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(54) **Feeder device for presenting products on a shelf**

(57) The present disclosure relates to a feeder device (1), which feeder device is configured for being mounted on a shelf (2) for feeding successive products to a front (3) of the shelf. The feeder device comprises an elongated guide member (4) which is configured for extending longitudinally backwards from the front of the shelf when the device is mounted. The feeder device also comprises a sled (5) which is slidably connected to the guide member such that the sled can slide along the length of the elongated guide member. The sled is configured for en-

gaging a back-most product of the successive products for pushing the products towards the front of the shelf. The feeder device also comprises a spring (6) connected to the sled, and configured for pushing the sled along the guide member towards a front end (7) of said guide member. The feeder device further comprises a damper (8) connected to the sled, and engaging the spring for damping the sliding motion of the sled towards the front end of the guiding member when the sled is pushed by the spring.

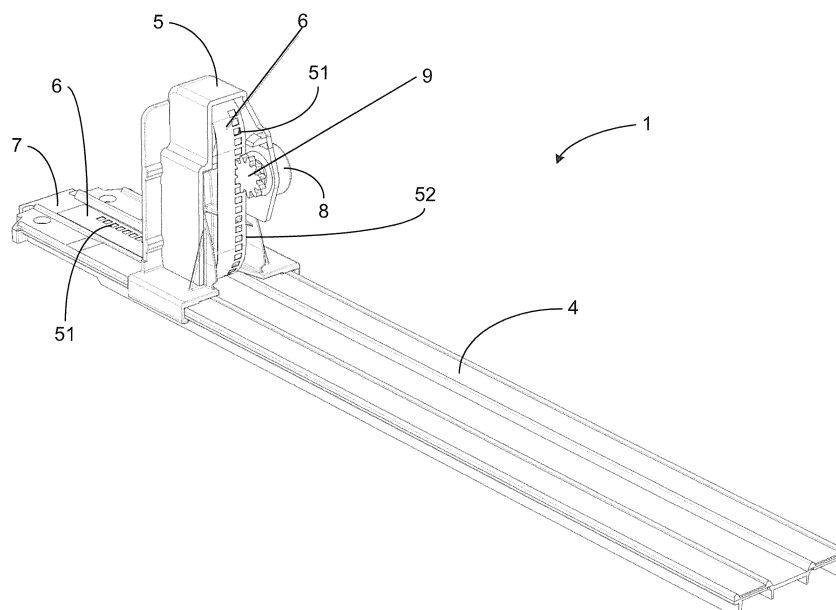


Fig. 5

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Description

TECHNICAL FIELD

[0001] The present disclosure relates to a feeder device configured for mounting on a shelf for feeding successive products to a front of the shelf. The feeder device comprises a spring arranged to act on a sled for pushing the products towards the front of the shelf. The feeder device may be used e.g. in shops such as grocery stores or the like for providing and displaying products on shelves therein.

BACKGROUND

[0002] Theft is a major problem in modern retail. In some product categories, more than 10% of the goods never pass the check-out. Various systems exist to prevent theft. Products can be put behind the counter, or locked in. These solutions are more or less fail-safe, but also leads to big drop in sales. Other solutions consist of using so called safers or other electronic alarm devices. These generally work quite good, but they are costly, and creates additional work for store personnel.

[0003] An in-between set of solutions focuses on preventing potential buyers from taking more than one pack at the time, so called anti-sweep solutions. More or less successful prior art solutions to provide this feature exists for peg hooks.

[0004] Feeder devices for merchandising in general are used for example in grocery stores where goods are exposed on the shelves. Indexing devices are used to push forward placed goods or store items, one behind the other, to the shelf edge, to facilitate the picking of the goods, improve visibility of the goods and make the shelf aesthetic appearance more appealing.

[0005] The feeder device includes a base or web which is placed on the shelf so that it extends from the shelf front edge in a rearward direction. A feed sled is slidably disposed on the base along its length. The automatic feeder devices are sled biased, for example by a helical spring which is arranged on the backside of the sled and which at one end is attached to the front end of the base.

[0006] To improve the system of the shelves and to separate neighbouring goods from one another often feeder devices are used together with shelf dividers or partitions. The dividers comprise a dividing wall that extends from the shelf front edge in an essentially rearward direction. Dividers may also comprise a front stop plate or front extending perpendicularly to dividing wall on one or both sides of said wall, to prevent goods from falling off the shelf. The dividers are attached to the shelf next to each other to form compartments in which the feeder devices are placed. The distance between dividers are chosen in accordance with the relevant goods width, so that the goods are brought into line with each other in their respective compartments. This minimizes the space required to store the goods on the shelf, while the shelf

aesthetic appearance becomes more appealing. To fit the different products and product packaging, dividers can be designed in a variety of ways. For example, the dividing wall height may vary widely. Furthermore, the fronts of the dividers can be designed in a variety of ways, for example as regards the width, height and contour, to suit different goods and to provide desired visual impact for every occasion.

[0007] Feeder devices and dividers should be easy to assemble and disassemble from the shelf. The feeder devices and the partitions are possible to fix at arbitrary positions laterally along the shelf, to thereby provide goods compartment with the desired width.

[0008] EP 0 337 340 discloses a shelf divider system comprising a divider wall mountable in a channel member secured to the front of a shelf. A spring-urged pusher member is slidably mounted on a track having a pair of rails integral with the divider shaft. In one embodiment, the operationally mounted divider wall is vertically oriented and the pusher member extends horizontally therefrom so that displayed merchandise resets directly on the shelf surface but is automatically urged forwardly by the retracted pusher member. In another embodiment, the track provides the supporting surface for displayed merchandise and a vertical divider wall is integrally formed with the track.

[0009] A general problem with spring urged feeder devices which pushes goods forward to the front edge of a store shelf is that goods items in line behind the front item being picked may be disrupted as the spring pushes them forward, and items may then be out of the feeder device and end up on the floor of the grocery store or the like. Another general problem is that it is easy to pick many of the lined up goods items at the same time, which may facilitate theft.

[0010] EP 1 806 076 discloses a pusher apparatus e.g. for pushing a row of cigarette packets towards the front of a shelf. The leading package is arranged to drop down a step at one end of a track and be held in the dropped position against a stop by gentle pressure on the entire row from a pusher. By locating a damped movement connection, for example a rack engaged by a damped pinion mounted on the pusher, the movement of the pusher itself maybe sufficiently damped to enable certain and repeatable dropping of the leading package as the row of packages is advanced, following the repeated removal of the leading one. Thus, the pinion of the pusher is engaged with a track along the row of packets and dampens the forward motion of the pusher. The drop down a step of the leading packet ensures that the front packet is easily accessible.

SUMMARY

[0011] It is an objective of the invention of the present disclosure to provide a feeder device for feeding products to the front of a shelf, which mitigates at least one of the problems of the prior art.

[0012] Embodiments of the present invention provide an anti-sweep solution (theft deterrence where a person is prevented from easily sweep many products at the same time from e.g. a shelf) for theft prone products like razor blades or batteries.

[0013] Another objective of the invention is to provide a delay in feeding the next product to the shelf edge. This feature is beneficial in product categories where consumers want to have the opportunity to pick up and look at packaging, and then also have the ability to easily put the pack back, before making their final choice.

[0014] According to an aspect of the present invention, there is provided a feeder device, which feeder device is configured for being mounted on a shelf for feeding successive products to a front of the shelf. The shelf may e.g. be a shelf in a shop such as a grocery store or department store or the like. The feeder device comprises an elongated guide member which is configured for extending longitudinally backwards from the front of the shelf when the device is mounted. The feeder device also comprises a sled which is slidably connected to the guide member such that the sled can slide along the length of the elongated guide member. The sled is configured for engaging a back-most product of the successive products for pushing the products towards the front of the shelf. The feeder device also comprises a spring connected to the sled (e.g. engaging or being attached to the sled), and configured for pushing the sled along the guide member towards a front end of said guide member. The feeder device further comprises a damper connected to the sled, and engaging the spring for damping the sliding motion of the sled towards the front end of the guiding member when the sled is pushed by the spring.

