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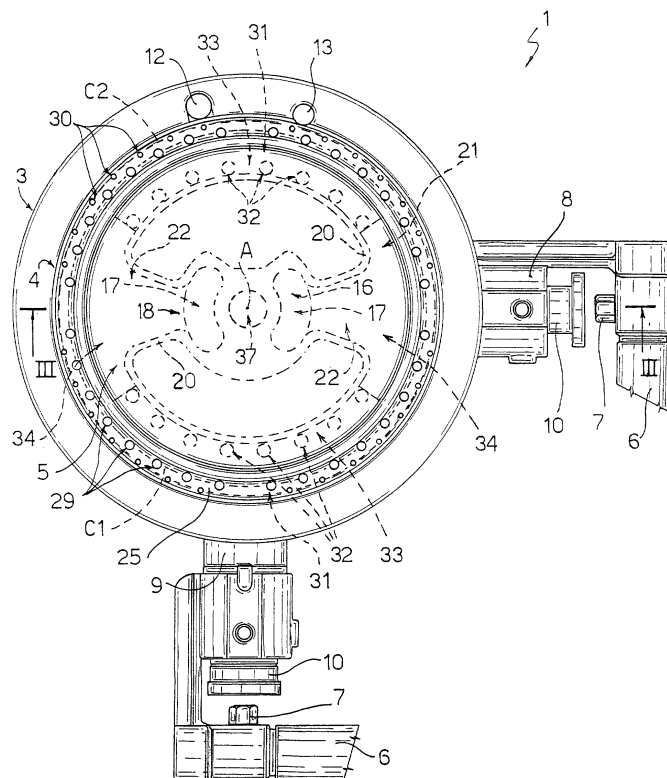
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(54) **Ultra-high-speed burner for a cooking range or a gas cooker**

(57) An ultra-high-speed burner for a cooking range or gas cooker has a plate (3); a jet ring (4) having a ring (25) along which power jet supply holes (29, 30) are distributed; an annular chamber (21) defined by the plate

(3) and by the jet ring (4) and communicating directly with the power jet supply holes (29, 30); and a first and a second channel (37, 38) for feeding fuel gas to respective sectors (33, 34; 39, 40) of the annular chamber (21).

Fig.2



Description

[0001] The present invention relates to an ultra-high-speed burner for a cooking range or gas cooker.

[0002] A cooking range or gas cooker comprises a number of burners, which differ in size, sometimes in shape, and in maximum power to meet different cooking requirements. One of these is the fast heating of large cooking vessels, e.g. to boil a large volume of water, which calls for high-power, so-called ultra-high-speed burners capable of supplying at least 3.5 kW.

[0003] Known ultra-high-speed burners comprise burners with one, two or three jet rings, known as single-, two- or three-ring ultra-high-speed burners respectively. Singlering ultra-high-speed burners have one large-diameter, high-power ring, but have the drawback of failing to provide for uniform heating.

[0004] By way of a solution to the problem, currently marketed ultra-high-speed burners are two-ring types comprising two concentric jet rings, each with respective power jet holes, i.e. for the jets providing the heating power. Two- and three-ring ultra-high-speed burners provide for uniform heating and high power, but have various drawbacks: a large number of component parts to dismantle when cleaning or servicing the range; unsightly appearance; unbalanced supply of the gaseous mixture to the two rings; and flow of the secondary air to the inner rings is hindered by the outer ring.

[0005] It is an object of the present invention to provide a high-power burner designed to eliminate the drawbacks typically associated with the known state of the art.

[0006] According to the present invention, there is provided an ultra-high-speed burner for a cooking range or gas cooker, wherein the burner comprises a plate; a jet ring having a ring along which power jet supply holes are distributed; an annular chamber defined by the plate and the jet ring; and a first channel for feeding fuel gas to said annular chamber; the burner being characterized by comprising a second channel for feeding fuel gas to said annular chamber.

