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(54) **DISPENSER FOR HYGIENE PAPER ROLLS**

SPENDER FÜR HYGIENEPAPIERROLLEN

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Description

TECHNICAL FIELD

[0001] The present invention relates to a dispenser for coreless hygiene paper rolls with a housing comprising a storage space for one or more hygiene paper rolls, a dispensing space terminated with a bottom situated beneath the storage space, in which dispensing space a hygiene paper roll so arranged as to be capable of rotating on a spindle is accessible to a user, locking devices, which in the active position prevent hygiene paper rolls that are present in the storage space from dropping down into the dispensing space under the effect of gravity, and an operating device to inactivate the locking devices, so that a hygiene paper roll that is present in the storage space drops down into the dispensing space.

BACKGROUND ART

[0002] In order to ensure the availability of toilet paper in toilets at workplaces, in public premises, etc., with large numbers of visitors, the use is previously disclosed of dispensers containing a storage space holding one or more rolls of toilet paper, which can replace a roll that has been used up in the dispensing space of such a dispenser. In order for such dispensers to function effectively, it must be easy for a user to feed a new roll from the storage space and easy for the dispenser to be refilled by the personnel who are responsible for the periodical refilling of the dispenser. It has proved difficult to design dispensers so that both of these requirements are satisfied.

[0003] DE- A1- 197 13 684 shows a dispenser of the kind mentioned by way of introduction, which can be used for hygiene paper rolls both with and without cores. This dispenser comprises locking devices that are operated by means of a push- button that is accessible on the top side of the dispenser. The locking devices are thus easy to operate for a user, and it is thus a simple matter for the user to replace a used- up roll with a roll from the storage space. It is a laborious procedure, on the other hand, to refill such a dispenser.

[0004] This dispenser is in addition intended primarily for toilet rolls provided with a core and has a hole in the bottom to permit the cores to fall out of the dispenser when the paper on the roll runs out, in order to permit an unused roll to be fed down. The empty cores which exit from the dispenser must naturally be disposed of, preferably by the user. However, many toilets do not have a waste paper basket or equivalent facility for the collection of empty cores and other waste, and as a result the empty cores litter the toilet or are simply thrown into the toilet pan. The use of toilet rolls provided with cores thus leads to increased waste handling and can also result in litter and can even cause blockage of the toilet.

[0005] The object of the present invention is to make available a dispenser for coreless hygiene paper rolls

that is designed in such a way that it is easy for a user to replace a used-up roll, at the same time as the procedure for refilling such a dispenser is simple and cost-effective.

DISCLOSURE OF INVENTION

[0006] This object is achieved in accordance with the invention through a dispenser for coreless hygiene paper rolls with a housing comprising a storage space for one or more hygiene paper rolls, a dispensing space terminated with a bottom situated beneath the storage space, in which dispensing space a hygiene paper roll so arranged as to be capable of rotating on a spindle is accessible to a user, locking devices, which in the active position prevent hygiene paper rolls that are present in the storage space from dropping down into the dispensing space under the effect of gravity, and an operating device to inactivate the locking devices, so that a hygiene paper roll that is present in the storage space drops down into the dispensing space, characterized in that the storage space is closed off on the top side by means of a removable lid, and in that the spindle is secured to the bottom inside the dispensing space and extends perpendicularly from the upper side of the bottom. Because refilling is performed from above in this dispenser, unlike the aforementioned previously disclosed dispenser, new hygiene paper rolls can be loaded into the storage space simply by lifting the lid and putting in the required number of new rolls. The operating devices for replacing a used-up roll with a roll from the storage space can also be arranged so that they are readily accessible from the under side or the upper side of the dispenser.

[0007] The operating device projects out from the under side of the bottom or from a hole in the lid.

[0008] The spindle is also hollow, and the locking devices are capable of axial displacement from an upper active position, in which locking hooks project out radially outside the spindle, to a lower inactive position, in which the locking hooks are situated radially within the periphery of the spindle in a preferred embodiment. Every locking device has a cam surface, which interacts with an edge of an opening in the spindle, so that a downward displacement of the locking device produces a radially inward movement of the locking hook. The locking devices are preferably spring-loaded towards their active position.

[0009] In one embodiment, the spindle extends only inside the dispensing space and the cam surfaces of the locking devices interact with the upper edge of the spindle.

[0010] In one advantageous embodiment, the dispenser also comprises locking devices to prevent the falling movement of hygiene paper rolls situated above the lowest hygiene paper roll in the storage space when the latter roll is fed down into the dispensing space.

[0011] The invention also relates to a method of refilling a dispenser for hygiene paper rolls with a housing com-

prising a storage space for one or more hygiene paper rolls, which storage space is closed on its top side by a removable lid, a dispensing space situated under the storage space closed off by a bottom with a central spindle projecting perpendicularly upwards from the upper side of the bottom, in which a hygiene paper roll arranged in such a way as to be capable of rotating on the spindle is accessible to a user, locking devices which, in the active position, prevent hygiene paper rolls that are present in the storage space from dropping down into the dispensing space under the effect of gravity, and an operating device to inactivate the locking devices, so that a hygiene paper roll that is present in the storage space drops down into the dispensing space, in conjunction with which the operating device projects out from the under side of the bottom, characterized in that the dispenser is refilled from above with coreless hygiene paper rolls. The use of only coreless hygiene paper rolls prevents waste, at the same time as the design of the dispenser can be simplified.

[0012] The invention also relates to the use of coreless hygiene paper rolls in such a dispenser.

BRIEF DESCRIPTION OF DRAWINGS

[0013] The invention is described below with reference to the accompanying Figures, in which:

Fig. 1 illustrates schematically a cross sectional view through a first preferred embodiment of a dispenser in accordance with the invention;

Fig. 2 a schematic cross-sectional view of the locking devices in a dispenser in accordance with Figure 1;

Fig. 3 illustrates an identical view to Figure 2 of the locking devices in a dispenser in accordance with a second preferred embodiment; and

Fig. 4 illustrates schematically an identical view to Figure 2 of the locking devices in a dispenser in accordance with a third preferred embodiment.

