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(54) **MASSAGE SYSTEM WITH REMOVABLY MOUNTED MASSAGE APPLICATOR**

(57) A massage system (1) comprises a massage device (3) and a massage applicator (5). The massage device (3) comprises a body (7) and an attachment protrusion (9) extending from the body (7) along an axial direction (11) to a tip (43) of the attachment protrusion (9) The massage applicator (5) comprises a receiving cavity (21) configured to at least partially receive the attachment protrusion (9) to removably mount the massage applicator (5) to the massage device (3). The attachment protrusion (9) is configured to carry out a reciprocating motion along the axial direction (11). A device engagement surface (35) of the attachment protrusion (9) is configured to contact an applicator engagement surface (33) of the massage applicator (5) to transmit an axial massage force to the massage applicator (5). There is a gap (41) along the axial direction (11) between the tip (43) of the attachment protrusion (9) and the massage applicator (5) in a mounted state of the massage applicator (5).

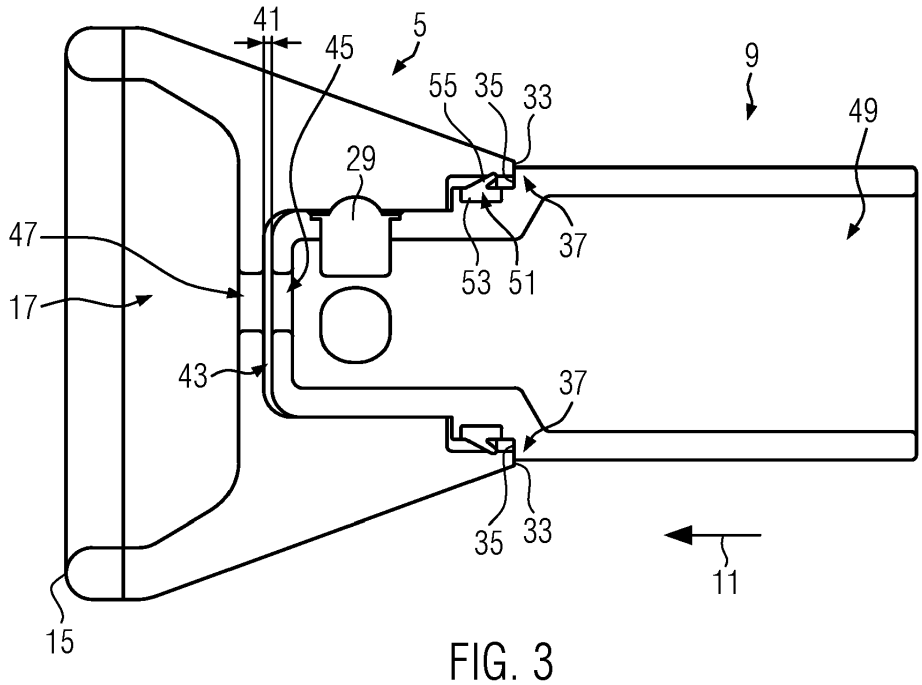

FIG. 3

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Description

[0001] The invention relates to a massage system with a massage device and a massage applicator that may be removably mounted on the massage device.

[0002] US 2020/0261307 A1 discloses a percussive therapy device comprising a motor and a push rod assembly operatively connected to the motor and configured to reciprocate in response to activation of the motor. The push rod assembly includes a male connector at the end of the reciprocating components that allows connection of an attachment to be used for massage or therapy. The attachment is affixed to the male connector so that the push rod assembly moves the attachment reciprocally in accordance with a specified amplitude.

[0003] According to a first aspect of the invention, a massage system is provided. The massage system comprises a massage device and a massage applicator. The massage device comprises a body and an attachment protrusion. The attachment protrusion extends from the body along an axial direction to a tip of the attachment protrusion. The massage applicator comprises a receiving cavity. The receiving cavity is configured to at least partially receive the attachment protrusion to removably mount the massage applicator to the massage device. The attachment protrusion is configured to carry out a reciprocating motion along the axial direction. The attachment protrusion comprises a device engagement surface. The massage applicator comprises an applicator engagement surface. The device engagement surface is configured to contact the applicator engagement surface to transmit an axial massage force to the massage applicator. There is a gap along the axial direction between the tip of the attachment protrusion and the massage applicator in a mounted state of the massage applicator.

[0004] The gap may prevent contact between the tip of the attachment protrusion and the massage applicator in the mounted state of the massage applicator. The gap may prevent that contact between the tip of the attachment protrusion and the massage applicator interferes with transmission of the axial massage force via contact between the device engagement surface and the applicator engagement surface. The gap between the tip of the attachment protrusion and the massage applicator may reduce wear of one or both of the attachment protrusion and the massage applicator. The gap between the tip of the attachment protrusion and the massage applicator may lead to increased stability of the connection between the massage device and the massage applicator, in particular as compared to systems where the tip of the attachment protrusion may tilt about a contact point or a contact area between the tip of the attachment protrusion and the massage applicator.

[0005] The attachment protrusion may extend along the axial direction from a first end of the attachment protrusion to a second end of the attachment protrusion. The first end of the attachment protrusion may be upstream of the second end of the attachment protrusion with respect to the axial direction. The first end of the attachment protrusion may be provided at the body or received in the body. The second end of the attachment protrusion may be configured to be received in the receiving cavity of the massage applicator to removably mount the massage applicator to the massage device. The second end of the attachment protrusion may comprise the tip of the attachment protrusion.

[0006] The tip of the attachment protrusion may be received in the receiving cavity of the massage applicator in the mounted state of the massage applicator.

[0007] The receiving cavity of the massage applicator may comprise an insertion opening. The insertion opening may provide access to the receiving cavity. To mount the massage applicator to the massage device, the attachment protrusion may be at least partially inserted into the receiving cavity through the insertion opening. The insertion opening may face against the axial direction in the mounted state of the massage applicator.

[0008] The massage applicator may comprise at least one massage surface. The at least one massage surface may be configured to contact a massage recipient. The at least one massage surface may be curved, for example.