[0007] A non-limiting embodiment of the present invention will be described by way of example with reference to the accompanying drawings, in which:

Figure 1 shows an exploded view, with parts removed for clarity, of an ultra-high-speed burner in accordance with the present invention;

Figure 2 shows a plan view of the Figure 1 burner; Figure 3 shows a section of the Figure 2 burner along line III-III;

Figure 4 shows a view in perspective of a detail of the Figure 2 burner;

Figure 5 shows a plan view of a variation of the Figure 1-4 burner.

[0008] With reference to Figures 1, 2 and 3, number 1 indicates as a whole a gas burner for a cooking range

comprising a wall P, only shown in Figure 3.

[0009] Burner 1 comprises a support 2 fixed to wall P, a plate 3 on top of support 2 and wall P, a jet ring 4, and a cap 5, which are placed in that order one on top of the other along an axis A. Burner 1 is supplied by a main-pressure gas pipe 6 fitted with two nozzles 7 (only one shown in Figures 1 and 2), and comprises two air-gas mixture supply conduits 8 and 9 located beneath wall P, connected to support 2, and comprising respective venturi tubes 10. Support 2 comprises a plate 11 fitted with a gas detector 12 and a piezoelectric device 13 for lighting the mixture; a central hole 14 coaxial with axis A and connected to conduit 8; and an opening 15 which, viewed from above, is sector-shaped, extends about hole 14, and is connected to conduit 9.

[0010] With reference to Figure 1, plate 3 is disk-shaped and comprises a central through sleeve 16; and two bean-shaped lateral openings 17 located on opposite sides of sleeve 16 and communicating, in use, with opening 15. To align openings 17 and opening 15, plate 3 and support 2 comprise respective locating elements (not shown) to position plate 3 on support 2 with a given orientation. Plate 3 comprises a bottom wall 18; a lateral wall 19; and two looped, bean-shaped partitions 20, which, together with bottom wall 18, lateral wall 19 and jet ring 4, define an annular chamber 21 and two passages 22 connecting openings 17 and annular chamber 21.

[0011] With reference to Figures 1 to 4, jet ring 4 is disk-shaped and comprises a dome 23 with a central through sleeve 24; a ring 25 having a projection 26; and a substantially cylindrical lateral wall 27, which mates with lateral wall 19 of plate 3 and has a succession of outlet holes 28 for supplying auxiliary jets. Ring 25 is truncated-cone-shaped and has a succession of holes 29 for supplying first power jets and located along a circumference C1; and a succession of holes 30 for supplying second power jets and located along a circumference C2 larger in diameter than and located beneath circumference C1. Holes 30 are smaller in diameter than and offset angularly with respect to holes 29. The edge of dome 23 has two sets 31 of holes 32 for supplying the mixture to annular chamber 21; sets 31 are located on opposite sides of sleeve 24 and passages 22, so as to correspond with respective partitions 20; and ring 4 and plate 3 have respective locating elements for so positioning ring 4 on plate 3 that supply holes 32 are offset with respect to openings 17 on plate 3. In other words, annular chamber 21 is ideally divided into two sectors 33 and two sectors 34, as shown by the dash lines in Figure 2, wherein sectors 34 communicate directly with respective passages 22, and each sector 33 communicates directly with a respective set 31 of supply holes 32. Given the location of holes 32 with respect to passages 22, sectors 33 and 34 alternate along the annular chamber. The division into sectors 33 and 34 is only determined during operation of burner 1, and depends on distribution of the fuel gas. Ring 4 comprises two parti-

tions 35, which, viewed from above, are substantially the same shape and size as partitions 20, are located at respective sets 31 of holes 32, and rest on top of partitions 20. Passages 22 are defined by bottom wall 18 and partitions 20 of plate 3, and by the dome and partitions 35 of jet ring 4.

[0012] Cap 5 is dome-shaped and fits onto projection 26 of ring 4 to form a chamber 36, which is located on top of ring 4 and communicates with annular chamber 21 via holes 32, and with conduit 9 via sleeve 24.