[0015] By using a damper which dampens the motion of the sled when it pushes the products towards the front of the shelf, the risk of products becoming disarrayed or unintentionally pushed out from the feeder device is reduced. A more controlled motion is achieved. When the front-most product is picked out from the feeder device by e.g. a store customer, the damper in cooperation with and engaging the spring can provide a slow and controlled feeding forward of the succeeding successive products towards the shelf front. Apart from reducing the risk of disarray that a fast and less controlled motion might result in, the slower and more controlled motion is more pleasing aesthetically. Also, the slower feeding forward of succeeding products may prolong the time until the next product is readily accessible for picking, which may reduce the risk of theft of many products at the same time.

[0016] By the damper engaging the spring, instead of engaging e.g. the shelf or the guide member, existing (non-dampened) feeder devices can more easily and cheaply be upgraded with a damper since existing shelves and/or guide members need not be modified or exchanged. Only the smaller parts of the feeder device, such as the spring and possibly the sled to which the damper is connected may need to be exchanged or modified.

[0017] Generally, all terms used in the claims are to be interpreted according to their ordinary meaning in the technical field, unless explicitly defined otherwise herein. All references to "a/an/the element, apparatus, component, means, step, etc." are to be interpreted openly as referring to at least one instance of the element, apparatus, component, means, step, etc., unless explicitly stated otherwise. The steps of any method disclosed herein do not have to be performed in the exact order disclosed, unless explicitly stated. The use of "first", "second" etc. for different features/components of the present disclosure are only intended to distinguish the features/components from other similar features/components and not to impart any order or hierarchy to the features/components.

BRIEF DESCRIPTION OF THE DRAWINGS

[0018] Embodiments will be described, by way of example, with reference to the accompanying drawings, in which:

Fig 1 is a schematic perspective view obliquely from the front of an embodiment of a feeder device of the present invention.

Fig 2 is a schematic perspective view of an embodiment obliquely from the front of a feeder device of the present invention.

Fig 3 is a schematic perspective view obliquely from the back of an embodiment of a damper mounted on a sled in accordance with an embodiment of the present invention.

Fig 4 is a schematic perspective view obliquely from the front of an embodiment of a feeder device of the present invention, loaded with a plurality of successive products.

Fig 5 is a schematic perspective view obliquely from the back of an embodiment of a feeder device of the present invention.

Fig 6 is a magnification of the sled in fig 5.

Fig 7 is a schematic perspective view obliquely from the back of an embodiment of a feeder device of the present invention with the damper removed.

Fig 8 is a schematic exploded perspective view obliquely from the back of an embodiment of a feeder device of the present invention.

DETAILED DESCRIPTION

[0019] Embodiments will now be described more fully hereinafter and with reference to the accompanying

drawings, in which certain embodiments are shown. However, other embodiments in many different forms are possible within the scope of the present disclosure. Rather, the following embodiments are provided by way of example so that this disclosure will be thorough and complete, and will fully convey the scope of the disclosure to those skilled in the art. Like numbers refer to like elements throughout the description.

[0020] The elongated guide member has as a main function to guide the sled in a longitudinal direction along the guide member. The sled may be connected to the guide member by gravity in combination with a longitudinal ledge, flange or other protrusion of the guide member against which the sled can abut and be guided by. However it may be convenient to provide the sled with a fastening means by which the sled can reach around to the underside of longitudinal sides or side flanges of the guide member to be more securely connected to the guide member and not rely on gravity for staying connected thereto.

[0021] The sled may be slidably connected to the guide member by being able to slide on respective sliding surfaces e.g. rails of the sled and guide member, or slide enhancing means such as rolls or the like may be provided on the sled and/or on the guide member for facilitating the sliding of the sled in relation to the guide member. Any sliding surfaces of the sled and/or guide member may be provided with slide enhancing material e.g. in the form of a strip or tape.

[0022] When a product or products are discussed herein, this is intended to refer to a product item or several product items, not necessarily to different types of products.

[0023] When a longitudinal direction is mentioned herein, a direction which is parallel to a longitudinal axis of the elongated guide member is intended.

[0024] That the products are successive implies that they form a longitudinal queue along the guide member.

[0025] In some embodiments, the damper is a rotary damper. A rotary damper may be convenient since it may be mounted on the sled and provide damping for a sliding motion along essentially the whole guide member, whereas e.g. a gas damper, which is also contemplated, due to its telescopic structure may only be able to provide damping over a part of the guide member. The rotary damper may comprise a sprocket configured for being in mesh with e.g. the spring. Such a sprocket may alternatively be called e.g. gear, pinion or cogwheel. The sprocket may be in mesh with a for that purpose arranged structure or track on the spring. In some embodiments, e.g., the spring comprises a plurality of longitudinally aligned recesses or holes (blind or through holes) configured for meshing with the sprocket of the rotary damper. The recesses or holes are longitudinally aligned such that they form a longitudinal track which is adapted to engage the sprocket as the sled to which the damper is connected slides along the guide member. In some embodiments, the track of holes along the spring may extend past a

longitudinal side edge of the spring, forming a (saw) toothed longitudinal side edge with which the sprocket may mesh.

[0026] In some embodiments, the spring is a spiral spring which is, at one of its ends, fastened or otherwise attached to a roll arranged in or otherwise connected to the sled. The spring is thus wound or rolled up onto (around) the roll when the sled is pushed forward along the guide member, and wound off said roll when the sled is pushed back e.g. when the feeder device is loaded with more products. In some embodiments, the damper is a rotary damper comprising a sprocket. The roll may then be hollow and configured to allow the sprocket to extend axially into and in mesh with said roll such that the rotational axis of the roll is essentially the same as the rotational axis of the sprocket. An inside surface of the roll may then have a structure which is adapted to the sprocket, e.g. a negative version of the sprocket surface. The sprocket may then be inserted into the hollow roll (round cylinder) along the rotational axis of the roll and mesh with the roll via its inside surface structure. The sprocket is then engaging the spring via the roll. The roll may be regarded as part of the rotary damper, engaging the spring rolled up around it.

[0027] In some embodiments, the damper is a unidirectional damper which provides more damping action to the sliding motion of the sled towards the front end of the guide member than to a sliding motion of the sled in the opposite direction. This may be advantageous since it allows products to be slowly successively fed forward to the front of the shelf when a product is picked from the feeder device, but at the same time allows the sled to be faster slid backwards away from the shelf front when one or more products are introduced or put back into the feeder device e.g. when store personnel are loading the feeder device. The feeder device may thus be more efficiently loaded. Unidirectional dampers are known in other fields of technology, and unidirectional damping of a rotary damper may e.g. be achieved by means of a rotor in a viscous fluid, e.g. in accordance with patent document EP 2 348 228. EP 2 348 228 discloses a rotary damper which includes a synthetic resin-made accommodating case for accommodating in its interior a viscous fluid which is constituted by silicone oil or the like and whose viscosity declines with a temperature rise, and a synthetic resin-made rotor which is disposed in the interior of the accommodating case rotatably, and which partitions the interior of the accommodating case into at least two chambers. Such a rotary damper imparts great braking to the rotation of the rotor in one direction by a viscous fluid which passes through clearances and small braking to the rotation of the rotor in the other direction, making the rotary damper a unidirectional rotary damper.

[0028] In some embodiments, the sled comprises opposing longitudinally extending grooves engaging longitudinal sides of the guide member, whereby the sled is slidably connected to the guide member. The grooves are longitudinal such as they are parallel to a longitudinal

axis of the guide member. Such grooves or tracks which may be integrally formed in the sled may be a convenient means of connecting the sled slidably to the guide member. For instance, the sled may be slid onto an essentially flat guide member at an end of the guide member, with the longitudinal grooves enveloping (e.g. gripping/extending around) the longitudinal sides of the flat guide member but still allowing the sled to slide along the guide member.

