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(54) **A WASHING MACHINE**

WASCHMASCHINE

MACHINE A LAVER

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Description

[0001] This invention relates to a washing machine which comprises a cleaning agent dispenser.

[0002] In the washing machines, the cleaning agent needed for the washing process is placed in a cleaning agent dispenser. The user is informed about the recommended cleaning agent quantities pre-determined by the producer according to variables such as the specifications of the washing machine, the washing program, the type and the weight of the laundry.

[0003] However, the consumer may place more or less cleaning agent than needed as a result of such errors in estimating the type and the weight of the laundry, in measuring the quantity of the cleaning agent etc.. But, placing the exact amount of cleaning agent is of utmost importance in washing efficiency. Using less cleaning agent than needed results in poor cleaning of the laundry, while using more than necessary causes poor rinsing and the cleaning agent remainings on the laundry. Furthermore, the excessive use of cleaning agent is one of the factors causing problems such as overfoaming in the tub, degraded drum rotation performance as a result of the excessive foaming and overflowing of the foam through the cleaning agent dispenser.

[0004] In the prior art, there are various embodiments realized in order to solve this problem. In the cleaning agent dispenser explicated in the German patent application no. DE3607632, a separator is mentioned, which is slidably located in the dispenser and used to provide variable volumes in the dispenser.

[0005] In the German patent application No. DE10355671 of the prior art, a description is given of a detergent dispenser which can adjust the dosage by being moved by means of a motor with respect to the quantity of the laundry loaded. In this embodiment, the motor and the cleaning agent dispenser are connected to each other. As a result, when there is a few quantity of the laundry, the cleaning agent dispenser is opened less. The user experiences problems, since the cleaning agent is put into the dispenser through a very narrow opening, and the cleaning agent could be dispersed out of the dispenser.

[0006] The object of this invention is the realization of a washing machine comprising a cleaning agent dispenser that facilitates the placement of the cleaning agent.

[0007] The washing machine realized in order to fulfill the objectives of this invention is explicated in the attached claims. The cleaning agent dispenser used in this washing machine comprises a separator which divides its inner volume into two sections by moving inside the dispenser. The movement provided by a motor which is fixed on the body outside the cleaning agent dispenser is transmitted to the separator by a transmission means and thus the separator is adjusted to the right position in the chamber. When the consumer opens the cleaning agent dispenser, the transmission means and the motor are disconnected and the separator remains at the ad-

justed position. Thus, the consumer is enabled to open the cleaning agent dispenser as much as needed and to place the cleaning agent easily into the related chamber.

[0008] In an embodiment of present invention, the transmission means is a belt which rotates around two pulleys. The separator is attached to the transmission means by means of a recess-extension connector. When the cleaning agent dispenser is pushed into its place, the belt gets caught between the pulley and the motor shaft. By means of friction, the rotational movement generated by the motor is conducted to the belt and then to the separator by means of the recess and the extension. Since the movement transmission between the motor shaft and the belt is provided only by surface contact, the cleaning agent dispenser and the motor are separated from each other with ease.

[0009] The washing machine realized in order to fulfill the objectives of this invention is illustrated in the attached figures, where:

Figure 1 - is the schematic view of the washing machine when the cleaning agent dispenser is closed.

Figure 2 - is the schematic view of the washing machine when the cleaning agent dispenser is open.

Figure 3 - is the front perspective view of the cleaning agent dispenser

Figure 4 - is the rear perspective view of the cleaning agent dispenser

Figure 5 - is the front perspective view of the cleaning agent dispenser when the separator is detached

Figure 6 - is the front view of the separator.

[0010] The elements shown in figures are numbered as follows :

1. Washing machine
2. Cleaning agent dispenser
3. Chamber
4. Separator
5. „15. Extention
6. Belt
7. Recess
8. Pulley
9. Rail
10. Motor
11. Body
12. Transmission means

[0011] The washing machine (1) comprises

- a body (11)
- a cleaning agent dispenser (2), located inside the body (11), which can be pulled out of the body (11) like a drawer, and which has at least one chamber (3) into which the cleaning agent is placed (Figure 1 and Figure 2).