[0013] In other words, burner 1 comprises two channels 37 and 38 for supplying chamber 21 and for separately supplying sectors 33 and 34 of chamber 21 respectively. Channel 37 is defined by conduit 8, hole 14 in support 2, sleeve 16 on plate 3, sleeve 24 on ring 4, chamber 36, and sets 31 of holes 32.

[0014] Channel 38 is defined, along a first portion, by conduit 9 and opening 15 on support 2, and, along a second portion, by openings 17 and passages 22. In other words, channel 38 is divided into two portions to supply the two opposite sectors 34.

[0015] In actual use, gas is supplied at mains pressure along pipe 6 and is regulated by a known tap not shown. The pressurized gas is injected by nozzles 7 into respective venturi tubes 10, and flows into respective conduits 8 and 9 together with air fed dynamically into conduits 8 and 9. That is, two separate streams of air-gas mixture flow along channels 37 and 38 in the direction indicated by arrows F to supply respective sectors 33 and 34 of annular chamber 21 separately. The separation of sectors 33 from sectors 34 is purely an ideal one, there being no partitions for actually dividing chamber 21 into different parts, and is due to the dynamic performance of the air-gas mixture determined by the location of holes 32 with respect to passages 22, i.e. by the relative position of the end portions of channels 37 and 38. The air-gas mixture flows out of each sector 33 and 34 of annular chamber 21 through holes 29 and 30 for supplying the first and second power jets, and through holes 28 for supplying the auxiliary jets.

[0016] In the Figure 5 variation, the annular chamber 21 is divided into two complementary sectors 39 and 40 by two partitions 41 connected to the partition 20 on the same side as piezoelectric lighting device 13; jet ring 4 comprises one set 31 of holes 32 for supplying sector 39; and sector 40 is supplied entirely through openings 17 and passages 22.

[0017] The variation described provides for detecting any interruption in supply of the air-gas mixture along both channel 37 and channel 38. Any interruption in supply of the air-gas mixture along channel 37, in fact, would prevent the entire burner 1 from lighting, by the air-gas mixture not being supplied to piezoelectric lighting device 13; while any interruption in supply of the mixture along channel 38 would only light the sector 39 jets.

[0018] In a variation not shown, as opposed to pipe 6, burner 1 is supplied by two separate pipes controlled by one tap for supplying channels 37 and 38 simultaneous-

ly or separately.

[0019] The burners described afford numerous advantages. In particular, they comprise a small number of component parts, and provide for concentrating considerable power in one relatively small-diameter jet ring.

Claims

1. An ultra-high-speed burner for a cooking range or gas cooker, wherein the burner comprises a plate (3); a jet ring (4) having a ring (25) along which power jet supply holes (29, 30) are distributed; an annular chamber (21) defined by the plate (3) and the jet ring (4); and a first channel (37) for feeding fuel gas to said annular chamber (21); the burner being **characterized by** comprising a second channel (38) for feeding fuel gas to said annular chamber (21).
2. A burner as claimed in Claim 1, **characterized in that** said first and said second channel (37, 38) debouch inside respective sectors (33, 34; 39, 40) of said annular chamber (21).
3. A Burner as claimed in Claim 1 or 2, **characterized in that** said power jet supply holes (29, 30) comprise a succession of first power jet supply holes (29) and a succession of second power jet supply holes (30).
4. A burner as claimed in Claim 3, **characterized in that** said first power jet supply holes (29) are arranged on said ring (25) along a first circumference (C1); and said second power jet supply holes (30) are arranged on said ring (25) along a second circumference (C2).
5. A burner as claimed in Claim 4, **characterized in that** said first power jet supply holes (29) are larger in diameter than the second power jet supply holes (30).
6. A burner as claimed in Claim 4 or 5, **characterized in that** the first power jet supply holes (29) are offset angularly with respect to the second power jet supply holes (30).
7. A burner as claimed in one of Claims 2 to 6, **characterized in that** the sectors (33, 34; 39, 40) comprise at least a first sector (33; 39) communicating with said first channel (37); and at least a second sector (34; 40) communicating with the second channel (38).
8. A burner as claimed in Claim 7, **characterized by** comprising a lighting device (13) adjacent to the first sector (33; 39).

