

(19) **DANMARK**

(10) **DK/EP 3664592 T3**



Patent- og
Varemærkestyrelsen

(12) **Oversættelse af
europæisk patentskrift**

-
- (51) Int.Cl.: **A 01 C 7/08 (2006.01)**
- (45) Oversættelsen bekendtgjort den: **2021-06-28**
- (80) Dato for Den Europæiske Patentmyndigheds bekendtgørelse om meddelelse af patentet: **2021-04-07**
- (86) Europæisk ansøgning nr.: **18750196.0**
- (86) Europæisk indleveringsdag: **2018-08-03**
- (87) Den europæiske ansøgnings publiceringsdag: **2020-06-17**
- (86) International ansøgning nr.: **EP2018071134**
- (87) Internationalt publikationsnr.: **WO2019030140**
- (30) Prioritet: **2017-08-07 DE 102017117923**
- (84) Designerede stater: **AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR**
- (73) Patenthaver: **Amazonen-Werke H. Dreyer SE & Co. KG, Am Amazonenwerk 9-13, 49205 Hasbergen, Tyskland**
- (72) Opfinder: **SCHWAMM, Victor, Heinrich-Rabe-Str. 19, 49086 Osnabrück, Tyskland**
TROEBNER, Michael, Goebenstraße 14A, 49076 Osnabrück, Tyskland
- (74) Fuldmægtig i Danmark: **Patrade A/S, Ceresbyen 75, 8000 Århus C, Danmark**
- (54) Benævnelse: **Fordelerhoved til en pneumatisk arbejdende fordelermaskine**
- (56) Fremdragne publikationer:
EP-A1- 2 298 055
EP-A1- 2 959 762
EP-A2- 0 799 560
DE-A1-102005 008 290

Distributing head for a pneumatically operating distributing machine**Description**

5 [0001] The invention relates to a distributor head for a pneumatically operating distribution machine according to the preamble of Claim 1.

[0002] Such a distributor head for a pneumatically operating distribution machine is disclosed in EP 2 298 055 A1. A shut-off slide which has the shape of a cylinder
10 section which is concentric relative to the annular distribution chamber is provided in this distributor. By means of this shut-off slide a plurality of inlet openings of distributor lines may be shut off simultaneously, so that the working width is reduced in a simple manner. When the distributor lines are shut off by means of the inserted shut-off slide, in order to permit the conveyance of excess conveyed air
15 via the shut-off distributor lines, it is provided in the prior art that the shut-off slide is configured in an air-permeable manner. As a result, conveyed air is able to escape through the recesses formed in the shut-off slide and from the distributor head into the shut-off distributor lines. In order to permit in a simple manner the escape of conveyed air through recesses formed in the shut-off slide, in this case the shut-off
20 slide is configured in the manner of a sieve. A drawback with this known shut-off slide is that it is only possible to shut off a plurality of distributor lines simultaneously by means of the shut-off slide.

[0003] A further distributor head for a pneumatically operating distribution
25 machine according to the preamble of claim 1 is disclosed in DE 10 2005 008 290 A1. In this distributor head, a plurality of distributor lines may be shut-off according to requirements, in each case individually by separate shut-off slides which are respectively able to be inserted with a foot part assigned to the shut-off slide into the outlets of the distributor line. The shut-off procedure is implemented
30 in this case such that a flow of conveyed air is not able to escape through the shut-off distributor lines. This results in the material which is supplied to the distributor head being unevenly distributed to the distributor lines which are not shut off.

[0004] The object of the invention is to enable in a simple manner a flow of conveyed air to be able to escape from the distributor head via the shut-off distributor lines, in the case of separate outlets of distributor lines which may be shut off by means of individual shut-off elements.

5

[0005] This object is achieved according to the invention in that the shut-off elements are configured in an air-permeable manner and that the shut-off wedges each have, above the foot part to be inserted into the particular outlet, at least one through-opening that leads out in the region of the lower end of the foot part.

10

[0006] As a result of these measures, conveyed air is able to escape from the distributor head into the respectively shut-off distributor line, through the through-opening which is arranged in the respective shut-off wedge. As a result, the excess conveyed air which is supplied is still able to escape via the shut-off distributor lines, such that the uniform distribution of the quantity of material which is supplied to the distributor is maintained to the distributor lines which are not shut off.

15

[0007] In order to achieve in a simple manner that no material supplied to the distributor head is able to pass into the shut-off distributor line via the opening arranged in the shut-off wedge, it is provided that the distributor head has a curved cover, that the side of the shut-off wedge that faces the cover bears at least approximately against the inner side of the curved cover, that between the inner side of the cover and that side of the shut-off wedges that faces the cover, a gap with a size is located that allows an air flow from the interior of the distributor head to the distributor line connected to the outlet but prevents the material to be distributed from passing through to the distributor line, that the start of the through-opening in the shut-off wedge is located on that side of the shut-off wedge that faces the inner side of the cover.

20

25

30

[0008] A simple arrangement of the through-opening in the shut-off wedge may be implemented by the through-opening being formed in a slot-like and/or channel-like manner in the shut-off wedge.

[0009] A further simple implementation of the arrangement of the through-opening in the shut-off wedge is achieved by the through-opening in the shut-off wedge being in the form of an aperture and/or bore.

5

[0010] So that it is ensured that the shut-off wedge remains securely in the outlet of the shut-off distributor line during operation, it is provided that the size of the foot of the shut-off wedge and the size of the outlet of the distributor head are coordinated with one another such that the foot of the shut-off wedge is arranged in a frictional manner in the outlet of the distributor head.

