Claims

1. Mechanical seal arrangement, comprising:
   - a first mechanical seal (10) with a rotating slide ring (11) and a stationary slide ring (12), which define a sealing gap (13) in between them,
   - a first sealing space (14) that is filled with a sealing liquid,
   - wherein the first mechanical seal (10) seals off the sealing space (14) against a surrounding area (6),
   - a first piston arrangement (15) with a piston element (16) and flexible wall areas that define a first piston interior space (160),
   - wherein the first piston interior space (160) is in fluid connection with the first sealing space (14),
   - wherein a piston outer surface of the piston element (16) is in fluid connection with the surrounding area (6), and
   - a first pre-stressing appliance (19) that exerts a first preload force (F1) on the piston element (16) of the first piston arrangement (15), and
   - a second mechanical seal (20) with a rotating slide ring (21) and a stationary slide ring (22), which define a sealing gap (23) in between them, a second sealing space (24) and a second piston arrangement (25) with a piston element (26) and flexible wall areas (27, 28), which define a second piston interior space (260), wherein the second mechanical seal (20) is arranged between the first sealing space (14) and the second sealing space (24), and the second piston interior space (260) is in fluid connection with the second sealing space (24), and a second pre-stressing appliance (29) exerts a second preload force (F2) on the second piston arrangement (25).

2. Arrangement according to claim 1, wherein the first piston interior space (160) is an annular space and the piston element (16) of the first piston arrangement (15) is an annular piston.

3. Arrangement according to any of the preceding claims, wherein the flexible wall areas of the first piston arrangement comprise a first bellows (17) and a second bellows (18).

4. Arrangement according to any of the preceding claims, wherein the first pre-stressing appliance (19) comprises a plurality of spring elements.

5. Arrangement according to claim 1, characterized by having a third mechanical seal (30) with a rotating slide ring (31) and a stationary slide ring (32), which defines a sealing gap (33) in between them, a third sealing space (34) and a third piston arrangement (35) with a piston element (36) and flexible wall areas (37, 38), which define a third piston interior space (360), wherein the third mechanical seal (30) is arranged between the second sealing space (24) and the third sealing space (34) and the third piston interior space (360) is in fluid connection with the third sealing space (34, and a third pre-stressing appliance (39), which exerts a third preload force (F3) on the third piston arrangement (35).

6. Arrangement according to claim 5, characterized by having a fourth mechanical seal (40) with a rotating slide ring (41) and a stationary slide ring (42), which define a sealing gap (43) in between them, a fourth sealing space (44) and a fourth piston arrangement (45) with a piston element (46) and flexible wall areas (47, 48), which define a fourth piston interior space (460), wherein the fourth mechanical seal (40) is arranged between the third sealing space (34) and the fourth sealing space (44) and the fourth piston interior space (460) is in fluid connection with the fourth sealing space (44), and a fourth pre-stressing appliance (49) exerts a fourth preload force (F4) on the fourth piston arrangement (45).

7. Arrangement according to any of the preceding claims, further comprising a housing sleeve (8) with at least one opening (9) that encloses the surrounding area (6), wherein the opening (9) provides a connection to an outer side of the housing sleeve (8).

8. Well bore conveyor device, in particular for conveying oleiferous media, comprising:
   - an electrical drive (2),
   - a pump (3) that is connected to the electrical drive (2) via a drive shaft (4), and
   - a mechanical seal arrangement (5) according to any of the preceding claims that is arranged at the drive shaft (4).

9. Well bore conveyor device according to claim 8, comprising a housing sleeve (8) with at least one opening (9) that encloses the mechanical seal arrangement (1).