9. A burner as claimed in one of the foregoing Claims, **characterized by** comprising a cap (5) resting on said jet ring (4) to define a chamber (36) between the jet ring (4) and the cap (5); said chamber (36) communicating directly with the annular chamber (21) by means of holes (32); and the first channel (37) being defined partly by the chamber (36) and by said holes (32). 5

10. A burner as claimed in Claim 9, **characterized in that** the first channel (37) is defined partly by a first conduit (8), by a hole (14) in a support (2), and by a first and a second sleeve (16, 24) of said plate (3) and said jet ring (4) respectively; said second sleeve (24) communicating directly with said chamber (36). 10 15

11. A burner as claimed in Claim 10, **characterized in that** said second channel (38) is defined partly by a second conduit (9), by a first opening (15) formed in said support (2), and by second openings (17) formed in said plate (3); said plate (3) being so positioned with respect to said support (2) that said second openings (17) correspond with the first opening (15). 20 25

12. A burner as claimed in Claim 11, **characterized in that** said second channel (38) is defined partly by two passages (22) extending on opposite sides of said first sleeve (16). 30

13. A burner as claimed in Claim 12, **characterized in that** said plate (3) and said jet ring (4) comprise respective first and second partitions (20, 35) defining said passages (22). 35

14. A burner as claimed in Claims 10 and 11, **characterized in that** the first and second conduit (8, 9) comprise respective venturi tubes (10). 40

15. A burner as claimed in one of Claims 2 to 14, **characterized by** comprising a first sector (39) and a second sector (40) complementary to each other and separated by two partitions (41) located in the annular chamber (21). 45

16. A burner as claimed in one of Claims 2 to 14, **characterized by** comprising two first sectors (33) and two second sectors (34) alternating with one another along the annular chamber (21). 50

17. A burner as claimed in Claim 16, **characterized in that** the first sectors (33) communicate with the second sectors (34). 55

