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(54) A paper dispenser.

(57) A toilet paper dispenser for dispensing paper from a paper roll (4) comprises a housing for accommodating the roll and having an outlet opening through which paper may be dispensed from the roll and torn off. The roll of paper is non-rotatably received on the axially displaceable shaft assembly (3) which is normally biased by a spring (50) into a position in which a ring of teeth (42) on the shaft assembly engages a ring of teeth (38) in a cover (2) of the housing to prevent rotation of the shaft assembly. The shaft assembly can be axially displaced to free it for rotation by pressing an actuating knob (7) and the knob then rotated to dispense paper from the roll in a controlled fashion. The shaft assembly is automatically returned to its non-rotatable position by the bias spring upon release of the actuating knob.

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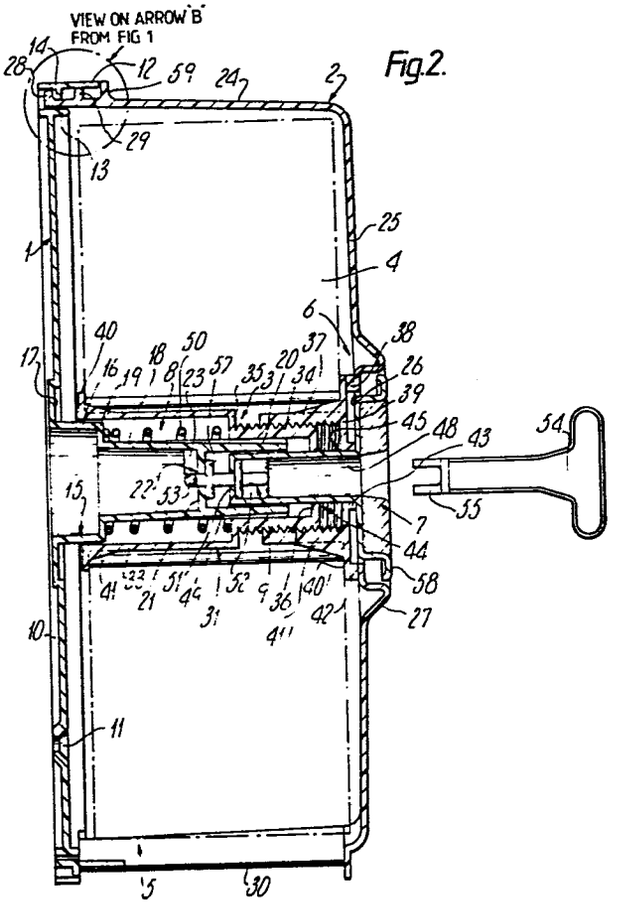

Fig.2.

"A Paper Dispenser"

THIS INVENTION relates to a paper dispenser, in particular a dispenser for dispensing toilet paper.

Conventional paper dispensers, in particular toilet paper dispensers, comprise a support mounted on a wall of the toilet on which a toilet roll is rotatably mounted for use. In such toilet paper dispensers the toilet roll is exposed and may often be improperly removed and dropped on the floor of the toilet or stolen. Further, particularly in the case of industrial plants or factories, where the toilets are washed down with water the toilet roll is likely to become sodden and unusable.

It has been proposed to provide a paper dispenser wherein one or more rolls of paper are rotatably mounted within a protective housing having an opening through which paper may be pulled from the roll and torn off. However, by pulling continually on the edge of the paper extending through the opening, large amounts of paper may be removed from the dispenser. Thus, such a dispenser is open to abuse by vandals.

It is an object of the invention to provide a paper dispenser wherein the disadvantages of previously proposed dispensers are overcome at least in part.

Accordingly the invention provides a paper dispenser for dispensing paper from a roll, comprising: a housing for accommodating a roll of paper and having an outlet opening through which paper may be dispensed from the roll and torn off; support means rotatably mounted in the housing for receiving thereon the roll of paper which is held against rotation relative to the support means; means for normally preventing rotation of the support means; and manually operable actuating means to release the support means for controlled rotation to dispense paper from the roll through the outlet opening of the housing.

Preferably, biasing means are provided for biasing the support means into a normal position in which stop means prevent rotation of the support means. Advantageously, the stop means comprise interengaging means on the support means and the dispenser housing.

Conveniently, the actuating means serve to displace the support means away from the said normal position against the action of the biasing means to free the support means for rotation.

Desirably the controlled rotation of the support means is effected by rotation of the actuating means which are coupled to the support means for rotation therewith.

In one form of the invention, the support means comprises an axially displaceable shaft assembly and the biasing means biases the shaft assembly into a normal axial position. The stop means may comprise a ring of teeth carried by the shaft assembly and axially engageable with a corresponding ring of teeth on the inside of the dispenser housing.

Conveniently, the shaft is hollow and is mounted for limited axial movement on a spigot projecting internally from the dispenser housing.

Preferably, the spigot is formed on a backplate of the dispenser housing and a domed cover of the housing is secured to the backplate by locking means.

In an embodiment of the invention, the actuating means comprises an actuating knob having a shank extending freely through the cover and coupled to the shaft assembly for rotation therewith.

Advantageously, the shank of the actuating knob is coupled to the backplate spigot by a locking member allowing limited axial movement of the actuating knob, removal of the cover being prevented by the actuating knob which is however capable of limited axial movement relative to the backplate in order to displace the shaft assembly from its normal position and thereby temporarily free it for rotation.

Suitably, the shaft assembly comprises two axial portions detachably connected together and provided with respective clamping flanges between which the paper roll is gripped when mounted on the shaft assembly.

In order that the invention may be readily understood, an embodiment thereof will now be described, by way of example, with reference to the accompanying drawings, in which:

FIGURE 1 is a plan view of a paper dispenser embodying the invention and intended for use as a toilet paper dispenser;

FIGURE 2 is a cross-sectional view of the paper dispenser, taken along the line II-II in Figure 1 and also illustrating a key for locking the dispenser;

FIGURE 3 is a side view of the paper dispenser in the direction of the arrow III in Figure 1;

FIGURE 4 is an underneath view of the paper dispenser in the direction of the arrow IV in Figure 3;

FIGURE 5A is a plan view of a backplate of the paper dispenser;

FIGURE 5B is a cross-sectional view of the dispenser backplate, taken on the line V-V in Figure 5A;

FIGURE 6A is a side view of a first sleeve of a shaft assembly of the paper dispenser;

FIGURE 6B is an end view of the first sleeve of the dispenser shaft assembly in the direction of arrow VI in Figure 6A;

FIGURE 7A is an axial cross-sectional view of a second sleeve of the dispenser shaft assembly;

FIGURE 7B is a view of one end of the second sleeve of the dispenser shaft assembly in the direction of arrow VII B in Figure 7A;

FIGURE 7C is a view of the other end of the second sleeve of the dispenser shaft assembly in the direction of arrow VII C in Figure 7A;

FIGURE 8A is a side view of a locking member of the paper dispenser;

FIGURE 8B is a view of one end of the locking member of the dispenser in the direction of arrow VIII B in Figure 8A;

FIGURE 8C is a view of the other end of the locking member of the dispenser in the direction of arrow VIII C in Figure 8A; and

FIGURE 9 illustrates the co-operation between threads on the backplate and a cover of the dispenser.