10

[0011] Further details of the invention may be derived from the description of the examples and the drawings. In the drawings:

15 Fig. 1 shows a towed pneumatic distribution machine, which is coupled to an agricultural tractor and which is configured as a seed drill, in a schematic diagram and a perspective view,

Fig. 2 shows the distributor head of the pneumatic seed drill in a schematic diagram, in enlarged scale and in a perspective view,

20

Fig. 3 shows the distributor head according to Fig. 2 with the cover removed in a different perspective view,

25 Fig. 4 shows the distributor head with a supply pipe in the section IV-IV and a perspective view,

Fig. 5 shows a partial view of the distributor head in the view according to Fig. 4 in enlarged scale, wherein a shut-off element which is configured as shut-off wedge is inserted in a shut-off outlet line,

30

- Fig. 6 shows the distributor head with the supply pipe in the section IV-IV with the illustrated air guidance on the distributor line which is shut off by the shut-off wedge,
- 5 Fig. 7 shows a partial view of the distributor head in the view according to Fig. 6 in enlarged scale with the illustrated air guidance on the distributor line which is shut off by the shut-off wedge,
- Fig. 8 shows a shut-off wedge in a perspective view,
- 10 Fig. 9 shows the shut-off wedge according to Fig. 8 in the section IX-IX,
- Fig. 10 shows a further shut-off wedge in a perspective view and
- 15 Fig. 11 shows the shut-off wedge according to Fig 10 in the section XI-XI.

[0012] The pneumatic distribution machine 1 is configured as a towed seed drill and comprises the frame 2 with the storage container 3 arranged thereon. The frame 2 is arranged with its front side via a coupling device on the coupling device of the agricultural tractor 4. The foldable coulter frame 5 with the seed coulters 6 is arranged on the rear side of the frame 2. Two distributor heads 7 with vertical supply pipes 8 are arranged on the coulter frame. The material, such as seed, fertilizer or the like which is located in the storage container 3, is fed in adjustable quantities to the supply pipes 8 and the distributor heads 7 via pneumatically actuated supply lines, which are adjoined thereto but not shown, via metering devices assigned to the storage container 3.

[0013] Thus the respective distributor head 7 is connected to a storage container 3. Outlets 9 are arranged in circular symmetrical distribution on the distributor head 7. In each case, the outlets 9 are adjoined by a distributor line 10, not shown in Fig. 1. The respective distributor line 10 leads to the dispensing devices configured as seed coulters 6 for the material to be distributed. Via the distributor head 7 the supplied material is distributed in the known manner to the outlets 9 of the

distributor head 7 leading to the individual seed coulters 6, and thus to the distributor line 10.

5 [0014] Individual outlets 9 of the distributor head 7 may be shut-off by air-permeable shut-off elements 11 cooperating therewith. The shut-off elements 11 are in the form of shut-off wedges 12 with a foot part 13 to be inserted into the particular outlet 9 of the distributor head to be shut off. The size of the foot part 13 of the respective shut-off wedge 12 and the size of the outlet 9 of the distributor head 7 are coordinated with one another such that the foot part 13 of the shut-off
10 wedge 12 is arranged in a frictional manner in the outlet of the distributor head 7.

[0015] The shut-off elements 11 which are in the form of shut-off wedges 12 may be inserted in each case with the foot part 13 thereof into the particular outlet 9. The shut-off wedges 12 each have, above the foot part 13 to be inserted into the
15 particular outlet 9, at least one through-opening 14 that leads out in the region of the lower end of the foot part 13. According to the exemplary embodiment according to Figs. 4 to 9, the through-opening 14 in the shut-off wedge 13 is in the form of an aperture and/or bore.

20 [0016] The distributor head 7 has a curved cover 15. The side of the shut-off wedge 12 that faces the cover 15 bears at least approximately against the inner side of the curved cover 15. Between the inner side of the cover 15 and that side of the shut-off wedges 12 that faces the cover 15 a gap 16 with a size is located that allows an
25 air flow 17 from the interior 18 of the distributor head 7 to the distributor line 10 connected to the outlet 9 but prevents the material to be distributed from passing through to the distributor line 10. The start of the through-opening 14 in the shut-off wedge 12 is located on that side of the shut-off wedge 12 that faces the inner side of the cover 15.

30 [0017] According to the exemplary embodiment according to Figs. 10 and 11, the through-opening 14 is formed in a slot-like and/or channel-like manner in the shut-off wedge 12.

PATENTKRAV

1. Fordelerhoved (7) til en pneumatisk arbejdende fordelermaskine (1) for så-
5 sæd, gødning og lignende, hvorved fordelerhovedet (7) er forbundet til en la-
gerbeholder (3), og afgangsåbninger er arrangeret cirkulærsymmetrisk på for-
delerhovedet (7), hvilke afgangsåbninger er sluttet til fordelerledningen (10), der
fører til dispenserindretninger (6) for materialet, som skal fordeles, og afspær-
ringselementer (11), der virker sammen med afgangsåbningerne (9), kan arran-
10 geres i fordelerhovedet (7) med henblik på at afspærre en eller flere af fordeler-
ledningerne (10), hvorved afspærringselementerne (11) er i form af afspær-
ringskiler (12) med en fod-del (13), og som kan indsættes i den respektive ud-
gang (9), der skal afspærres,

kendetegnet ved, at

15 afspærringselementerne er konfigureret som luftgennemtrængelige,
og at de respektive afspærringskiler (12), oven over fod-delen (13), og som skal
indsættes i den respektive afgangsåbning (9), omfatter mindst én gennem-
gangsåbning (14), der udmunder i området ved fod-delens (13) nedre ende.