[0029] In some embodiments, the spring has two ends and is at one of its ends attached to the sled and at the other one of its ends attached to the guide member at the front end of said guide member. It may be convenient to attach the spring to the sled to achieve a robust construction of the device. Alternatively, the end of the spring may lay against and push on the sled without being attached/fixed to the sled. The spring may e.g. be a spiral spring or a helical spring.

[0030] In some embodiments, the feeder device further comprises a housing configured for, in cooperation with the shelf, enclosing the successive products longitudinally along at least a part of the guide member, the housing having an opening at the front end of the guide member for allowing access to a front-most product of the successive products. The housing may enclose the products along three longitudinal sides (above and to each lateral side of the queue of successive products in the device), again referring to a longitudinal axis of the guide member. Below, the products are enclosed by the shelf when the device is mounted thereon. Enclosing the products thus, prevents access to products in the feeder device. For allowing access to the front-most product, the housing has an opening allowing e.g. a customer to pick out said front-most product. The housing thus makes it impossible or at least more difficult for someone (possibly a thief) to access and remove many or all of the products at the same time. Instead, it is necessary to wait until the next product is fed forward to the front end of the guide member until picking it, i.e. removing it from the feeder device. The lateral sides of the housing may also function as side barriers for keeping the queued products in line. The housing is thus an alternative to shelf dividing barriers, which may alternatively be used with the present invention. The housing dimensions may conveniently be adapted to the size of the products therein. The opening is conveniently designed so as to only provide easy external access to one product item at the time. The housing may be made from a transparent material, e.g. transparent plastics, in order to allow the products therein to be seen even though they are not directly accessible. In some embodiments, the housing comprises a front barrier at the front end of the guide member. The barrier is configured for stopping the front-most product of the successive products from being pushed beyond the front of the shelf. In other embodiments, a front barrier is not part of the housing or even of the feeder device, but may be provided as part of the shelf at the front of said shelf. The spring thus pushes the queued products, via the sled,

against the front barrier. The housing may also comprise a backside, preventing access to the products from the back of the shelf. The housing may be attached to the guide member, or the housing may be configured to be attached only to the shelf.

[0031] In some embodiments, the feeder device is mounted on the shelf. However, the present invention also relates to a feeder device which is configured to be mounted/attached to a shelf, but which is currently not so mounted/attached.

[0032] Figure 1 illustrates an embodiment of a feeder device 1 of the present invention, mounted onto a shelf 2.

[0033] A flat elongated guide member 4 lays on top of the shelf 2 and extends from the front 3 of the shelf 2 and backwards atop the shelf surface, with the front end 7 of the guide member being positioned at the front 3 of the shelf 2. The guide member may e.g. be mounted to the shelf by means of a fastening means of a screw, clip or similar. The guide member 4 is provided with longitudinally aligned recesses 10 in the form of through holes which form a longitudinal ladder-type track at and along a longitudinal side 12 of the guide means.

[0034] A sled 5 is slidably arranged on the guide member 4. In the sled 5, a rotary damper 8 is attached to the sled. The damper 8 comprises a sprocket 9 which protrudes somewhat below the sled 5 and is there in mesh with the track of holes 10 of the guide member 4. As the sled 5 moves forward or backward along the guide member 4, the track of holes 10 engages the sprocket to turn said sprocket. Additionally or alternatively, the sprocket is engaging the spring in accordance with the present invention. The turning motion of the sprocket is dampened, at least in the forward direction of the sled 5, whereby the rotary damper 8 by means of the sprocket 9 dampens the forward sliding motion of the sled 5. The damper may e.g. prolong the time for feeding the next product item to a front barrier after a previous front-most product item has been removed from the feeder device to more than 3 seconds, such as more than 5 seconds or more than 10 seconds, depending e.g. on the thickness of the products. A spiral spring 6 is mounted in and attached to the sled 5, with an external end of the spring 6 being attached to the front end 7 of the guide member 4. The spring 6 is configured to push the sled 5 forward towards the front end 7 and the front 3 of the shelf 2.

[0035] A housing 13 made from a transparent plastic material is positioned on the top surface of the shelf 2 and encloses the guide member 4. The housing may enclose the products along three longitudinal sides (above and to each lateral side of the queue of successive products in the device), again referring to a longitudinal axis of the guide member. Below, the products are enclosed by the shelf when the device is mounted thereon. The housing may be attached to the guide member, and indirectly attached to the shelf 2 via the guide member 4, or it may be directly attached to the shelf e.g. by means of a fastening means of a screw, clip or similar. If the housing 13 is attached both to the shelf 2 and the guide

member 4, the guide member is indirectly attached to the shelf via the housing. The housing 13 has an opening 14 which is adapted to allow easy access to (only) the front-most product of the queued product items covered by the housing. The housing also comprises a front barrier 15, in the embodiment of the figure divided into a left and a right part with a space there between to further improve accessibility to the front-most product. Further, the housing 13 may comprise longitudinal bottom sections configured to lay flat on top of the shelf 2, essentially in the same plane as the guide member 4. The top surfaces of these bottom sections may be configured to support the queuing products such that they rest on top of the sections and slides along the sections when the products are pushed forward by the sled. The sections may e.g. sliding enhancing strips or tape 16 applied to them to improve the sliding of the products thereon.

[0036] Figure 2 illustrates an embodiment of a feeder device 1 of the present invention, not mounted onto a shelf 2.

[0037] The figure shows the feeder device 1 as in figure 1 but without the optional housing 13 and not mounted to the shelf 2. The discussions above in relation to figure 1 regarding the guide member 4, the sled 5, the damper 8 and the spring 6 are also relevant for the device 1 of figure 2.

[0038] As is seen in more detail in figure 2 than in figure 1, the sled 5 comprises a relatively flat upright section 17 extending perpendicular to the longitudinal extension of the guide member 4. This upright section 17 is adapted for contacting and pushing against a backside of the back-most product item in the feeder device, thus pushing all the successive products forward. Further, fastening means 18, in the figures illustrated as holes, in the guide member are provided for mounting the feeder device on a shelf 2. Figure 2 also provides a better view of how the sled 5 is slidably connected to the guide member 4 by extending around the longitudinal side edges 12 of the guide member by means of longitudinal grooves 11 formed in the bottom part of the sled 5.

[0039] The feeding device 1 of figure 2 may be combined with a housing 13 to obtain a similar embodiment as in figure 1, or it may be used without a housing.

[0040] Figure 3 shows an embodiment of the sled 5 from behind, and particularly shows how the rotary damper 8 may be mounted in the sled e.g. for engaging the spring (6) and/or the guide member. The longitudinal grooves 11 are shown more clearly and from behind. The sprocket 9 of the damper 8 protrudes from the bottom, i.e. under side, of the sled 5, allowing it to access the guide member 4 to mesh herewith when the sled is slidably connected to said guide member.

[0041] Figure 4 shows an embodiment of the feeder device loaded with products 100. In the figure, four successive products 100a-d are shown, but any number of products may be used. The front-most product 100a is accessible through the opening 14 in the housing 13. When e.g. a customer picks the front-most product 100a

and thus removes it from the feeder device, the spring 6, via the sled 5, pushes the remaining products 100b-d forward, as discussed above. The sled 5, e.g. by means of its flat upright section 17, is in contact with the back side of the back-most product 100d as it pushes the products 100 forward.