[0009] The massage applicator may be formed as a single piece. A material of the massage applicator may be the same throughout the massage applicator. Alternatively, the massage applicator may be formed of at least two different materials. For example, at least a portion of the massage applicator that comprises the massage surface may be formed of a first material and at least a portion of the massage applicator that comprises the applicator engagement surface may be formed of a second material. The second material may be harder than the first material. The first material may be a rubber material or a foam material. The second material may be a metal material or a plastic material.

[0010] The attachment protrusion may comprise a step portion or a flange defining the device engagement surface. The step portion or the flange may comprise a change in diameter of the attachment protrusion, in particular a step-wise change of the diameter of the attachment protrusion. The change in diameter of the attachment protrusion may be a change in diameter when progressing along the axial direction. The step portion or the flange may be formed around a full circumference of the attachment protrusion around the axial direction.

[0011] The device engagement surface may face along the axial direction. The device engagement surface may extend perpendicular to the axial direction. The device engagement surface may extend around a full circumference of the attachment protrusion around the axial direction. The device engagement surface may be inclined with respect to the axial direction. An angle between the device engagement surface and the axial direction may be the same fully around a circumference of the attachment protrusion around the axial direction.

[0012] The applicator engagement surface may face against the axial direction. The applicator engagement surface may extend perpendicular to the axial direction. The applicator engagement surface may extend fully around the axial direction. The applicator engagement surface may extend around a full circumference of the attachment protrusion around the axial direction in the mounted state of the massage applicator. The applicator engagement surface may be inclined with respect to the axial direction. An angle between the applicator engagement surface and the axial direction may be the same fully around a circumference of the attachment protrusion around the axial direction in the mounted state of the massage applicator.

[0013] The applicator engagement surface may extend in parallel to the device engagement surface. In the mounted state of the massage applicator, the device engagement surface may contact the applicator engagement surface to transmit the axial massage force to the massage applicator.

[0014] The receiving cavity may comprise a base surface and a side surface. The base surface and the side surface may together define the receiving cavity. The base surface may face against the axial direction. The side surface may circumferentially extend around the axial direction. The side surface may circumferentially extend around the attachment protrusion in the mounted state of the massage applicator. The gap between the tip of the attachment protrusion and the massage applicator may be a gap between the tip of the attachment protrusion and the base surface of the receiving cavity.

[0015] The applicator engagement surface may be provided within the receiving cavity. The side surface of the receiving cavity may comprise a step portion defining the applicator engagement surface. In the mounted state of the massage applicator, an interface between the device engagement surface and the applicator engagement surface may be provided within the receiving cavity. The interface between the device engagement surface and the applicator engagement surface may be protected from outside interference within the receiving cavity.

[0016] The applicator engagement surface may be provided outside of the receiving cavity. The applicator engagement surface may be a surface of the massage applicator that is nearest to the body of the massage device in the mounted state of the massage applicator. The applicator engagement surface may be a surface of the massage applicator that is most upstream with respect to the axial direction in the mounted state of the massage applicator. An interface between the device engagement surface and the applicator engagement surface may be provided outside the receiving cavity in the mounted state of the massage applicator.

[0017] The device attachment surface may be provided outside of the massage applicator in the mounted state of the massage applicator. The device attachment surface may be configured to contact the applicator attachment surface outside of the massage applicator in the mounted state of the massage applicator. If one or both of the device engagement surface and the applicator engagement surface are provided outside of the receiving cavity in the mounted state of the massage applicator, it may not be required to provide the receiving cavity with a specific shape adapted to receive the axial massage force. For example, the side wall of the receiving cavity may be devoid of recesses, or steps, or both.

[0018] The attachment protrusion may have a non-circular cross-section in a sectional plane perpendicular to the axial direction. In particular, a portion of the attachment protrusion that is received in the receiving cavity may have a non-circular cross-section in a sectional plane perpendicular to the axial direction.

[0019] The receiving cavity may have a non-circular cross-section, when viewed in a sectional plane perpendicular to the axial direction in the mounted state of the massage applicator.

[0020] A shape of the cross-section of the attachment protrusion may correspond to a shape of the cross-section of the receiving cavity. The shapes of the attachment protrusion and the receiving cavity may interact to limit or prevent rotation of the massage applicator around the axial direction in the mounted state of the massage applicator. A form-fit may be provided between the attachment protrusion and the massage applicator.

[0021] For example, one or both of the cross-section of the attachment protrusion and the cross-section of the receiving cavity in a sectional plane perpendicular to the axial direction may be a circular cross-section, or a triangular cross-section, or a rectangular cross-section, or a polygonal cross-section, or an elliptical cross-section, or a star-shaped cross-section, or an irregular cross-section.

[0022] The attachment protrusion may comprise a protrusion retention feature. The receiving cavity may comprise a cavity retention feature. The protrusion retention feature and the cavity retention feature may interact in the mounted state of the massage applicator to provide a retaining effect preventing the attachment protrusion from sliding out of the receiving cavity. The retaining effect may be overcome by user interaction. For example, the massage applicator may be pulled from the attachment protrusion by applying sufficient force to overcome a holding force generated by interaction between the protrusion retention feature and the cavity retention feature.

[0023] One of the protrusion retention feature and the cavity retention feature may comprise an engagement element. The other one of the protrusion engagement feature and the cavity engagement feature may comprise an engagement recess. The engagement element may be configured to at least partially extend into the engagement recess in the mounted state of the massage applicator. The engagement element may be biased for moving towards the engagement recess, when the massage applicator is mounted to the massage device. The engagement recess may be formed as a recess in the side surface of the receiving cavity or as a recess in a circum-

ferential surface of the attachment protrusion. The engagement element may be formed as a ball configured to protrude into the engagement recess.

[0024] A device suction opening may be provided in the attachment protrusion. The device suction opening may be provided in a part of the attachment protrusion that is received in the receiving cavity in the mounted state of the massage applicator. The device suction opening may be provided in the tip of the attachment protrusion. The device suction opening may face along the axial direction.