20 2. Fordelerhoved (7) ifølge krav 1, **kendetegnet ved, at** fordelerhovedet om-
fatter et hvælvet dæksel (15), **ved, at** den side af afspærringskilen (12), der
vender mod dækslet (15), i det mindste med tilnærmelse ligger an mod den
indvendige side af det hvælvede dæksel (15), **ved, at** der mellem den indven-
dige side af dækslet (15) og den side af afspærringskilerne (12), som vender
25 mod dækslet (15), er arrangeret en spalte (16) med en størrelse, der muliggør
en luftstrøm (17) fra det indre (18) af fordelerhovedet (7) til fordelerledningen
(10), som er forbundet til udgangen (9), men hindrer materialet, der skal forde-
les, i at passere igennem til fordelerledningen (10), og **ved, at** begyndelsen af
gennemgangsåbningen (14) i afspærringskilen (12) befinder sig på den side af
30 afspærringskilen (12), som vender mod den indvendige side af dækslet (15).

3. Fordelerhoved ifølge mindst et af de foregående krav, **kendetegnet ved, at**
den gennemgående åbning (14) i afspærringskilen (12) er dannet som slids-
lignende og/eller som kanal-lignende.

4. Fordelerhoved ifølge mindst eet af de foregående krav 1 og/eller 2, **kendetegnet ved, at** den gennemgående åbning (14) i afspærringskilen (12) er dannet som en gennembrydning og/eller boring.

5

5. Fordelerhoved ifølge mindst eet af de foregående krav, **kendetegnet ved, at** størrelsen af afspærringskilens (12) fod-del (13) og størrelsen af fordelerhovedets (3) udgang (4) er afstemt således med hinanden, at afspærringskilens (12) fod-del (13) er arrangeret med friktionskontakt i fordelerhovedets (3) udgang (9).