[0042] Figures 5 and 6 illustrate an embodiment of a feeder device 1 of the present invention, not mounted onto a shelf 2, where the spring attached to the sled 5 is not engaging the guide member 4, but only engages the spring 6. The embodiment of figure 5 differs from the embodiments of the previous figures in that it is shown how the sprocket 9 of the damper is in mesh with the spring 6. The spring 6 is provided with a track of longitudinally aligned through holes 51 adapted to fit and mesh with the cogs of the sprocket 9. Thus, the damper 8 can dampen the movement of the sled 5 by being in mesh with the spring 6. The spring 6 is at one (external) end fastened to the front of the guide member, and at the other (internal) end rolled up onto a roll in the sled 5. The sprocket 9 is in mesh with the spring 6 and dampens/regulates the speed with which the spring can roll (wind) itself up onto the roll. Such a roll in combination with a spiral spring can be used with any of the embodiments of the preceding figures as well. In some embodiments, the track of holes 51 along the spring 6 may extend past a longitudinal side edge 52 of the spring, forming a (saw) toothed longitudinal side edge 52 with which the sprocket 9 may mesh. In the embodiment of figures 5 and 6, the sprocket 9 is positioned in mesh with the outside of the spring, in relation to the rolled-up spring around the roll. This may be advantageous since the stiffness of the spring 6 then naturally presses the spring against the sprocket 9 as it passes said sprocket. However, in some other embodiments, it may be convenient to position the sprocket in mesh with the inside of the spring 6.

[0043] Figure 7 further illustrates how the spring 6 may be rolled-up onto a roll 71 in the sled 5 in embodiments of the feeder device 1. The figure also shows how the roll 71 may be hollow and have an inner surface with a structure adapted to receive a sprocket 9 of a damper 8. On the sled 5, by the hollow roll 71, two pins 72 are present for fastening a damper 8 to the sled 5 such that a sprocket 9 is inserted into the hollow roll 71 to mesh with said roll via its inner surface structure.

[0044] Figure 8 is an exploded perspective view of an embodiment of the feeder device 1 of the present invention. The spring 6 is a spiral spring with one of its ends fastened at the front 7 of the guide member 4. The other (inner) end of the spring 6 is fastened to a roll 71 onto which the spring is partly rolled-up. The roll 71 and the part of the spring 6 rolled-up thereon is positioned inside the sled 5. A damper 8 is mounted to the sled 5 by means of the two pins 72 on the sled. In the more specific embodiment illustrated in figure 8, the roll 71 is a hollow round cylinder having an inside surface with a structure adapted to mesh with a sprocket 9 of the damper 8 when the damper is mounted to the sled 5, as discussed above

e.g. with reference to figure 7.

[0045] Although not specifically shown in figure 8, the sled 5 is slidably attached to the guide member 4 as discussed above.

[0046] By embodiments of the feeder device of the present invention, as exemplified in the figures, a theft preventing anti-sweep system for displaying products 100 on a shelf 2, e.g. products attractive to thieves, particularly relatively small and expensive articles such as razor blades or batteries, is obtained. This is according to the present invention achieved by means of the dampened feeder or pushing mechanism discussed herein. Since it will take some time for the next article to be pushed in place for easy picking, e.g. 5-10 seconds, a potential thief will abstain from stealing, at least from stealing many items at the same time from the same feeder device 1, since he needs to pick the items one-by-one and wait 5-10 s between each item. It may also be possible to adjust the time for feeding the next product 100 to the shelf front 3 by adjusting the tension of the spring 6 and/or the strength of the damper 8. The feeder device 1 may additionally comprise a housing 13, which further prevents a thief from accessing more than the front-most product 100a in the feeder device. The housing is essentially a box which covers the left, right and top sides of the feeder device when mounted on a shelf 2. If desired, also the back side of the feeder device may be covered by the housing. Conveniently, the dimensions of the housing 13 is adapted to the dimensions of the products intended to be queued therein, such that only the front-most of the successive products 100 is accessible through the opening 14 of the housing, when the front-most product 100a has been pushed to the front of the feeder device 1, typically the front of the shelf 2 and against the front barrier 15. The housing 13 may have any suitable shape but is typically cylindrical (e.g. with a round or rectangular cross-section) to fit the shape and size of the products 100. The housing may e.g. be extruded and/or it may be composed of several parts which are fitted together or be monolithic. The housing may in some embodiments also comprise shelf dividers of the shelf 2.

[0047] Additionally, embodiments of the present invention may facilitate putting back a picked product to the correct place on a shelf. A person may e.g. like to pick and briefly examine a plurality of different products of different brands or different colours or the like, before possibly choosing one to buy, putting the other products back on the shelf. By the damping of the feeder device 1, a product may be more easily put back in the same place as it was picked from since it takes a few seconds or more before the next product has been feed forward to the front of the feeder device. This reduces the risk of the person putting the product back in the wrong place.

[0048] According to another aspect of the present invention, there is provided a feeder device, which feeder device is configured for being mounted on a shelf for

feeding successive products to a front of the shelf. The shelf may e.g. be a shelf in a shop such as a grocery store or department store or the like. The feeder device comprises an elongated guide member which is configured for extending longitudinally backwards from the front of the shelf when the device is mounted. The feeder device also comprises a sled which is slidably connected to the guide member such that the sled can slide along the length of the elongated guide member. The sled is configured for engaging a back-most product of the successive products for pushing the products towards the front of the shelf. The feeder device also comprises a spring connected to the sled (e.g. engaging or being attached to the sled), and configured for pushing the sled along the guide member towards a front end of said guide member. The feeder device further comprises a damper connected to the sled, and configured for damping the sliding motion of the sled towards the front end of the guiding member when the sled is pushed by the spring.

[0049] The present disclosure has mainly been described above with reference to a few embodiments. However, as is readily appreciated by a person skilled in the art, other embodiments than the ones disclosed above are equally possible within the scope of the present disclosure, as defined by the appended patent claims.

Claims

1. A feeder device (1) configured for mounting on a shelf for feeding successive products (100) to a front (3) of the shelf (2), the device comprising:

an elongated guide member (4) which is configured for extending longitudinally backwards from the front (3) of the shelf (2) when the device (1) is mounted;

a sled (5) slidably connected to the guide member (4) such that the sled can slide along the length of the elongated guide member, configured for engaging a back-most product (100d) of the successive products for pushing the products towards the front (3) of the shelf (2); and a spring (6) connected to the sled (5), and configured for pushing the sled along the guide member (4) towards a front end (7) of said guide member;

characterised by further comprising:

a damper (8) connected to the sled (5), and engaging the spring (6) for damping the sliding motion of the sled when pushed by the spring (6).

2. The device of claim 1, wherein the damper (8) is a rotary damper comprising a sprocket (9) in mesh with the spring (6).

3. The device of claim 2, wherein the spring (6) comprises a plurality of longitudinally aligned holes (51) configured for meshing with the sprocket (9) of the rotary damper (8).
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4. The device of claim 2, wherein the spring (6) has a toothed longitudinal side edge (52) configured for meshing with the sprocket (9) of the rotary damper (8).
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5. The device of claim 1, wherein the sled (5) comprises a roll (71), and the spring (6) is a spiral spring which is, at one of its ends, rolled-up around said roll (71), and wherein the damper (8) is a rotary damper comprising a sprocket (9) extending axially into and in mesh with said roll (71) such that the rotational axis of the roll is essentially the same as the rotational axis of the sprocket (9).
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6. The device of any preceding claim, wherein the damper (8) is a unidirectional damper which provides more damping action to the sliding motion of the sled (5) towards the front end (7) of the guide member (4) than to a sliding motion of the sled (5) in the opposite direction.
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7. The device of any preceding claim, wherein the sled (5) comprises opposing longitudinally extending grooves (11) engaging longitudinal sides (12) of the guide member (4), whereby the sled (5) is slidably connected to the guide member (4).
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8. The device of any preceding claim, wherein the spring (6) has two ends and is at one of its ends attached to the sled (5) and at the other one of its ends attached to the guide member (4) at the front end (7) of said guide member.
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9. The device of any preceding claim, further comprising a housing (13) configured for, in cooperation with the shelf (2), enclosing the successive products (100) longitudinally along at least a part of the guide member (4), the housing having an opening (14) at the front end (7) of the guide member (4) for allowing access to a front-most product (100a) of the successive products.
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10. The device of claim 8, wherein the housing (13) comprises a front barrier (15) at the front end (7) of the guide member (4), configured for stopping the front-most product (100a) of the successive products from being pushed beyond the front (3) of the shelf (2).
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11. The device of claim 8 or 9, wherein the housing (13) is attached to the guide member (4).
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12. The device of any preceding claim, wherein the feeder device (1) is mounted on the shelf (2).