MODES FOR CARRYING OUT THE INVENTION

[0014] The dispenser 1 shown in Figures 1 and 2 comprises an upper storage space 2 and a lower dispensing space 3 for coreless toilet rolls A-C, which rolls are indicated in the Figures with broken lines. The rolls A,B are arranged in the storage space 2, and the roll C is arranged in the dispensing space 3 resting against the bottom 4 of the dispenser. The coreless rolls have an axial opening which fits over a hollow vertical spindle 5, which extends from the bottom 4 through the dispensing space 3 and the storage space 2. The dispenser also comprises a housing with a circular wall 6 which encloses the storage space 2. The housing can also include a wall which partially encloses the roll C in the dispensing space, but

which leaves this roll readily accessible to a user. The dispenser is thus used by pulling toilet paper radially outwards from the roll C, which is rotatably arranged on the spindle 5. The housing preferably has a wall which partially encloses the dispensing space and can be provided with a tearing edge to facilitate tearing the toilet paper. However, the paper in toilet rolls is usually provided with lines of perforations or similar recurring at regular intervals, which themselves facilitate tearing the paper into suitably large pieces, in which case it is possible to do without a wall with a tearing edge.

[0015] The storage space 2 is closed off upwards by means of a lid 7, which is capable of being opened in an appropriate fashion, preferably by being pivotally attached to the top edge of the wall 6 of the housing, as schematically illustrated with an arrow in Figure 1. The lid 7 is also lockable to prevent inappropriate access to the storage space 2. The lid also comprises a pin 8, which projects into the hollow spindle 5 and stabilizes its upper end.

[0016] The fit between the central opening in the coreless rolls A-C and the spindle 5 is such that the rolls slide easily on the spindle under the effect of gravity alone. Locking hooks 9 are provided in order to prevent the rolls A,B in the storage space from sliding down from the storage space and into the dispensing space, thereby imposing a loading on the upper side of the roll C, which locking hooks project radially outwards through openings in the hollow spindle 5. In order to permit the roll C to be replaced by the roll B after it has been used up, operating devices 10 for causing the locking hooks 9 to be displaced inwards from their active position are provided, as illustrated schematically in Figure 1. These operating devices are described below with reference to Figure 2.

[0017] The locking hooks 9 are illustrated in their actively locking position in the right-hand part of Figure 2, whereas they are illustrated in their inactivated, non-locking position in the left-hand part of Figure 2. In their position illustrated in the right-hand part of Figure 2, the free ends of the locking hooks 9 project outwards through openings 11 in the hollow spindle 5. The opposite ends of the locking hooks are attached to an operating rod 12, which extends centrally inside the hollow spindle 5 and projects outwards and downwards through an opening in the bottom 4. The operating rod 12 is also guided through a central opening in a disc 13 secured to the inside of the hollow spindle 5. The locking hooks are also spring-loaded towards their active position, as illustrated in the right-hand part of Figure 2, by means of a pressure spring 14, which is illustrated schematically in Figure 2. A comfortable operating knob 15 to facilitate the manual downward pulling of the operating rod is attached to the end of the operating rod 12. The locking hooks also exhibit cam surfaces 16 at their free ends, which interact with the lower edge of the openings 11 in the spindle 5 to cause the free ends of the locking hooks to be displaced inwards in conjunction with the downward movement of the operating rod and the accompanying down-

ward movement of the locking hooks. Illustrated in the left-hand part of Figure 2 is the inactive position of the locking hooks after the operating knob has been pulled downwards. The downward movement of the operating rod is appropriately restricted by a stop 17 that is attached to or comprises an integral part of the operating rod 12. As can be appreciated from the left-hand part of Figure 2, the locking hooks are situated entirely inside the outer periphery of the spindle 5 in its inactive position. The locking hooks 9 are also executed so that they spring back to their position illustrated in the right-hand part of Figure 2, that is to say they will spring outwards of their own accord from the retracted position illustrated in the left-hand part of Figure 2 to the extended position illustrated in the right-hand part of Figure 2 when the operating rod 12 is caused by the spring 14 to be displaced upwards after the operating knob 15 has been released by a user.

[0018] The dispenser described here is very easy to use. When the toilet roll C, which is situated in the dispensing space 3 (see the right-hand part of Figure 2), has been used up, the user quite simply takes hold of the operating button 15 and pulls the operating rod 12 downwards. The locking hooks 9 are caused to be displaced downwards and inwards in this way to the position illustrated in the left-hand part of Figure 2. Once the locking hooks have been displaced, so that their outermost ends are situated within the periphery of the hollow spindle 5, the toilet rolls A,B will slide downwards on the spindle to the position illustrated in the left-hand part of figure 2, in which position the roll B rests against the bottom 4 of the dispenser 1.

[0019] The user then releases the operating knob 15, in conjunction with which the operating rod 12 will be displaced by the pressure spring 14 to the position illustrated in the right-hand part of Figure 2. The cam surfaces on the locking hooks are executed, and the openings 11 in the spindle are situated in such a way that, at the start of the upward movement of the operating rod from the position illustrated in the left-hand part of Figure 2, the locking hooks will already be displaced directly outwards from the openings 11 and will penetrate in between the upper edge of the roll B that is situated in the dispensing space and the lower edge of the roll A that is in contact with the former roll. The locking hooks 9 will then, during their continued upwards and outwards movement, carry the roll A with them upwards, so that it is displaced upwards to the position occupied by the roll B in the right-hand part of Figure 2.