[0012] The washing machine further comprises

- a separator (4) which, moving in the chamber (3), divides its volume into two.
- a motor (10) placed outside the cleaning agent dispenser (2), and fixed to the body (11), and
- a transmission means (12), placed within the cleaning agent dispenser (2), which by contacting the exit-shaft of the motor (10) transmits the movement retained from the motor (10) to the separator (4) (Figure 1 and Figure 2).

[0013] In this embodiment, the cleaning agent to be used is determined depending on the parameters such as the washing program preferred by the consumer, the quantity and the type of the laundry placed into the drum, the hardness of the tap water. Then, the motor (10) is actuated to move the separator (4) within the chamber (3) to a position suitable for the detected amount of cleaning agent to be placed. The volume between the separator (4) and the front wall of the chamber (3) is equal to the volume of the detected amount of cleaning agent. The consumer opens the cleaning agent dispenser (2) after the separator (4) is moved. The cleaning agent dispenser (2) and the transmission means (12) are separated from the motor (10), and the separator (4) remains in the same adjusted position. The consumer fills the space in front of the separator (4) in the chamber (3) with the cleaning agent and pushes the cleaning agent dispenser into back to its place (2). As the cleaning agent dispenser (2) is closed, the transmission means (12) contacts again to the shaft of the motor (10).

[0014] In this embodiment, the separator (4), preferably, comprises at least one opening (not shown in the figures). In a certain step of the washing program, as the cleaning agent dispenser (2) takes the water inside, the cleaning agent on one side of the separator (4) is mixed with the water and flows into the tub by passing through either under, above, besides the separator (4) or through an opening on the separator (4).

[0015] In an embodiment of present invention, the transmission means (12) comprises two pulleys (8) within the chamber (3) and a belt (6) connected to the separator (4), rotating around these pulleys (8). The transmission means (12) further comprises a belt (6) and a separator (4), one having a recess (7), and the other an extension (5) which fits into this recess (7) so as to transmit the motion between the two. Thus, the position of the recess (7) on the belt (6) and the position of the separator (4) within the chamber (3) changes as the belt (7) rotates (Figure 3, Figure 5 and Figure 6).

[0016] In this embodiment of present invention, the transmission means (12) further comprises teeth (not shown in the figures) located on the belt (6) and the shaft of the motor (10), which fit into each other. By means of these teeth, the motion transmission between the belt (6) and the shaft of the motor (10) is provided more efficiently.

[0017] In another embodiment of present invention, the washing machine (1) comprises at least one rail (9) within

the chamber (3) and a second extension (15) on the separator (4) which fits into the rail (9). The rail (9), preferably, stands against the belt (6) and lies down parallel to the belt (6). A more regular movement of the separator (4) within the chamber (3) is provided by means of the rail (9).

[0018] In another embodiment of present invention, the washing machine (1) comprises a lock (not shown in the figures) which prevents the consumer from opening the cleaning agent dispenser (2), after the laundry to be washed is loaded into the drum and the program is chosen, until the position of the separator (4) is adjusted. Thus, the consumer is prevented from opening the detergent dispenser before the time.

[0019] In this embodiment, the washing machine (1) further comprises an audio and/or visual indicator which shows the user whether the adjustment process of the separator (4) is in progress and/or done. Thus, the consumer is informed about whether the adjustment process is in progress or done.

[0020] By way of the washing machine (1) of the present invention, the consumer can easily place the necessary amount of cleaning agent into the cleaning agent dispenser (2).

Claims

1. A washing machine (1) comprising

- a body (11)
- a cleaning agent dispenser (2) inside the body (11), which can be pulled out of the body (11) as in the movement of a drawer, and which has at least one chamber (3) into which the cleaning agent is placed,
- a separator (4) which divides the volume of the chamber (3) into two by moving inside it,
- and a motor (10) which is located outside the cleaning agent dispenser (2) and fixed to the body (11), wherein the amount of cleaning agent to be used is determined depending on parameters such as the washing program preferred by the consumer, the quantity and the type of the laundry placed into the drum and the hardness of the tap water **characterized in that**,
- the motor (10) is actuated to move the separator (4) within the chamber (3) to a position suitable for the detected amount of cleaning agent to be placed and **in that** the washing machine further comprises
- a transmission means (12) placed within the cleaning agent dispenser (2), which by contacting the shaft of the motor (10) transmits the movement retained from the motor (10) to the separator (4), which keeps the separator (4) at its position after the adjusted position is provided, which loses contact with the motor (10) when the cleaning agent dispenser (2) is pulled out of

the body (11) and which contacts the shaft of the motor (10) when pushed back into its place in the body (11).