10

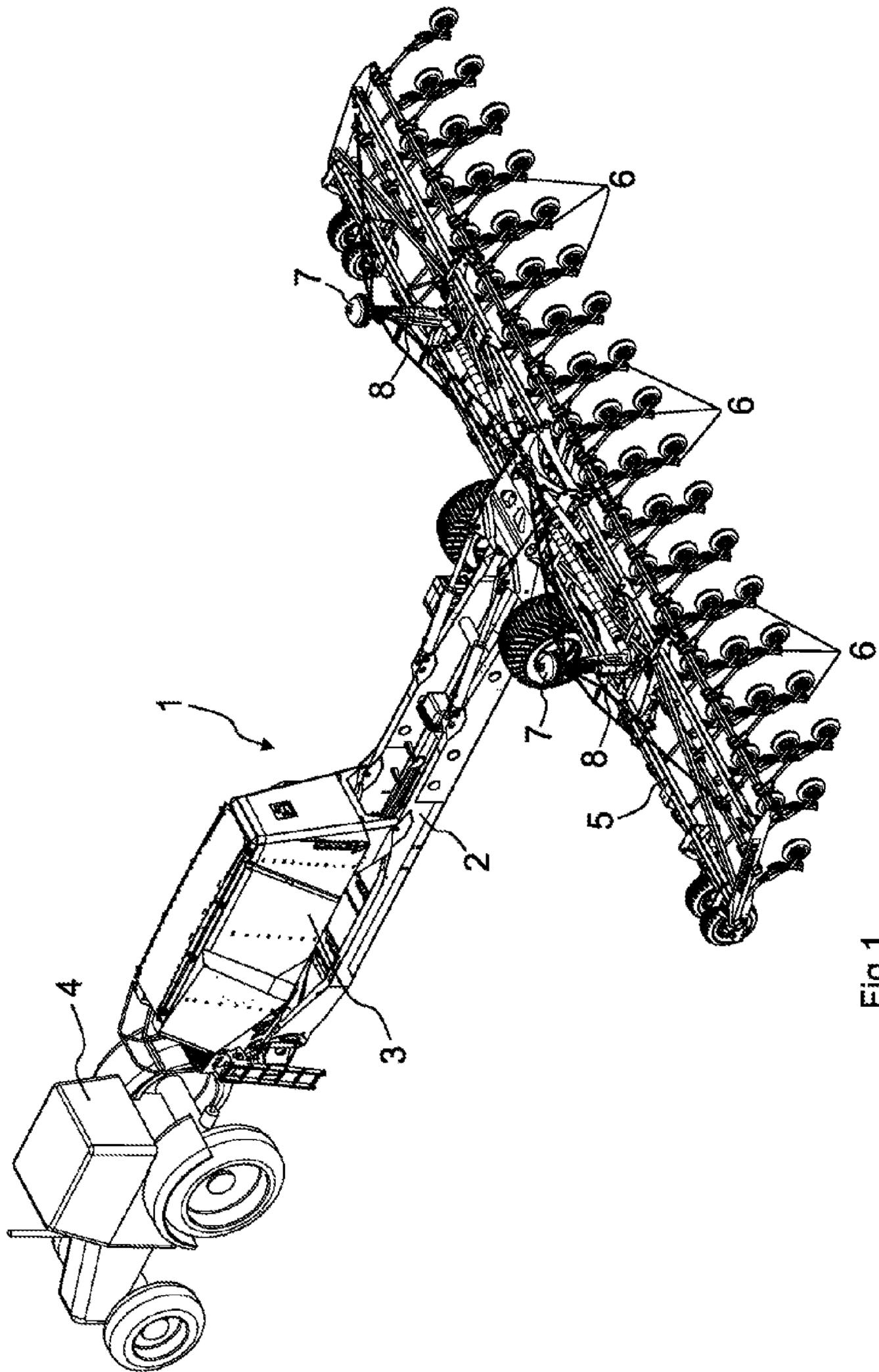


Fig.1

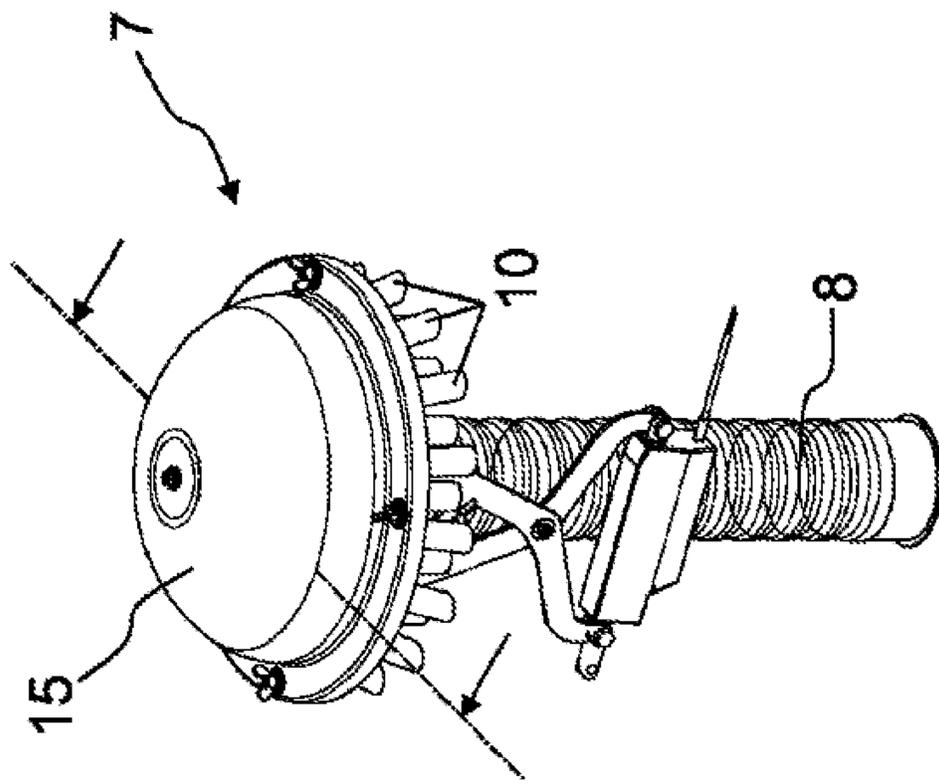


Fig.2