[0020] The dispenser illustrated in Figures 1 and 2 is intended to be refilled periodically in order to ensure that a user is not left without toilet paper. This can be achieved easily by unlocking the lid and pivoting it upwards, and by then introducing the required number of new toilet rolls. In the event that the dispensing space is empty, the operating rod 12 is pulled downwards before refilling with the rolls. If only a small part of the roll in the dispensing area 3 is unused, this part should be pulled out prior to

refilling. The dispenser in accordance with Figures 1 and 2 can thus be refilled in a very easy and cost-effective fashion, which is a major advantage in the case of dispensers that require to be refilled periodically, such as dispensers in large workplaces, public establishments and public toilets. It is pointed out in this connection that the dispenser is designed for use by coreless toilet rolls. The use of coreless toilet rolls offers the advantage, compared with rolls provided with cores, that there is no need to dispose of the cores from used-up rolls. In the case of dispensers for rolls provided with cores, it is the user who must normally deal with and dispose of the empty core after a roll has been used up, which naturally makes the waste disposal of the empty cores more difficult.

[0021] The dispenser 1, apart from the pressure spring 14, is preferably manufactured from plastic material, for example ABS (acrylonitrile- butadiene- styrene) , polycarbonate, polypropylene or PMMA (polymethyl methacrylate) , although other plastic materials can also be used. The locking hooks, too, can be manufactured from plastic material, for example polypropylene or POM (polyoxymethylene) . It is naturally not necessary to use plastic material, but other materials, such as stainless steel or aluminum, can be used for the dispenser or parts thereof.

[0022] Illustrated in Figure 3 is a second embodiment of a dispenser shown in a similar view to Figure 2. The components in the embodiment in accordance with Figure 3, which correspond to identical or similar components in the embodiment in accordance with Figures 1 and 2, have been given the same reference designations as in these Figures, with the addition of a prime character. The embodiment illustrated in Figure 3 differs from the embodiment illustrated in Figures 1 and 2 primarily in that the spindle 5' has been made shorter, so that its upper edge constitutes the edge with which the cam surfaces 16' of the locking hooks 9' interact. For the purpose of guiding the vertical movement of the operating rod 12', a guide sleeve 18 is preferably attached to the bottom 4' of the dispenser. The dispenser illustrated in Figure 3 is executed in other respects in an identical fashion to the dispenser in Figures 1 and 2. Because the wall 6', which defines the storage space 2', has a circular cross section with a diameter that is only slightly larger than the diameter of the roll, the central openings of the rolls A'-C' in this embodiment, too, will lie directly in line with the spindle 5', so that the rolls are able to slide downwards under the effect of gravity onto the latter when the locking hooks are displaced into their inactive position. Refilling of this dispenser thus takes place in the same way as for the dispenser in Figures 1 and 2.

[0023] Illustrated in Figure 4 is a third embodiment of a dispenser in a similar view to that shown in Figure 2. The components in the embodiment in accordance with Figure 4, which correspond to identical or similar components in the embodiment in accordance with Figures 1 and 2, have been given the same reference designations as in these Figures, with the addition of a double

prime character. This embodiment differs from the embodiment described with reference to Figures 1 and 2, in that the locking devices are different. In the embodiment illustrated in Figure 4, the locking hooks 9" are pivotally attached to the inside of the hollow spindle 5" and project outwards in their active position from openings 11" in the spindle 5", as illustrated in the right-hand part of Figure 4. The locking hooks are retained in this position by cam surfaces on a procorerance 19 on the operating rod 12". The procorerance 19 can be an integral part of the operating rod or a separate element attached thereto. The locking hooks 9" are caused by a spiral spring or similar to be displaced towards their inactive position illustrated in the left-hand part of Figure 4, in which they are situated inside the periphery of the spindle 5" in contact with the operating rod 12". In conjunction with a downward movement of the operating rod from the position illustrated in the right-hand part of Figure 4, the locking hooks 9" will be caused to pivot into the spindle 5", so that the roll B" can drop down into the dispensing space 3". In conjunction with a subsequent upward movement of the operating rod, caused by the pressure spring 14" when the operating knob 15 was released, the cam surfaces of the procorerance 19 will displace the locking hooks outwards to their locked position.

[0024] The dispenser illustrated in Figure 4 also has upper locking hooks 21, which interact with a second procorerance 20 or similar on the operating rod. The procorerance 20 is positioned on the operating rod in such a way that it retains the locking hooks 21 in their active position when the locking hooks 9" are in their inactive position, as illustrated in the left-hand part of Figure 4. The locking hooks 21 are also so arranged as to press against the inner periphery of a roll A" present in the storage space, so that the roll is prevented from sliding downwards. The locking hooks 21 are preferably provided at their free ends with pointed elements which penetrate into the paper of the toilet roll; for example, the free ends may be in the form of saw teeth.

[0025] In order to replace a used-up toilet roll, for example the roll C" in the right-hand part of Figure 4, the user takes hold of the operating knob 15" and pulls the operating rod 12" downwards in the same way as in the previously described embodiments. The procorerance 19 is caused to be displaced downwards in this way, and under the effect of the spiral spring the locking hooks 9" are displaced inwards to their inactive position, as illustrated in the left-hand part of Figure 4, as a consequence of which the roll B" drops down into the dispensing space. At the same time, the downward movement of the operating rod 12" causes the procorerance 20 to actuate the locking hooks 21, so that they are caused to project out from upper openings 22 in the spindle 5", and the free ends of these locking hooks 21 come into contact with the inner periphery of the roll A" and prevent it from dropping down into the dispensing space 3" above the roll B". The procorerance 20 is preferably positioned on the operating rod 12" axially in such a way that the locking

hooks 21 come into contact with the inside of the roll A" before the lower locking hooks 9" are fully retracted. When the operating knob 15" is subsequently released after the roll B" has dropped down into the dispensing space, the operating rod 12" will be caused to return upwards by the effect of the pressure spring 14", and the procorerance 19 will cause the locking hooks 9" to be displaced to their active position. At the same time, the upper procorerance 20 will be displaced upwards and will in so doing release the locking hooks 21, so that these are displaced by spiral springs or similar to their inactive position, so that the roll A" can drop downwards into the storage space and into contact with the outward-projecting locking hooks 9".