2. A washing machine (1) as in Claim 1, **characterized by** the transmission means (12) comprising two pulleys (8) located inside the chamber (3) and a belt (6) connected to the separator (4), rotating around the pulleys (8). 5
3. A washing machine (1) as in Claim 2, **characterized by** the transmission means (12) comprising a belt (6) and a separator (4), one of which having a recess (7), and the other an extension (5) which fits into this recess (7). 10
4. A washing machine (1) as in Claim 2 or 3, **characterized by** teeth which fit into each other and which are located on the belt (6) and the shaft of the motor (10). 15
5. A washing machine (1) as in any one of the above Claims, **characterized by** at least one rail (9) which is located within the chamber (3) and an extension (15) which is placed on the separator (4), fitting into the rail (9). 20
6. A washing machine (1) as in any one of the above Claims, **characterized by** a lock which prevents the user from opening the cleaning agent dispenser (2) after the laundry to be washed is loaded into the drum and the program is chosen, until the position of the separator (4) is adjusted. 25
7. A washing machine (1) as in any one of the above Claims, **characterized by** an audio and/or visual indicator which shows the consumer whether the adjustment process of the separator (4) is in progress and/or done. 30

Patentansprüche

1. Waschmaschine (1), umfassend 35
 - einen Gehäusekörper (11),
 - einen Waschmittelspender (2) im Inneren des Gehäusekörpers (11), der wie bei der Bewegung einer Schublade aus dem Gehäusekörper (11) herausgezogen werden kann und der wenigstens eine Kammer (3) aufweist, in die Waschmittel gegeben werden kann, 40
 - eine Trennwand (4), die das Volumen der Kammer (3) in zwei Teile teilt, indem sie sich darin bewegt, 45
 - und einen Motor (10), der außerhalb des Waschmittelspenders (2) angeordnet und am Gehäusekörper (11) befestigt ist, 50

wobei die Menge an Waschmittel abhängig von Parametern wie etwa dem vom Benutzer bevorzugten Waschprogramm, der Menge und der Art der Wäsche, die in die Trommel gegeben wird, und der Härte des Leitungswassers bestimmt wird, **dadurch gekennzeichnet, dass**

- der Motor (10) angetrieben wird, um die Trennwand (4) in der Kammer (3) in eine Position zu bewegen, die für die erkannte Menge an einzugewandtem Waschmittel geeignet ist,

und dass die Waschmaschine ferner Folgendes umfasst

- ein Übertragungsmittel (12), das im Waschmittelspender (2) angeordnet ist und durch Kontakt mit der Welle des Motor (10) die vom Motor (10) aufgenommene Bewegung an die Trennwand (4) überträgt, die Trennwand (4) nach dem Bereitstellen der angepassten Position in ihrer Position hält, den Kontakt mit dem Motor (10) verliert, wenn der Waschmittelspender (2) aus dem Gehäusekörper (11) gezogen wird, und in Kontakt mit dem Motor (10) tritt, wenn er zurück in den Gehäusekörper (11) geschoben wird.

2. Waschmaschine (1) nach Anspruch 1, **dadurch gekennzeichnet, dass** das Übertragungsmittel (12) zwei Riemenscheiben (8), die in der Kammer (3) angeordnet sind, und einen Riemen (6) umfasst, der mit der Trennwand (4) verbunden ist und sich um die Riemenscheiben (8) dreht. 55
3. Waschmaschine (1) nach Anspruch 2, **dadurch gekennzeichnet, dass** das Übertragungsmittel (12) einen Riemen (6) und eine Trennwand (4) umfasst, von denen eine eine Vertiefung (7) und das andere eine Verlängerung (5) umfasst, die in die Vertiefung (7) passt. 60
4. Waschmaschine (1) nach Anspruch 2 oder 3, **gekennzeichnet durch** Zähne, die ineinander eingreifen und an dem Riemen (6) und der Welle des Motors (10) angeordnet sind. 65
5. Waschmaschine (1) nach einem der vorangehenden Ansprüche, **gekennzeichnet durch** wenigstens eine Schiene (9), die in der Kammer (3) angeordnet ist, und eine Verlängerung (15), die an der Trennwand (4) angeordnet ist und in die Schiene (9) passt. 70
6. Waschmaschine (1) nach einem der vorangehenden Ansprüche, **gekennzeichnet durch** eine Verriegelung, die verhindert, dass der Benutzer den Waschmittelspender (2) öffnet, nachdem die Wäsche in die Trommel gegeben und das Programm gewählt wurde, bis die Position der Trennwand (4) angepasst 75

wurde.