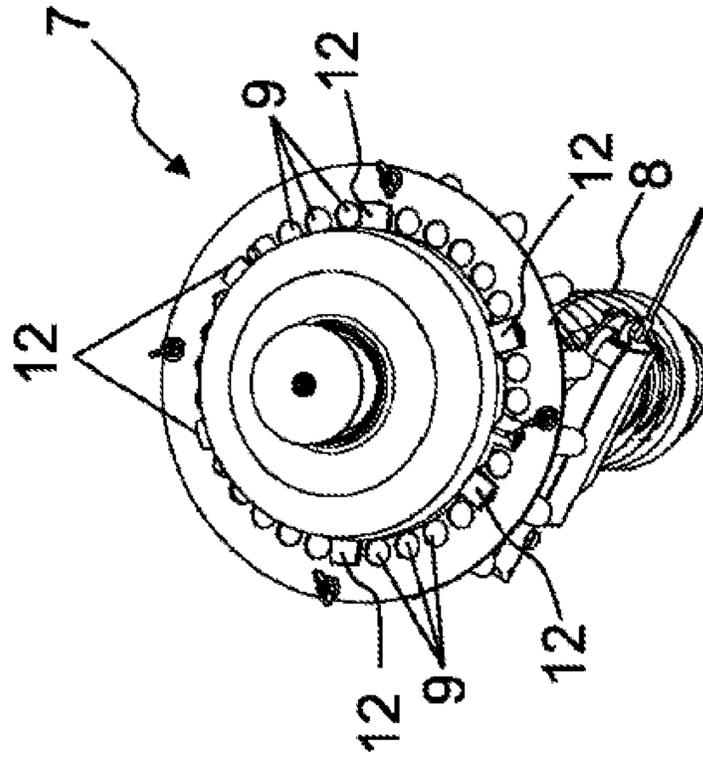
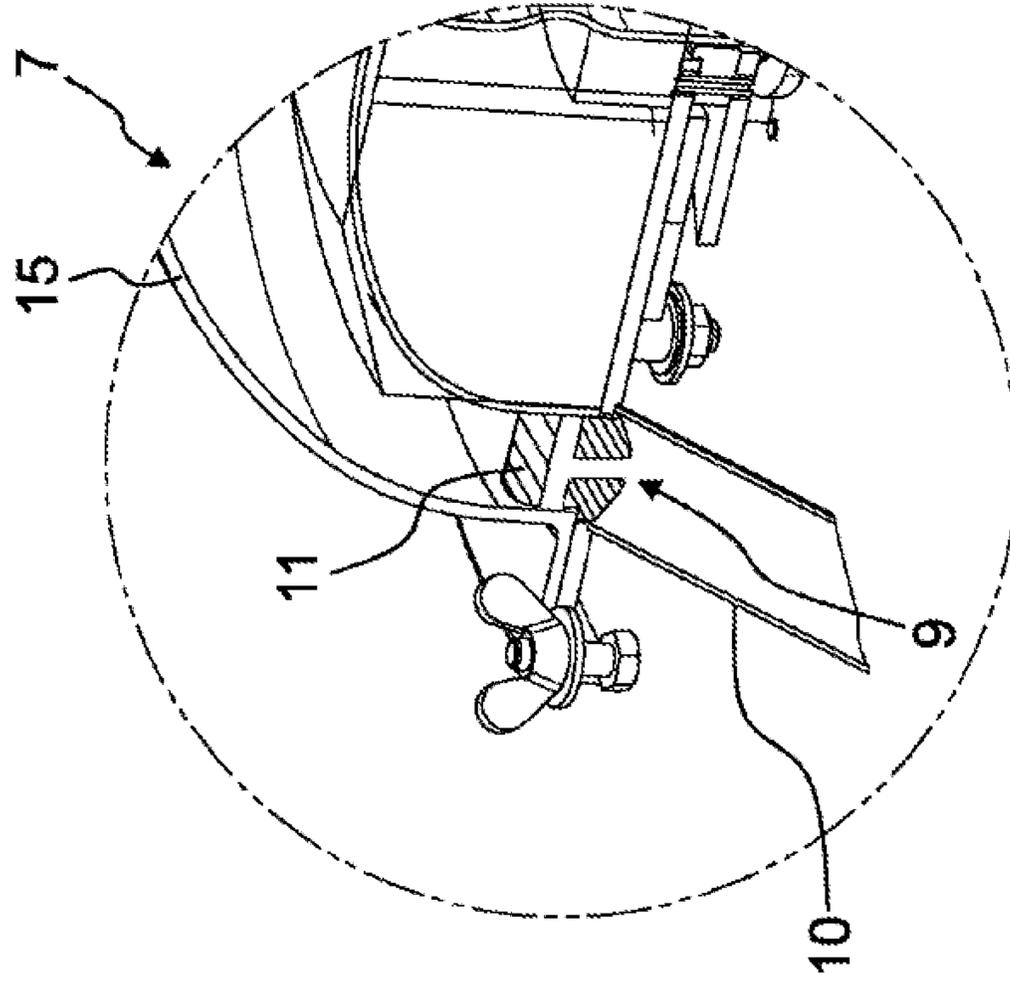
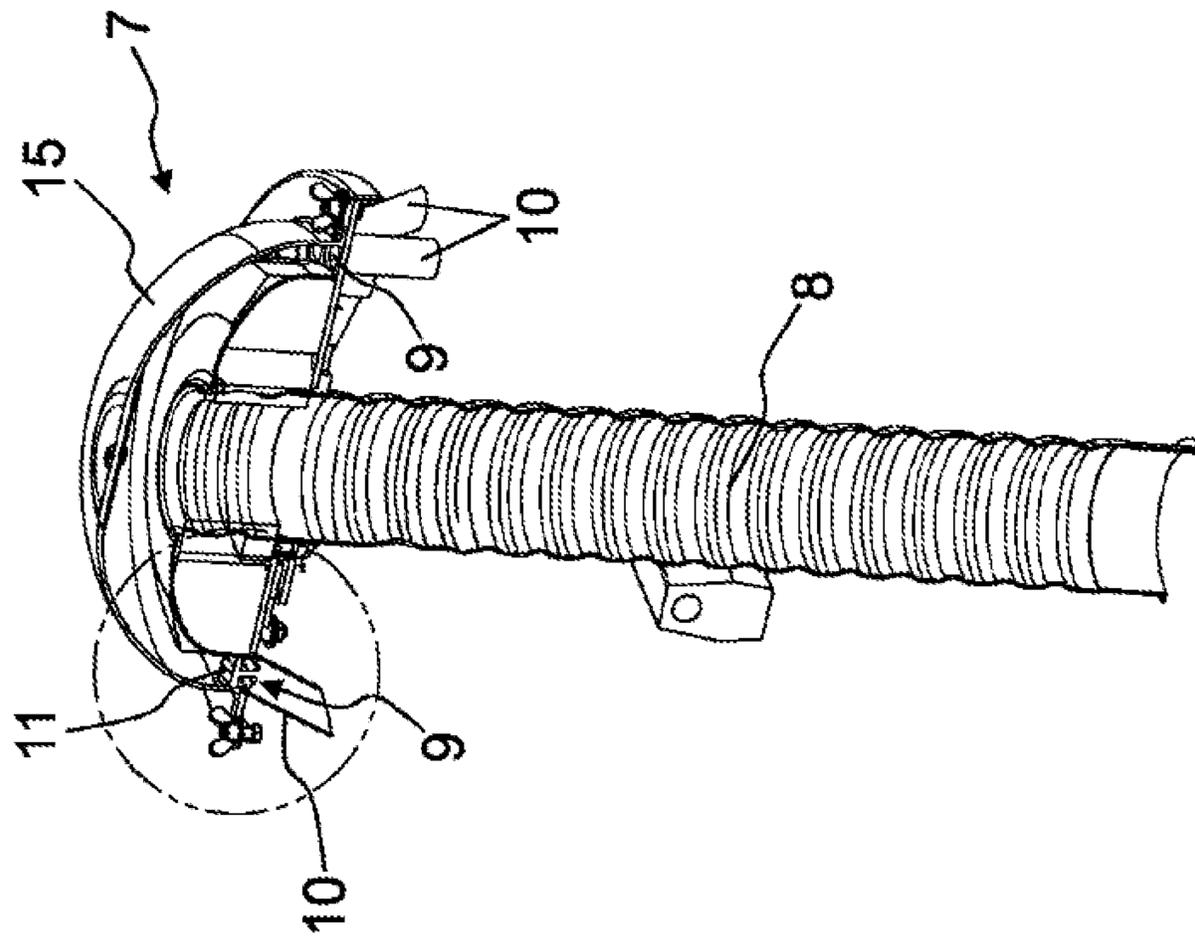