[0026] The dispenser illustrated in Figure 4 can also be refilled in a simple fashion from above. If the dispenser is completely empty, one or two rolls are first introduced into the storage space, after which the operating rod is pulled down, so that a roll from the storage space drops down into the dispensing space. The operating rod is then released, and the remaining number or rolls is introduced into the storage space until it is full.

[0027] An axial slot or similar (not shown in the Figures) is preferably arranged in the storage space in order to make it easy to establish whether or not the storage space is full.

[0028] As can be appreciated from the above description, the dispenser in accordance with the invention is easy to operate for a user who needs to replace a toilet roll in the dispensing space that has been used up with a new roll from the storage space. At the same time, refilling of the dispenser only requires simple operations and can accordingly be performed rapidly and effectively, which is of considerable significance for the operating costs in a system that utilizes dispensers with storage spaces for replacement rolls. In order for the dispenser in accordance with the invention to function in the intended fashion, coreless toilet rolls must be used, which is associated with the further advantage that empty cores from used-up toilet rolls do not need to be dealt with.

[0029] The expression coreless hygiene paper rolls is also used to denote hygiene paper rolls with a centre that is reinforced by some means or other, on condition that the reinforced centre does not remain on the spindle when the paper runs out, but accompanies the end of the paper from the dispenser.

[0030] The embodiments described here can naturally be modified within the scope of the invention. For example, the storage space can be executed to accommodate more than two hygiene paper rolls. More than two locking hooks can be arranged in order to prevent hygiene paper rolls from dropping down into the dispensing space. The operating rod can also be operated by a push-button, which projects upwards from a hole in the lid, instead of by the illustrated pull-knob 15. The locking hooks can have other designs; for example the locking hooks illustrated in the two first embodiments can be caused to be displaced towards their locked positions by means of

springs, instead of being manufactured from a spring-back material. Moreover, the operating rod can be operated with a screw-and-nut mechanism, instead of being pulled downwards. The locking devices could also be so arranged as to act against the outside of the rolls, instead of against the inside, although this is not preferred because the operating devices will then be more prominent and aesthetically displeasing, as well as being less readily accessible to a user, because they must then be positioned in such a way that they do not obstruct a user when pulling paper from the roll that is situated in the dispensing space. The scope of the invention must accordingly be restricted only by the content of the accompanying Patent Claims.

Claims

1. A dispenser (1;1',1'') for coreless hygiene paper rolls with a housing comprising a storage space (2;2';2'') for one or more hygiene paper rolls (A-C;A'-C';A''-C''), a dispensing space (3;3';3'') terminated with a bottom (4;4';4'') situated beneath the storage space, in which dispensing space a hygiene paper roll so arranged as to be capable of rotating on a spindle (5;5';5'') is accessible to a user, locking devices (9;9';9''), which in the active position prevent hygiene paper rolls that are present in the storage space from dropping down into the dispensing space under the effect of gravity, and an operating device (12,15;12',15';12'',15'') to inactivate the locking devices, so that a hygiene paper roll that is present in the storage space drops down into the dispensing space, wherein the storage space (2;2';2'') is closed off on the top side by means of a removable lid (7), and in that the spindle (5;5';5'') is secured to the bottom (4;4';4'') inside the dispensing space and extends perpendicularly from the upper side of the bottom, **characterized in that** the operating device (12,15;12',15';12'',15'') projects out from the under side of the bottom (4;4';4''), and the spindle (5;5') is hollow, and the locking devices are capable of axial displacement from an upper active position, in which locking hooks (9;9') project out radially outside the spindle, to a lower inactive position, in which the locking hooks are situated radially within the periphery of the spindle.
2. A dispenser as claimed in claim 1, **characterized in that** every locking device (9;9') has a cam surface (16;16'), which interacts with an edge of an opening in the spindle (5;5'), so that a downward displacement of the locking device causes a radially inward movement of the locking hook.
3. A dispenser as claimed in claim 2, **characterized in that** the locking devices (9;9') are spring-loaded towards their active position.
4. A dispenser as claimed in claims 1 or 2, **characterized in that** the spindle (5') extends only inside the dispensing space (3'), and **in that** the cam surfaces (16') of the locking devices (9') interact with the upper edge of the spindle.
5. A dispenser (1;1',1'') for coreless hygiene paper rolls with a housing comprising a storage space (2;2';2'') for one or more hygiene paper rolls (A-C;A'-C';A''-C''), a dispensing space (3;3';3'') terminated with a bottom (4;4';4'') situated beneath the storage space, in which dispensing space a hygiene paper roll so arranged as to be capable of rotating on a spindle (5;5';5'') is accessible to a user, locking devices (9;9';9''), which in the active position prevent hygiene paper rolls that are present in the storage space from dropping down into the dispensing space under the effect of gravity, and operating devices (12,15;12',15';12'',15'') to inactivate the locking devices, so that a hygiene paper roll that is present in the storage space drops down into the dispensing space, wherein the storage space (2;2';2'') is closed off on the top side by means of a removable lid (7), and in that the spindle (5;5';5'') is secured to the bottom (4;4';4'') inside the dispensing space and extends perpendicularly from the upper side of the bottom, **characterized in that** it also comprises locking devices (21) to prevent the falling movement of hygiene paper rolls situated above the lowest hygiene paper roll in the storage space (2'') when the latter roll is fed down into the dispensing space (3'').
6. A method for refilling a dispenser for hygiene paper rolls with a housing comprising a storage space for one or more hygiene paper rolls, which storage space is closed on its top side by a removable lid, a dispensing space situated under the storage space closed off by a bottom with a central spindle projecting perpendicularly upwards from the upper side of the bottom, in which a hygiene paper roll arranged in such a way as to be capable of rotating on the spindle is accessible to a user, locking devices which, in the active position, prevent hygiene paper rolls that are present in the storage space from dropping down into the dispensing space under the effect of gravity, and an operating device to inactivate the locking devices, so that a hygiene paper roll that is present in the storage space drops down into the dispensing space, in conjunction with which the operating device projects out from the under side of the bottom, **characterized in that** the dispenser is refilled from above with coreless hygiene paper rolls.
7. The use of coreless hygiene paper rolls in a dispenser for hygiene paper rolls with a housing comprising a storage space for one or more hygiene paper rolls, which storage space is closed on its top side by a removable lid, a dispensing space situated under the