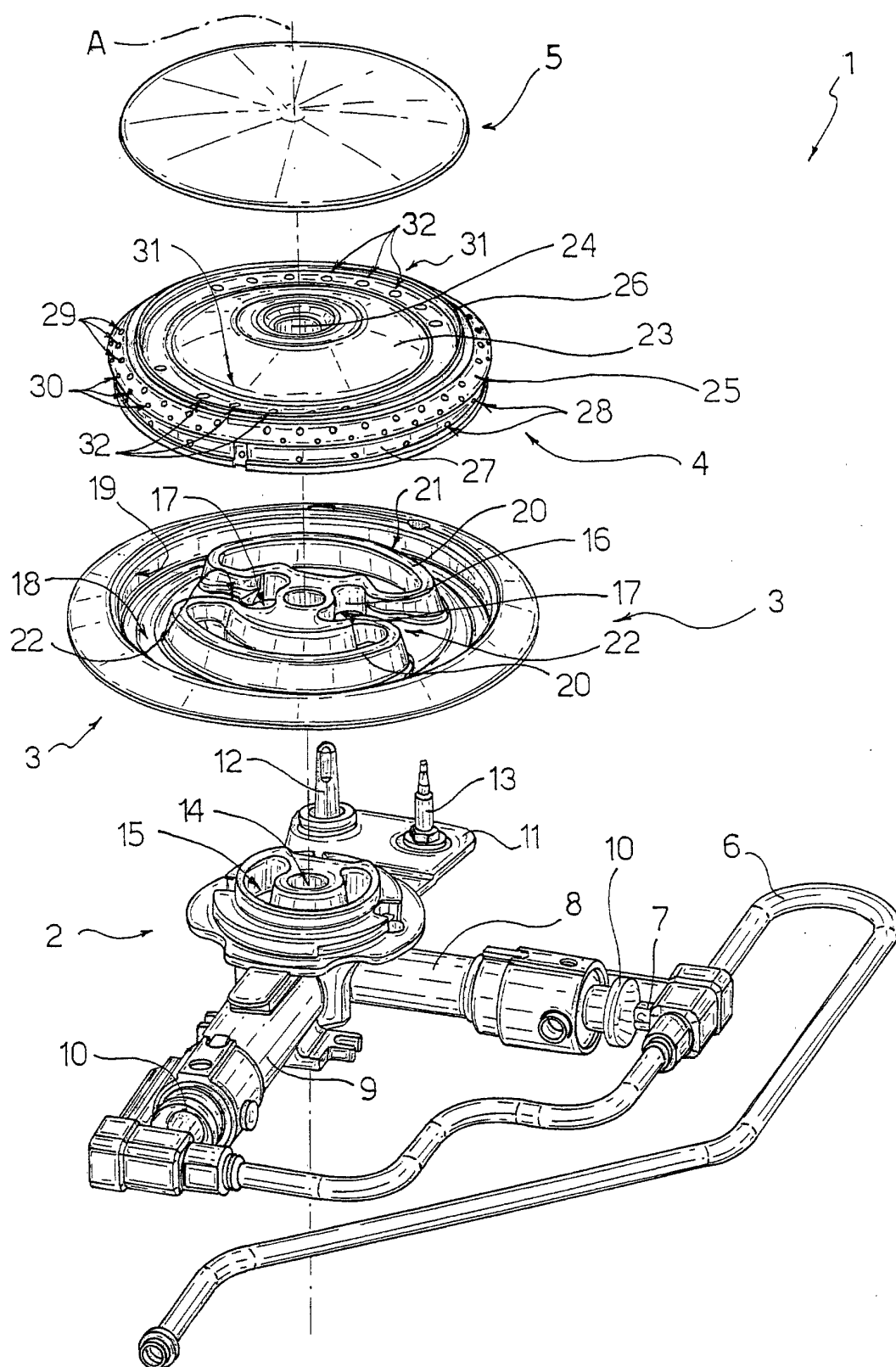