Fig.3



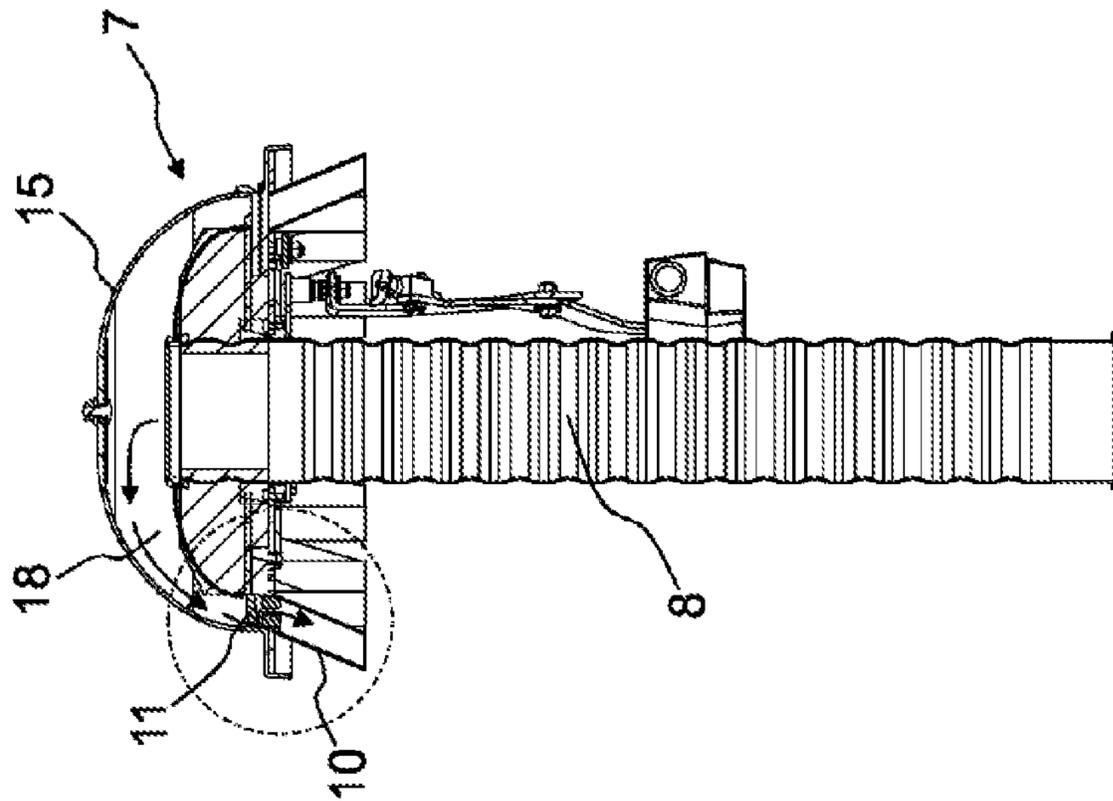


Fig. 6

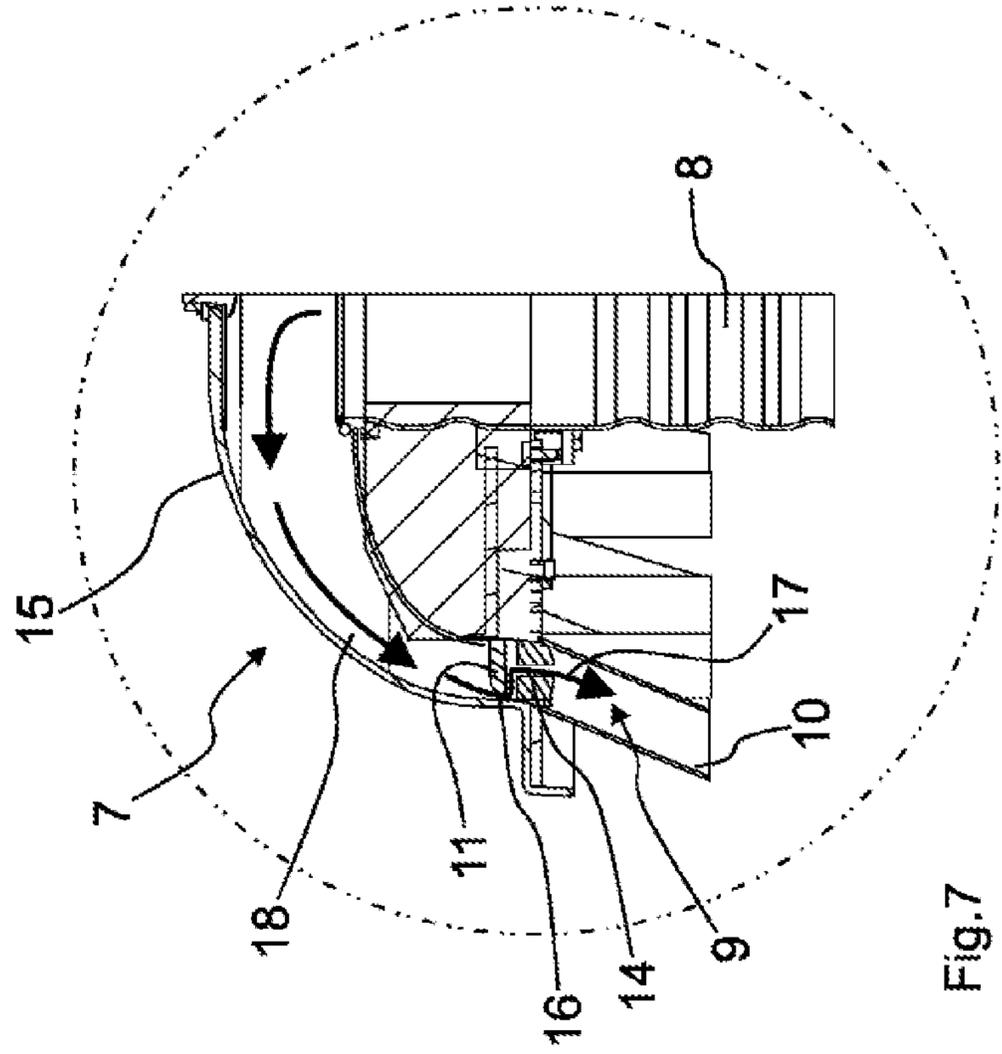