Referring now to the drawings, and particularly Figures 1 to 4, a paper dispenser embodying the invention comprises a housing constituted by a circular backplate 1 and a domed cover 2 lockably mounted on the backplate, the housing containing support means in the form of an axially displaceable shaft assembly 3 for receiving thereon a roll 4 of toilet paper from which lengths of paper are to be dispensed to a user as required through an outlet opening 5 in the cover. The paper roll 4 is non-rotatably held on the shaft assembly 3 which itself is normally prevented from rotating by the inter-engagement of complementary stop means 6 on the shaft assembly 3 and the cover 2. The shaft assembly is axially displaced to free it for rotation by an actuating knob 7 by the user pressing on the knob 7, the shaft assembly being automatically returned to its non-rotatable position by biasing means 8 upon the user releasing the knob 7. A locking member 9 secures the knob 7, and thus the cover 2, to the backplate 1 to prevent unauthorised access to the interior of the housing, whilst permitting the necessary limited axial movement of the knob 7 to free the shaft assembly 3 for rotation.

The construction of the backplate 1 is shown in Figures 5A and 5B, from which it can be seen that the backplate is formed with radially extending strengthening ribs 10 deformed out of the general plane of the backplate. Three equiangularly spaced countersunk fixing holes 11 extend

through respective ribs for the passage of fasteners, such as screws, by which the backplate 1 may be secured to a convenient vertical surface, such as a wall.

Around its rim the backplate 1 is formed with a mounting channel for the cover 2, such channel having an outer higher side wall 12 and a lower inner side wall 13. At four equally spaced locations therearound the inner surface of the outer side wall 12 is provided with a short screw thread 14.

At the centre the backplate 1 is formed with a projecting hollow tapered spigot 15 which serves to support the shaft assembly 1 of the dispenser and to which the actuating knob 7 is locked in the assembled dispenser. The spigot 15 has a root portion 16 surrounded by an annular well 17 in the backplate 1 and a reduced diameter stem portion 18 forming a shoulder 19 at its junction with the root portion 16. Externally, the stem portion 18 presents four longitudinal locating ribs 20. Internally, the stem portion 18 has a transversely extending wall 21 formed with a locking slot 22. A locking abutment 23 extending perpendicularly to the length of the slot 22 is provided substantially midway along the slot on the surface of the wall 21 nearest the root portion 16.

As best shown in Figure 2, the domed cover 2 has a slightly conical side wall 24 and a circular slightly domed end wall 25 provided with a central circular aperture 26 surrounded by a raised lip 27. Adjacent the aperture 26 an annular rim is formed with a ring of teeth 38 facing the backplate 1 and constituting part of the stop means 6. Near the open end of the side wall 24 the external surface of the wall is formed at four equally spaced locations with an inclined thread 28 of the same circumferential extent as that of the thread 14 on the backplate. At the same locations the side wall 24 is formed with a thread 29 extending parallel to the backplate and of the same extent as the thread 28, the threads 28 and 29 converging at one end so that the spacing between the ends of the threads is less than the width of the threads axially of the wall 24. By introducing the free end of the side wall 24 into the mounting channel of the backplate 1 with the threads 14 and 28 in staggered relationship and then rotating the cover clockwise, the threads 14 are brought into engagement between the threads 28 and 29 with the leading end of the thread 14 in abutment with the thread

29 as shown in Figure 9. If desired, radially extending pips (not shown) may be provided on the surface of wall 13 within the mounting channel and on the inner surface of side wall 24 and arranged to pass one another during the clockwise rotation of cover 2 just before full engagement of the threads on the backplate and cover, so as to prevent inadvertent unscrewing of the cover. An outwardly extending trim flange 59 on the outsie surface of the cover side wall 24 hides the joint between the cover and backplate 1 to improve the appearance of the dispenser.

As can be seen from Figures 2 to 4, the outlet opening 5 is formed mainly in the cover side wall 24 but, in order to reduce the necessary axial length of the cover, also extends a small way into the backplate 1, requiring the channel walls 12 and 13 to be cut away over part of their angular extent. The opening 5 has a pair of serrated edges 30 to assist in severing lengths from the paper roll 4.

Figure 2 shows that the shaft assembly of the dispenser comprises a first sleeve 31 and a second sleeve 32, the first sleeve having a larger diameter portion 33 guided on the root portion of the spigot 15 and a smaller diameter portion 34 guided on the stem portion 18 of the spigot, the sleeve portions 33 and 34 being connnected by a radially extending shoulder 35. The larger diameter first sleeve portion 33 presents at its free end a clamping flange 40 and adjacent thereto four axial triangular gripping ribs 41 for securely holding the paper roll 4 on the shaft assembly. The smaller diameter first sleeve portion 34 has an end wall 36 at its free end and is externally screwthreaded at such free end. The second sleeve 32 has a cylindrical body 37 which is internally screwthreaded at one end for screwing into the smaller diameter first sleeve portion 34. The other end of the second sleeve 32 terminates in a centrally apertured circular end plate 39 defining a second clamping flange 40' with adjacent gripping ribs 41' on the second sleeve 32. At its outer periphery the end plate 39 has a ring of teeth 42 constituting part of the stop means 6 and co-operating with the teeth 38 on the cover 2. The inner periphery of the end plate 39 has an axially extending hub 43.

The sleeves 31 and 32 are pressed to the right in Figure 2 by biasing means 8 in the form of a compression spring 50 which is received on the

spigot stem 18 and acts between the spigot shoulder 19 and the shoulder 35 of sleeve 31, thereby pressing the teeth 42 into engagement with the teeth 38.

The first and second sleeves 31 and 32 are shown in more detail in Figures 6A and 6B and Figures 7A to 7C, where it can be seen that a central hexagonally shaped orifice 44 is formed in the hub 43 of the end wall 36 of sleeve 31 and a similar central hexagonal orifice 45 is formed in the end plate 39 of the sleeve 32. In use, the two orifices 44 and 45 are aligned to receive a hexagonal cross-section shank 46 (Figure 2) of the actuating knob 7 of the dispenser, so that the shaft assembly 3 and knob 7 are coupled togther for rotation, although independently movable in the axial direction. End plate 39 is, as shown in Figure 7B, provided with three strengthening ribs 47.