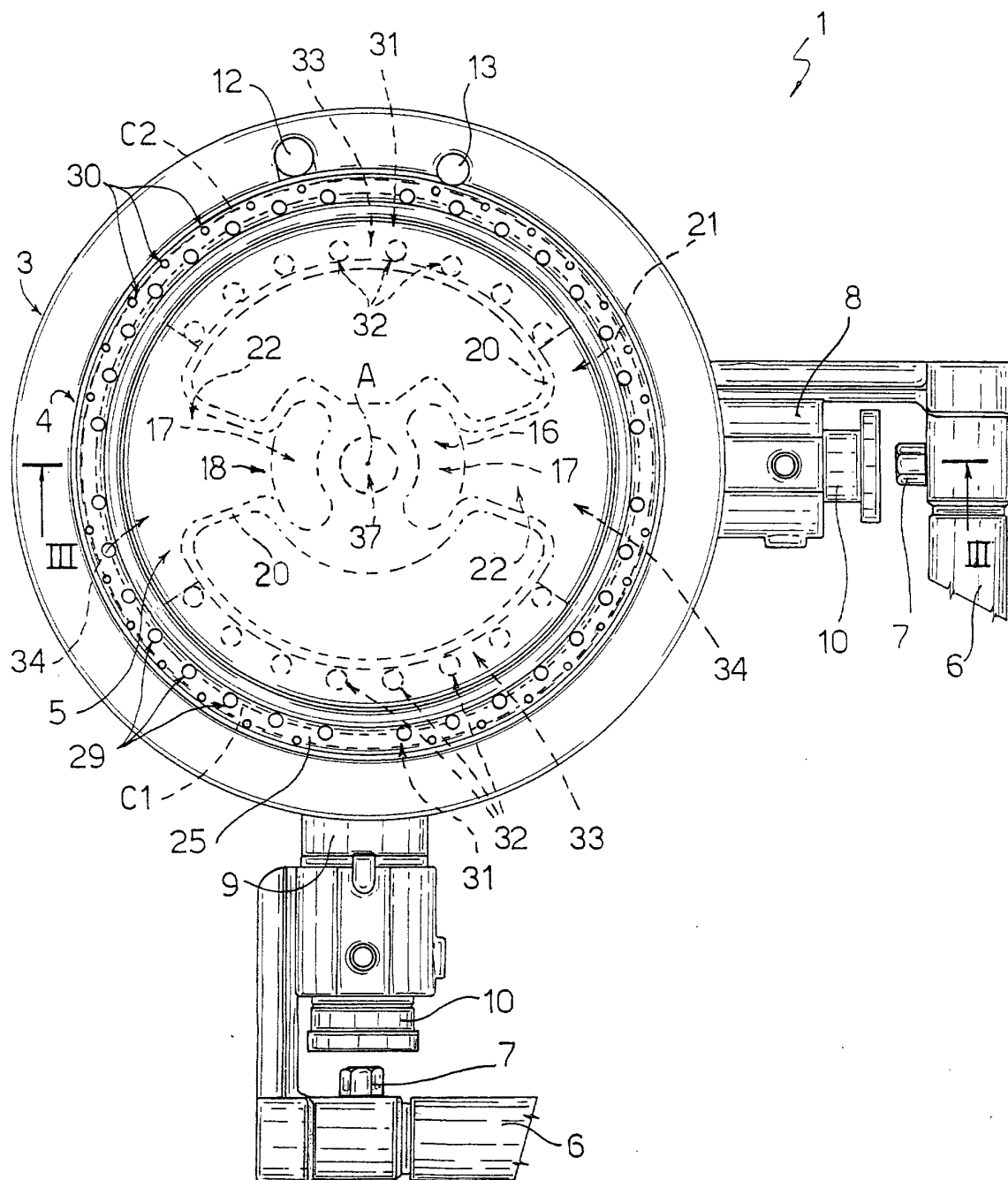


