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(71) Applicant (for all designated States except US): **MEAD-WESTVACO CORPORATION** [US/US]; 501 South 5th Street, Richmond, Virginia 23219-0501 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **THOMAS, Laurel** [US/US]; 10248 NW Edgewood Drive, Portland, Oregon 97229 (US). **ZACHERLE, Matthew E** [US/US]; 1148 Joliette Road, Chesterfield, Virginia 23235 (US).

(74) Agents: **SRISIRI-SISSON, Warunee** et al.; MeadWestvaco Corporation, 501 South 5th Street, Richmond, Virginia 23219-0501 (US).

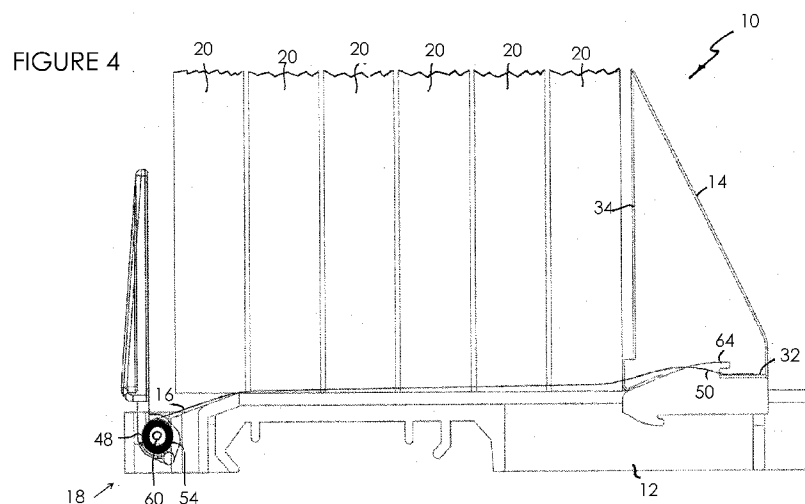
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(54) Title: PRODUCT BIASING SYSTEM WITH LOW INVENTORY INDICATOR



(57) Abstract: A product biasing system (10) is disclosed that includes an elongated rail (12) having a front end and a rear end, a moveable member (14) slidably engaged with the rail, and a biasing element (16) operatively connected to the moveable member to bias the moveable member toward the front end of the rail. The biasing element of the disclosed system is marked with indicia indicative of the longitudinal displacement of the moveable member relative to the front end of the rail.

PRODUCT BIASING SYSTEM WITH LOW INVENTORY INDICATOR

FIELD

[0001] This application relates to product displays and, more particularly, to systems for forward-biasing products to improve product display.

BACKGROUND

[0002] Point-of-sale display units are commonly used in retail outlets because they present products in an eye-catching manner. As products are removed from the display, it may become increasingly difficult to access the remaining products, particularly when the remaining products are located at the rear of the display.

[0003] Thus, various techniques have been developed to move products toward the front of the display, thereby improving product accessibility. As one example, gravity dispensers feed products capable of rolling to a product display area at the front of the dispenser. The products roll to the front of the dispenser under the force of gravity. As another example, biasing apparatus utilize a spring-biased sled to urge products toward the front of the display.

[0004] A specific example of a biasing apparatus that utilizes a spring-biased sled is described in greater detail in United States Patent Application Serial Number 13/049,004 titled "Product Biasing and Dispensing System with Security Engagement" filed on March 16, 2011, the entire contents of which are incorporated herein by reference. The biasing apparatus disclosed in U.S. Ser. No. 13/049,004 is designed to dispense individual products from a container, thereby eliminating the need for transferring the individual products from the container to a display, which can be quite time consuming.

[0005] Unfortunately, it often becomes difficult to determine when a display is empty or sufficiently low in products as to warrant replenishment (i.e., a low inventory condition). A low inventory condition may be particularly difficult to detect in a display in which the individual products are housed in a container.

[0006] Accordingly, those skilled in the art continue with research and development efforts in the field of product display.

SUMMARY

[0007] In one aspect, the disclosed product biasing system may include an elongated rail having a front end and a rear end, a moveable member slidably engaged with the rail, and a biasing element operatively connected to the moveable member to bias the moveable member toward the front end of the rail, the biasing element being marked with indicia indicative of the longitudinal displacement of the moveable member relative to the front end of the rail.