Referring to Figure 2, the actuating knob 7 has a central axial bore 48 which extends through the shank 46 and is closed by an end wall 49 of the shank. A slot 51 is provided in the wall 49 to permit the passage of a locking part of the locking member 9, whilst a head 52 of the member remains slidable within the bore 48. A transverse locking bar 53 of the member 9 can pass through the locking slot 22 in the internal spigot wall 21 in one orientation of the bar 53 and is then held captive by rotating the member 9 through $90\frac{1}{4}$ using the key 54 which is insertable into the bore 48 and has tines 55 adapted to be received in corresponding axial slots 56 (Figure 8B) in the head 52 of the locking member 9. A retaining bar 57 perpendicular to the locking bar 53 and received between the walls 21 and 49 prevents unauthorised removal of the locking member 9, whilst permitting limited axial movement of the actuating knob 7.

Preferably, the key 54 and the various parts of the dispenser (except the steel spring 50) are made of appropriate strong plastics materials. If desired, the cover may be made of translucent and/or coloured plastics material.

Installation of the described paper dispenser is accomplished by first attaching the backplate 1 to a suitable vertical surface in a toilet so that the outlet aperture will be positioned at the bottom.

The paper roll is mounted on the shaft assembly 3 by unscrewing the sleeves 31 and 32, inserting each sleeve into a respective end of the roll 4, and then screwing the sleeves 31 and 32 together until the roll is firmly held between the clamping flanges 35 and 40 and the hexagonal orifices 44 and 45 are also aligned. The shaft assembly is then placed on the backplate spigot 15 with the interposition of bias spring 50 and the cover 2 is offered up over the roll. The free end of the side wall 24 of the cover is introduced into the peripheral channel of the backplate with the baseplate threads 14 and cover threads 28 and 29 offset and, with the end of the cover 2 pressed against the base of the backplate channel, the cover is rotated clockwise to bring the threads into their engaged condition. Next the knob 7 with the locking member therein is inserted through the aligned hexagonal orifices of the sleeves 31 and 32. The key 54 is inserted to grip the head of the locking member 9 to orient it so that is passes through the locking slot 22 and then to rotate the locking member through 90½ into its captive position holding the actuating knob 7 to the spigot 15. A rim 58 on the knob 7 overlaps the toothed rim 38 of the cover end wall 25 to retain the cover against unauthorised removal in the locked condition.

In the installed condition described above, the shaft assembly 3 is normally biased to the right in Figure 2 by the spring 50 so that the teeth 38 and 42 engage and prevent rotation of the shaft and the roll 4 thereon. In order to remove paper from the roll, the actuating knob 7 must first be depressed to press on the hub of sleeve 32 and displace the shaft assembly away from the cover and disengage the teeth 38 and 42. The well 17 in the baseplate allows the final part of the necessary displacement of the shaft assembly, while keeping the axial dimension of the dispenser to a minimum. With the knob 7 maintained depressed, paper may now be dispensed in a controlled fashion from the roll 4 through the outlet opening 5 by rotation of the knob 7 and torn off by means of the serrated edges 30. Upon release of the knob 7, the spring 50 returns the shaft assembly to its normal non-rotatable condition, thereby preventing paper being removed from the roll simple by pulling on the end of the paper through the outlet opening 5.

The dished head of the knob 7 wilthin the rim 58 is so contoured that, should a user attempt simply to maintain the knob depressed with one hand whilst pulling the paper through the outlet opening 5 with the other hand,

the user will find it extremely difficult to maintain the rotating knob depressed.

As will be gathered from the above description, replacement of an empty paper roll 4 is effected by first releasing the locking member 9 from the backplate spigot 15 using the key 54. The cover 2 may then be rotated anticlockwise to release it from the backplate and the second sleeve 32 of the shaft assembly unscrewed. The cardboard former of the empty paper roll may then be removed and a fresh paper roll introduced over the first sleeve 31. The second sleeve is then screwed back onto the first sleeve 31 and tightened, ensuring that the hexagonal orifices are aligned in the tightened condition. The cover may then be replaced, rotated to engage it with the backplate and finally re-locked by means of the key 54.

CLAIMS

1. A paper dispenser for dispensing paper from a roll, comprising: a housing for accommodating a roll of paper and having an outlet opening through which paper may be dispensed from the roll and torn off; support means rotatably mounted in the housing for receiving thereon the roll of paper which is held against rotation relative to the support means; biasing means for biasing the support means into a normal position in which stop means prevent rotation of the support means; and manually operable actuating means to displace the support means away from the said normal position against the action of the biasing means to free the support means for controlled rotation to dispense paper from the roll through the outlet opening of the housing.

2. A paper dispenser according to claim 1, wherein the stop means comprise interengaging means on the support means and the dispenser housing.

3. A paper dispenser according to claim 1 or 2, wherein the controlled rotation of the support means is effected by rotation of the actuating means which are coupled to the support means for rotation therewith.

4. A paper dispenser according to claim 3, wherein the support means comprises an axially displaceable shaft assembly and the biasing means biases the shaft assembly into a normal axial position.

5. A paper dispenser according to claim 4, wherein the stop means comprises a ring of teeth carried by the shaft assembly and axially engageable with a corresponding ring of teeth on the inside of the dispenser housing.

6. A paper dispenser according to claim 4 or 5, wherein the shaft is hollow and is mounted for limited axial movement on a spigot projecting internally from the dispenser housing.

7. A paper dispenser according to claim 6, wherein the spigot is formed

on a backplate of the dispenser housing and a domed cover of the housing is secured to the backplate by locking means.

8. A paper dispenser according to claim 7, wherein the actuating means comprises an actuating knob having a shank extending freely through the cover and coupled to the shaft assembly for rotation therewith.

9. A paper dispenser according to claim 8, wherein the shank of the actuating knob is coupled to the backplate spigot by a locking member allowing limited axial movement of the actuating knob, removal of the cover being prevented by the actuating knob which is however capable of limited axial movement relative to the backplate in order to displace the shaft assembly from its normal position and thereby temporarily free it for rotation.

10. A paper dispenser according to any one of claims 4 to 7, wherein the shaft assembly comprises two axial portions detachably connected together and provided with respective clamping flanges between which the paper roll is gripped when mounted on the shaft assembly.

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Fig.1.