7. Waschmaschine (1) nach einem der vorangehenden Ansprüche, **gekennzeichnet durch** eine akustische und/oder visuelle Anzeige, die dem Verbraucher zeigt, ob der Anpassungsvorgang der Trennwand (4) im Gange und/oder abgeschlossen ist.

Revendications

1. Un lave-linge (1) comprenant

- un corps (11)
- un bac à produits de lavage (2) dans le corps (11), qui peut être tiré du corps (11) comme dans le mouvement d'un tiroir, et qui présente au moins une chambre (3) dans laquelle le produit de lavage est placé,
- un séparateur (4) qui divise le volume la chambre (3) en deux en se déplaçant dans celle-ci,
- et un moteur (10) qui est situé à l'extérieur du bac à produits de lavage (2) et fixé au corps (11),

où la quantité du produit de lavage à utiliser est déterminée en fonction des paramètres comme le programme de lavage préféré par l'utilisateur, la quantité et le type du linge placé dans le tambour et la dureté de l'eau du robinet

caractérisé en ce que

- le moteur (10) est actionné pour déplacer le séparateur (4) dans la chambre (3) à une position appropriée pour le placement de la quantité du produit de lavage détectée et **en ce que** le lave-linge comprend en outre
- un moyen de transmission (12) placé dans le bac à produits de lavage (2), qui transmet le mouvement reçu du moteur (10) au séparateur en touchant l'arbre du moteur (10), qui maintient le séparateur (4) à sa position après que la position ajustée est fournie, qui perd son contact avec le moteur (10) lorsque le bac à produits de lavage (2) est tiré du corps (11) et qui touche l'arbre du moteur (10) lorsqu'il est poussé à sa place dans le corps (11).

2. Un lave-linge (1) selon la Revendication 1, **caractérisé par** le moyen de transmission (12) comprenant deux poulies (8) situées dans la chambre (3) et une courroie (6) reliée au séparateur (4), tournant autour des poulies (8).
3. Un lave-linge (1) selon la Revendication 2, caractérisé le moyen de transmission (12) comprenant une courroie (6) et un séparateur (4), dont l'un présente un évidement (7) et l'autre présente une extension (5) qui rentre dans l'évidement (7).

4. Un lave-linge (1) selon la Revendication 2 ou 3, **caractérisé par** des dents qui s'emboîtent l'une dans l'autre et qui sont situées sur la courroie (6) et l'arbre du moteur (10).

5. Un lave-linge (1) selon l'une quelconque des revendications précédentes, **caractérisé par** au moins un rail (9) qui est situé dans la chambre (3) et une extension (15) qui est placée sur le séparateur (4) et qui rentre dans le rail (9).

6. Un lave-linge (1) selon l'une quelconque des revendications précédentes, **caractérisé par** un verrou qui empêche l'utilisateur d'ouvrir le bac à produits de lavage (2) après le linge à laver est chargé dans le tambour et le programme est choisi, jusqu'à ce que la position du séparateur (4) est ajustée.

7. Un lave-linge (1) selon l'une quelconque des revendications précédentes, **caractérisé par** un indicateur audio et/ou visuel qui indique l'utilisateur si le processus d'ajustement du séparateur (4) est en cours et/ou achevé.

