

CLAIMS

1. An assembly suitable for dispensing liquid from a compressible bag, the assembly comprising an apparatus and a flexible mat,

the apparatus comprises a housing having a dispensing end and an opposite rear end, a floor comprising a flat floor surface, a pair of parallel guiding tracks and a roller arrangement comprising a roller body having a first and a second roller body ends and a roller surface with a cross-sectional circumference, the roller arrangement has a first roller arrangement end and a second roller arrangement end, respectively engaged with said respective guiding tracks, wherein said guiding tracks are located to guide said roller arrangement to roll said roller arrangement from the rear end location towards the dispensing end,

said mat has a length extending between a first mat end and a second mat end, wherein the first mat end is mounted to or adapted to be mounted to said roller body and the mat is located at least partly on the flat floor between said guiding tracks when said roller is located at said rear end location.

2. The assembly of claim 1, wherein said second mat end is located closer to said dispensing end than the first mat end, at least when said roller arrangement is located at said rear end location.

3. The assembly of claim 1 or claim 2, wherein said mat when fully unrolled is extending from its mounting to the roller to a distance of 5 cm or less of said dispensing end, preferably to a distance of 2 % or less of said dispensing, such as to the dispensing end.

4. The assembly of any one of the preceding claims, wherein said mat has a length of at least 1.5 times the roller circumference, such as from about 2 to about 10 times the roller circumference.

5. The assembly of any one of the preceding claims, wherein said mat has a width, which is up to a length of said roller body, preferably up to the distance between said respective guiding tracks, such as up to about 90 % of the distance between said respective guiding tracks, preferably said width is at least about 5 cm, such as from about 8 cm to about 30 cm, such as from about 10 to about 20 cm.
6. The assembly of any one of the preceding claims, wherein said mat is flexible and suitable for being rolled onto the roller body.
7. The assembly of any one of the preceding claims, wherein said mat has a top surface and an opposite bottom surface facing said floor surface when unrolled from the roller body, wherein said bottom surface has a lower roughness than said top surface, preferably said bottom surface has a RA roughness of less than about 10 μm , such as of less than 5 μm , such as of 1 μm or less.
8. The assembly of claim 7 wherein said bottom surface has a coefficient of static friction (CoSF) of about 0.3 or less, such as about 0.2 or less, such as about 0.1 or less determined according to ASTM D3702-94 (2019).
9. The assembly of claim 7 or claim 8 wherein said bottom surface is at least partly provided by a low friction polymer comprising fluoropolymer, such as PTFE (polytetrafluoroethylene), fluoropolymer, PFA (perfluoroalkoxy) and/or FEP (fluorinated ethylene propylene), said bottom surface is optionally in the form of a layer of said low friction polymer or a coating of said low friction polymer.
10. The assembly of any one of claims 7-9, wherein said top surface is at least partly provided by a high friction polymer comprising an elastomer, such as a rubber, e.g. a silicone rubber, preferably the high friction polymer has a Durometer, Shore A hardness of 90 or less, such as of 80 or less.

11. The assembly of any one of claims 7-10, wherein said mat comprises two or more layers which are interfacially bonded or which are interconnected at least at the first mat end and the second mat end.
12. The assembly of any one of the preceding claims, wherein said
5 mounting of the mat to said roller body is a chemical (Glue), a physical (tape) and/or a mechanical mounting (mounting in a groove and/or a projection on or in the roller body), preferably the mat is releasable mounted.
13. The assembly of any one of the preceding claims, wherein said
10 floor comprises a rigid polymer selected from acrylic, polycarbonate, polyimide, PEEK (polyetheretherketone), Acetal (polyoxymethylene), polyamide or any combinations thereof.
14. The assembly of any one of the preceding claims, wherein said
15 floor comprises a fiber reinforced polymer, preferably reinforced with fibers selected from glass fibers, carbon fibers, basalt fibers, aramid fibers or any combinations comprising one or more of these.
15. The assembly of any one of the preceding claims, wherein said floor surfaces has a CoSF) of about 0.4 or less, such as about 0.3 or less, such as about 0.2 or less determined according to ASTM D3702-94 (2019).
16. The assembly of any one of the preceding claims, wherein said
20 roller arrangement comprises a track engagement arrangement at each of its respective first second ends engaged with said respective guiding tracks, wherein at least one of said track engagement arrangements comprises a track slider engaged with said guiding track for sliding along the guiding tracks, preferably both of said track engagement arrangements comprises a
25 track slider engaged with said guiding track for sliding along the guiding tracks.
17. The assembly of any one of the preceding claims, wherein said roller arrangement comprises a track engagement arrangement at each of its

respective first second ends engaged with said respective guiding tracks, wherein at least one of said track engagement arrangement comprises a wheel adapted to run onto or in said guiding track it is engaged with.