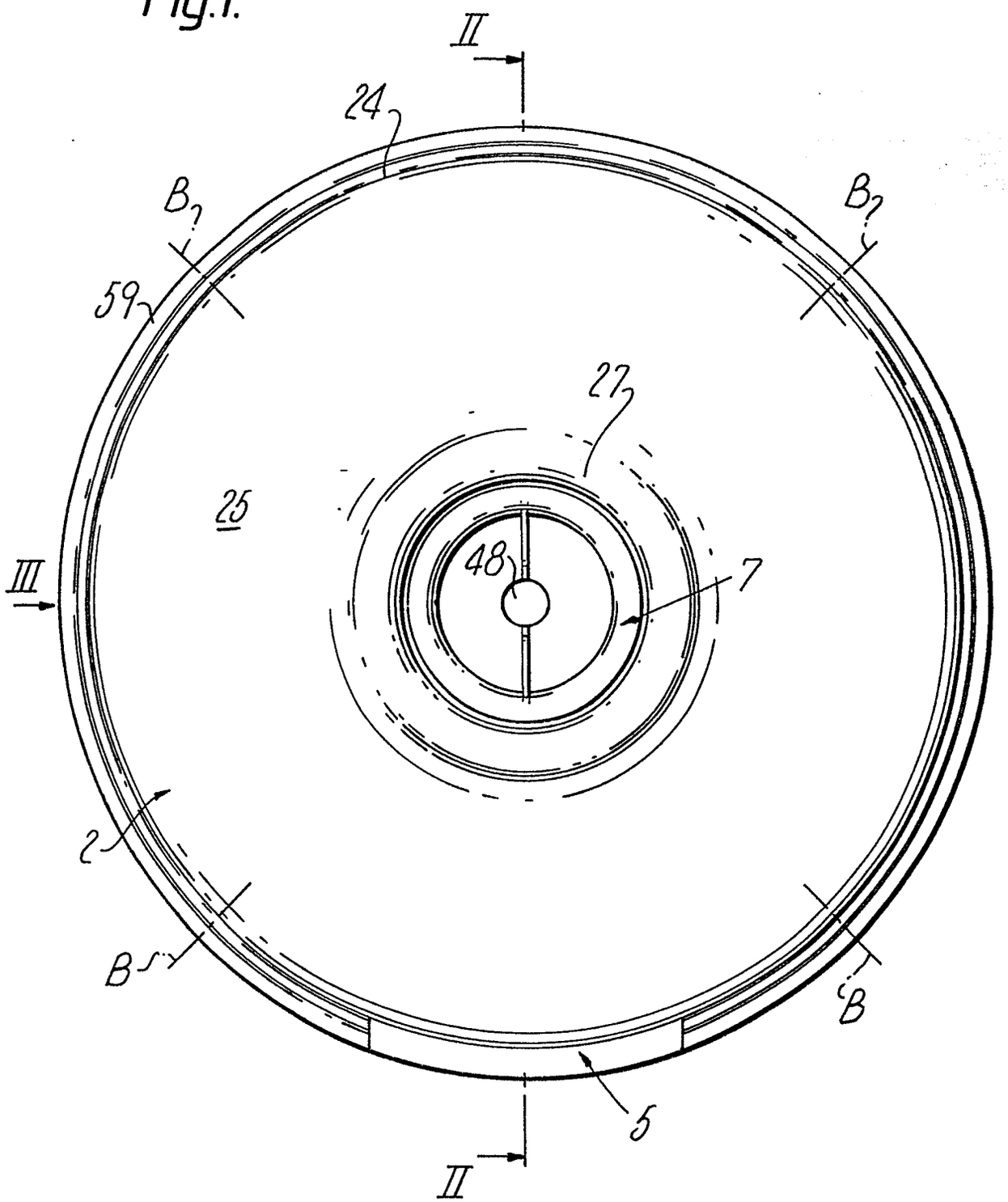


Fig.2.

