obviate noise or vibrations due to the concealment member 34 rattling or oscillating laterally within housing 12 during use of device 10.

[0068] It is to be appreciated that while ribs 82 are illustrated in Figures 25 to 28, other alternative centralizing formations could be provided. For example, inner surface 30 of sidewall 14 of housing 12 could have formed thereon a plurality of small protrusions that are spaced over, both along and around, the inner surface 30. In a further alternative, the centralizing and/or noise reduction formations, such as ribs or protrusions could be provided over the outer surface 60 of skirt 38 of concealment member 34, rather than over inner surface 30 of the sidewall 14 of housing 12.

[0069] Figures 29 to 32 illustrate alternative construction detail by which indicator member 26 may be secured concentrically on the hub 58 comprising a continuation of spigot 56 of device 10 of Figures 2 to 20. The same alternatives apply to the securement of the indicator member 27 on the hub 59 in the device 11 of Figures 21 to 24. In Figure 29, the indicator member 26 is a neat fit on hub 58, such as to provide a strong friction fit or with securement enhanced by a film providing adhesive bonding. Figure 30 shows an arrangement in which indicator member 26 is spaced slightly from hub 58 but is secured by an adhesive bonding layer 84 between the opposed surfaces of member 26 and hub 58. In the alternative of Figure 31, more clearly illustrated by the enlarged detail of Figure 32, a fusible fin 86 is provided around the end of indicator member 26 opposed to end wall 44 of housing 12 and, when the fin 86 is heated by any suitable arrangement, the fin 86 melts to bond that end of member 26 to wall 44.

[0070] Further alternatives for securing indicator member 26 on hub 58 of device 10, with similar possible for securing member 27 on hub 59 of device 11, are shown in Figures 33 and 35, with Figures 34 and 36 providing respective enlarge detail. In the arrangement of Figures 33 and 34, the indicator member 26 is shown as having an in-turned flange 88 around the end of member 26 remote from end wall 44 of housing 12. The flange 88 overlaps the adjacent end of hub 58, with a fin 90 on flange 88 bearing against that adjacent end of hub 58. Heating of the fin 90

41 of the skirt 38 or 39 is in sealing engagement with the end wall 44 or 45. In any event, ambient air is precluded from being drawn into the chamber 20 or 21, through the opening or openings, until the seal between end 40 or 41 of skirt 38 or 39, of concealment member 34 or 35, is broken by the flow rate of the supply gas increasing to generate the sufficient pressure to cause the concealment member 34 or 35 to move against the action of the biasing member 36 or 37, to enable the secondary flow of the supplied gas around the exterior of the concealment member 34 or 35. It is the secondary flow, in passing across the at least one opening that draws in the ambient air, by creating a Venturi effect.

[0074] As will be appreciated, the gas flow indicator device of the invention enables enhanced ease of observation of a condition, namely exposure of the indicator member, confirming required supply of gas to a patient. With full exposure of the indicator member preferably also confirming that a desired or minimum gas flow rate, such as 6 L/min, has been achieved and is being maintained. The device has components that enable low cost production, readily assembled and provide reliable operation. Also, the device is such that it can be provided in a number of alternative forms each suited to providing a respective required gas flow rate. Thus, for a given standardised biasing member, it is possible to vary performance by selecting from a series of devices that differ in the size of the opening of respective concealment members and, hence, the gas flow rate required to move the concealment member to expose the respective indicator member. Alternatively, a series of devices may have a standardised such opening in the respective concealment members, but differ in the strength of the biasing action of the respective biasing members. Thus, in each case, a respective gas flow rate is required for each device of the series in order to overcome the resistance to flow provided by the respective opening of the concealment member in order for the concealment member to move against the action of the biasing member. The different devices of such series can be readily differentiated by the colour or indicia provided on the outer surface of the skirt of each concealment member, or elsewhere on the device, such as on the housing. Of course, the device also may be provided in a single standardised form, with the gas flow rate at any time within

CLAIMS:

1. A gas flow indicator device including an elongate housing that has a peripheral sidewall that extends between first and second opposite ends and that defines a gas flow chamber through which gas is able to flow from an inlet port at a first end to an outlet port at a second end; wherein, within the chamber, the device has a gas flow indicator member that extends from adjacent to the first end of the housing over part of the length of the chamber towards the second end; the indicator member is of annular form such that gas flowing through the chamber from the inlet port to the outlet port enters the chamber along a bore that extends through the indicator member; the indicator member is spaced from an inner surface of the sidewall of the housing to define, with that inner surface, an annular space that forms part of the chamber; the device further includes a concealment member that is movable from the first end of the housing in response to a sufficient pressure generated by gas flow from the inlet port to the outlet port, against the action of a biasing member acting to bias the concealment member to the first end; the concealment member has an annular peripheral skirt that, under the bias of the biasing member on the concealment member, is receivable into the annular space, such that one of opposite ends of the skirt is able to seal against an annular surface of the housing at or adjacent to an end wall of the housing at the first end of the housing; and the concealment member also includes, at the other of the opposite ends of the skirt, a transverse wall that defines an opening through which the flow of gas from the inlet port to the outlet port is able to pass, with the opening providing resistance to such flow; wherein the arrangement is such that the one of opposite ends of the skirt is able to be held in sealing engagement with the annular surface at or adjacent to the end wall of the housing whereby the indicator member is concealed from view, through a laterally adjacent viewing window portion of the housing, when there is no gas flow or a gas flow rate generating less than the sufficient pressure but such that, with increasing gas flow rate the sufficient pressure is achieved and the bias of the biasing member is thereby overcome to enable the concealment member to move towards the second end of the housing and expose the indicator member to view through the viewing window portion of the housing and provide a visual indication indicative of gas flow.

2. The gas flow indicator device of claim 1, wherein movement of the concealment member to expose the indicator member moves the one of opposite ends of the skirt of the concealment member from the annular surface at or adjacent to the end wall of the housing, such as thereby to enable a secondary gas flow to the outlet that passes around the one of opposite ends of the skirt between the concealment member and the housing.

3. The gas flow indicator device of claim 1 or claim 2, wherein the biasing member acts in compression in biasing the concealment member to the first end of the housing, such as by the biasing member being compressed between, such as compressed by, the concealment member and the second end so as to provide the required bias in seeking to expand.

4. The gas flow indicator device of claim 1 or claim 2, wherein the biasing member acts in tension in biasing the concealment member to the first end of the housing, such as by the biasing member being within the concealment member, and tensioned by being expanded between, such as by being connected in relation to, each of the transverse wall of the concealment member and the first end of the housing so as to provide the bias in seeking to contract.

5. The gas flow indicator device of any one of claims 1 to 4, wherein the biasing member comprises a coil spring.

6. The gas flow indicator device of claim 3, wherein the biasing member comprises a coil spring acting between the concealment member and the second end of the housing, and wherein compression of the spring can limit the extent to which the concealment member can move towards the second end of the housing simply as a consequence of the presence of the compressed spring.

7. The gas flow indicator device of claim 4, wherein the biasing member comprises a coil spring within the concealment member, with the arrangement such that the concealment member is able to move so as to contact the end wall at the

second end of the housing, or such that contact of the concealment member with the second end of the housing is precluded by the spring reaching its elastic limit.

8. The gas flow indicator device of any one of claims 1 to 7, wherein the concealment member is able to move, between a first position in which the indicator member is concealed and a second position in which the indicator member is sufficiently exposed whereby the indicator member can readily be seen through the viewing window portion of the sidewall of the housing by a person in close proximity and also from a considerable distance of up to five to ten meters, or further, from the device.

9. The gas flow indicator device of claim 8, wherein the viewing window portion is sufficiently transparent to facilitate viewing of the indicator member, wherein the viewing window portion extends around the full circumferential extent of the sidewall of the housing adjacent to the first end, or comprises two or more regions spaced circumferentially around that wall of the housing adjacent to the first end.