18. The assembly of any one of claim 16 and 17, wherein the track engagement arrangements are engaged with said respective guiding tracks to hold the roller body at a predefined and/or selectable distance to said flat floor surface when the roller arrangement passes from the rear end towards the dispensing end.

19. The assembly of any one of claims 16-18, wherein the track engagement arrangements are engaged with said respective guiding tracks to hold the roller body in a locked, predefined and/or selectable distance to said flat floor surface when the roller arrangement passes from the rear end towards the dispensing end.

20. The assembly of any one of claims 18-19, wherein said predefined and/or selectable distance to said flat floor surface is larger than the thickness of the mat, such as from about 2 mm to about 3 cm larger than the thickness of the mat, such as from about 5 mm to about 2 cm larger than the thickness of the mat, such as from about 8 mm to about 1 cm larger than the thickness of the mat.

21. The assembly of any one of the preceding claims, wherein said mat has a thickness of from about 0.1 mm to about 1 cm, such as from about 1 mm to about 5 mm.

22. The assembly of any one of the preceding claims, wherein said mat at its second mat end has a stop arrangement preventing the second end of the mat to be rolled onto the roller body.

23. The assembly of any one of the preceding claims, wherein said stop arrangement is adapted for being blocked by said track engagement arrangements when the track engagement arrangements reached the second

end of the mat, said stop arrangement preferably comprises a rigid stopper such as a rigid rod.

24. The assembly of any one of the preceding claims, wherein the roller arrangement has a center axis located in a center axis plane parallel to the flat floor surface, when the roller arrangement passes from the rear end towards the dispensing end.

25. The assembly of any one of the preceding claims, wherein said apparatus comprises a drive arrangement engaged with said roller arrangement for driving said roll of the roller arrangement from the rear end towards the dispensing end, said drive arrangement preferably comprises a spring arrangement and/or an electric motor.

26. The assembly of claim 25, wherein the drive arrangement is adapted for driving the roller body in clock direction when seen from side where the dispensing end is located left to the roller body.

27. The assembly of claim 25 or claim 26, wherein said drive arrangement comprises a spring arrangement, wherein said spring arrangement comprises a single spring or a multi spring arrangement, such as a spring arrangement comprising two or more springs operating in parallel.

28. The assembly of any one of claims 25-27, wherein said drive arrangement comprises a spring arrangement, said spring arrangement preferably being at least partly located in the roller body.

29. The assembly of claim 28, wherein said spring arrangement comprises at least one helical torsion spring located within the roller body, preferably said roller body forms a housing for said one or more helical torsion springs.

30. The assembly of any one of the preceding claims, wherein said roller arrangement comprises an axle and wherein said roller body is arranged to rotate around said axle.

31. The assembly of claim 30 wherein said spring arrangement is arranged to drive said roller body to rotate around the axle.
32. The assembly of claim 30 or claim 31 wherein at least one helical torsion spring is located between said roller body and said axle.
- 5 33. The assembly of claim 31 wherein the axle is rigidly connected to at least one axle flange and wherein a first end of the helical torsion spring is engaged with said roller body and a second end of the helical torsion spring is engaged with said axle flange.
34. The assembly of claim 33 wherein the roller body comprises a
10 cylindrical body part and at least one roller flange perpendicular to the cylindrical body and wherein the first end of the helical torsion spring is engaged with said roller flange or said cylindrical body part.
35. The assembly of claim 34, wherein at least one of said axle
15 flanges is an engagement axle flange and at least one of said roller flanges is an engagement roller flange, wherein said engagement axle flange is engaged with said engagement roller flange, preferably to control, steer and/or restrain the rotation of the roller body.
36. The assembly of claim 35, wherein said engagement axle flange
20 and said engagement roller flange are engaged by corresponding annular flanges, annular channels and/or annular sections of flanges.
37. The assembly of claim 35 or claim 36, wherein said engagement axle flange and said engagement roller flange forms a rotational restraint, restraining the rotation of the roller body to a predefined rotation rate.
38. The assembly of any one of claims 35-37, wherein said
25 engagement axle flange and said engagement roller flange forms a rotational restraint, wherein a first of said engagement axle flange and said engagement roller flange comprises annular channels and a second of said engagement axle flange and said engagement roller flange comprises annular

flanges or sections of flanges engaged into the annular channels of said first of said engagement axle flange and said engagement roller flange.

39. The assembly of claim 38, wherein said annular channels comprises a lubricate, such as an oil or grease, preferably the lubricate is filling up space in the channels between the annular flanges or sections of flanges, preferably said lubricate can pass from one annular channel to another annular channel, e.g. through perforations in the annular flanges and/or between sections of flanges.

40. The assembly of claim 38 or claim 39, wherein said annular channels each has a channel width and wherein at least one of said annular flanges or sections of flanges engaged into an Annular channel has a width of from about 75 % to about 100 %, such as from about 90 % to about 99% of said channel width of said channel.