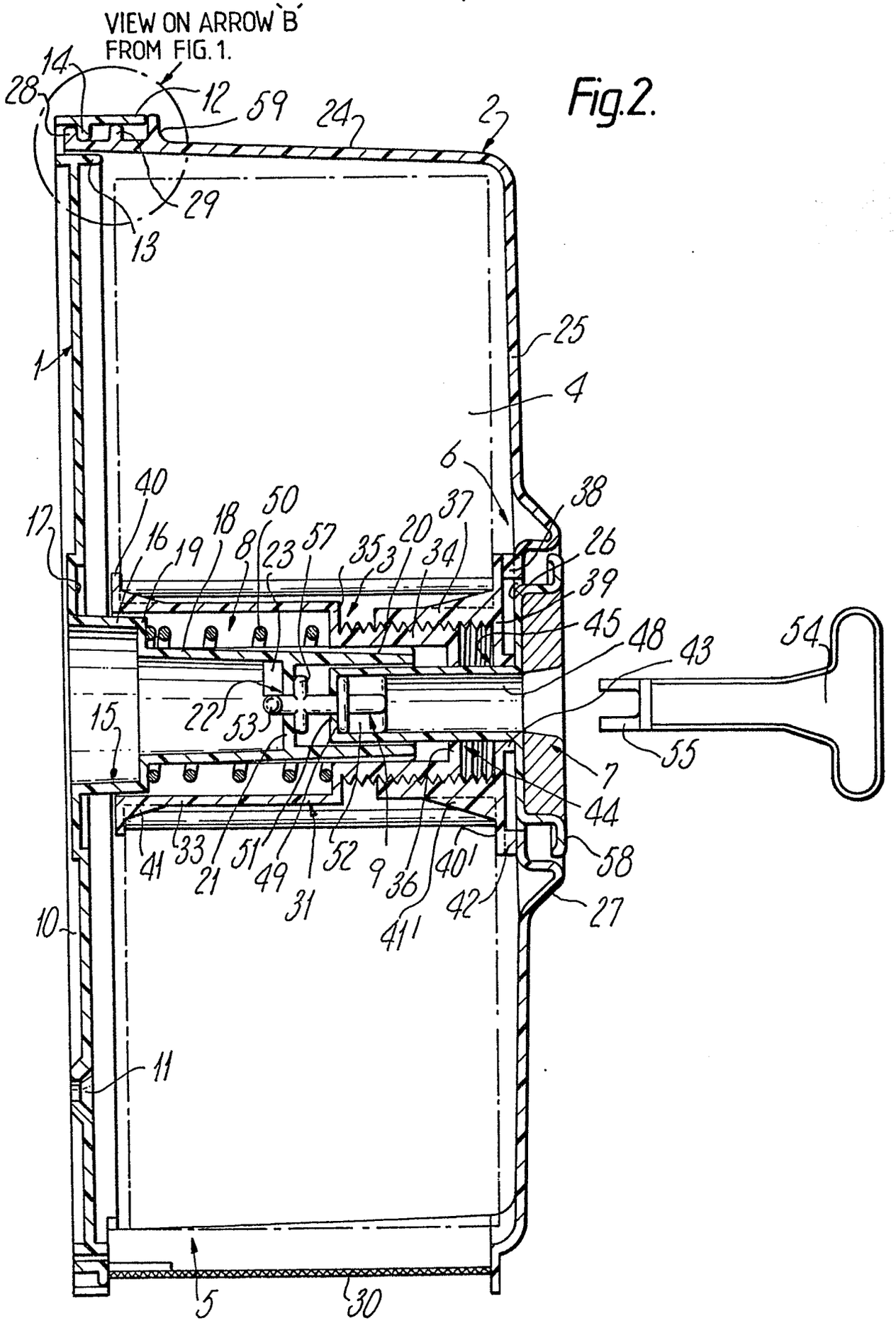
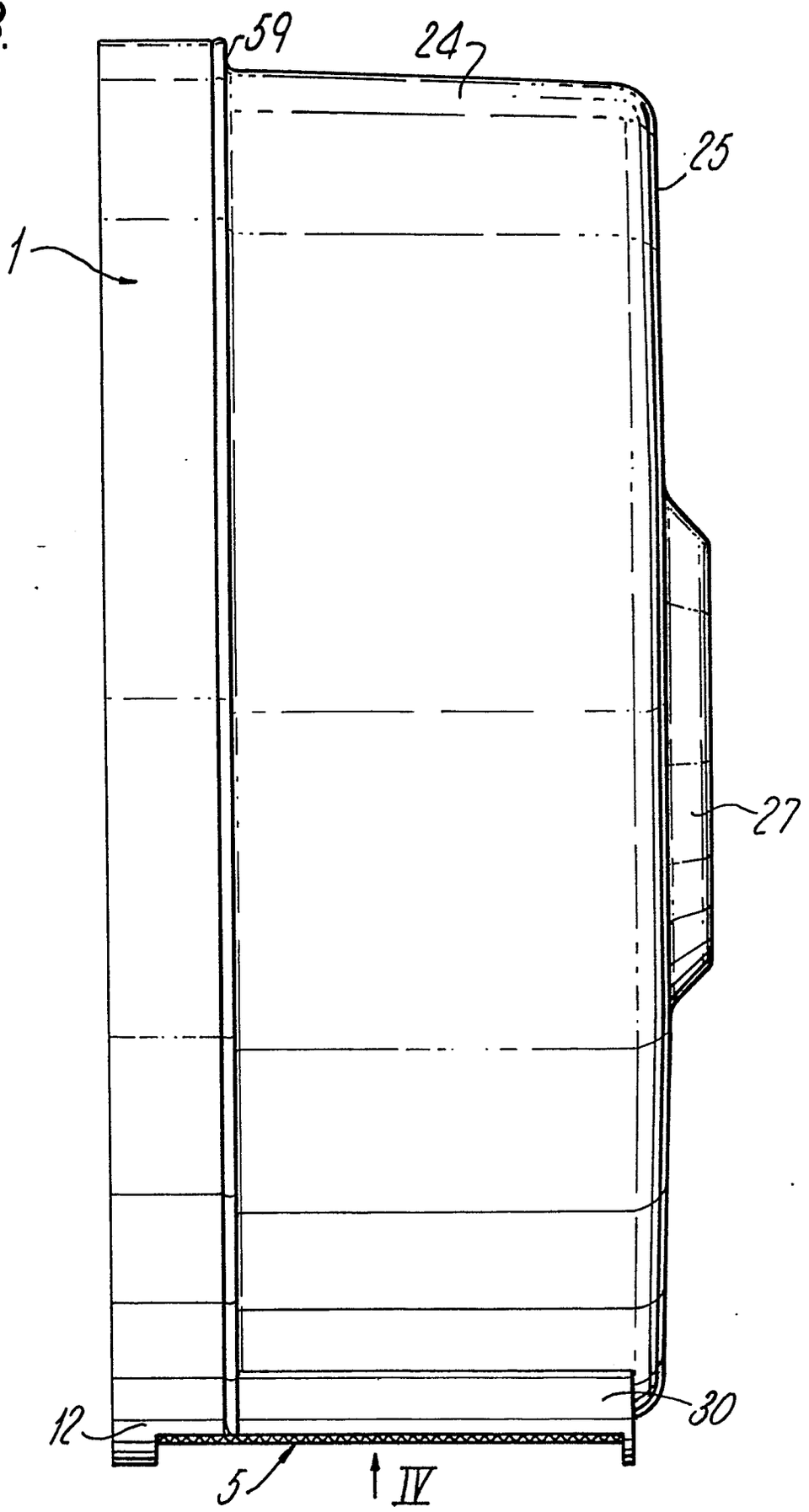

VIEW ON ARROW B
FROM FIG. 1.
14
28
12
59
24
2
29
13
1
25
4
6
40
16
19
18
8
50
23
57
35
3
20
34
37
38
26
39
17
45
48
43
54
22
53
15
55
7
44
41
33
21
51
49
31
52
9
36
411
40'
42
58
27
10
11
5
30

Fig.3.



