (17; 117) pivotably mounted on the envelope (11; 111) and configured to rotate between an unlocked position in which said locking lever (17; 117) is radially away from the envelope (11; 111) and the locked position.
- 20 3. Device (10; 100) according to claim 1 or 2, wherein said locking mechanism (16; 116) is further configured to clamp at least one cable (40; 140, 142) while bringing the free ends of the envelope (11; 111) closer to each other in the locked position.
- 25 4. Device (10; 100) according to claims 2 and 3, wherein the locking lever (17; 117) is designed to clamp the cable (40; 140, 142) in the locked position.
- 30 5. Device (10; 100) according to claims 2 to 4, wherein the envelope (11; 111) comprises at least one longitudinal groove (14; 114a, 114b), extending along an axis parallel to the axis (A1; A'1) of the envelope, in the vicinity of the circumferential gap (J1; J2), said groove (14; 114a, 114b) being configured to receive the at least one cable (40; 140, 142).
6. Device (10; 100) according to claims 2 and any of claims 3 to 5, wherein the inner surface of the locking lever (17; 117) of the

locking mechanism (16; 116) comprises a plurality of teeth (17a) configured to grip the cable (40; 140, 142).

5 7. Device (10; 100) according to claim 2 and any of claims 3 to 6, wherein the locking mechanism (16; 116) comprises at least one transversal cap screw (18a, 18b; 118) attached to one of the free ends (11c; 11c) of the envelope (11; 111) and to the locking lever (17; 117), said cap screw (18a, 18b; 118) being located in a hollowed cavity provided in the other free end (11d; 111d) of the envelope (11; 111) in the locked position of the locking mechanism (16; 116).

10 8. Device (10; 100) according to claim 2 and any of claims 3 to 7, comprising at least one longitudinal shaft (19a, 19b; 119) extending along a rotational axis (A2; A'2) parallel to the longitudinal axis (A1; A'1) of the envelope (11; 111), the locking lever (17; 117) being pivotably mounted on said shaft (19a, 19b; 119).

15 9. Device (10; 100) according to claims 7 and 8, wherein the cap screw (18a, 18b; 118) is fixed to the longitudinal shaft (19a, 19b; 119) for the locking lever (17; 117).

20 10. Device (10; 100) according to claim 9, wherein the locking lever (17; 117) comprises an off-centred portion (17'; 117') in the vicinity of the circumferential gap (J1; J2), said off-centred portion (17'; 117') being offset compared to the rotational axis (A2; A'2) in such a way that when rotating the locking lever in the locked position, said off-centred shape comes in contact with the envelope (11; 111), thereby pretensioning the cap screw (18a, 18b; 118).

25 11. Device (10; 100) according to any of the preceding claims, wherein the envelope (11; 111) comprises at least two shells (12a, 12b; 112a, 112b) articulated compared to each other between an opened position and a closed position in which said shells (12a, 12b; 112a, 112b) configured to surround the first steel tube (20).

30 12. Device (10; 100) according to claim 11, wherein the shells (12a, 12b; 112a, 112b) are articulated through at least one hinge (13a, 13b; 113a, 113b).

13. Device (10; 100) according to claim 2 and any of claims 3 to 12, wherein the outer circumferential surface (11b; 111b) of the envelope

(11; 111) comprises a recess (11i; 111i) designed to receive the locking lever (17; 117) of the locking mechanism (16; 116) in the locked position.

5 14. Device (10; 100) according to claim 2 and any of claims 3 to 13, wherein the locking lever (17; 117) has a rounded shape so as to match the shape of the outer circumferential surface of the envelope in the locked position.

 15. Device (10; 100) according to any of the preceding claims, wherein the envelope (11; 111) is made of metallic material.

10 16. Device (10; 100) according to claim 2 and any of claims 3 to 15, wherein the locking lever (17; 117) of the locking mechanism (16; 116) is made of metallic material.

 17. Device (10; 100) according to any of the preceding claims, wherein the inner circumferential surface (11a; 111a) of the envelope (11; 111) comprises at least one anti-rotational tooth (15).

 18. Device (10; 100) according to claim 2 and any of claims 3 to 17, wherein the locking mechanism (16; 116) comprises a holding system (24, 50, 52) configured to maintain the locking lever (17; 117) in the locked position.

20 19. Device (10) according to claim 18, wherein the holding system (50) comprises an elastically deformable strand arranged in a safety clip (17d) provided on the locking lever (17) configured to be elastically deformable between holding position in which the free ends of said strand (50) are arranged in a corresponding slot (11j) provided in
25 the envelope (11) and a free position in which said free ends are away from said slots (11j).

 20. Device (10) according to claim 19, wherein the holding system (50) comprises a first longitudinal portion (50a) extending along an axis substantially parallel to the longitudinal axis (A1) of the
30 envelope (11) and arranged in the safety clip (17d), two transversal portions (50b, 50c) extending from the first longitudinal portion (50a) and each connected to a second and third coaxial longitudinal portions (50d, 50e) extending outwardly in a corresponding through-hole (17e, 17f) provided on the locking lever (17), the free ends of said second and

third longitudinal portions (50d, 50e) being located in a corresponding slot (11j) when the holding system (50) is in the holding position.

21. Device (10) according to claim 18, wherein the holding system (52) comprises at least one lug (52a, 52b) extending from a free end (17g) of the locking lever (17), opposite to the cap screw (18a, 18b), towards the envelope (11), the free end of said lug (52a, 52b) comprising an attachment pin configured to be arranged in a corresponding hole (11k, 11L) provided on the envelope when the locking lever (17) is in the locked position.

22. Device (10; 100) according to any of the preceding claims, further comprising at least one radio frequency identification chip.

23. Device (10; 100) according to any of the preceding claims, wherein the envelope (11; 111) comprises an inner tapered surface (11g; 111g).

24. Device (10; 110) according to claim 23, comprising a protective closure (13) covering the inner tapered surface (11g) of the envelope.

25. Steel tube (20) intended for use in a tubular hydrocarbon column, preferably as a completion tube, said tube including a pin portion and a box portion (22) configured to receive a pin portion of another second steel tube (30), and a device (10; 100) according to any of the preceding claims.

26. Tubular hydrocarbon column comprising a first tube (20) including a first pin portion and a first box portion (22), a second tube (30) including a second pin portion (32) configured to be screwed into the first box portion (22) and a second box portion, and at least one device (10; 110) according to any of the claims 1 to 25 mounted so as to be secured on the first box portion (22) of the first tube (20).