10. The gas flow indicator device of claim 8 or claim 9, wherein the viewing window portion is of a high-transparency plastics or glass material having a high level of clarity, and wherein the material of which the remainder of the housing is made is transparent, translucent or opaque.

11. The gas flow indicator device of any one of claims 8 to 10, wherein the housing is of unitary or integral form and made of a single material comprising a rigid plastics material or an engineering plastics material.

12. The gas flow indicator device of any one of claims 1 to 11, wherein the housing is circular in cross-sections perpendicular to the direction of spacing between the first and second ends, with the housing having an inner surface that is substantially cylindrical and of substantially constant circular transverse cross-section between the first and second ends, and with the sidewall also having an outer surface that is substantially cylindrical and of substantially constant circular cross-section.

13. The gas flow indicator device of claim 12, wherein the housing has an outer surface of the sidewall that departs from a cylindrical form, at least along an initial section of its longitudinal extent from adjacent to the first end, with that initial section extending around the gas flow indicator member, and wherein the outer surface of the sidewall, over that initial section of its longitudinal extent, smoothly increases in diameter to a maximum in a direction away from the first end towards the second end, and thereafter smoothly decreases in diameter substantially to the diameter at the first end, so as to have a convex longitudinal form.

14. The gas flow indicator device of any one of claims 1 to 13, wherein at the first end of the housing, the inlet port is defined by a spigot that projects from the first end of the housing in a direction away from the second end, and that enables connection of a gas supply conduit to the housing.

15. The gas flow indicator device of claim 14, wherein the spigot has an extension that projects into the interior of the housing to provide a hub on or around which the gas flow indicator member is mounted, with the indicator member preferably having an axial extent that is substantially the same as, or slightly greater than, the length of the hub, with the indicator member being a firm friction fit on the hub or by the indicator member being bonded or welded onto the hub, or by the indicator member having an end, adjacent to the end wall at the first end of the housing, by which the indicator member is bonded or welded to the end wall or the indicator member has, at its end remote from the first end of the housing, a flange that overlaps the corresponding end of the hub, with the flange bonded or welded to that end of the hub.

16. The gas flow indicator device of claim 14, wherein the indicator member is bonded or welded to an end wall of the housing at the first end, or mechanically engaged with that end wall by screw-threaded engagement or a snap fit in or around the inlet port.

17. The gas flow indicator device of any one of claims 1 to 16, wherein the skirt of the concealment member has an outer surface that is spaced from the inner surface

of the sidewall of the housing, with a spacing between the surfaces throughout the extent of movement of the concealment member longitudinally within the housing.

18. The gas flow indicator device of claim 17, further including guide members that maintain the concealment member in a substantially co-axial relationship with the housing, such guide members preferably comprising a plurality of circumferentially spaced projections that stand proud, or project inwardly, of the inner surface of the housing so as to be contactable with the outer surface of the skirt of the concealment member, or the converse, or a plurality of longitudinal ribs on the inner surface of the sidewall of the housing or the outer surface of the concealment member.

19. The gas flow indicator device of any one of claims 1 to 18, wherein the inner surface of the skirt of the concealment member, when the indicator member is concealed, is spaced from the outer peripheral surface of the indicator member, thereby avoiding contact between the skirt of the concealment member and the indicator member, and thereby obviates friction that could resist movement of the concealment member relative to the indicator member, with the skirt of the concealment member and the indicator member each being of substantially uniform wall thickness along its respective axial extent and of similar or substantially the same wall thickness.

20. The gas flow indicator device of any one of claims 1 to 19, wherein at the second end, the housing has an end wall that defines the outlet port, with the end wall preferably being separable from the sidewall of the housing, such as by the end wall comprising an annular peripheral rim that is engaged with the sidewall of the housing around the second end, a central hub portion and a plurality of circumferentially spaced connectors that extend between the rim and the hub.

21. A gas delivery device, gas delivery system or gas supply conduit including the gas flow indicator device of any one of the preceding claims.