

CLAIMS

We claim:

1. A seal for use in a seal assembly comprising:
 - 5 a radially extending seal body having in a longitudinal cross-section, an outer surface, an inner sealing surface for contacting a surface to be sealed and a first and a second side surface, wherein the first side surface defines a first inwardly extending channel configured to receive an absorbing seal and the second side surface defines a second inwardly extending channel configured to receive a biasing member;
 - 10 wherein a first portion of the second side surface of the seal body and the inner sealing surface define a scraper lip and a second portion of the second side surface of the seal body is configured for contacting a wall of a gland; and
 - wherein a first portion of the first side surface of the seal body and the inner sealing surface are configured to allow fluid intake into the first inwardly extending channel and a
 - 15 second portion of the first side surface of the seal body is configured to contact a wall of a gland.
2. The seal body according to claim 1, wherein the seal body comprises a polymeric material.
3. The seal body according to claim 2, wherein the polymeric material is selected from
 - 20 the group consisting of polytetrafluoroethylene, polyarylene polymers, polyarylene ether polymers, natural rubber, olefinic rubber, polyamides, polyimides, polyetherimides, fluorinated co-polymers, and polychlorotrifluoroethylene.
4. The seal body according to claim 1, wherein the inner sealing surface is configured to guide fluid or debris toward the first and the second inwardly extending channels.
- 25 5. The seal body according to claim 4, wherein the scraper lip is angled inwardly toward a surface to be sealed.
6. The seal body according to claim 4, wherein the second portion of the second side surface of the seal body has a flange protruding transversely into the second inwardly extending channel so as to receive and contact a biasing member.
- 30 7. The seal body according to claim 4, wherein the first side surface has a first and a second radiused section defining a mouth of the first inwardly extending channel.
8. The seal body according to claim 4, wherein the inner sealing surface may be angled inwardly as it meets the first portion of the first side surface towards a surface to be sealed.

9. The seal body according to claim 1, wherein the first side surface defines an inwardly extending wall having a generally circular shape and an inwardly extending curved portion to provide a fluid retaining area.

10. The seal body according to claim 1, wherein the second inwardly extending channel is generally U-shaped.

11. The seal body according to claim 1, wherein the outer surface of the seal is angled on each of its first and second end toward the first and second side surfaces respectively.

12. The seal body according to claim 1, further comprising an annular channel through the seal body extending from the first inwardly extending channel to the inner sealing surface

13. A scraper seal assembly, comprising:

a radially extending seal body having in a longitudinal cross-section, an outer surface, an inner sealing surface for contacting a surface to be sealed and a first and a second side surface, wherein the first side surface defines a first inwardly extending channel configured to receive an absorbing seal and the second side surface defines a second inwardly extending channel configured to receive a biasing member, wherein a first portion of the second side surface of the seal body and the inner sealing surface define a scraper lip and a second portion of the second side surface of the seal body is configured for contacting a wall of a gland, and wherein a first portion of the first side surface of the seal body and the inner sealing surface are configured to allow fluid intake into the first inwardly extending channel and a second portion of the first side surface of the seal body is configured to contact a wall of a gland;

a felt ring seated within the first inwardly extending channel; and

a biasing member seated within the second inwardly extending channel.

14. The scraper seal assembly according to claim 13, wherein the seal body comprises a polymeric material.

15. The scraper seal assembly according to claim 14, wherein the polymeric material is selected from the group consisting of polytetrafluoroethylene, polyarylene polymers, polyarylene ether polymers, natural rubber, olefinic rubber, polyamides, polyimides, polyetherimides, fluorinated co-polymers, and polychlorotrifluoroethylene.

16. The scraper seal assembly according to claim 13, wherein the inner sealing surface is configured to guide fluid or debris toward the first and the second inwardly extending channels.

17. The scraper seal assembly according to claim 16, wherein the scraper lip is angled inwardly toward a surface to be sealed.

18. The scraper seal assembly according to claim 16, wherein the second portion of the second side surface of the seal body has a flange protruding transversely into the second inwardly extending channel so as to receive and contact the biasing member.

19. The scraper seal assembly according to claim 16, wherein the first side surface has a first and a second radiused section defining a mouth of the first inwardly extending channel.

20. The scraper seal assembly according to claim 16, wherein the inner sealing surface may be angled inwardly as it meets the first portion of the first side surface towards a surface to be sealed.

21. The scraper seal assembly according to claim 13, wherein the first side surface defines an inwardly extending wall having a generally circular shape and an inwardly extending curved portion to provide a fluid retaining area such that the felt ring is seated in the generally circular area between a mouth of the first inwardly extending channel and the fluid retaining area.

22. The scraper seal assembly according to claim 13, wherein the second inwardly extending channel is generally U-shaped and the biasing member is also generally U-shaped so that the center of the biasing member contacts the second inwardly extending channel and the bottom of the U-shape of the channel, but the channel provides some space around the legs of the biasing member.

23. The scraper seal assembly according to claim 13, wherein the outer surface of the seal is angled on each of its first and second end toward the first and second side surfaces respectively.

24. The scraper seal assembly according to claim 13, wherein the biasing member is an energizing biasing member comprising a metal or metal alloy.

25. The scraper seal assembly according to claim 13, further comprising an annular channel through the seal body extending from the first inwardly extending channel to the inner sealing surface

26. A seal assembly comprising:

a seal body comprising a radially extending seal body having in a longitudinal cross-section, an outer surface, an inner sealing surface for contacting a surface to be sealed and a first and a second side surface, wherein the first side surface defines a first inwardly extending channel configured to receive an absorbing seal and the second side surface defines a second inwardly extending channel configured to receive a biasing member;

wherein a first portion of the second side surface of the seal body and the inner sealing surface define a scraper lip and a second portion of the second side surface of the seal body is configured for contacting a wall of a gland;

wherein a first portion of the first side surface of the seal body and the inner sealing surface are configured to allow fluid intake into the first inwardly extending channel and a second portion of the first side surface of the seal body is configured to contact a wall of a gland; and

5 wherein the seal body comprises an annular channel extending from the first inwardly extending channel to the inner sealing surface.

27. The seal assembly according to claim 26, further comprising a felt ring seated within the first inwardly extending channel; and a biasing member seated within the second inwardly extending channel.

10