[0008] In another aspect, the disclosed product biasing system may include an elongated rail having a front end and a rear end, a moveable member slidably engaged with the rail, a product positioned on the rail between the front end of the rail and the moveable member, the product longitudinally displacing the moveable member from the front end of the rail, and a biasing element operatively connected to the moveable member to bias the moveable member, and ultimately the product, toward the front end of the rail, the biasing element being marked with indicia indicative of the longitudinal displacement of the moveable member from the front end of the rail.

[0009] In another aspect, the disclosed product biasing system may include an elongated rail having a front end and a rear end, a moveable member slidably engaged with the rail, and a biasing element including a band shaped into a coil, the band having a free end and being marked with indicia, wherein the coil is connected proximate the front end of the rail and the free end is connected to the moveable member to bias the moveable member toward the front end of the rail, and wherein the indicia is indicative of the longitudinal displacement of the moveable member relative to the front end of the rail.

[0010] In yet another aspect, disclosed is a method for determining an inventory level of a display. The method may include the steps of (1) providing a biasing system including an elongated rail having a front end and a rear end, the front end defining a window, a moveable member slidably engaged with the rail and a biasing element operatively connected to the moveable member to bias the moveable member toward the front end of the rail, wherein the biasing element includes an elongated band shaped into a coil, the band being marked with indicia that varies along the band; (2) positioning a quantity of products on the rail between the front

end of the rail and the moveable member, the moveable member urging the products toward the front end of the rail, wherein a low inventor condition is established when the quantity drops below a predetermined value; and (3) observing the indicia through the window to determine whether the low inventor condition has been established.

[0011] Other aspects of the disclosed product biasing system with low inventory indicator will become apparent from the following description, the accompanying drawings and the appended claims.

BRIEF DESCRIPTION OF THE DRAWINGS

[0012] Fig. 1 is a side elevational view of one aspect of the disclosed product biasing system with low inventory indicator;

[0013] Fig. 2 is a front and side perspective view of the product biasing system of Fig. 1;

[0014] Fig. 3 is a front elevational view of the product biasing system of Fig. 2;

[0015] Fig. 4 is a side elevational view, in section, of the forward portion of the product biasing system of Fig. 1;

[0016] Fig. 5 is a rear perspective view of the moveable member of the product biasing system of Fig. 4;

[0017] Fig. 6 is a side elevational view of the biasing element of the product biasing system of Fig. 4, shown in an extended configuration;

[0018] Fig. 7 is a top plan view of the biasing element of Fig. 6;

[0019] Fig. 8 is a side elevational view of the biasing element of Fig. 6, shown in a retracted configuration;

[0020] Fig. 9 is a top plan view of the biasing element of Fig. 8;

[0021] Fig. 10 is a side elevational view of the product biasing system of Fig. 1, shown in a low inventory condition; and

[0022] Fig. 11 is a front elevational view of the product biasing system of Fig. 10.

DETAILED DESCRIPTION

[0023] Referring to Figs. 1 and 4, one aspect of the disclosed product biasing system, generally designated 10, may include a rail 12, a moveable member 14 and a biasing element 16. The biasing element 16 may be connected to the moveable member 14 to urge the moveable member 14 toward the front end 18 of the rail 12. Therefore, the moveable member 14 may urge products 20 positioned between the front end 18 of the rail 12 and the moveable member 14 toward the front end 18.

[0024] In one particular implementation, the product biasing system 10 may be positioned on a store shelf such that the front end 18 of the rail 12 is positioned proximate (i.e., at or near) the front edge of the shelf. Therefore, the product biasing system 10 may urge the products 20 toward the front edge of the shelf, thereby improving the accessibility of the products 20 to consumers.

[0025] Referring to Figs. 1 and 2, the rail 12 may be elongated along a longitudinal axis **A** (Fig. 2), and may include the front end 18 and a rear end 22. As shown in Fig. 4, the rail 12 may define a sliding surface 24 and an elongated track 26 formed in the sliding surface 24. The elongated track 26 may extend from proximate the front end 18 of the rail 12 to proximate the rear end 22 of the rail 12.