[0025] The device may comprise an underpressure source. The underpressure source may be configured to apply an underpressure through the device suction opening.

[0026] The attachment protrusion may comprise an underpressure channel. The underpressure channel may be in fluid connection with the device suction opening. The underpressure channel may form at least part of a fluid connection between the underpressure source and the device suction opening. The underpressure channel may extend along the axial direction.

[0027] The massage applicator may comprise an applicator suction opening. In the mounted state of the massage applicator, the device suction opening may be in fluid communication with the applicator suction opening.

[0028] The massage applicator may comprise a suction space. The applicator suction opening may open into the suction space. In the mounted state of the massage applicator, the suction space may be in fluid communication with the device suction opening, in particular via one or both of the gap between the tip of the attachment protrusion and the massage applicator and the applicator suction opening. The suction space may be configured to be open towards a surface, such as a skin surface, of the massage recipient, when the massage applicator, in particular the massage surface of the massage applicator, is in contact with the massage recipient. Underpressure may be applied to the massage recipient through the suction space. The massage applicator may be configured to provide a seal between the suction space and the surface of the massage recipient.

[0029] The device suction opening may be in fluid connection with the gap between the tip of the attachment protrusion and the massage applicator in the mounted state of the massage applicator. The device suction opening may be in fluid connection with one or both of the applicator suction opening and the suction space via the gap between the tip of the attachment protrusion and the massage applicator in the mounted state of the massage applicator.

[0030] The gap between the tip of the attachment protrusion and the massage applicator may form an underpressure reservoir or an underpressure buffer. The underpressure reservoir or the underpressure buffer may accelerate application of a desired level of underpressure to a massage recipient.

[0031] The massage system may comprise a sealing member. The sealing member may seal a space between the attachment protrusion and the massage applicator around a circumference of the attachment protrusion in the mounted state of the massage applicator. The sealing member may reduce or prevent entry of foreign material, such as dust or liquid, between the attachment protrusion and the massage applicator. The sealing member may reduce or prevent outside air from entering a space between the attachment protrusion and the massage applicator. The sealing member may facilitate providing an underpressure to the massage recipient by reducing or preventing a flow of outside air compensating the underpressure.

[0032] The sealing member may extend around a full circumference of the attachment protrusion in the mounted state of the massage applicator. The sealing member may extend fully around the axial direction.

[0033] The device suction opening may be in fluid communication with the space between the attachment protrusion and the massage applicator directly downstream of the sealing member along the axial direction in the mounted state of the massage applicator. The space between the attachment protrusion and the massage applicator directly downstream of the sealing member along the axial direction may be in fluid communication with the gap between the tip of the attachment protrusion and the massage applicator in the mounted state of the massage applicator.

[0034] The sealing member may comprise a base and a sealing lip. The base may be fixed to one of the attachment protrusion and the massage applicator. The sealing lip may be configured to sealingly engage the other one of the attachment protrusion and the massage applicator in the mounted state of the massage applicator.

[0035] The base and the sealing lip may be formed as one part. The base and the sealing lip may be formed of the same material.

[0036] The sealing lip may extend from the base to a free end of the sealing lip. The sealing lip may extend from the base to the free end of the sealing lip against the axial direction. Against the axial direction, the sealing lip may extend radially away from the one of the attachment protrusion and the massage applicator to which the base is fixed.

[0037] An underpressure applied through the device suction opening may be configured to force the sealing lip against the other one of the attachment protrusion and the massage applicator in the mounted state of the massage applicator. An underpressure applied through the device suction opening may strengthen or improve the sealing effect of the sealing member.

[0038] The sealing member may be overmolded on one of the attachment protrusion and the massage applicator. An overmolded sealing member may ensure that the sealing member remains in place even if the massage applicator is repeatedly mounted and dismounted. An overmolded sealing member may have a reduced risk of being lost. An overmolded sealing member may have a

reduced risk of dislocation of the sealing member, which could lead to at least partial failure of the seal.

[0039] The base may be fixed to the attachment protrusion and the sealing lip may be configured to sealingly engage the massage applicator in the mounted state of the massage applicator. In particular if the base is fixed to the attachment protrusion, the sealing lip may extend from the base in a direction that leads radially outwards and against the axial direction.

[0040] The base may be fixed to the massage applicator and the sealing lip may be configured to sealingly engage the attachment protrusion in the mounted state of the massage applicator. In particular if the base is fixed to the massage applicator, the sealing lip may extend from the base radially inwards and against the axial direction.

[0041] The massage device may comprise a drive configured to drive the attachment protrusion to carry out the reciprocating motion along the axial direction. The drive may comprise a motor, in particular an electric motor.

[0042] According to a second aspect of the invention, there is provided a use of a sealing member comprising a sealing lip to seal a space between an attachment protrusion of a massage device and a massage applicator removably mounted on the attachment protrusion.

[0043] The massage device may comprise a body, wherein the attachment protrusion extends from the body along an axial direction to a tip of the attachment protrusion.

[0044] The massage applicator may comprise a receiving cavity. In a mounted state of the massage applicator, the receiving cavity may at least partially receive the attachment protrusion. The attachment protrusion may be configured to carry out a reciprocating motion along the axial direction.

[0045] A device engagement surface of the attachment protrusion may be configured to contact an applicator engagement surface of the massage applicator to transmit an axial massage force to the massage applicator.

[0046] Optionally, a gap along the axial direction may be provided between the tip of the attachment protrusion and the massage applicator in the mounted state of the massage applicator.

[0047] A device suction opening may be provided in the attachment protrusion. The device may comprise an underpressure source configured to apply an underpressure to the device suction opening. The device suction opening may be in fluid communication with an applicator suction opening of the massage applicator in the mounted state of the massage applicator.

[0048] The sealing member may seal the space between the attachment protrusion and the massage applicator around a circumference of the attachment protrusion, in particular around a full circumference of the attachment protrusion.