storage space closed off by a bottom with a central spindle projecting perpendicularly upwards from the upper side of the bottom, in which a hygiene paper roll arranged in such a way as to be capable of rotating on the spindle is accessible to a user, locking devices which, in the active position, prevent hygiene paper rolls that are present in the storage space from dropping down into the dispensing space under the effect of gravity, and an operating device to inactivate the locking devices, so that a hygiene paper roll that is present in the storage space drops down into the dispensing space, in conjunction with which the operating device projects out from the under side of the bottom.

Patentansprüche

1. Spender (1; 1'; 1'') für kernlose Hygienepapierrollen mit einem Gehäuse, umfassend einen Lagerraum (2; 2'; 2'') für eine oder mehr Hygienepapierrollen (A-C; A'-C'; A''-C''), einen Abgaberaum (3; 3'; 3''), der mit einem Boden (4; 4'; 4'') endet, der sich unterhalb des Lagerraums befindet, in welchem Abgaberaum eine Hygienepapierrolle, die derart angeordnet ist, dass sie imstande ist sich auf einer Spindel (5; 5'; 5'') zu drehen, einem Nutzer zugänglich ist, Verriegelungsvorrichtungen (9; 9'; 9''), welche in der aktiven Position verhindern, dass Hygienepapierrollen, die in dem Lagerraum vorhanden sind, unter der Wirkung von Schwerkraft in den Abgaberaum herunterfallen, und eine Bedienvorrichtung (12, 15; 12', 15'; 12'', 15''), um die Verriegelungsvorrichtungen zu inaktivieren, so dass eine Hygienepapierrolle, die in dem Lagerraum vorhanden ist, in den Abgaberaum herunterfällt, wobei der Lagerraum (2; 2'; 2'') an der Oberseite mittels eines abnehmbaren Deckels (7) abgesperrt ist, und dadurch, dass die Spindel (5; 5'; 5'') an dem Boden (4; 4'; 4'') im Inneren des Abgaberaums befestigt ist und sich senkrecht von der Oberseite des Bodens erstreckt, **dadurch gekennzeichnet, dass** die Bedienvorrichtung (12, 15; 12', 15'; 12'', 15'') von der Unterseite des Bodens (4; 4'; 4'') herausragt, und die Spindel (5; 5'; 5'') hohl ist, und dadurch, dass die Verriegelungsvorrichtungen aus einer oberen aktiven Position zu einer axialen Verschiebung imstande sind, in welcher Verriegelungshaken (9; 9') radial außerhalb der Spindel herausragen, in eine niedrigere inaktive Position, in welcher sich die Verriegelungshaken radial innerhalb des Umfangs der Spindel befinden.
2. Spender nach Anspruch 1, **dadurch gekennzeichnet, dass** jede Verriegelungsvorrichtung (9; 9') eine Nockenoberfläche (16; 16') aufweist, die mit einem Rand von einer Öffnung in der Spindel (5; 5') zusammenwirkt, so dass eine Verschiebung der Verriegelungsvorrichtung nach unten eine radiale Bewegung

des Verriegelungshakens nach innen bewirkt.

3. Spender nach Anspruch 2, **dadurch gekennzeichnet, dass** die Verriegelungsvorrichtungen (9; 9') zu ihrer aktiven Position hin federbelastet sind.
4. Spender nach Anspruch 1 oder 2, **dadurch gekennzeichnet, dass** sich die Spindel (5') lediglich im Inneren des Abgaberaums (3') erstreckt, und dadurch, dass die Nockenoberflächen (16') der Verriegelungsvorrichtungen (9') mit dem oberen Rand der Spindel zusammenwirken.
5. Spender (1; 1'; 1'') für kernlose Hygienepapierrollen mit einem Gehäuse, umfassend einen Lagerraum (2; 2'; 2'') für eine oder mehr Hygienepapierrollen (A-C; A'-C'; A''-C''), einen Abgaberaum (3; 3'; 3''), der mit einem Boden (4; 4'; 4'') endet, der sich unterhalb des Lagerraums befindet, in welchem Abgaberaum eine Hygienepapierrolle, die derart angeordnet ist, dass sie imstande ist sich auf einer Spindel (5; 5'; 5'') zu drehen, einem Nutzer zugänglich ist, Verriegelungsvorrichtungen (9; 9'; 9''), welche in der aktiven Position verhindern, dass Hygienepapierrollen, die in dem Lagerraum vorhanden sind, unter der Wirkung von Schwerkraft in den Abgaberaum herunterfallen, und eine Bedienvorrichtung (12, 15; 12', 15'; 12'', 15''), um die Verriegelungsvorrichtungen zu inaktivieren, so dass eine Hygienepapierrolle, die in dem Lagerraum vorhanden ist, in den Abgaberaum herunterfällt, wobei der Lagerraum (2; 2'; 2'') an der Oberseite mittels eines abnehmbaren Deckels (7) abgesperrt ist, und dadurch, dass die Spindel (5; 5'; 5'') an dem Boden (4; 4'; 4'') im Inneren des Abgaberaums befestigt ist und sich senkrecht von der Oberseite des Bodens erstreckt, **dadurch gekennzeichnet, dass** er auch Verriegelungsvorrichtungen (21) umfasst, um die Fallbewegung von Hygienepapierrollen zu verhindern, die sich über der untersten Hygienepapierrolle in dem Lagerraum (2'') befinden, wenn die letztere Rolle abwärts in den Abgaberaum (3'') zugeführt wird.
6. Verfahren zum Nachfüllen eines Spenders für Hygienepapierrollen mit einem Gehäuse, umfassend einen Lagerraum für eine oder mehr Hygienepapierrollen, welcher Lagerraum an seiner Oberseite durch einen abnehmbaren Deckel abgesperrt ist, einen Abgaberaum, der sich unterhalb des Lagerraums befindet, durch einen Boden abgeschlossen, mit einer zentralen Spindel, die sich senkrecht von der Oberseite des Bodens nach oben erstreckt, in welchem eine Hygienepapierrolle, die derart angeordnet ist, dass sie imstande ist sich auf einer Spindel zu drehen, einem Nutzer zugänglich ist, Verriegelungsvorrichtungen, welche in der aktiven Position verhindern, dass Hygienepapierrollen, die in dem Lagerraum vorhanden sind, unter der Wirkung von