Fig. 7

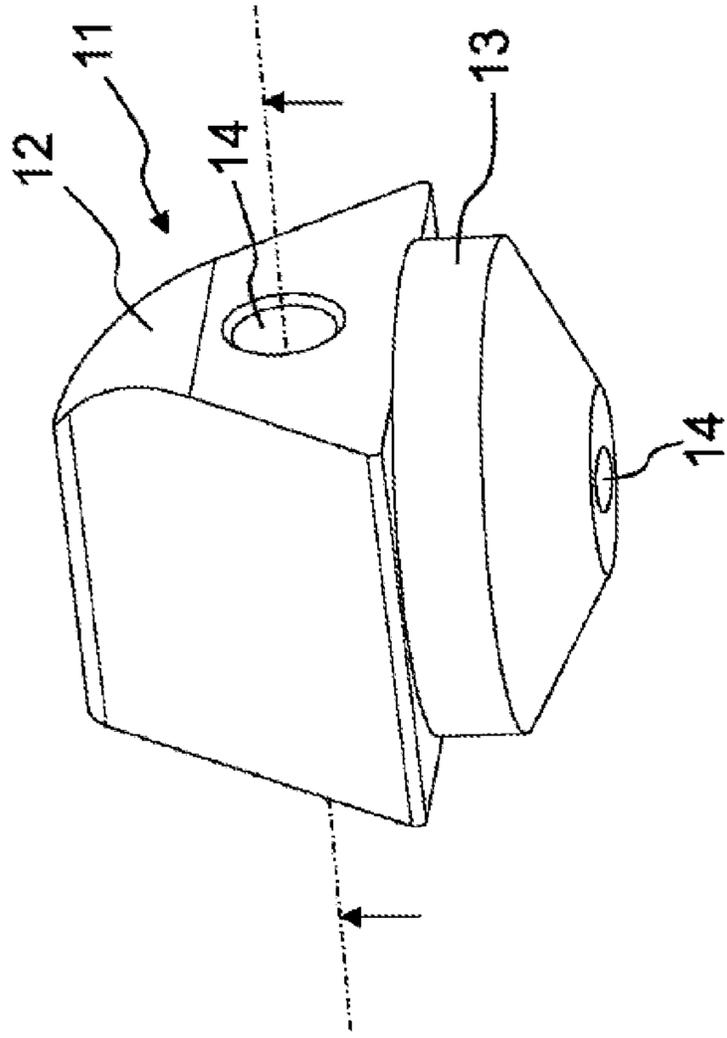


Fig. 8

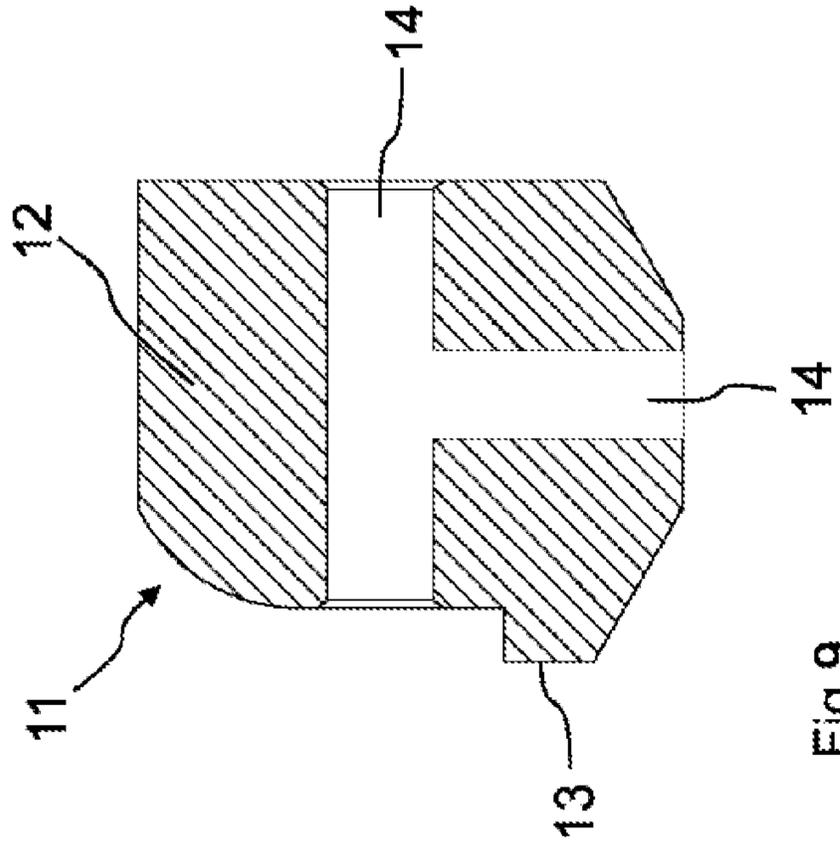