Fig.1

Fig.2



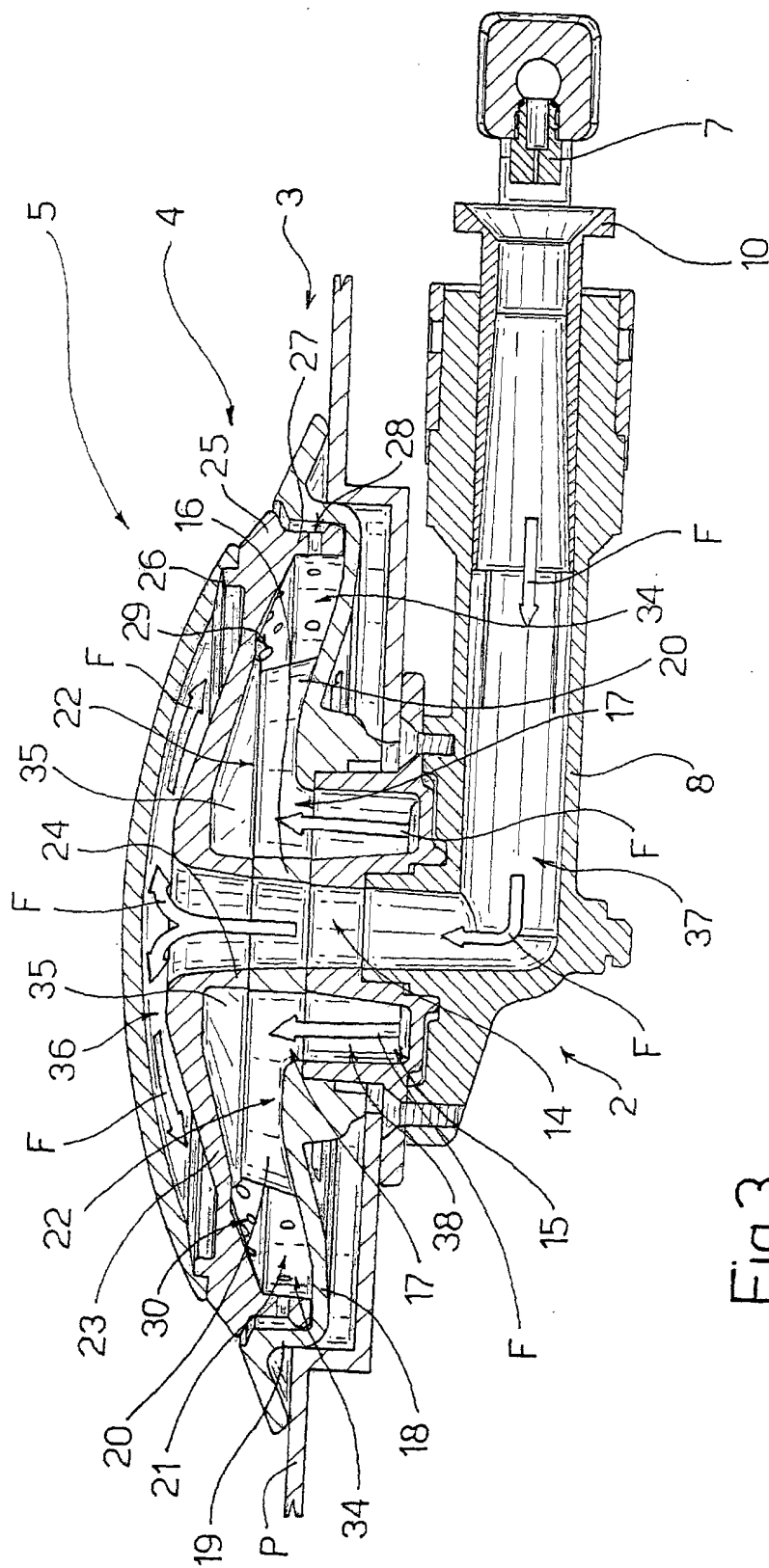


Fig.3

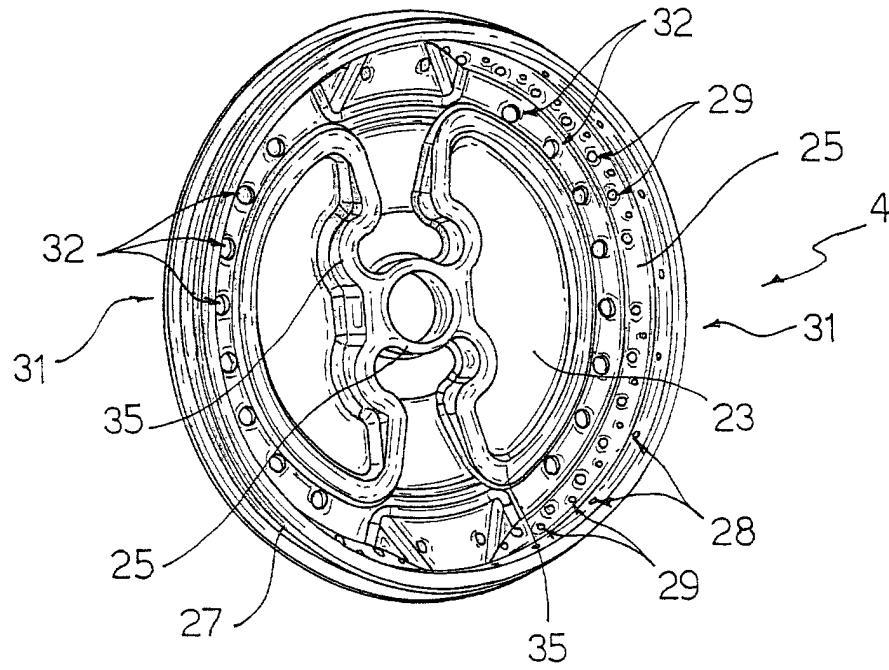
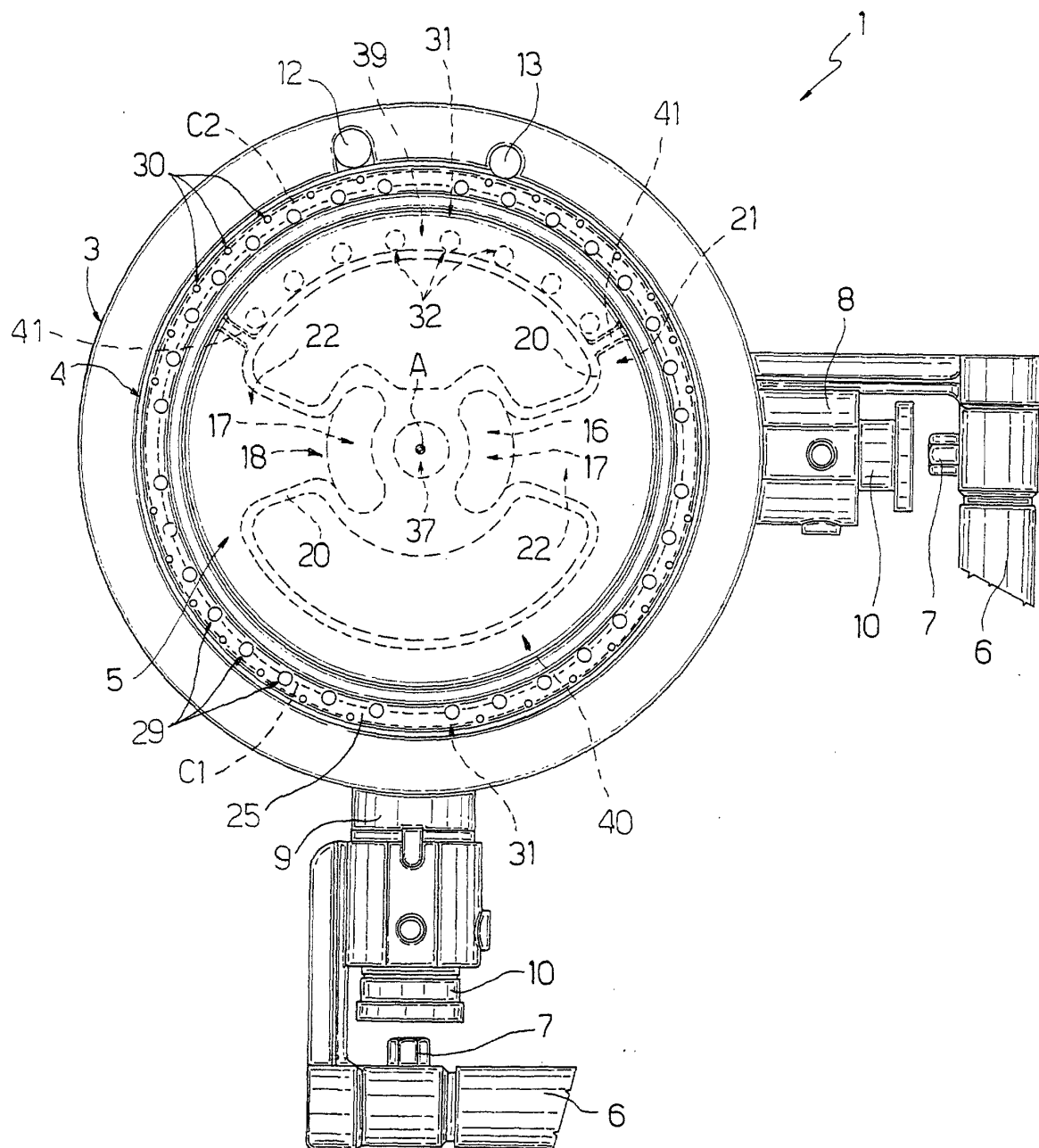


Fig.4

Fig.5





European Patent
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EUROPEAN SEARCH REPORT

Application Number
EP 01 11 8518

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The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (Int.Cl.7)
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Place of search		Date of completion of the search	Examiner
MUNICH		8 November 2001	Theis, G
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**ANNEX TO THE EUROPEAN SEARCH REPORT
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