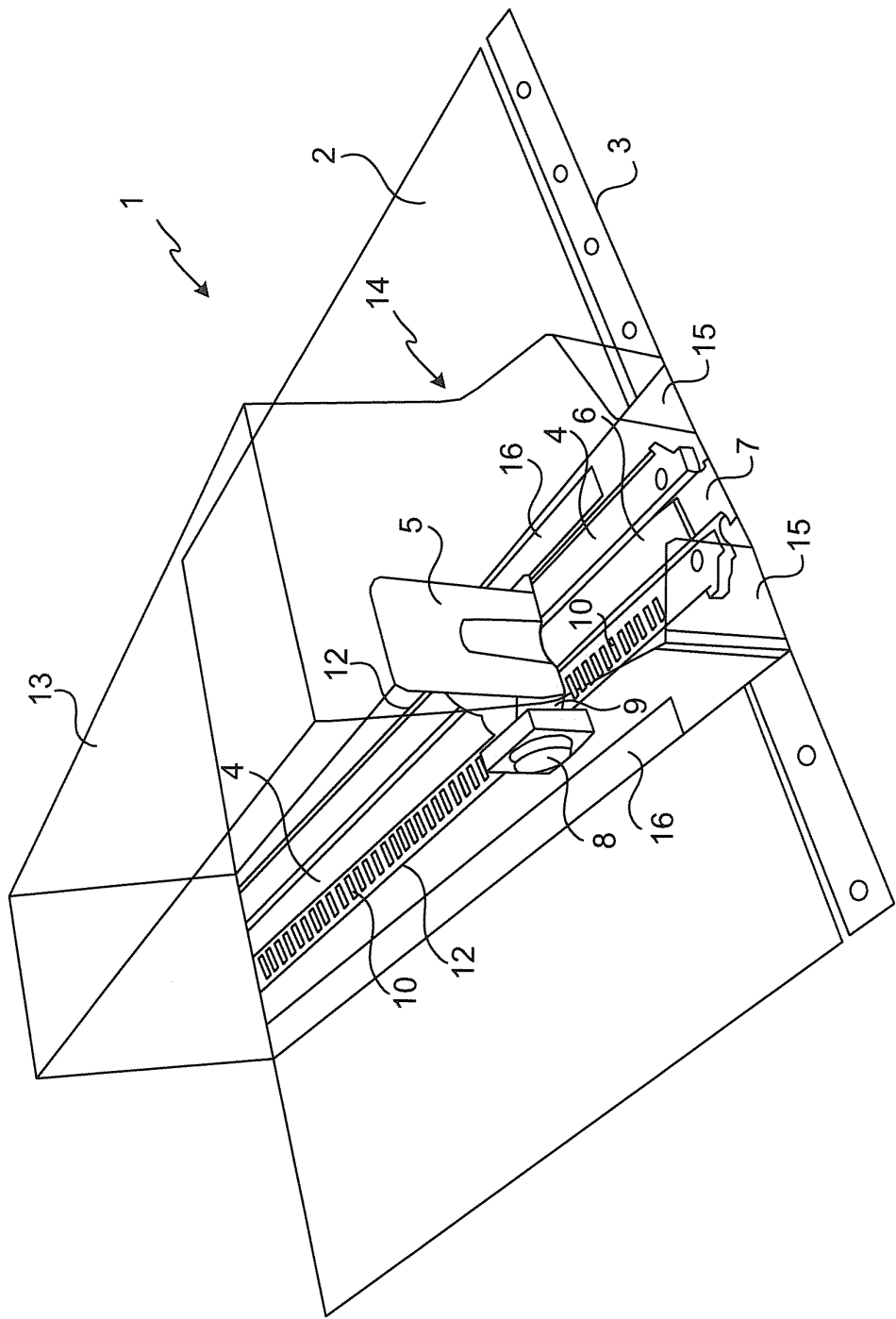


Fig. 1

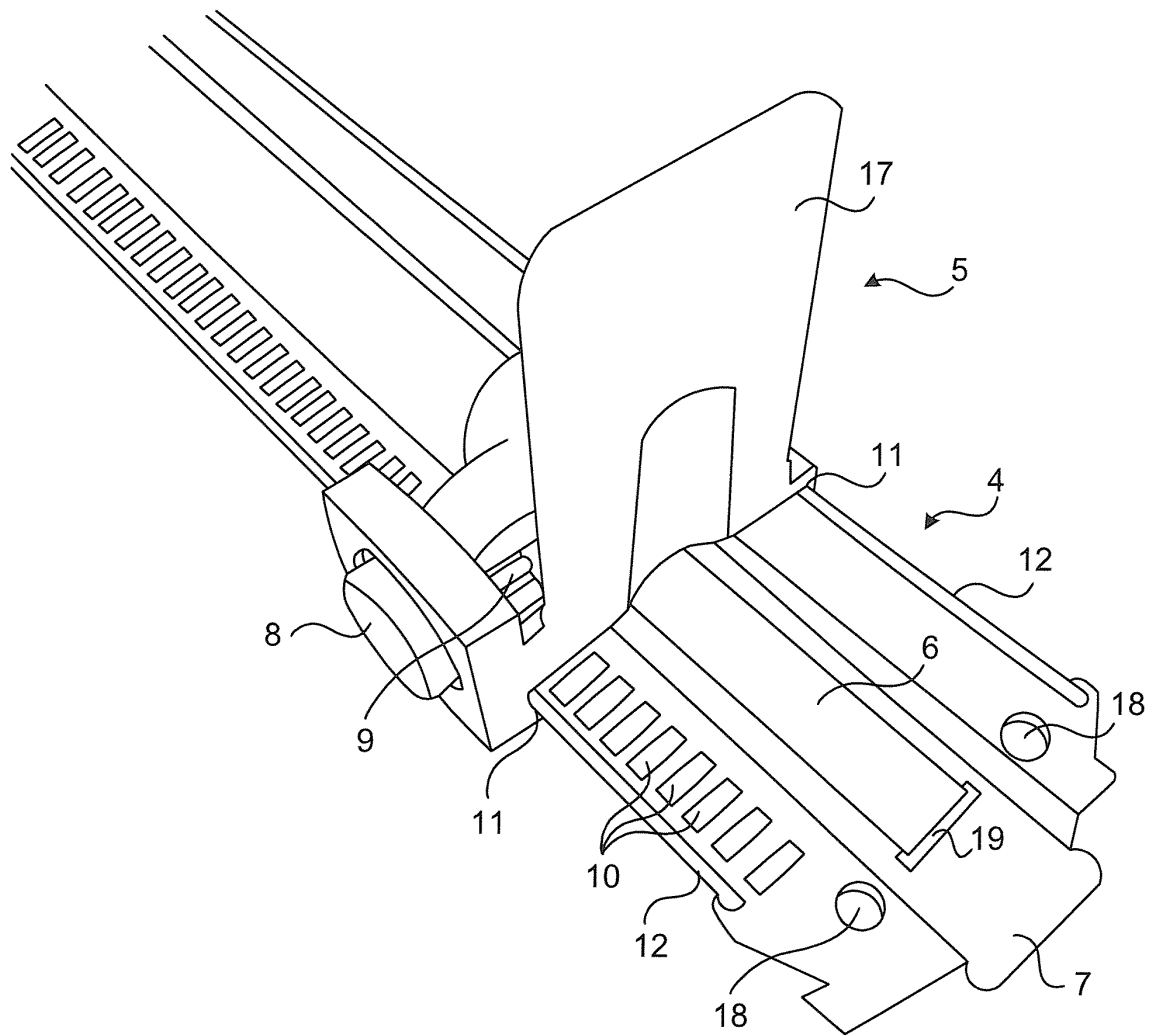


Fig. 2

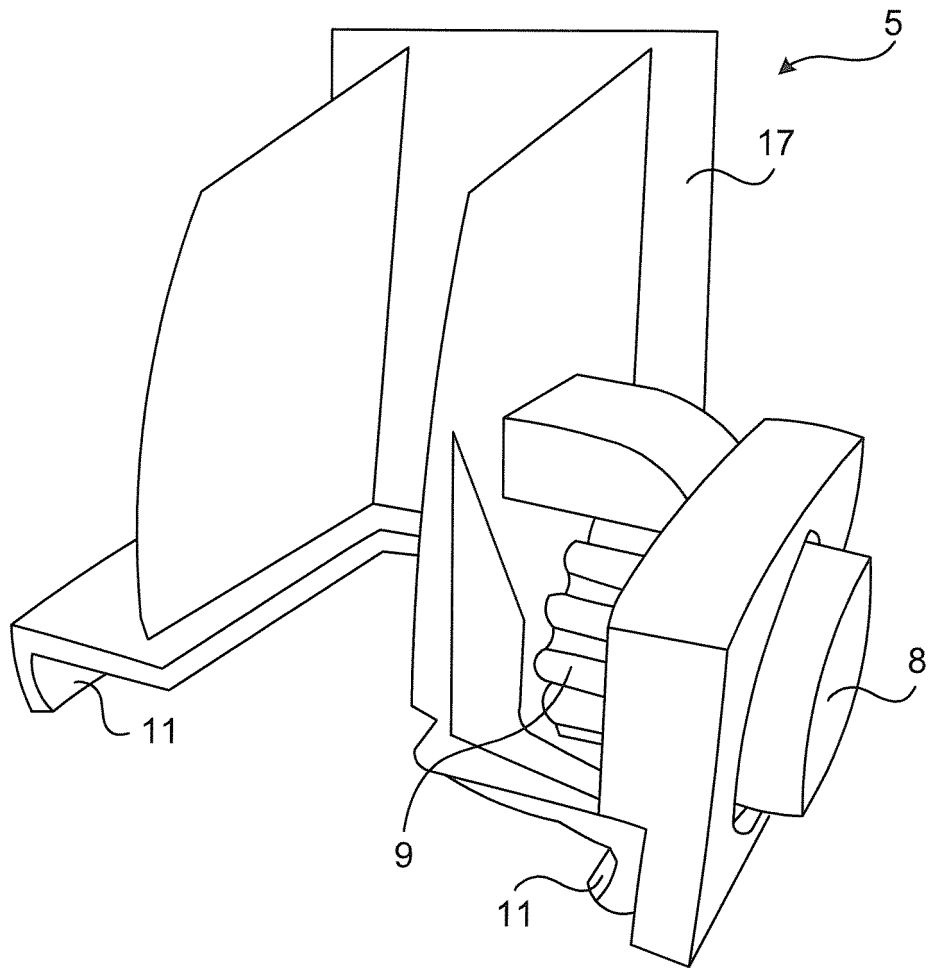


Fig. 3

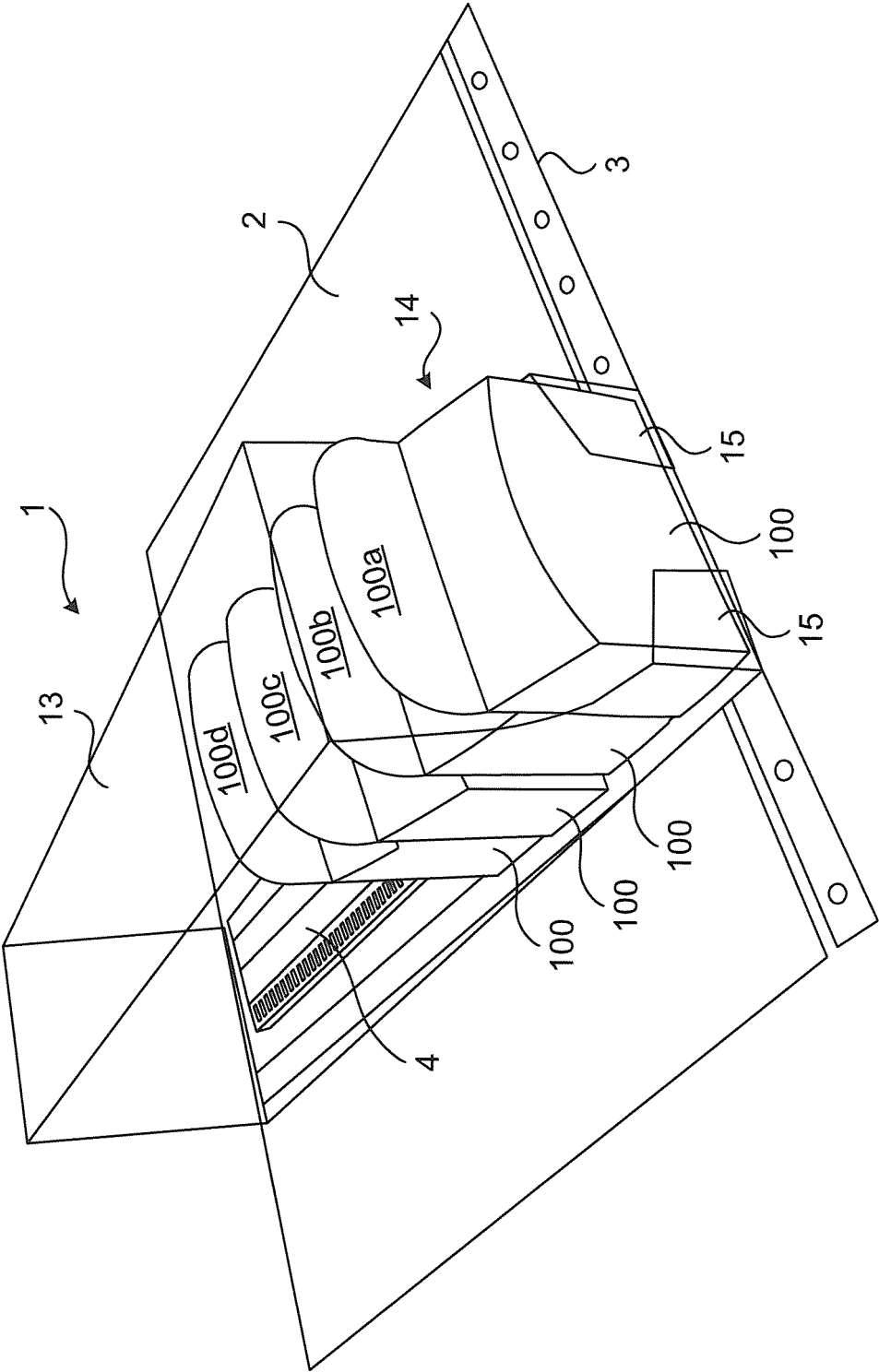


Fig. 4

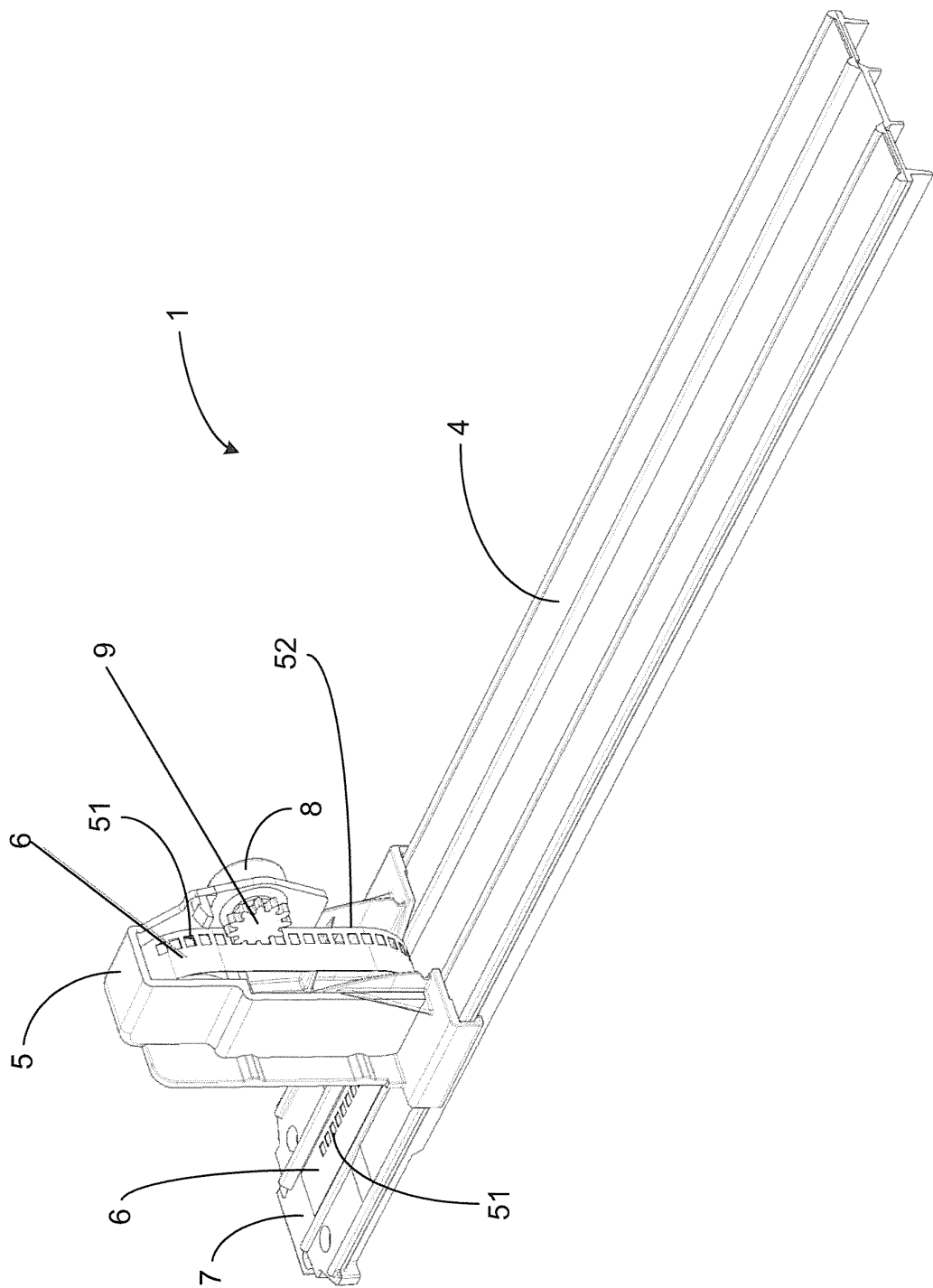


Fig. 5

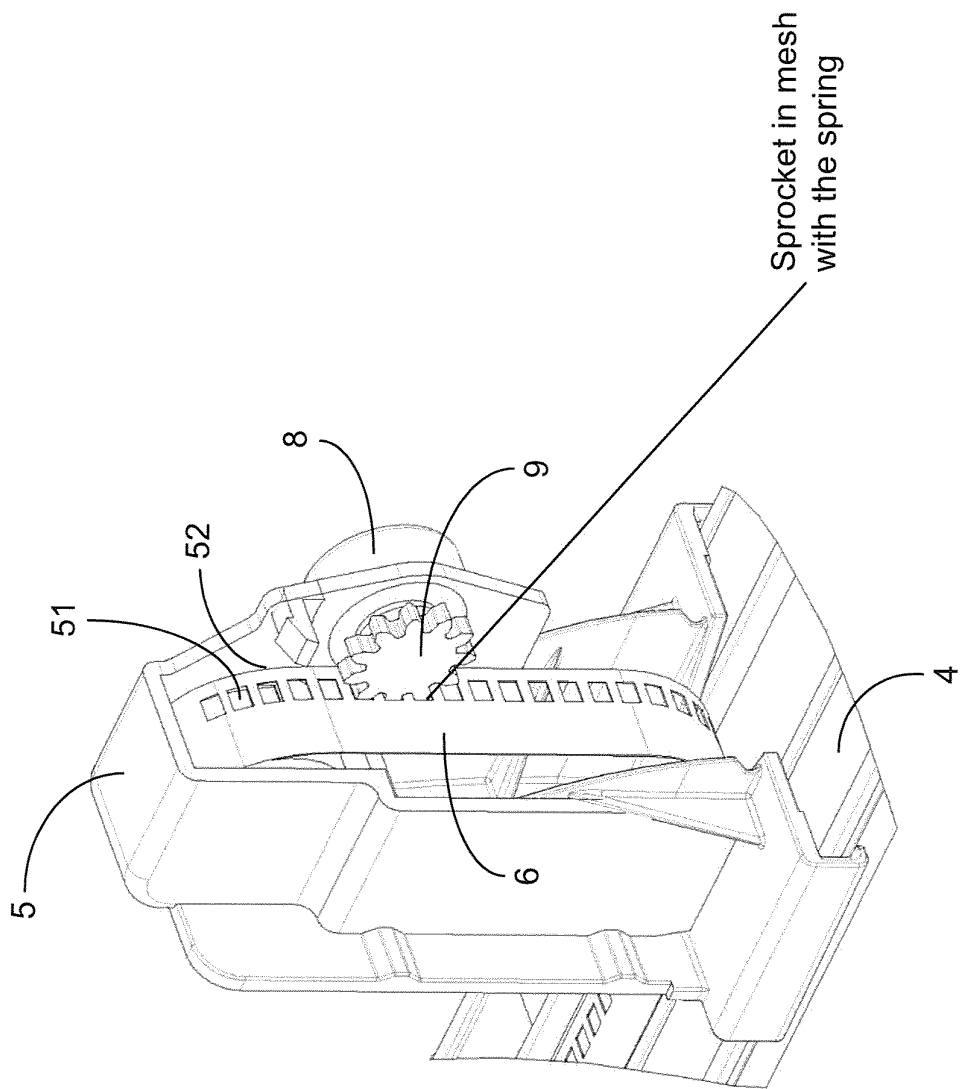


Fig. 6

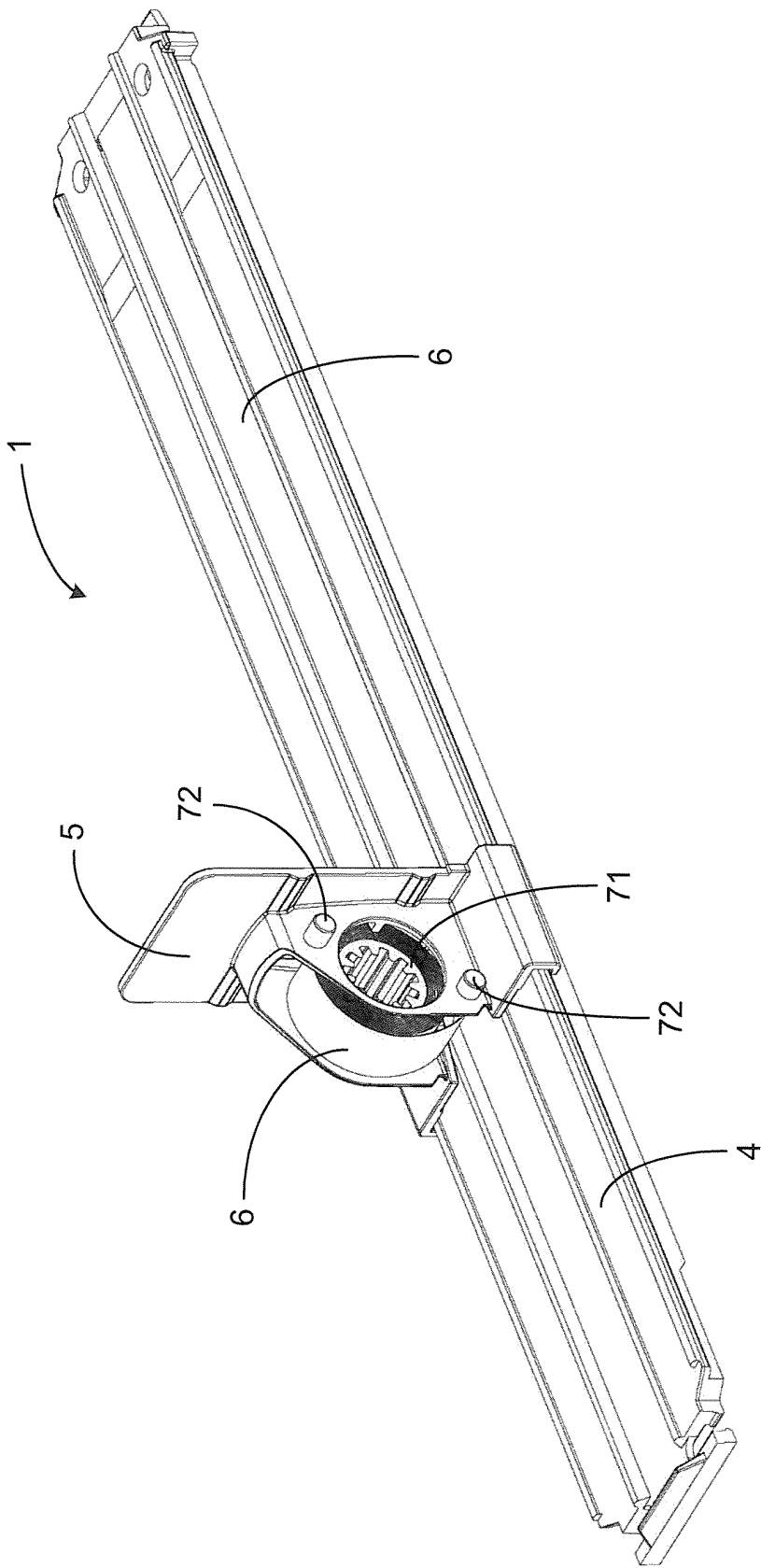


Fig. 7

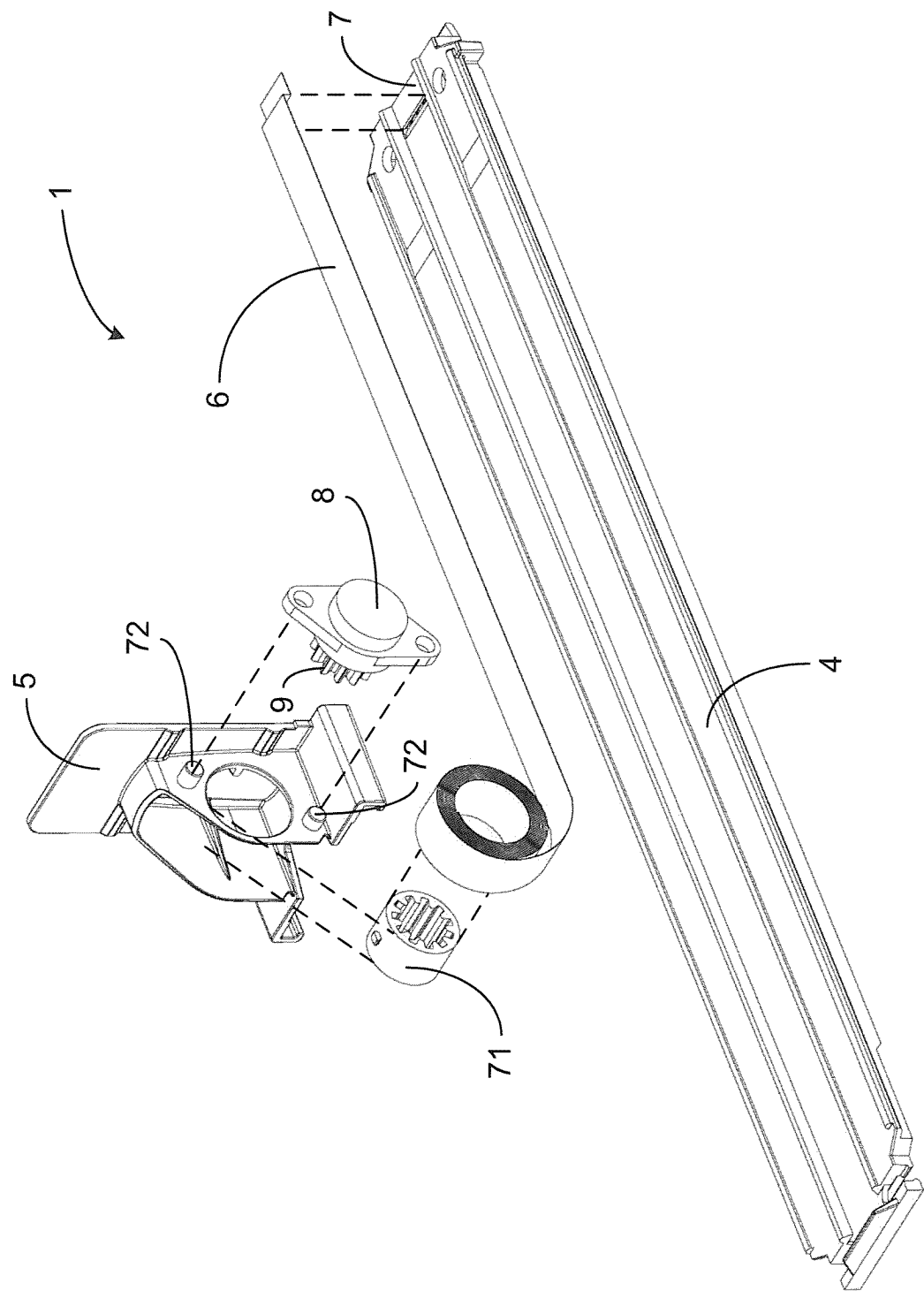


Fig. 8



EUROPEAN SEARCH REPORT

Application Number