[0049] According to a third aspect of the invention, there is provided a massage system. The massage system comprises a massage device and a massage applicator. The massage device comprises a body and an attachment protrusion. The attachment protrusion extends from the body along an axial direction to a tip of the attachment protrusion. The massage applicator comprises a receiving cavity. The receiving cavity is configured to at least partially receive the attachment protrusion to removably mount the massage applicator to the massage device. The attachment protrusion is configured to carry out a reciprocating motion along the axial direction. The massage system comprises a sealing member sealing a space between the attachment protrusion and the massage applicator around a circumference of the attachment protrusion in the mounted state of the massage applicator. The sealing member comprises a base and a sealing lip. The base is fixed to one of the attachment protrusion and the massage applicator. The sealing lip is configured to sealingly engage the other one of the attachment protrusion and the massage applicator in the mounted state of the massage applicator.

[0050] The sealing member may extend from the base to a free end of the sealing lip against the axial direction.

[0051] The sealing member may be overmolded on the one of the attachment protrusion and the massage applicator.

[0052] A suction opening may be provided in the attachment protrusion.

[0053] The device may comprise an underpressure source. The underpressure source may be configured to apply an underpressure through the device suction opening.

[0054] The device suction opening may be in fluid communication with an applicator suction opening of the massage applicator in the mounted state of the massage applicator.

[0055] An underpressure applied through the device suction opening may be configured to force the sealing lip against the other one of the attachment protrusion and the massage applicator in the mounted state of the massage applicator.

[0056] The device suction opening may be in fluid communication with the space between the attachment protrusion and the massage applicator directly downstream of the sealing member in the mounted state of the massage applicator.

[0057] According to a fourth aspect of the invention, there is provided a use of an underpressure applied through a device suction opening of a massage device to improve sealing by a sealing member sealing a space between an attachment protrusion of the massage device and a massage applicator removably mounted on the attachment protrusion.

[0058] The underpressure may also be used to apply a suction effect to a massage recipient via the massage applicator.

[0059] Any features, descriptions or explanations recited with respect to any one of the aspects, examples or embodiments described herein may be applied to, combined with, or transferred to any other one of the

aspects, examples or embodiments described herein. The Massage system of the first aspect and the massage system of the third aspect may be suitable, adapted, or configured to carry out the use according to one or both of the second aspect and the fourth aspect. The use according to the second aspect and the use according to the fourth aspect may be carried out using the massage system according to the first aspect or the massage system according to the third aspect.

[0060] Below, there is provided a non-exhaustive list of non-limiting examples Ex1 to Ex10.

[0061] Example Ex1: Massage system, comprising:

a massage device comprising a body and an attachment protrusion extending from the body along an axial direction to a tip of the attachment protrusion; and

a massage applicator comprising a receiving cavity configured to at least partially receive the attachment protrusion to removably mount the massage applicator to the massage device;

wherein the attachment protrusion is configured to carry out a reciprocating motion along the axial direction;

wherein the massage system comprises a sealing member sealing a space between the attachment protrusion and the massage applicator around a circumference of the attachment protrusion in the mounted state of the massage applicator; and

wherein the sealing member comprises a base that is fixed to one of the attachment protrusion and the massage applicator, and a sealing lip that is configured to sealingly engage the other one of the attachment protrusion and the massage applicator in the mounted state of the massage applicator.

[0062] Example Ex2: Massage system according to Example Ex1, wherein the sealing lip extends from the base to a free end of the sealing lip against the axial direction.

[0063] Example Ex3: Massage system according to Example Ex1 or Ex2, wherein the sealing member is overmolded on the one of the attachment protrusion and the massage applicator.

[0064] Example Ex4: Massage system according to any one of Examples Ex1 to Ex3, wherein a device suction opening is provided in the attachment protrusion.

[0065] Example Ex5: Massage system according to Example Ex4, wherein the device comprises an underpressure source configured to apply underpressure through the device suction opening.

[0066] Example Ex6: Massage system according to Examples Ex4 or Ex5, wherein the device suction opening is in fluid communication with an applicator suction opening of the massage applicator in the mounted state of the massage applicator.

[0067] Example Ex7: Massage system according to any one of Examples Ex4 to Ex6, wherein an underpressure applied through the device suction opening is configured to force the sealing lip against the other one of the attachment protrusion and the massage applicator in the mounted state of the massage applicator.

[0068] Example Ex8: Massage system according to any one of Examples Ex4 to Ex7, wherein the device suction opening is in fluid communication with the space between the attachment protrusion and the massage applicator directly downstream of the sealing member in the mounted state of the massage applicator.

[0069] Example Ex9: Use of an underpressure applied through a device suction opening of a massage device to improve sealing by a sealing member sealing a space between an attachment protrusion of the massage device and a massage applicator removably mounted on the attachment protrusion.

[0070] Example Ex10: Use according to Example Ex 9, wherein the underpressure is also used to apply a suction effect to a massage recipient via the massage applicator.

[0071] Embodiments will now be further described with reference to the figures.

Fig. 1 shows a schematic perspective view of a massage system according to an embodiment.

Fig. 2 shows a schematic view of a massage applicator and an attachment protrusion of the massage system according to the embodiment.

Fig. 3 to 5 show schematic sectional views of a massage applicator and an attachment protrusion according to different embodiments in mounted states of the massage applicator.

[0072] Fig. 1 shows a massage system 1. The massage system 1 comprises a massage device 3 and a massage applicator 5. The massage device 3 comprises a body 7 and an attachment protrusion 9 extending from the body 7 along an axial direction 11. In fig. 1, the massage applicator 5 is shown in a state of being detached from the massage device 7. However, the massage applicator 5 may be mounted to the massage device 3 by slipping the massage applicator 5 onto the attachment protrusion 9. The massage device 3 comprises a motor 13 configured to cause the attachment protrusion 9 to carry out a reciprocating motion along the axial direction 11. The massage applicator 5 comprises a massage surface 15 for engaging a massage recipient. In the mounted state, the massage applicator 5 carries out a reciprocating motion along the axial direction 11 together with the attachment protrusion 9. Due to the reciprocating motion, a massaging effect is obtained.

