CLAIMS

1. A dose counting device (10; 110; 210) for coupling with a medical container (1) filled with a number N of doses of a product to be withdrawn therefrom, said medical container being provided with an opening (3a) for access to said product, the dose counting device comprising :

- a gripping member (20) for securing the dose counting device to the medical container, said gripping member including a hole (44; 144; 244) intended to face said opening when said dose counting device is coupled to said medical container,

- a counting ring (30; 230) rotatably mounted with respect to said gripping member, said counting ring being provided with information data corresponding to the N doses,

- a cover (50; 140; 240) movable with respect to said hole between a closed position, in which said cover prevents access to said hole, and an open position, in which it does not prevent access to said hole.

2. The dose counting device (10; 210) of claim 1, further comprising an incrementing system (32, 57; 248, 253, 232, 232a, 232b) coupled to said cover and to said counting ring, said incrementing system allowing the counting ring to automatically rotate on a predetermined angle, each time said cover moves from its open position to its closed position.

3. The dose counting device (10; 210) of claim 2, wherein said incrementing system comprises an active surface (57; 253) and said counting ring comprises a complementary active surface (32; 232a, 232b), said active surface engaging and cooperating with said complementary active surface so as to rotate said counting ring, when said cover moves back from its open position to its closed position.

4. The dose counting device (10) of claim 3, wherein said cover being movable in rotation around an axis R with respect to said gripping member when said cover moves from its closed position to its open position and vice-versa, said incrementing system comprises a part of a gear wheel (57) located on said cover, said gear wheel being rotatable around axis R and being provided with a plurality of radial teeth capable of cooperating with a plurality of complementary radial teeth (32) provided on the periphery of the counting ring, when said cover moves back from its open position to its closed position.

5. The dose counting device (210) of claim 3, wherein said cover being movable in translation with respect to said gripping member, when said

cover moves from its closed position to its open position and vice-versa, said incrementing system comprises a flexible leg (253) located on said cover, said flexible leg being capable of escaping a sloped surface (232a) of the periphery of said counting ring when said cover moves from its closed position to its open position, said flexible leg engaging a radial surface (232b) of said periphery of said counting ring when said cover moves back from its open position to its closed position.

6. The dose counting device (10; 110; 210) of any one of claims 1 to 5, further comprising a pierceable elastomeric piece (60) fixed with respect to the gripping member and intended to face the opening of the medical container when said dose counting device is coupled to said medical container, regardless from the position of the cover.

7. The dose counting device of any one of claims 1 to 6, further comprising biasing means for forcing the cover in its closed position.

8. Assembly comprising a medical container (1) comprising an opening (3a) and filled with a number N of doses of a product to be withdrawn therefrom via said opening and a dose counting device (10; 110; 210) according to any one of claims 1 to 7.

9. The assembly of claim 8, wherein said opening (3a) is closed by a septum (4).

10. The assembly of claims 6 and 9, wherein, when said dose counting device is coupled to said medical container, said pierceable elastomeric piece is in contact with said septum.

11. The assembly of any one of claims 8 to 10, wherein, said opening being a collar (3) closed by a septum, said gripping member comprises a clip (21, 24) capable of substantially surrounding said collar.

CLAIMS

1. A dose counting device (10; 110; 210) for coupling with a medical container (1) filled with a number N of doses of a product to be withdrawn therefrom, said medical container being provided with an opening (3a) for access to said product, the dose counting device comprising :

- a gripping member (20) for securing the dose counting device to the medical container, said gripping member including a hole (44; 144; 244) intended to face said opening when said dose counting device is coupled to said medical container,

- a counting ring (30; 230) rotatably mounted with respect to said gripping member, said counting ring being provided with information data corresponding to the N doses,

- a cover (50; 140; 240) movable with respect to said hole between a closed position, in which said cover prevents access to said hole, and an open position, in which it does not prevent access to said hole,

characterised in that it further comprises

- an incrementing system (32, 57; 248, 253, 232, 232a, 232b) coupled to said cover and to said counting ring, said incrementing system being configured such that the counting ring automatically rotates on a predetermined angle, each time said cover moves from its open position to its closed position.

2. The dose counting device (10; 210) of claim 1, wherein said incrementing system comprises an active surface (57; 253) and said counting ring comprises a complementary active surface (32; 232a, 232b), said active surface engaging and cooperating with said complementary active surface so as to rotate said counting ring, when said cover moves back from its open position to its closed position.

3. The dose counting device (10) of claim 2, wherein said cover being movable in rotation around an axis R with respect to said gripping member when said cover moves from its closed position to its open position and vice-versa, said incrementing system comprises a part of a gear wheel (57) located on said cover, said gear wheel being rotatable around axis R and being provided with a plurality of radial teeth capable of cooperating with a plurality of complementary radial teeth (32) provided on the periphery of the counting ring, when said cover moves back from its open position to its closed position.

4. The dose counting device (210) of claim 2, wherein said cover being movable in translation with respect to said gripping member, when said cover moves from its closed position to its open position and vice-versa, said

incrementing system comprises a flexible leg (253) located on said cover, said flexible leg being capable of escaping a sloped surface (232a) of the periphery of said counting ring when said cover moves from its closed position to its open position, said flexible leg engaging a radial surface (232b) of said periphery of said counting ring when said cover moves back from its open position to its closed position.

5. The dose counting device (10; 110; 210) of any one of claims 1 to 4, further comprising a pierceable elastomeric piece (60) fixed with respect to the gripping member and intended to face the opening of the medical container when said dose counting device is coupled to said medical container, regardless from the position of the cover.

6. The dose counting device of any one of claims 1 to 5, further comprising biasing means for forcing the cover in its closed position.

7. Assembly comprising a medical container (1) comprising an opening (3a) and filled with a number N of doses of a product to be withdrawn therefrom via said opening and a dose counting device (10; 110; 210) according to any one of claims 1 to 6.

8. The assembly of claim 7, wherein said opening (3a) is closed by a septum (4).

9. The assembly of claims 5 and 8, wherein, when said dose counting device is coupled to said medical container, said pierceable elastomeric piece is in contact with said septum.

10. The assembly of any one of claims 7 to 9, wherein, said opening being a collar (3) closed by a septum, said gripping member comprises a clip (21, 24) capable of substantially surrounding said collar.