EP 13 16 3994

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	GB 2 386 116 A (GILLETTE CO [US]) 10 September 2003 (2003-09-10) * page 15, paragraph 1 *	1	INV. A47F1/12
A	* figure 11 *	2	
A,D	----- EP 1 806 076 A2 (KESSLERS INTERNAT LTD [GB]) 11 July 2007 (2007-07-11) * column 4, paragraph 18 - paragraph 19 * * figure 7 *	1	
A	----- DE 12 97 833 B (SOFIMETAL SOC FINACIERE METALL) 19 June 1969 (1969-06-19) * the whole document *	1	
			TECHNICAL FIELDS SEARCHED (IPC)
			A47F
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 25 April 2013	Examiner Bitton, Alexandre
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure 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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ON EUROPEAN PATENT APPLICATION NO.

EP 13 16 3994

5

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
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25-04-2013

10

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
GB 2386116 A	10-09-2003	DE 10309589 A1 FR 2838034 A1 GB 2386116 A	25-09-2003 10-10-2003 10-09-2003
EP 1806076 A2	11-07-2007	NONE	
DE 1297833 B	19-06-1969	AT 275088 B CH 454599 A DE 1297833 B	10-10-1969 15-04-1968 19-06-1969

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Patent documents cited in the description

- EP 0337340 A [0008]
- EP 1806076 A [0010]
- EP 2348228 A [0027]