[0073] The massage applicator 5 comprises a cup-like structure facing towards the massage recipient and defining a suction space 17. The suction space 17 is open towards the massage recipient. When the massage applicator 5 is in contact with the massage recipient, the cup-like structure seals against the massage recipient so that an underpressure generated by an underpressure

source 19 of the massage device 3 and applied to the suction space 17 acts on the massage recipient. In particular, the underpressure and the reciprocating motion may act on the massage recipient simultaneously.

[0074] Fig. 2 shows a state where the massage applicator 5 is not yet mounted on the attachment protrusion 9, but is already positioned and oriented to be mounted on the attachment protrusion 9 by a relative motion between the massage applicator 5 and the attachment protrusion 9 towards each other in parallel to the axial direction 11. The massage applicator 5 comprises a receiving cavity 21 configured to receive an insertion portion 23 of the attachment protrusion 9. The massage applicator 5 comprises a base surface 25 facing against the axial direction 11 and a side surface 27 extending circumferentially around the axial direction 11. The base surface 25 and the side surface 27 together at least partially define the receiving cavity 21.

[0075] The insertion portion 23 of the attachment protrusion 9 comprises engagement elements 29 in the form of spring-loaded balls. The balls are biased radially outwards towards an extended position shown in fig. 2. Upon combining the massage applicator 5 and the attachment protrusion 9, the balls are pushed into the attachment protrusion 9 by engagement with the side surface 27. Engagement recesses 31 are formed in the side surface 27. When the engagement elements 29 reach the engagement recesses 31, the balls again move radially outwards to protrude into the engagement recesses 31, thereby establishing a lock between the massage applicator 5 and the attachment protrusion 9. To remove or de-mount the massage applicator 5 from the attachment protrusion 9, a sufficient pulling force has to be applied so that the balls are pushed back into the attachment protrusion 9 against the respective biasing forces.

[0076] Figs. 3 to 5 show schematic sectional views of the massage applicator 5 and the attachment protrusion 9 in mounted states of the massage applicator 5. Figs. 3 to 5 show different embodiments. Each of the embodiments of figs. 3 to 5 may be used in the massage system of fig. 1. Each of the embodiments of figs. 3 to 5 comprise the features described with respect to fig. 2.

[0077] In fig. 3, the massage applicator 5 comprises an applicator engagement surface 33 facing against the axial direction 11. The applicator engagement surface 33 is a most upstream surface of the massage applicator 5 with respect to the axial direction 11. The applicator engagement surface 33 is provided outside of the receiving cavity 21 in the embodiment of fig. 3. The attachment protrusion 9 comprises a device engagement surface 35 contacting the applicator engagement surface 33 to transmit an axial massage force to the massage applicator 5, when the attachment protrusion 9 carries out its reciprocating motion. The device engagement surface 35 is formed by a step portion 37 of the attachment protrusion 9. The device engagement surface 35 faces along the axial direction 11.

[0078] The embodiment of fig. 4 differs from the embodiment of fig. 3 in that the applicator engagement surface 33 and the device engagement surface 35 are provided within the receiving cavity 21 of the massage applicator 5 in the mounted state of the massage applicator 5. Again, the applicator engagement surface 33 faces against the axial direction 11 and the device engagement surface 35 faces along the axial direction 11. The applicator engagement surface 33 and the device engagement surface 35, again, contact to transmit an axial massage force to the massage applicator 5 when the attachment protrusion 9 carries out a reciprocating motion along the axial direction 11. The device attachment surface 35 is, again, formed by a step portion 37 of the attachment protrusion 9. In the embodiment of fig. 4, the attachment engagement surface 33 is formed by a step portion 39 of the massage applicator 5.

[0079] Both in the embodiment of fig. 3 and in the embodiment of fig. 4, there is a gap 41 along the axial direction 11 between the tip 43 of the attachment protrusion 9 and the massage applicator 5 within the receiving cavity 21.

[0080] In the embodiment of fig. 5, the gap 41 may be omitted and the axial massage force may be transmitted from the reciprocating attachment protrusion 9 to the massage applicator 5 at any one or more of locations 44.

[0081] In each of the illustrated embodiments, a device suction opening 45 is provided in the attachment protrusion 9. The device suction opening 45 opens along the axial direction 11 and is provided in the tip 43 of the attachment protrusion 9. Further, the massage applicator 5 comprises an applicator suction opening 47 opening into the suction space 17.

[0082] Underpressure generated by an underpressure source 19 in the massage device 3 is applied to an underpressure channel 49 extending along the axial direction 11 within the attachment protrusion 9. The underpressure channel 49 is in fluid communication with the suction space 17 through the device suction opening 45 and the applicator suction opening 47.

[0083] In each of the illustrated embodiments, a sealing member 51 seals a space between the attachment protrusion 9 and the massage applicator 5 around a circumference of the attachment protrusion 9 in the mounted state of the massage applicator 5. The sealing member 51 has an annular shape and extends fully around the attachment protrusion 9. The sealing member 51 comprises a base 53 that is fixed to the attachment protrusion 9 by being overmolded on the attachment protrusion 9. The sealing member 51 further comprises a sealing lip 55 extending from the base 51 radially outwards towards the massage applicator 3 and, at the same time, against the axial direction 11. A free end of the sealing lip 55 engages the side surface 27.

[0084] A space between the attachment protrusion 9 and the massage applicator 5 directly downstream of the sealing member 51 along the axial direction 11 is in fluid-communication with the device suction opening 45. When an underpressure is applied through the device

suction opening 45, the sealing lip 55 is sucked along the axial direction 11, thereby strengthening engagement between the sealing lip 55 and the side surface 27.