Schwerkraft in den Abgaberaum herunterfallen, und eine Bedienvorrichtung, um die Verriegelungsvorrichtungen zu inaktivieren, so dass eine Hygienepapierrolle, die in dem Lagerraum vorhanden ist, in den Abgaberaum herunterfällt, in Verbindung mit welcher die Bedienvorrichtung von der Unterseite des Bodens herausragt, **dadurch gekennzeichnet, dass** der Spender von oben mit kernlosen Hygienepapierrollen nachgefüllt wird.

7. Verwendung von kernlosen Hygienepapierrollen in einem Spender für Hygienepapierrollen mit einem Gehäuse, umfassend einen Lagerraum für eine oder mehr Hygienepapierrollen, welcher Lagerraum an seiner Oberseite durch einen abnehmbaren Deckel abgesperrt ist, einen Abgaberaum, der sich unterhalb des Lagerraums befindet, durch einen Boden abgeschlossen, mit einer zentralen Spindel, die sich senkrecht von der Oberseite des Bodens nach oben erstreckt, in welchem eine Hygienepapierrolle, die derart angeordnet ist, dass sie imstande ist sich auf einer Spindel zu drehen, einem Nutzer zugänglich ist, Verriegelungsvorrichtungen, welche in der aktiven Position verhindern, dass Hygienepapierrollen, die in dem Lagerraum vorhanden sind, unter der Wirkung von Schwerkraft in den Abgaberaum herunterfallen, und eine Bedienvorrichtung, um die Verriegelungsvorrichtungen zu inaktivieren, so dass eine Hygienepapierrolle, die in dem Lagerraum vorhanden ist, in den Abgaberaum herunterfällt, in Verbindung mit welcher die Bedienvorrichtung von der Unterseite des Bodens herausragt.

Revendications

1. Distributeur (1, 1', 1") pour rouleaux de papier hygiénique sans noyau, doté d'un logement comprenant un espace de stockage (2, 2', 2") destiné à un ou plusieurs rouleaux de papier hygiénique (A à C ; A' à C' ; A" à C"), un espace de distribution (3 ; 3' ; 3") qui se termine par un fond (4 ; 4' ; 4") situé sous l'espace de stockage, dans lequel espace de distribution est disposé un rouleau de papier hygiénique agencé de manière à pouvoir tourner sur un axe (5 ; 5' ; 5") qui est accessible pour un utilisateur, des dispositifs de verrouillage (9 ; 9' ; 9") qui, en position d'activité, empêchent que des rouleaux de papier hygiénique qui sont présents dans l'espace de stockage tombent dans l'espace de distribution sous l'effet de la gravité, ainsi qu'un dispositif de commande (12 ; 15 ; 12' ; 15' ; 12" ; 15") destiné à désactiver les dispositifs de verrouillage, de telle manière qu'un rouleau de papier hygiénique qui est présent dans l'espace de stockage tombe jusque dans l'espace de distribution, dans lequel l'espace de stockage (2 ; 2' ; 2") est fermé sur son côté supérieur au moyen d'un couvercle amovible (7) et en ce que l'axe (5 ;