[0026] A stop 28 may be positioned proximate the front end 18 of the rail 12. The stop 28 may prevent (or at least inhibit) forward longitudinal movement of the products 20 beyond the stop 28.

[0027] Optionally, the stop 28 may be connected to the rail 12 at a pivot point 30. Therefore, the stop 28 may pivot from the forward-most configuration (i.e., stopping configuration) shown in Fig. 1 to a collapsed configuration when a rearward force **F** (Fig. 1) is applied to the stop 28, such as when a product 20 is being loaded onto the product biasing system 10.

[0028] The products 20 may be positioned on the rail 12 proximate the front end 18 of the rail 12 such that the products 20 extend in a longitudinal row along the rail 12. Alternatively, two or more rows of product 20 may be positioned along the rail 12. While the products 20 are shown without a container, use of the disclosed product biasing system 10 to bias products housed in a container is also contemplated. Use of a biasing system to bias products housed in a container is described in greater detail in U.S. Ser. No. 13/049,004.

[0029] Those skilled in the art will appreciate that a wide variety of products 20 may be dispensed with the disclosed product biasing system 10. As one example, the products 20 may be various foodstuffs packaged in boxes, cartons, pouches, cans or bottles. As another example, the products 20 may be various consumer goods, and may or may not be individually contained in a package, such as a box, carton, clamshell, pouch or the like. Other examples of products 20 suitable for being dispensed from the disclosed product biasing system 10 are left to the skilled artisan.

[0030] The moveable member 14 may be slidably engaged with the rail 12, and may be longitudinally displaceable from the front end 18 of the rail 12 along the longitudinal axis **A** (Fig. 2) of the rail 12. In one particular implementation, the moveable member 14 may be a sled or the like.

[0031] Referring to Figs. 4 and 5, the moveable member 14 may include a base 32 and a face panel 34 connected to the base 32. The face panel 34 of the moveable member 14 may extend generally perpendicularly from the base 32. Optional struts 36, 38 may extend from the face panel 34 to the base 32 to resist pivotal movement of the face panel 34 relative to the base 32.

[0032] The base 32 of the moveable member 14 may be slidably engaged with the rail 12 such that the moveable member 14 may move longitudinally along the sliding surface 24 of the rail 12 between the front end 18 and the rear end 22 (Fig. 1) of the rail 12. Those skilled in the art will appreciate that various techniques may be used to effect a sliding engagement between the rail 12 and the moveable member 14, and that variation in the techniques used to effect such a sliding engagement will not result in a departure from the scope of the present disclosure.

[0033] As shown in Fig. 5, in one particular construction, the base 32 of the moveable member 14 may include a T-shaped member 40 connected thereto and engaged with the rail 12. The T-shaped member may include a cross member 42 and a tie member 44 connecting the cross member 42 to the base 32 of the moveable member 14. The tie member 44 may extend through the track 26 in the rail 12 such that a portion of the rail 110 (particularly a portion of the sliding surface 24) is positioned between the base 32 of the moveable member 14 and the cross member 42. Therefore, the moveable member 14 (particularly the tie member 44)

may longitudinally move through the track 26 in the rail 12, and the cross member 42 may resist separation of the moveable member 14 from the rail 12.

[0034] The biasing element 16 may be connected to the moveable member 14 to urge the moveable member 14 toward the front end 18 of the rail 12. Specifically, as shown in Fig. 4, a first end 48 of the biasing element 16 may be connected to the front end 18 of the rail 12 and a second, free end 50 of the biasing element 16 may be connected to the moveable member 14. Therefore, the retraction force of the biasing element 16 may urge the moveable member 14 toward the front end 18 of the rail 12.

[0035] Referring to Figs. 6–9, in one specific construction, the biasing element 16 may be formed as a coiled tape spring, and may include an elongated band 52 wound into a coil 54. The band 52 may be formed from a resilient material, such as steel, and may be biased to the relaxed, undrawn configuration shown in Figs. 8 and 9. Therefore, when the second end 50 of the band 52 is drawn from the coil 54, as shown in Figs. 6 and 7, a retraction force **R** (Fig. 6) may be established that urges the band 52 back to the relaxed, undrawn configuration shown in Figs. 8 and 9.