Fig. 9

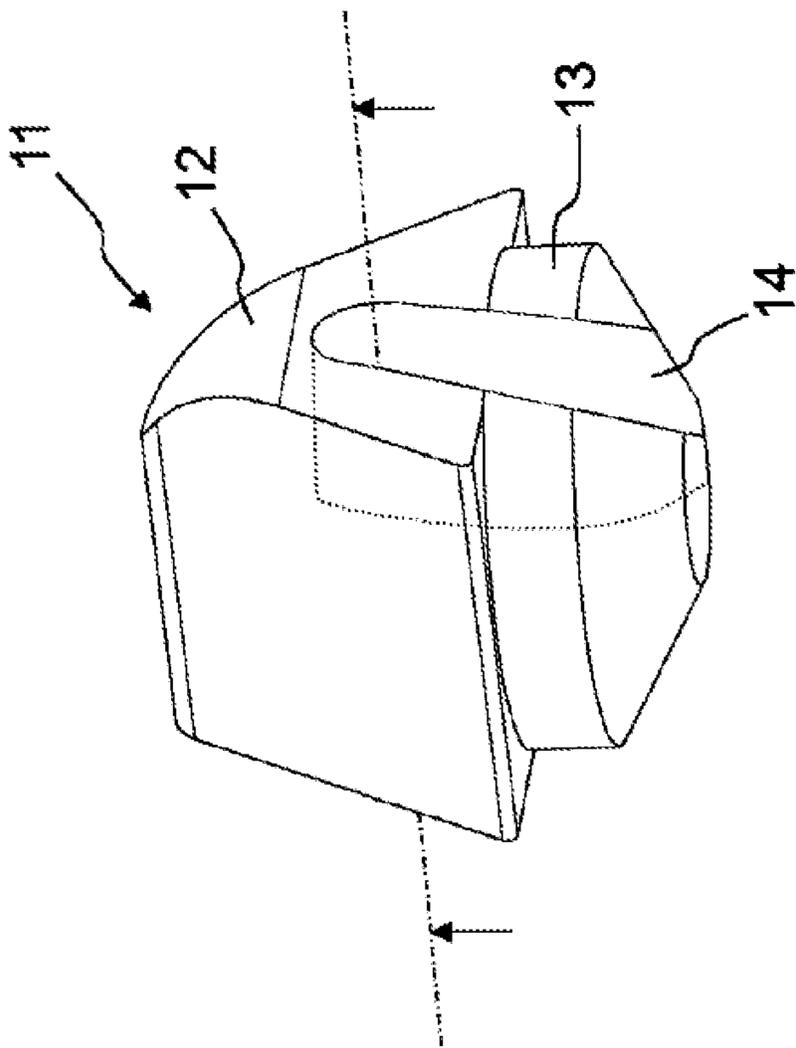


Fig.10

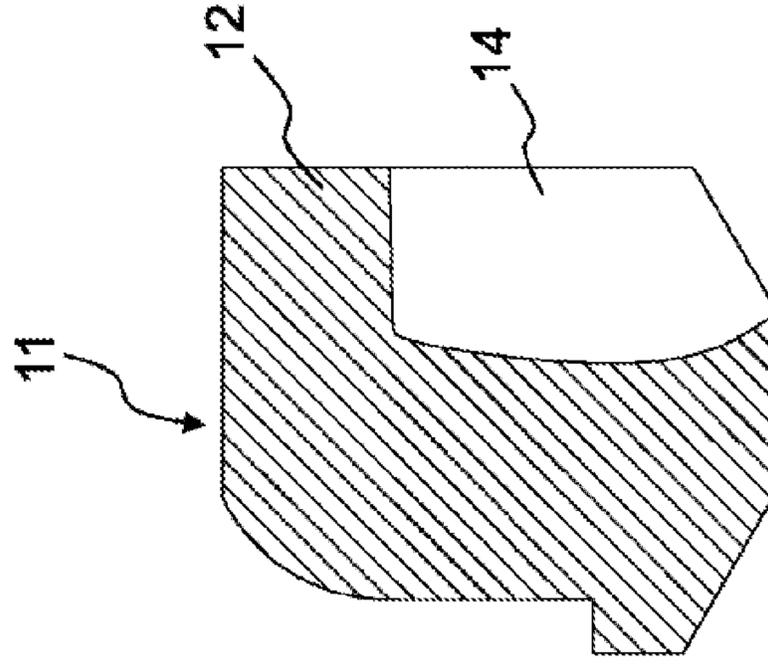


Fig.11