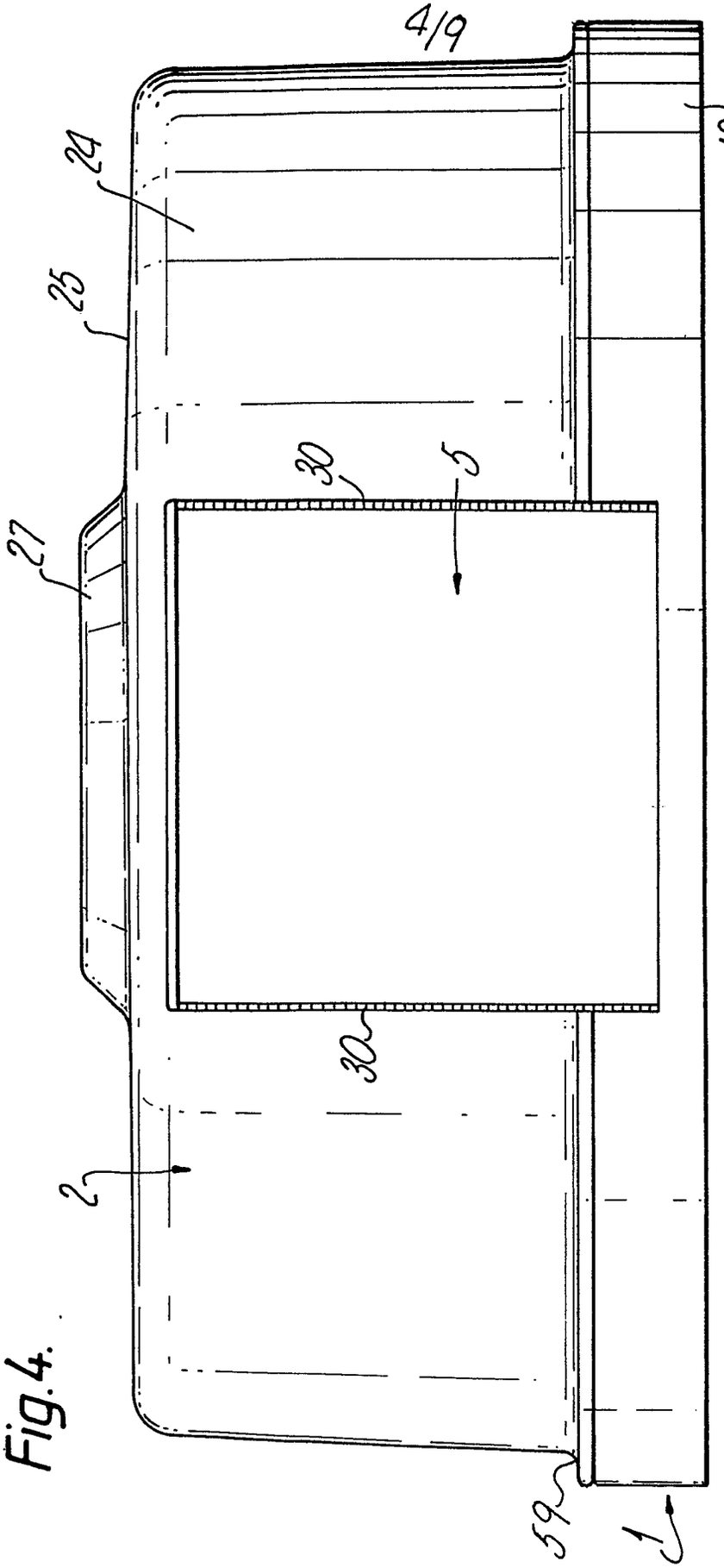
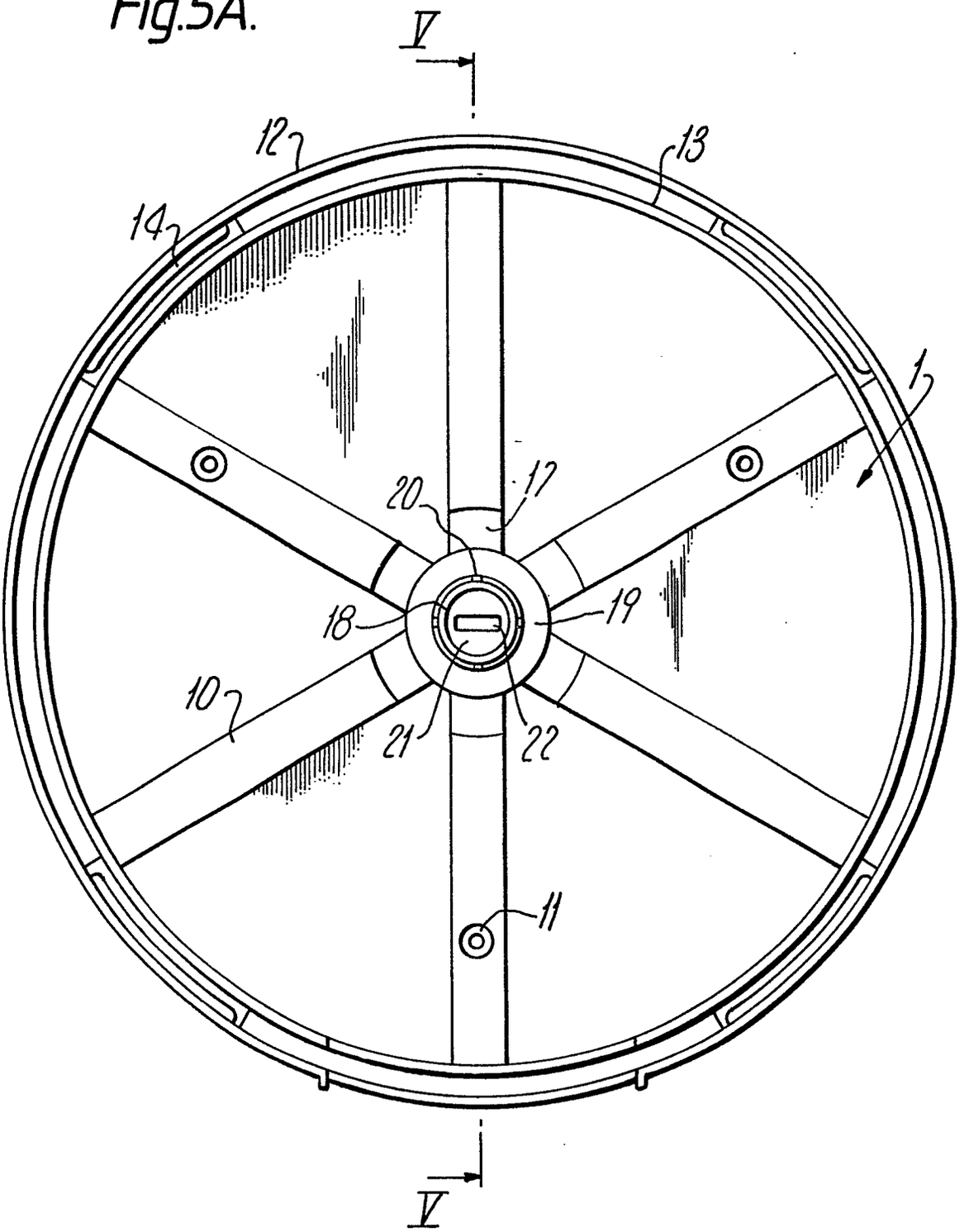


Fig.4.

Fig.5A.