Claims

1. Massage system (1), comprising:

   a massage device (3) comprising a body (7) and an attachment protrusion (9) extending from the body (7) along an axial direction (11) to a tip (43) of the attachment protrusion (9); and
   a massage applicator (5) comprising a receiving cavity (21) configured to at least partially receive the attachment protrusion (9) to removably mount the massage applicator (5) to the massage device (3);
   wherein the attachment protrusion (9) is configured to carry out a reciprocating motion along the axial direction (11);
   wherein a device engagement surface (35) of the attachment protrusion (9) is configured to contact an applicator engagement surface (33) of the massage applicator (5) to transmit an axial massage force to the massage applicator (5); and
   wherein there is a gap (41) along the axial direction (11) between the tip (43) of the attachment protrusion (9) and the massage applicator (5) in a mounted state of the massage applicator (5).

2. Massage system according to claim 1, wherein the attachment protrusion (9) comprises a step portion (37) or a flange defining the device engagement surface (35).

3. Massage system according to claim 1 or 2, wherein the applicator engagement surface (33) faces against the axial direction.

4. Massage system according to any one of the preceding claims, wherein the device engagement surface (35) is provided outside of the massage applicator (5) in the mounted state of the massage applicator (5).

5. Massage system according to any one of the preceding claims, wherein a device suction opening (45) is provided in the attachment protrusion (9).

6. Massage system according to claim 5, wherein the device (3) comprises an underpressure source (19) configured to apply underpressure through the device suction opening (45).

7. Massage system according to claim 5 or 6, wherein the device suction opening (45) is in fluid communication with an applicator suction opening (47) of the massage applicator (5) in the mounted state of the massage applicator (5).

8. Massage system according to any one of claims 5 to 7, wherein the device suction opening (45) is in fluid connection with the gap (41) between the tip (43) of the attachment protrusion (9) and the massage applicator (5) in the mounted state of the massage applicator (5).

9. Massage system according to any one of the preceding claims, wherein the massage system (1) comprises a sealing member (51) sealing a space between the attachment protrusion (9) and the massage applicator (5) around a circumference of the attachment protrusion (9) in the mounted state of the massage applicator (5).

10. Massage system according to claim 9 as depending on any one of claims 5 to 8, wherein the device suction opening (45) is in fluid communication with the space between the attachment protrusion (9) and the massage applicator (5) directly downstream of the sealing member (51) along the axial direction (11) in the mounted state of the massage applicator (5).

11. Massage system according to claim 9 or 10, wherein the sealing member (51) comprises a base (53) that is fixed to one of the attachment protrusion (9) and the massage applicator (5), and a sealing lip (55) that is configured to sealingly engage the other one of the attachment protrusion (9) and the massage applicator (5) in the mounted state of the massage applicator (5).

12. Massage system according to claim 11, wherein the sealing lip (55) extends from the base (53) to a free end of the sealing lip (55) against the axial direction (11).

13. Massage system according to claim 11 or 12 as depending on any one of claims 5 to 8, wherein an underpressure applied through the device suction opening (45) is configured to force the sealing lip (55) against the other one of the attachment protrusion (9) and the massage applicator (5) in the mounted state of the massage applicator (5).

14. Massage system according to any one of claims claim 9 to 13, wherein the sealing member (51) is overmolded on one of the attachment protrusion (9) and the massage applicator (5).

15. Use of a sealing member (51) comprising a sealing lip (55) to seal a space between an attachment pro-

trusion (9) of a massage device (3) and a massage applicator (5) removably mounted on the attachment protrusion (9).

