Claims

1. A contact activated incision device, comprising, in combination:

a housing defining a cavity, wherein a longitudinal axis extends between a proximal end and a distal end of the housing;

a slider slidable with respect to the housing along the longitudinal axis and at least partially positioned outside of the housing;

a roller mounted on the housing and rotatable about an axis perpendicular to the longitudinal axis; and

a blade assembly mounted on the roller and having a blade, wherein the blade is movable between a retracted position, an extended position and a final position;

wherein at the retracted position the blade is positioned in the cavity, at the extended position the blade extends at least partially beyond the proximal end of the housing, and at the final position the blade is positioned in the cavity.

2. A contact activated incision device, comprising, in combination:

a housing defining a cavity, wherein a longitudinal axis extends between a proximal end and a distal end;

a slider slidable with respect to the housing along the longitudinal axis and at least partially positioned outside of the housing;

a first biasing means positioned between the housing and the slider, the first biasing means abutting the slider and biasing the slider towards the proximal end;

a roller mounted on the housing and rotatable with respect to the housing; and

a blade assembly mounted on the roller and having a blade, wherein the blade is movable between a retracted position, an extended position and a final position;

wherein at the retracted position the blade is positioned in the cavity, at the extended position the blade extends at least partially beyond the proximal end of the housing, and at the final position the blade is positioned in the cavity.

3. The device of claim 1 or 2, wherein the slider is slidable from a first position to a second position and to a third position, and the roller is movable from a start position to an apex position and to a post-apex segment; and

wherein when the slider is in the first position, the roller is at the start position and the blade is at the retracted position.

4. The device of claim 3, wherein when the roller is at the apex position, the slider is in the second position, and the blade is at the extended position.

5. The device of any one of claims 3-4, wherein when the roller is at the post-apex segment, the blade is at the final position.

6. The device of any one of claims 3-5, wherein movement of the slider to the third position urges the roller to rotate past the apex position to the post-apex segment.

7. The device of any one of claims 3-6, wherein the roller engages the slider such that the roller cannot rotate from the start position until the slider has moved from the first position.

8. The device of any one of claims 3-7, wherein:

the roller has a pair of shafts;

the slider defines a slot adapted to receive the pair of shafts; and

the slider receives the pair of shafts within the slot and resists rotation of the roller when the roller is at the start position.

9. The device of any one of claims 3-8, wherein the slider further comprises a cam ledge, and the blade assembly has a projection which engages the cam ledge, the cam ledge is positioned between the roller and the projection such that as the slider slides from the first position to the second position, the roller rotates, and the blade translates away from the roller.

10. The device of claim 9, wherein the projection engages a second wall of the cam ledge to resist rotation of the roller back from the post-apex segment to the apex position.

11. The device of claim 9 or 10, wherein the roller further comprises a cam surface and the cam ledge engages the cam surface to urge rotation of the roller as the slider moves towards the second position.

12. The device of any one of claims 8-11, wherein further rotation of the roller around the post-apex segment away from the apex position is limited by the pair of shafts engaging the cam ledge of the slider.

13. The device of any one of the preceding claims, wherein the blade assembly further comprises a second biasing means adapted to bias the blade towards the retracted position.

14. The device of claim 13, wherein the second biasing means is positioned between the blade assembly and the roller.

15. The device of any one of the preceding claims, further comprising a cap releasably secured to the proximal end of the housing.

16. The device of any one of the preceding claims, wherein the blade is slidable with respect to the roller.

17. The device of any one claims 3-16, wherein the slider further comprises a lip; and

wherein the lip extends beyond the proximal end of the housing when the slider is at the first position, and the lip is positioned within the cavity when the slider is at the third position.

18. The device of claim 1, further comprising a first biasing means positioned between the housing and the slider, the first biasing means abutting the slider and biasing the slider towards the proximal end.