[0036] The exterior surface 56, or at least a portion of the exterior surface 56, of the band 52 of the biasing element 16 may be marked with inventory level indicating indicia 58, and the indicia 58 may vary along the longitudinal length of the band 52. In the expression shown in Figs. 6–9, the portion of the exterior surface 56 of the band 52 extending from point **P** toward the second end 50 of the band 52 is marked with cross-hatching (indicia 58), while the exterior surface 56 of the band 52 extending from point **P** toward the first end 48 of the band 52 is free from cross-hatching.

[0037] Thus, the indicia 58 may provide an indication of the extent that the band 52 is drawn from the coil 54 by observing the indicia 58 (or lack thereof) at the first end 48 of the biasing element 16. For example, with the biasing element 16 in the configuration shown in Figs. 6 and 7, the first end 48 of the biasing element 16 may be free from indicia 58, as shown in Fig. 3. The absence of indicia 58 at the first end 48 of the biasing element 16 may indicate that the second end 50 of the biasing element 16 is sufficiently drawn away from the coil 54 and, hence, the moveable member 14 is sufficiently longitudinally displaced from the front end 18 of the rail 12

due to the presence of products 20 in the system 10. However, with the biasing element 16 in the configuration shown in Figs. 8 and 9, the indicia 58 may be viewed at the first end 48 of the biasing element 16, as shown in Fig. 11. The presence of indicia 58 at the first end 48 of the biasing element 16 may indicate that the second end 50 of the biasing element 16 has been sufficiently retracted to the coil 54 and, hence, the moveable member 14 has sufficiently longitudinally approximated the front end 18 of the rail 12 indicating a low inventory condition.

[0038] In a first alternative expression, the indicia 58 may include a color scheme. For example, the exterior surface 56 of the band 52 may be marked with the colors green, yellow and red, with the color transitioning from green, to yellow, and then to red along the band 52 toward the second end 50 of the band 52.

[0039] In a second alternative expression, the indicia 58 may include numbers. For example, the exterior surface 56 of the band 52 may be marked with numbers ranging from “0” to “9,” with the numbers consecutively transitioning from “9” to “0” along the band 52 toward the second end 50 of the band 52.

[0040] In a third alternative expression, the indicia 58 may include text. For example, the exterior surface 56 of the band 52 may be marked with “High,” “Medium” and “Low,” with the text transitioning from “High” to “Low” along the band 52 toward the second end 50 of the band 52.

[0041] In a fourth alternative expression, the indicia 58 may include images or graphics. For example, the exterior surface 56 of the band 52 may be marked with “☺” and “☹,” with the images transitioning from “☺” to “☹” along the band 52 toward the second end 50 of the band 52.

[0042] At this point, those skilled in the art will appreciate that the biasing element 16 may be marked with various indicia 58 to indicate the presence or absence of a low inventory condition. Those skilled in the art will also appreciate that the indicia 58 may be presented as a spectrum extending longitudinally along the band 52 such that a range of conditions between “full” and “low inventory” may be communicated, thereby providing a more precise indication of the inventory level of the system 10.

[0043] Referring back to Fig. 4, the coil portion 54 of the biasing element 16 may be connected to the rail 12 proximate the front end 18 of the rail 12. For example,

the coil portion 54 may be received over a post 60 that transversely extends across the rail 12 proximate the front end 18 of the rail 12.

[0044] Referring to Figs. 4 and 5, the second end 50 of the biasing element 16 may extend from the coil 54 and may be connected to the moveable member 14. For example, the second end 50 of the biasing element 16 may define an aperture 62 and the base 32 of the moveable member 14 may include a protrusion 64 extending therefrom. The protrusion 64 may extend through the aperture 62 to connect the second end 50 of the biasing element 16 to the moveable member 14.

[0045] Referring to Figs. 3 and 11, the front end 18 of the rail 12 may define a window 66 such that the first end 48 of the biasing element 16, including any indicia 58 thereon, may be visible at the front end 18 of the rail 12.