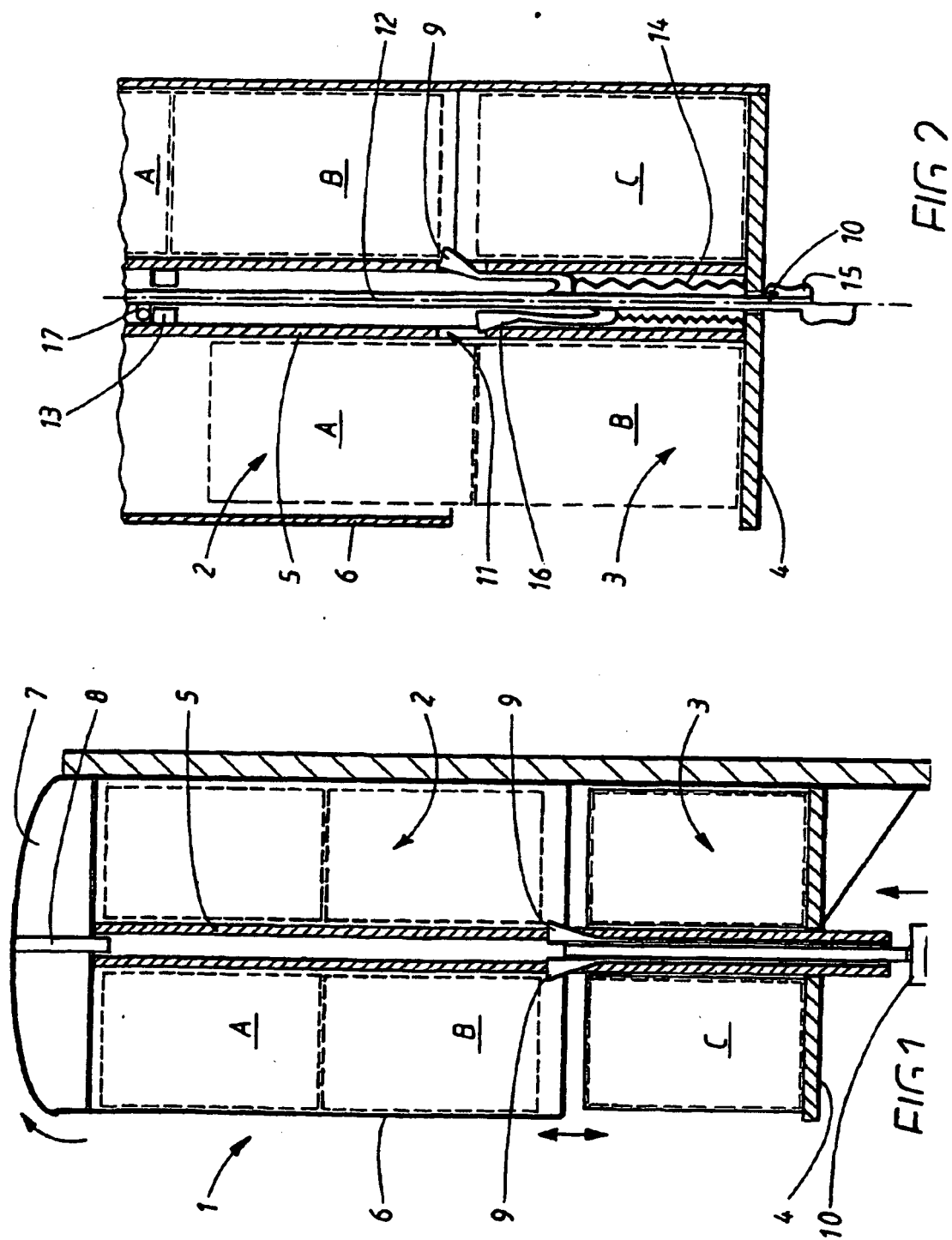
5' ; 5") est fixé au fond (4 ; 4' ; 4") à l'intérieur de l'espace de distribution et s'étend perpendiculairement à partir du côté supérieur du fond, **caractérisé en ce que** le dispositif de commande (12 ; 15 ; 12' ; 15' ; 12" ; 15") fait saillie à partir du côté inférieur du fond (4 ; 4' ; 4"), et l'axe (5 ; 5') est creux, et les dispositifs de verrouillage sont aptes à être déplacés axialement depuis une position d'activité supérieure, dans laquelle des crochets de verrouillage (9 ; 9') font saillie radialement à l'extérieur de l'axe, jusqu'à atteindre une position d'inactivité inférieure dans laquelle les crochets de verrouillage sont disposés radialement à l'intérieur de la périphérie de l'axe.

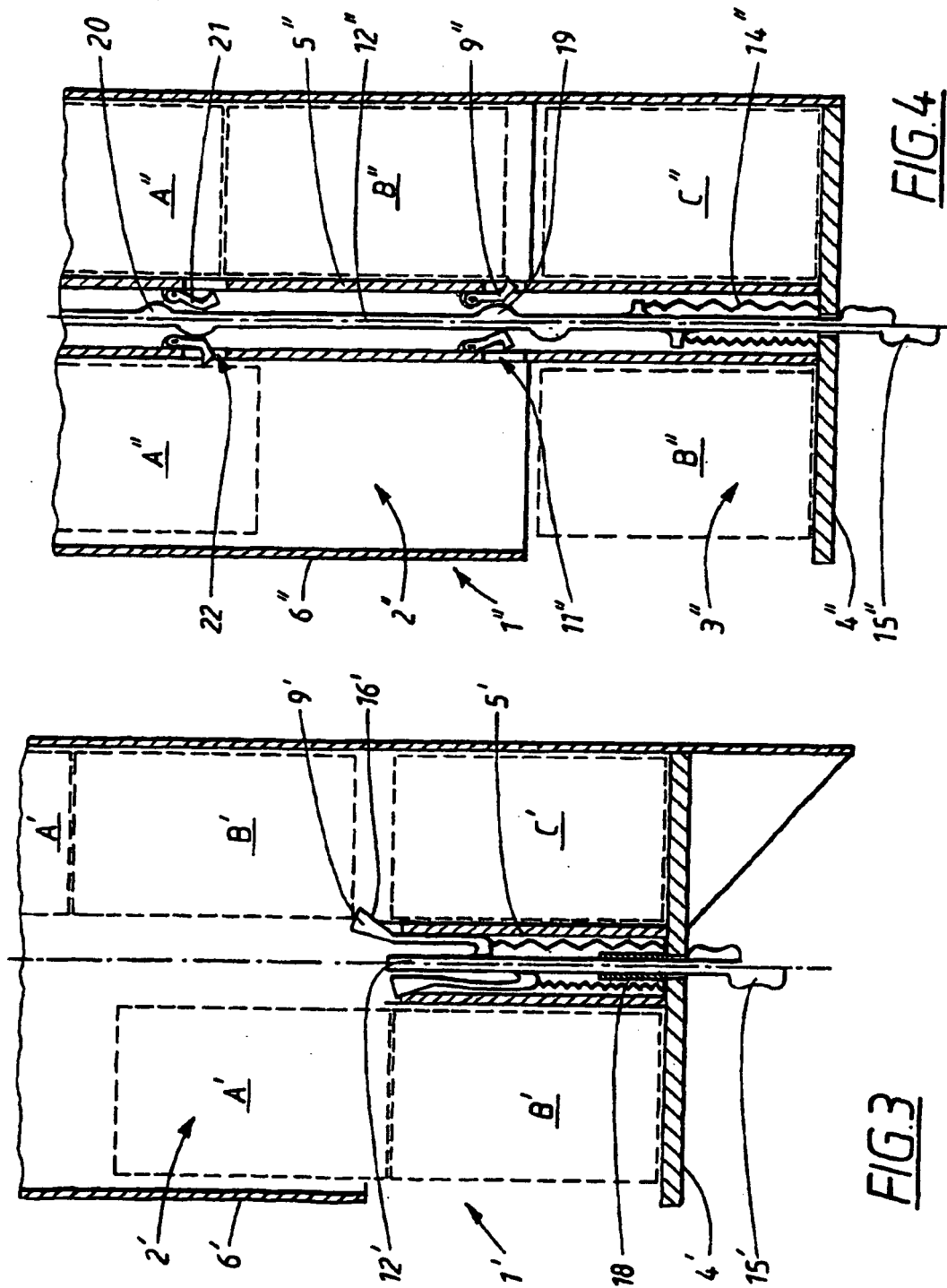
2. Distributeur selon la revendication 1, **caractérisé en ce que** chaque dispositif de verrouillage (9 ; 9') est doté d'une surface de came (16 ; 16') qui interagit avec un bord d'une ouverture pratiquée dans l'axe (5 ; 5') de telle manière que le déplacement du dispositif de verrouillage vers le bas provoque un déplacement radial du crochet de verrouillage vers l'intérieur.
3. Distributeur selon la revendication 2, **caractérisé en ce que** les dispositifs de verrouillage (9 ; 9') sont soumis à une contrainte élastique en direction de leur position d'activité.
4. Distributeur selon les revendications 1 ou 2, **caractérisé en ce que** l'axe (5') s'étend seulement à l'intérieur de l'espace de distribution (3'), et **en ce que** les surfaces de came (16') des dispositifs de verrouillage (9') interagissent avec le bord supérieur de l'axe.
5. Distributeur (1, 1', 1") pour rouleaux de papier hygiénique sans noyau, doté d'un logement comprenant un espace de stockage (2, 2', 2") destiné à un ou plusieurs rouleaux de papier hygiénique (A à C ; A' à C' ; A" à C"), un espace de distribution (3 ; 3' ; 3") qui se termine par un fond (4 ; 4' ; 4") situé sous l'espace de stockage, dans lequel espace de distribution est disposé un rouleau de papier hygiénique agencé de manière à pouvoir tourner sur un axe (5 ; 5' ; 5") qui est accessible pour un utilisateur, des dispositifs de verrouillage (9 ; 9' ; 9") qui, en position d'activité, empêchent que des rouleaux de papier hygiénique qui sont présents dans l'espace de stockage tombent dans l'espace de distribution sous l'effet de la gravité, ainsi qu'un dispositif de commande (12 ; 15 ; 12' ; 15' ; 12" ; 15") destiné à désactiver les dispositifs de verrouillage, de telle manière qu'un rouleau de papier hygiénique qui est présent dans l'espace de stockage tombe jusque dans l'espace de distribution, dans lequel l'espace de stockage (2 ; 2' ; 2") est fermé sur son côté supérieur au moyen d'un couvercle amovible (7) et en ce que l'axe (5 ; 5' ; 5") est fixé au fond (4 ; 4' ; 4") à l'intérieur de

