CLAIMS

1. Tunnelling machine having a drive shaft (206) designed to rotate a cutting wheel (109), having a sealing arrangement (212) designed to seal an annular gap (333) formed around the drive shaft (206) between stationary components (309, 336) and rotating components (309, 384), wherein the sealing arrangement (212) comprises a number of sealing rings (303, 339, 345, 351) and chamber rings (330, 342, 348) arranged between the sealing rings (303, 339, 345, 351), having a fluid-supply assembly (803) arranged to supply lubricants to the sealing arrangement (212), and having a number of receiving chambers formed between adjacent sealing rings (303, 339, 345, 351), comprising a first internal chamber (369) located at the front in a direction of advance and a second internal chamber (372) located at the rear of the first internal chamber (369) in a direction of advance, which can be supplied with lubricants, wherein the fluid-supply assembly (803) is designed to adjust the pressure in the first internal chamber (369) such that the pressure in the first internal chamber (369) is lower than the pressure in a region (306) located in the direction of advance in front of the sealing ring (303) sealing the first internal chamber (369) against a mining area (112), and higher than the pressure prevailing in the second internal chamber (372), wherein the fluid-supply assembly (803) is designed to adjust the pressure in the second internal chamber (372) so that this pressure lies between the pressure in the first

internal chamber (369) and the pressure in an end chamber (375) located behind the second internal chamber (372) in the direction of advance, and wherein the first internal chamber (369) can be selectively pressurized with overpressure or vacuum relative to atmospheric pressure, **characterized in that** a vacuum line (830) and a vacuum pump (833) are provided for applying a vacuum, which are in fluid communication with the respective internal chamber (369, 372).

2. Tunnelling machine according to claim 1, characterized in that the second internal chamber (372) can be selectively pressurized with atmospheric pressure or with overpressure relative to atmospheric pressure or with vacuum relative to atmospheric pressure.

3. Tunnelling machine according to claim 1 or claim 2, characterized in that a compressed air reservoir (821) is provided for applying overpressure, which is in fluid connection with the respective internal chamber (369, 372).

4. Tunnelling machine according to one of claims 1 to 3, characterized in that a ventilation part (848) is provided for applying atmospheric pressure, which is in fluid connection with the second internal chamber (372).

5. Tunnelling machine according to one of claims 1 to 4, characterized in that the end chamber (375) can be selectively pressurized with atmospheric pressure or with an overpressure relative to

atmospheric pressure or with a vacuum relative to atmospheric pressure.

6. Tunnelling machine according to claim 5, characterized in that a vacuum line (830) and a vacuum pump (833) are provided for applying a vacuum to the end chamber (375), which are in fluid connection with the end chamber (375).

7. Tunnelling machine according to claim 5 or claim 6, characterized in that a compressed air reservoir (821) is provided for applying overpressure, which is in fluid connection with the end chamber (375).

8. Tunnelling machine according to one of claims 5 to 7, characterized in that a ventilation part (848) is provided for applying atmospheric pressure, which is in fluid communication with the end chamber (375).

9. Tunnelling machine according to one of claims 5 to 8, characterized in that a connecting line (381) is provided, which is arranged at the rear of the end chamber (375) in the direction of advance and can be selectively pressurized with atmospheric pressure or with an overpressure relative to atmospheric pressure.

10. Tunnelling machine according to one of claims 1 to 9, characterized in that the fluid-supply assembly (803) is designed to deliver a fluid grease or oil as a lubricant to the first internal chamber (369) and a fluid grease or oil to the second internal chamber (372).

11. Tunnelling machine according to one of claims 1 to 10, characterized in that the fluid-supply assembly (803) is designed to deliver a fluid grease or oil as a lubricant into the end chamber (375).

12. Tunnelling machine having a drive shaft (206) designed to rotate a cutting wheel (109), having a sealing arrangement (212) designed to seal an annular gap (333) formed around the drive shaft (206) between stationary components (309, 336) and rotating components (309, 384), wherein the sealing arrangement (212) comprises a number of sealing rings (303, 339, 345, 351) and chamber rings (330, 342, 348) arranged between the sealing rings (303, 339, 345, 351), having a fluid-supply assembly (803) arranged to supply lubricants to the sealing arrangement (212), and having a number of receiving chambers formed between adjacent sealing ring (303, 339, 345, 351), comprising a first internal chamber (369) located at the front in a direction of advance and a second internal chamber (372) located at the rear of the first internal chamber (369) in a direction of advance, which can be supplied with lubricants, **characterized in that** chamber rings (330, 342) arranged in the internal chambers (369, 372) are formed with an annular groove (363) and with passage recesses (366) located in the apex area relative to gravity, which create a fluid connection to an annular groove (363), and in that flow brakes (403, 406; 706) are arranged in the annular groove (363) on both sides of the apex area of internal chambers (369, 372).

13. Tunnelling machine according to one of claims 1 to 11 or according to claim 12, characterized in that the drive shaft (206) is designed as a hollow shaft and in that the sealing arrangement (212) has a first sealing area (215) arranged radially on the outside and a second sealing area (218) arranged radially on the inside.

14. Method for driving a tunnel, comprising the steps of
- providing a tunnelling machine according to one of claims 1 to 11, and
- adjusting the pressure in the first internal chamber (369) such that the pressure in the first internal chamber (369) is lower than the pressure in a region (306) located in the direction of advance in front of the sealing ring (303) sealing the first internal chamber (369) against a mining area (112) in the direction of advance and higher than the pressure prevailing in the second internal chamber (372).

15. Method according to claim 14, comprising the step of
- adjusting the pressure in the second internal chamber (372) such that the pressure in the second internal chamber (372) is different from a reference pressure (p_ref).

16. Method according to claim 15, comprising the step of
- setting the reference pressure (p_ref) such that the reference pressure (p_ref) is different from atmospheric pressure.

17. Method according to one of claims 14 to 16, insofar as a tunnelling machine according to one of claims 5 to 9 or according to claim 11 is provided, comprising the step of
- adjusting the pressure in the end chamber (375) such that the pressure in the end chamber (375) is lower than the pressure in the second internal chamber (372).