Figure 1

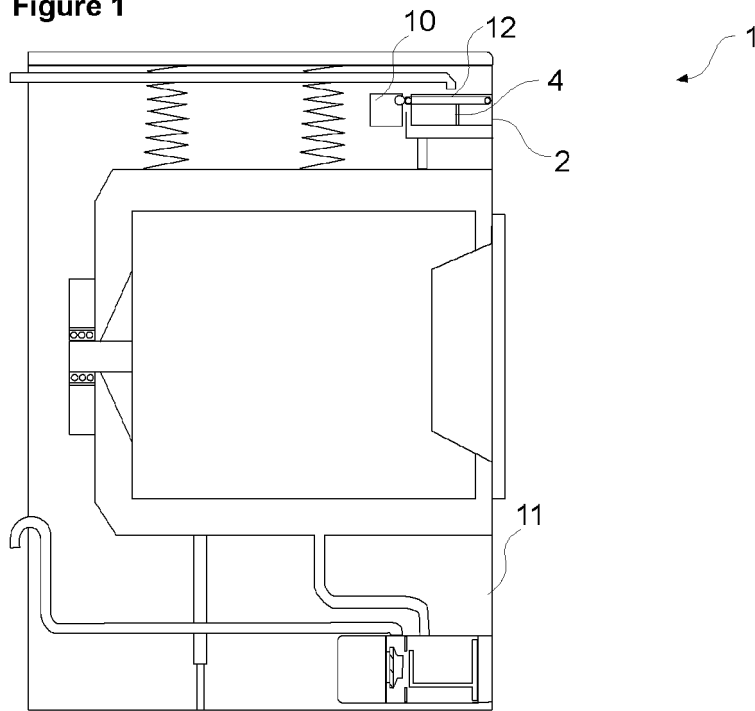


Figure 2

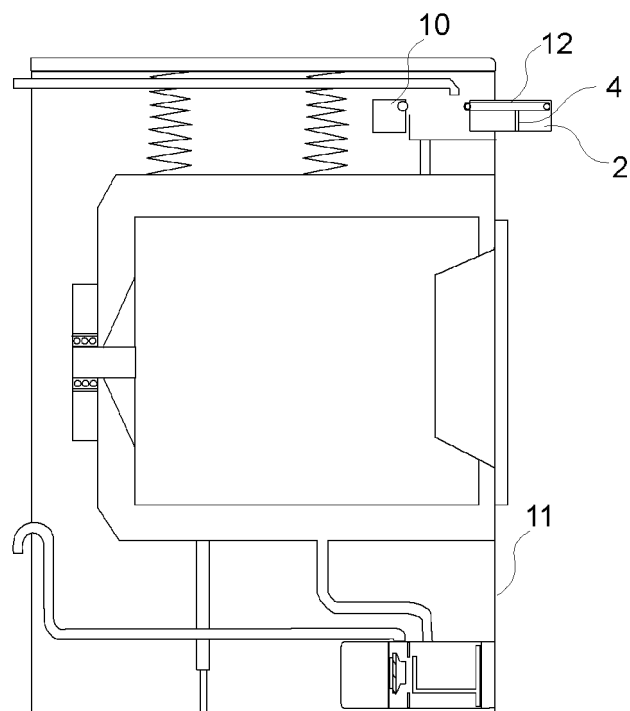


Figure 3

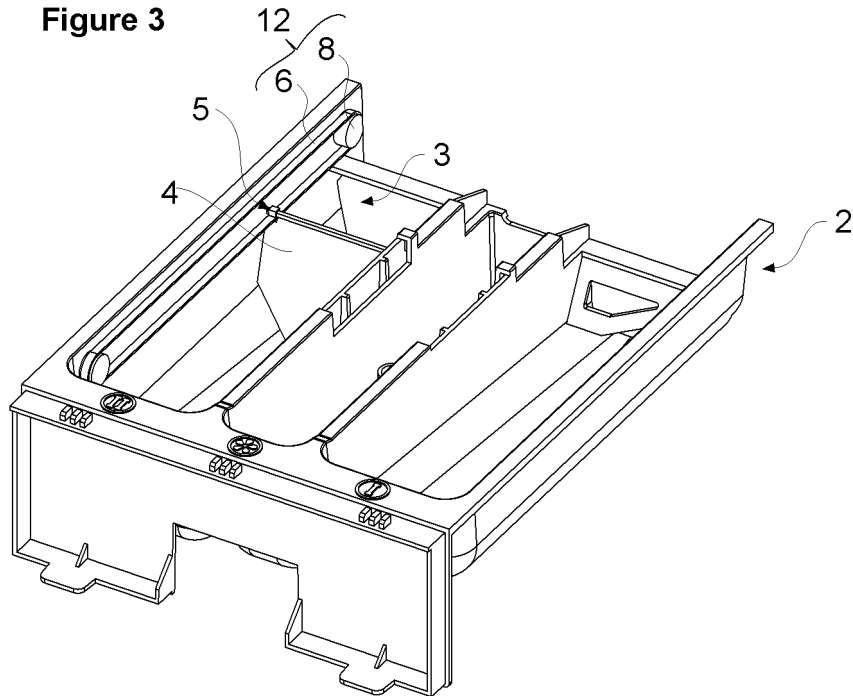


Figure 4

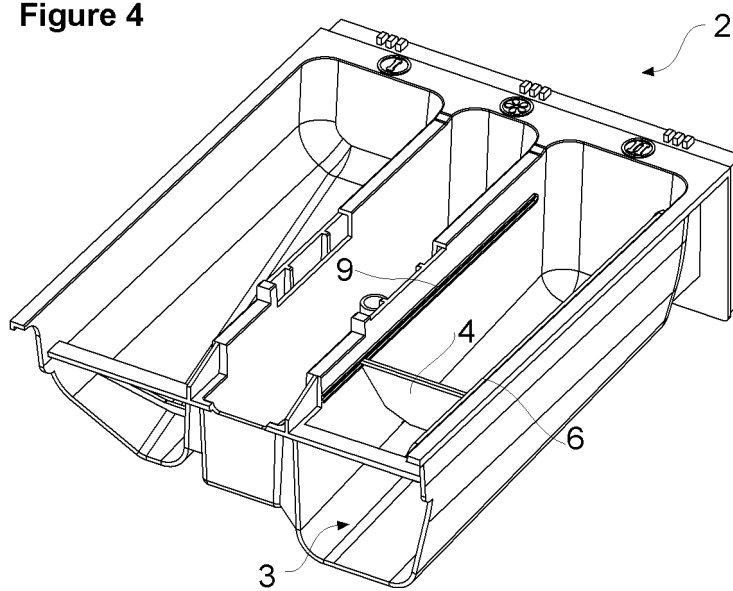