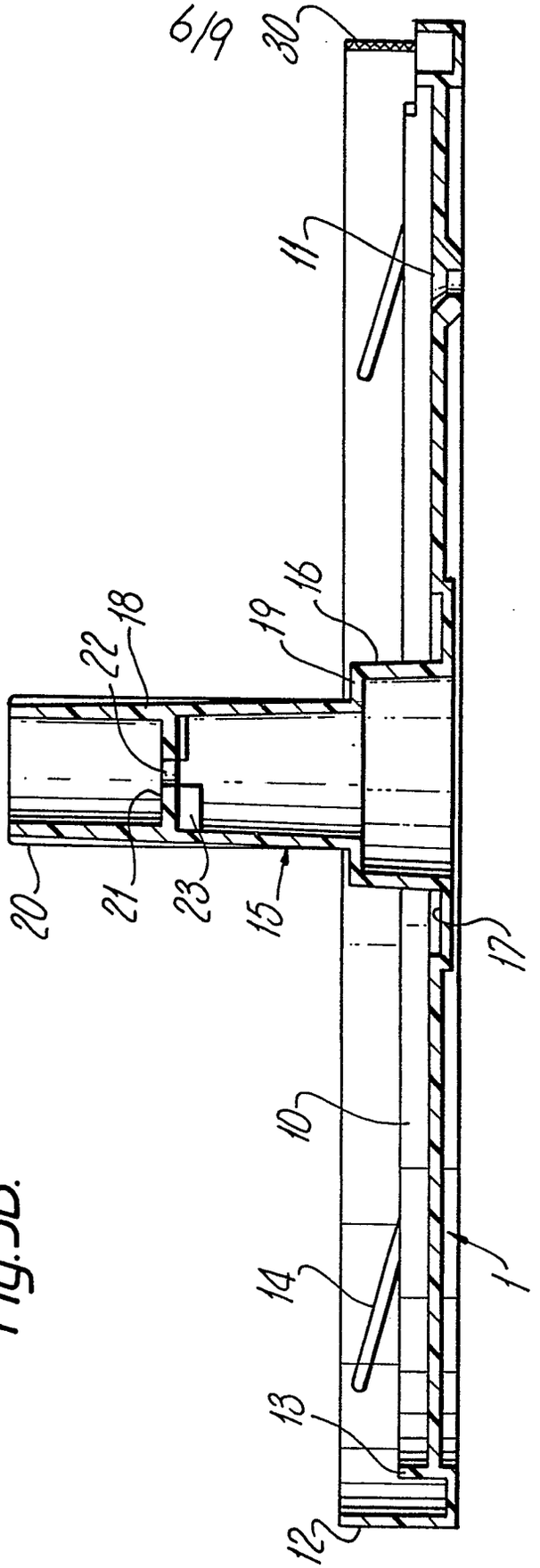


Fig.5B.

Fig.6A.

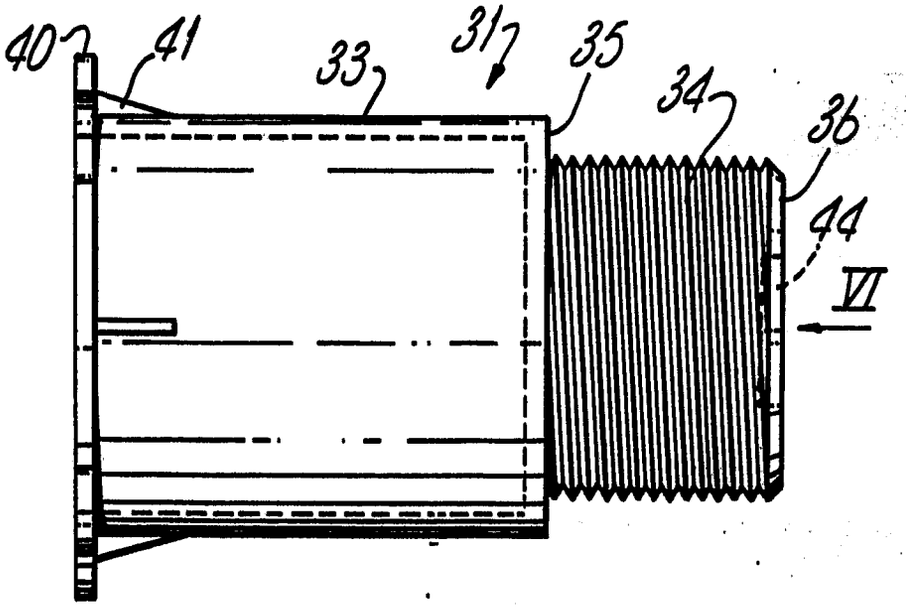


Fig.6B.

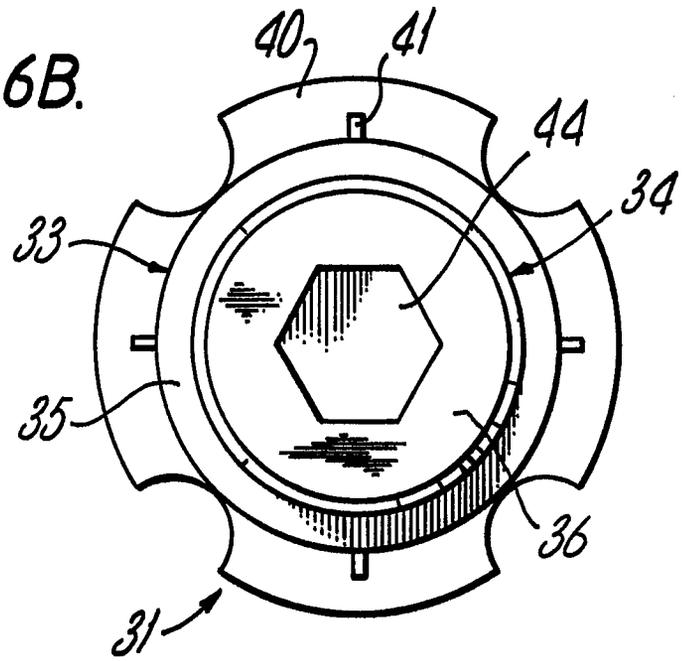


Fig.7A.

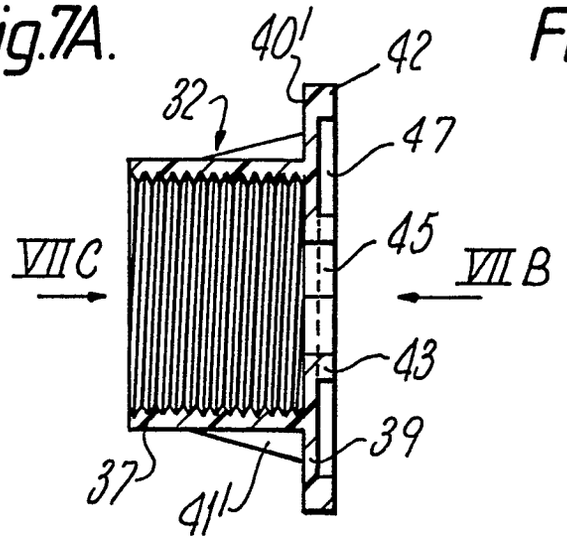


Fig.7C.

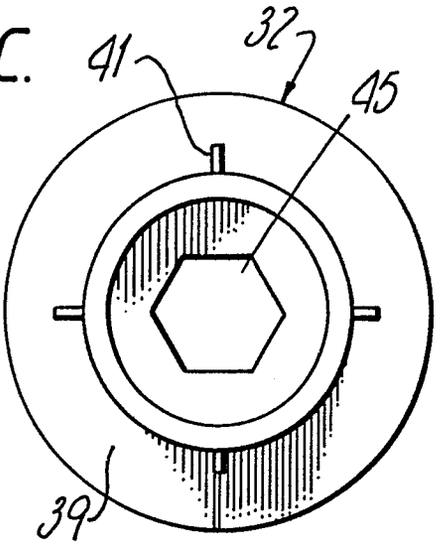


Fig.7B.