l'espace de distribution et s'étend perpendiculairement à partir du côté supérieur du fond, **caractérisé en ce qu'il** comprend également des dispositifs de verrouillage (21') destinés à empêcher le mouvement de chute des rouleaux de papier hygiénique situés au-dessus du rouleau de papier hygiénique qui se trouve le plus bas dans l'espace de stockage (2'') lorsque ce dernier rouleau est transporté vers le bas jusque dans l'espace de distribution (3'').

fait saillie à partir du côté inférieur du fond.

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6. Procédé de recharge d'un distributeur de rouleaux de papier hygiénique, doté d'un logement comprenant un espace de stockage destiné à un ou plusieurs rouleaux de papier hygiénique, lequel espace de stockage est fermé sur son côté supérieur par un couvercle amovible, un espace de distribution situé sous l'espace de stockage, fermé par un fond, comportant un axe central qui fait saillie perpendiculairement vers le haut à partir du côté supérieur du fond, dans lequel un rouleau de papier hygiénique est agencé de manière à être apte à tourner sur l'axe et permet à un utilisateur d'y avoir accès, des dispositifs de verrouillage qui, en position d'inactivité, empêchent que des rouleaux de papier hygiénique qui sont présents dans l'espace de stockage tombent jusque dans l'espace de distribution sous l'effet de la gravité, et un dispositif de commande destiné à désactiver les dispositifs de verrouillage, de telle manière qu'un rouleau de papier hygiénique qui est présent dans l'espace de stockage tombe jusque dans l'espace de distribution, en conjugaison avec lequel le dispositif de commande fait saillie depuis la face inférieure du fond, **caractérisé en ce que** le distributeur est rechargé à partir du haut en rouleaux de papier hygiénique sans noyau.
7. Utilisation de rouleaux de papier hygiénique sans noyau, dans un distributeur de rouleaux de papier hygiénique doté d'un logement comprenant un espace de stockage destiné à un ou plusieurs rouleaux de papier hygiénique, lequel espace de stockage est fermé sur son côté supérieur au moyen d'un couvercle amovible, un espace de distribution situé sous l'espace de stockage fermé par un fond comportant un axe central qui fait saillie perpendiculairement vers le haut à partir du côté supérieur du fond, dans lequel un utilisateur a accès à un rouleau de papier hygiénique disposé de manière à être apte à tourner sur l'axe, des dispositifs de verrouillage qui, en position d'activité, empêchent que des rouleaux de papier hygiénique qui sont présents dans l'espace de stockage tombent jusque dans l'espace de distribution sous l'effet de la gravité, et un dispositif de commande destiné à désactiver les dispositifs de verrouillage, de telle manière qu'un rouleau de papier hygiénique qui est présent dans l'espace de stockage tombe jusque dans l'espace de distribution, en conjugaison avec lequel le dispositif de commande





REFERENCES CITED IN THE DESCRIPTION

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