41. The assembly of any one of claims 27-40, wherein said spring arrangement comprises a loading arrangement for at least partly loading said spring arrangement, said loading arrangement is preferably arranged for at least partly loading said spring arrangement by unrolling the mat from the roller body and or by moving the roller arrangement in a direction from the dispensing end and towards the rear end.

42. The assembly of any one of claims 27-41, wherein said spring arrangement comprises a loading station for loading said spring arrangement, said loading station preferably being located to engage with said roller arrangement at rear end location of said housing.

43. The assembly of claim 42, wherein said loading station comprising a toothed wheel and a bar for rotating the toothed wheel, said roller body comprises a ring of teeth located to engage with said toothed wheel when said roller body is located in said loading station, preferably said ring of teeth is located on a periphery of a roller flange located at one of its roller body ends.

44. The assembly of claim 42 or claim 43, wherein said roller arrangement comprises a snap lock for temporarily holding said roller body in said loading station.
45. The assembly of any one of claims 42-44, wherein said roller arrangement comprises a lever for releasing said roller body from said loading station.
46. The assembly of any one of the preceding claims, wherein said apparatus comprises a top part, such as a lid, which may be fully or partly moved for allowing access to the mat.
47. The assembly of any one of the preceding claims, wherein a rear section of the housing forms a shelter for the roller arrangement, when located in a rearmost position.
48. The assembly of claim 47, wherein the roller is located in the shelter when engaging with the loading station.
49. The assembly of any one of the preceding claims, wherein the apparatus comprises a monitor sensor and a display for monitoring and displaying least one condition of a compressible bag arranged on the mat, the condition preferably comprises a temperature of a liquid in the bag and/or at least one dispensing condition, such as dispensing rate, dispensing status or dispensing time left.
50. The assembly of any one of the preceding claims, wherein the apparatus comprises a regulator arrangement for automatic or remote controlling start or stop of dispensing of liquid from a bag located on the mat.
51. The assembly of claim 50, wherein the monitor sensor is integrated with or associated to the regulator arrangement.
52. The assembly of any one of the preceding claims, wherein the apparatus comprises a display for displaying a loading condition of said spring arrangement.

53. The assembly of any one of the preceding claims, wherein the apparatus comprises a temperature regulating arrangement adapted to heat a liquid in a compressible bag located on the mat.
54. The assembly of claim 53, wherein the temperature regulating arrangement comprises one or more heating elements incorporated into the mat, into the floor and/or into the lid.
55. The assembly of claim 53 or claim 54, wherein the temperature regulating arrangement comprises an air heat blower arranged for heating the space within the housing to a selected temperature.
- 10 56. The assembly of any one of claims 53-55, wherein the temperature regulating arrangement comprises at least one temperature sensor, the temperature sensor is advantageously associated with the heating element(s) for controlling the heating element(s).
57. The assembly of any one of claims 49-56 wherein the one or more sensors is/are located in the floor, the mat, and/or in the track(s).
- 15 58. A system suitable for dispensing liquid from a compressible bag, the system comprising an assembly according to any one of the preceding claims and a compressible bag, the compressible bag has a rear end and a dispensing end, the dispensing end comprises a dispensing port suitable for being connected to a tubing arrangement for administering the liquid.
- 20 59. The system of claim 58, wherein the mat has a width, which is at least as large as a width of the compressible bag.
60. The system of claim 58 or claim 59, wherein the mat has a length which is at least as long as the distance between the rear end and the dispensing end of the compressible bag.
- 25 61. The system of any one of claims 58-60, wherein the track engagement arrangements are engaged with said respective guiding tracks to hold the roller at a predefined and/or selectable distance to said flat floor

surface when the roller arrangement passes from the rear end towards the dispensing end, wherein said predefined and/or selectable distance to said flat floor surface is from about 1 mm to about 2.5 cm larger than the combined thickness of the mat and the compressible bag in empty condition,
5 such as from about 2 mm to about 2 cm, such as from about 4 mm to about 1 cm larger than the combined thickness of the mat and the compressible bag in empty condition.

62. The system of any one of claims 58-61, wherein said system further comprises the tubing arrangement for administering the liquid
10 wherein the tubing arrangement comprises a tube and a roller pinch clamp for adjusting the flow through the tube, wherein the roller pinch clamp comprises at least two adjustment rollers.

63. The system of claim 62, wherein at least two adjustment rollers are located opposite to each other for directly and or indirectly via a support
15 flange pinching the tube between the rollers.

64. The system of claim 62 or claim 63, wherein said tubing arrangement comprises a spike and drip chamber connected between the dispensing port and the tube, the roller pinch clamp preferably being integrated with the drip chamber or being located at a distance to the drip
20 chamber along the tube of up to about 0.5 m, such as up to about 0.2 m, such as up to about 0.1 m.