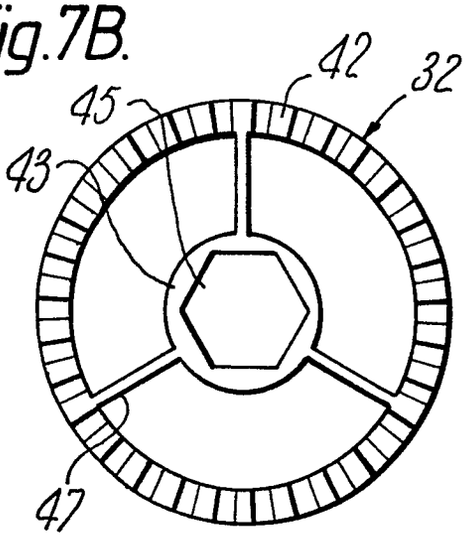


Fig.8A.

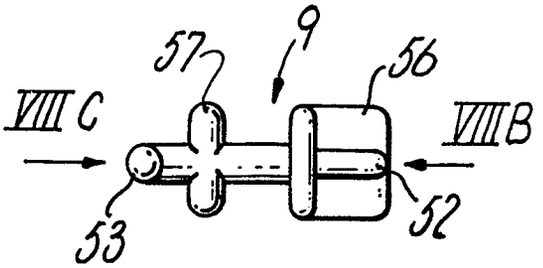


Fig.8B.

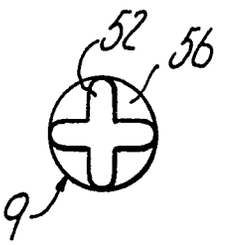


Fig.8C.

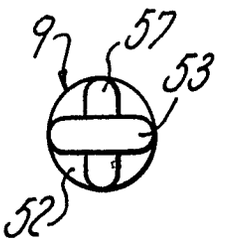
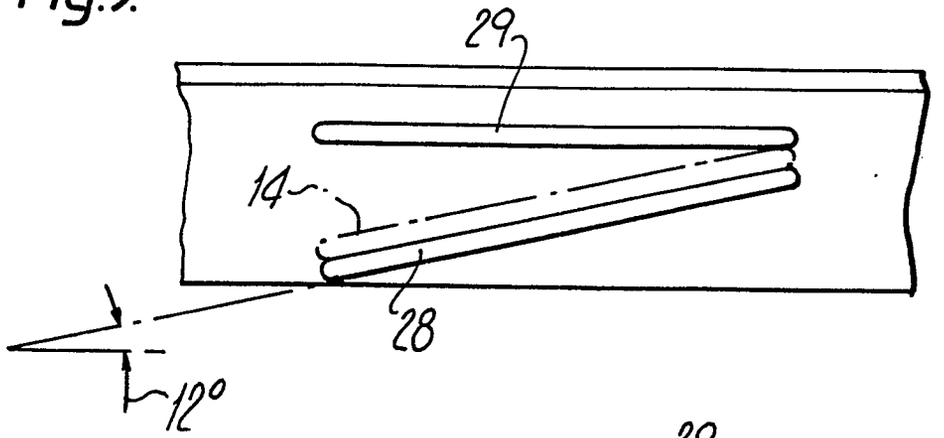
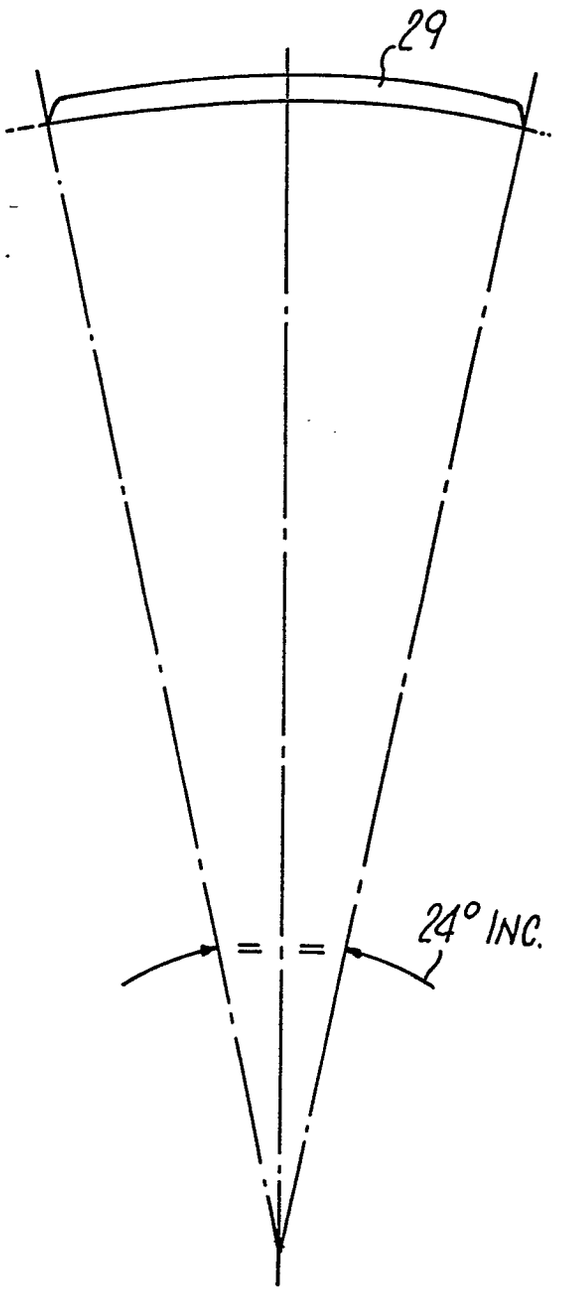


Fig.9





European Patent Office

EUROPEAN SEARCH REPORT

Application number

EP 82 30 4900

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl. ³)
Y	US-A-4 108 513 (LANDER) * Column 2, line 45 - column 3, line 22; column 3, lines 33-44; column 4, lines 13-52; figures 1-3 *	1-9	A 47 K 10/38
Y	US-A-4 223 964 (KILGORE) * Column 1, line 40 - column 2, line 34; figures 1-4 *	1,10	

TECHNICAL FIELDS SEARCHED (Int. Cl. ³)

A 47 K

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	24-05-1983	AYITER J.

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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A : technological background
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P : intermediate document

T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

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