19. The device of claim 2, wherein the roller is rotatable about an axis perpendicular to the longitudinal axis.

Claims

1. A contact activated incision device, comprising, in combination: a housing defining a cavity, wherein a longitudinal axis extends between a proximal end and a distal end of the housing;

a slider slidable with respect to the housing along the longitudinal axis and at least partially positioned outside of the housing;

a roller mounted on the housing and rotatable about a fixed axis perpendicular to the longitudinal axis; and

a blade assembly mounted on the roller and having a blade, wherein the blade is movable between a retracted position, an extended position and a final position upon moving the slider;

wherein, at the retracted position the blade is positioned in the cavity, at the extended position the blade extends at least partially beyond the proximal end of the housing, and at the final position the blade is positioned in the cavity.

2. The device of claim 1, wherein the movement of the blade from the retracted to the final position does not retrace its steps.

3. A contact activated incision device, comprising, in combination: a housing defining a cavity, wherein a longitudinal axis extends between a proximal end and a distal end;

a slider slidable with respect to the housing along the longitudinal axis and at least partially positioned outside of the housing;

a first biasing means positioned between the housing and the slider, the first biasing means abutting the slider and biasing the slider towards the proximal end; a roller mounted on the housing and rotatable with respect to the housing; and

a blade assembly mounted on the roller and having a blade, wherein the blade is movable between a retracted position, an extended position and a final position upon moving the slider;

wherein at the retracted position the blade is positioned in the cavity, at the extended position the blade extends at least partially beyond the proximal end of the housing, and at the final position the blade is positioned in the cavity and wherein the movement of the blade from the retracted to the final position does not retrace its steps.

4. The device, anyone of claims 1-3, wherein the slider is slidable from a first position to a second position and to a third position, and the roller is movable from a start position to an apex position and to a post-apex segment; and

wherein when the slider is in the first position, the roller is at the start position and the

blade is at the retracted position.

5. The device of claim 4, wherein when the roller is at the apex position, the slider is in the second position, and the blade is at the extended position.

6. The device of claim 4 or claim 5, wherein when the roller is at the post-apex segment, the blade is at the final position.

7. The device of anyone of claims 4-6, wherein movement of the slider to the third position urges the roller to rotate past the apex position to the post-apex segment.

8. The device of anyone of claims 4-7, wherein the roller engages the slider such that the roller cannot rotate from the start position until the slider has moved from the first position.

9. The device of anyone of claims 4-8, wherein: the roller has a pair of shafts; the slider defines a slot adapted to receive the pair of shafts; and the slider receives the pair of shafts within the slot and resists rotation of the roller when the roller is at the start position.

10. The device of anyone of claims 4-9, wherein the slider further comprises a cam ledge, and the blade assembly has a projection which engages the cam ledge, the cam ledge being positioned between the roller and the projection and the engagement of the projection and the cam ledge being such that as the slider slides from the first position to the second position, the roller rotates, and the blade translates away from the roller.

11. The device of claim 10 9, wherein the projection engages a second wall of the cam ledge to resist rotation of the roller back from the post-apex segment to the apex position.

12. The device of claim 10 or claim 11, wherein the roller further comprises a cam surface and the cam ledge engages the cam surface to urge rotation of the roller as the slider moves towards the second position.

13. The device of claim 12, wherein the roller further comprises a shaft and the cam ledge engages the shaft after engaging the cam to urge rotation of the roller as the slider moves beyond the second position.

14. The device of anyone of claims 9-13, wherein further rotation of the roller around the post-apex segment away from the apex position is limited by the pair of shafts engaging the cam ledge of the slider.

15. The device of anyone of the preceding claims, wherein the blade assembly further comprises a second biasing means adapted to bias the blade towards the retracted position.

16. The device of claim 15, wherein the second biasing means is positioned between the blade assembly and the roller.

17. The device of anyone, of the preceding claims, further comprising a cap releasably secured to the proximal end of the housing to prevent unintentional movement of the slider.

18. The device of anyone of the preceding claims, wherein the blade is slidable with respect to the roller.

19. The device of anyone claims 4-18, wherein the slider further comprises a lip having a contrasting colour to the housing; and wherein the lip extends beyond the proximal end of the housing when the slider is at the first position, and the lip is positioned within the cavity when the slider is at the third position.

20. The device of claim 1, further comprising a first biasing means positioned between the housing and the slider, the first biasing means abutting the slider and biasing the slider towards the proximal end.

21. The device of claim 3, wherein the roller is rotatable about a fixed axis perpendicular to the longitudinal axis.