Figure 5

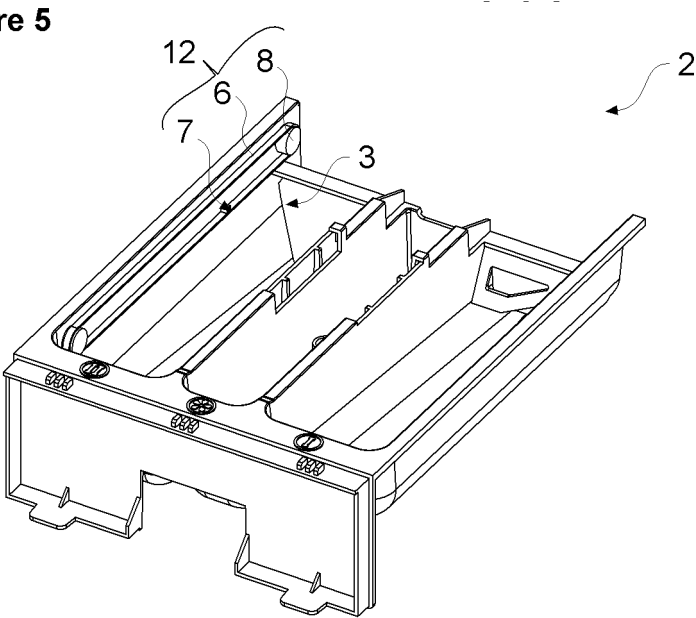
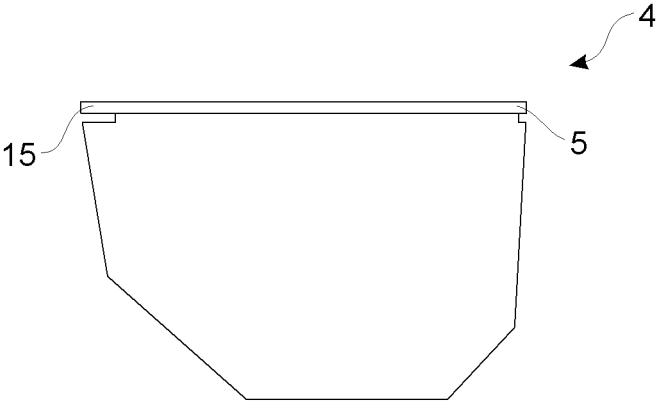


Figure 6



REFERENCES CITED IN THE DESCRIPTION

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