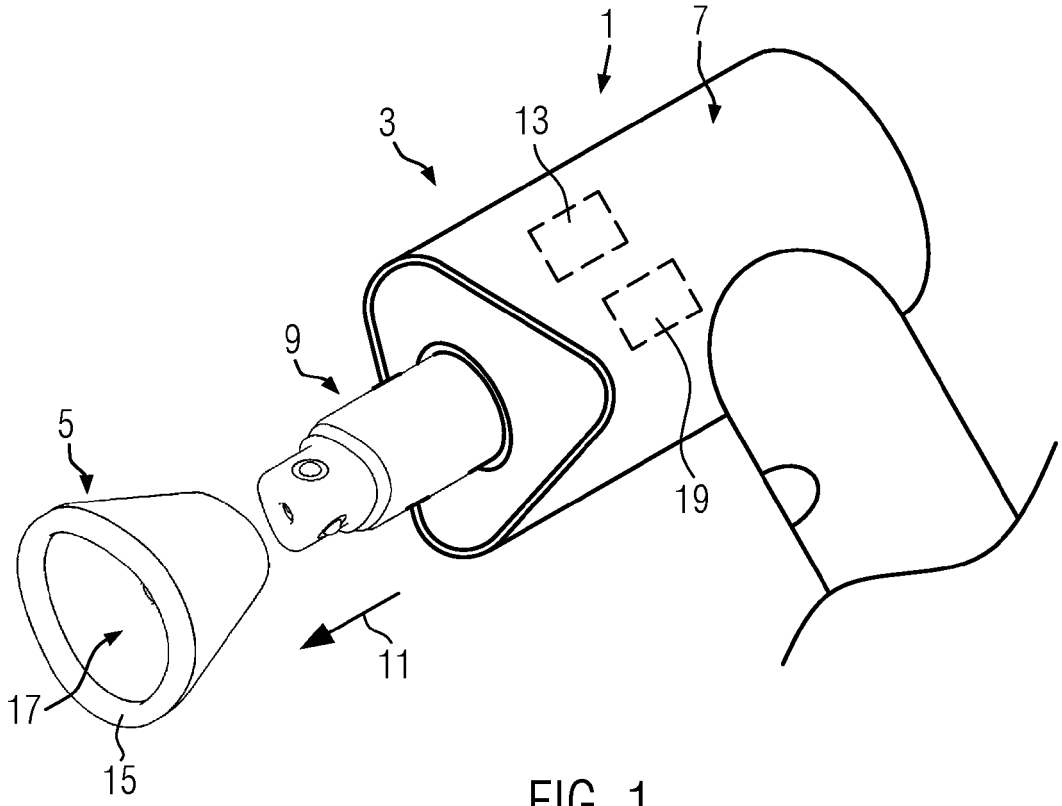

FIG. 1

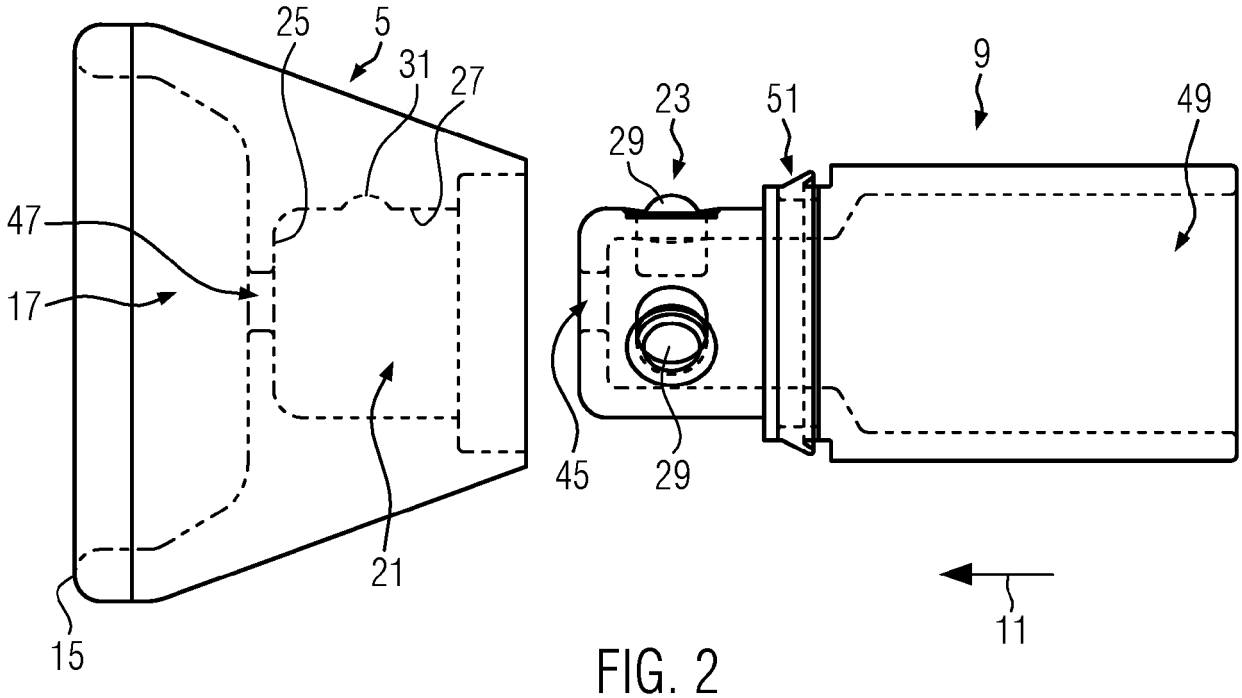

FIG. 2

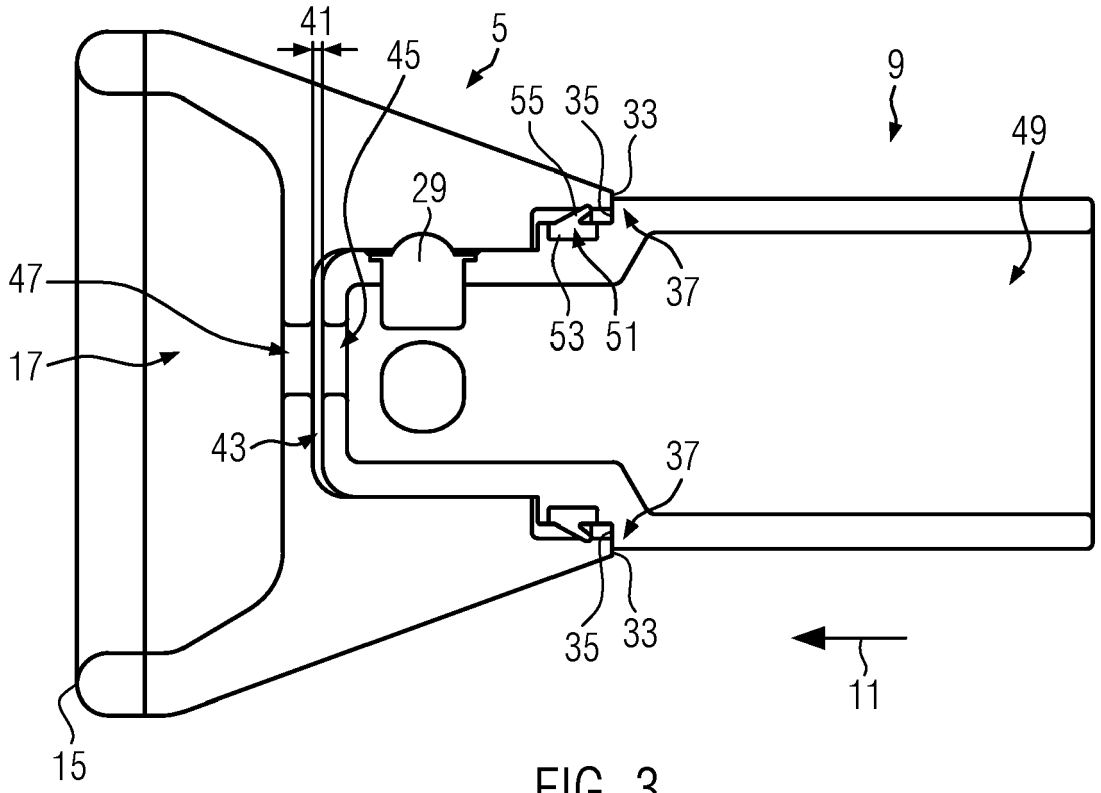
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FIG. 3

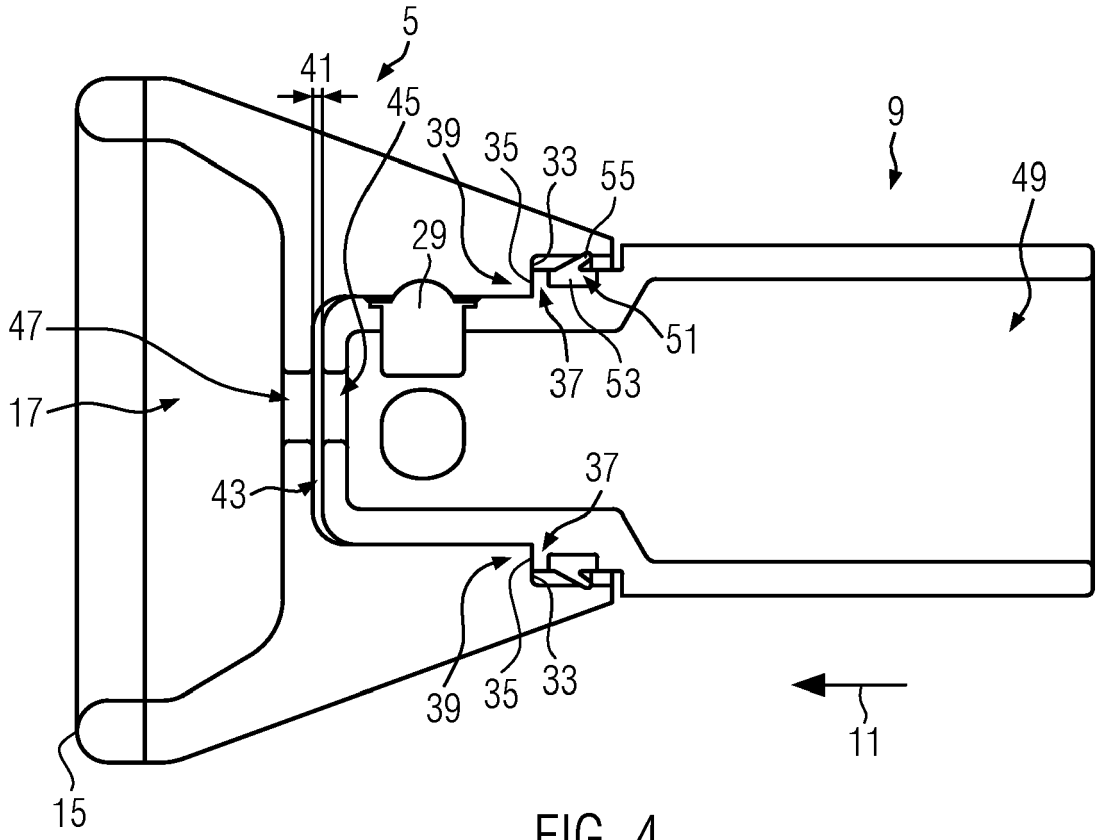
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FIG. 4

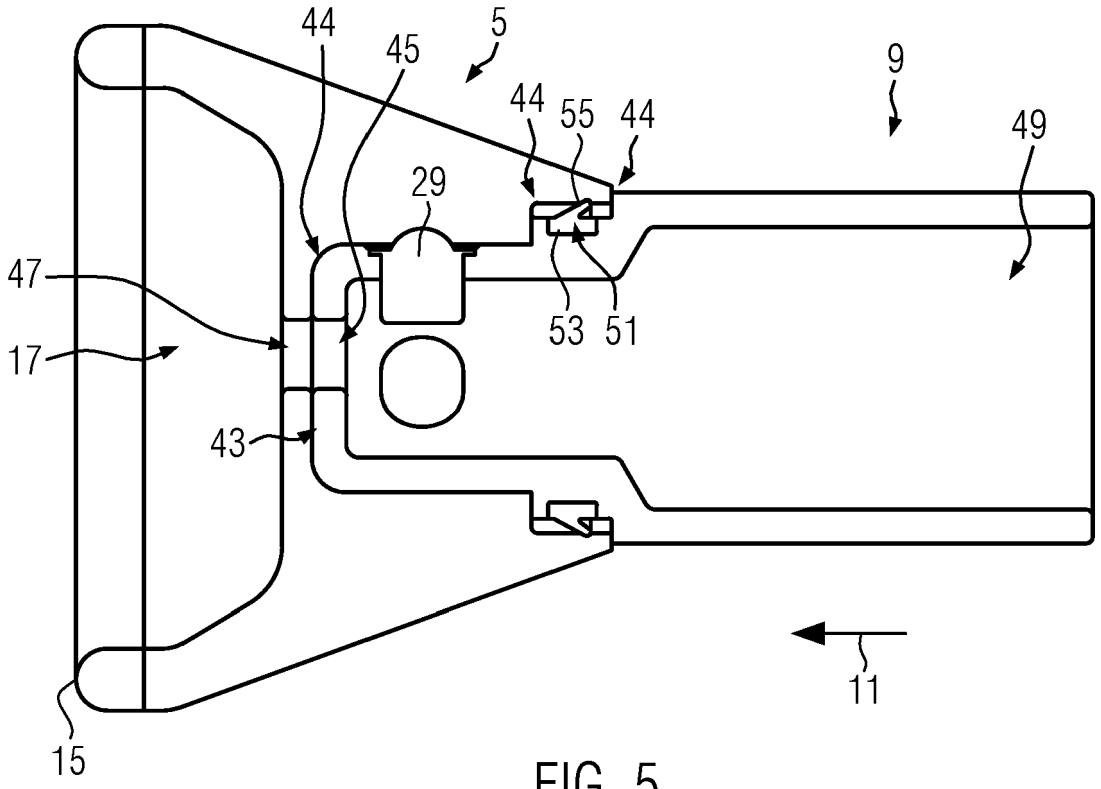

FIG. 5

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EUROPEAN SEARCH REPORT

Application Number
EP 23 15 8711

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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	24 July 2023	Teissier, Sara

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