[0046] Accordingly, depending on whether the indicia 58 on the biasing element 16 is visible through the window 66 at the front end 18 of the rail 12 and/or depending on the type of indicia 58 visible through the window 66, the biasing element 16 may provide an indication that the product biasing system 10 is filled with products 20, as shown in Fig. 3, or that a low inventory condition is present, as shown in Fig. 11.

[0047] Although various aspects of the disclosed product biasing system with low inventory indicator have been shown and described, modifications may occur to those skilled in the art upon reading the specification. The present application includes such modifications and is limited only by the scope of the claims.

Claims:

1. A product biasing system comprising:
 - an elongated rail having a front end and a rear end;
 - a moveable member slidably engaged with said rail; and
 - a biasing element operatively connected to said moveable member to bias said moveable member toward said front end of said rail, said biasing element being marked with indicia indicative of a longitudinal displacement of said moveable member relative to said front end of said rail.
2. The product biasing system of claim 1 wherein said rail defines an elongated track, and said moveable member is engaged with said track.
3. The product biasing system of claim 2 wherein said moveable member comprises a T-shaped member engaged with said track.
4. The product biasing system of claim 1 wherein said front end of said rail defines a window, and wherein said indicia is viewable through said window.
5. The product biasing system of claim 1 wherein said moveable member comprises a base and a face panel, said face panel being generally perpendicular to said base.
6. The product biasing system of claim 1 wherein said biasing element comprises a band shaped into a coil, said band including a free end.
7. The product biasing system of claim 6 wherein said band is formed from a resilient material.
8. The product biasing system of claim 6 wherein said coil is connected proximate said front end of said rail, and wherein said free end of said band is connected to said moveable member.
9. The product biasing system of claim 6 wherein said front end of said rail defines a window, and wherein at least a portion of said coil is viewable through said window.

10. The product biasing system of claim 6 wherein said indicia longitudinally extends along at least a portion of said band.

11. The product biasing system of claim 1 wherein said indicia comprises at least two different colors.

12. The product biasing system of claim 1 wherein said indicia comprises text or graphics.

13. The product biasing system of claim 1 further comprising a plurality of products positioned on said rail between said front end of said rail and said moveable member, said plurality of products longitudinally displacing said moveable member from said front end of said rail.

14. A product biasing system comprising:

an elongated rail having a front end and a rear end;

a moveable member slidably engaged with said rail; and

a biasing element comprising a band shaped into a coil, said band comprising a free end extendable from said coil, said band being marked with indicia,

wherein said coil is connected proximate said front end of said rail and said free end is connected to said moveable member to bias said moveable member toward said front end of said rail, and

wherein said indicia is indicative of a longitudinal displacement of said moveable member relative to said front end of said rail.

15. The product biasing system of claim 14 wherein said front end of said rail defines a window, and wherein at least a portion of said indicia on said band is viewable through said window.

16. The product biasing system of claim 14 wherein said indicia comprises at least a first color and a second color, said first color being different than said second color.

17. The product biasing system of claim 16 wherein said front end of said rail defines a window, and wherein said first color is viewable through said window when said moveable member is displaced a first distance from said front end of said rail, and wherein said second color is viewable through said window when said moveable member is displaced a second distance from said front end of said rail.

18. The product biasing system of claim 14 wherein said indicia longitudinally extends along at least a portion of said band.

19. The product biasing system of claim 14 further comprising a plurality of products positioned on said rail between said front end of said rail and said moveable member, said plurality of products longitudinally displacing said moveable member from said front end of said rail.

20. A method for determining an inventory level of a display, said method comprising steps of:

 providing a biasing system comprising:

 an elongated rail having a front end and a rear end, said front end defining a window,

 a moveable member slidably engaged with said rail, and

 a biasing element operatively connected to said moveable member to bias said moveable member toward said front end of said rail,

 wherein said biasing element comprises an elongated band shaped into a coil, said band being marked with indicia, said indicia varying along said band;

 positioning a quantity of products on said rail between said front end of said rail and said moveable member, said moveable member urging said products toward said front end of said rail, wherein a low inventory condition is established when said quantity drops below a predetermined value; and

 observing said indicia through said window to determine whether said low inventory condition has been established.

FIGURE 1

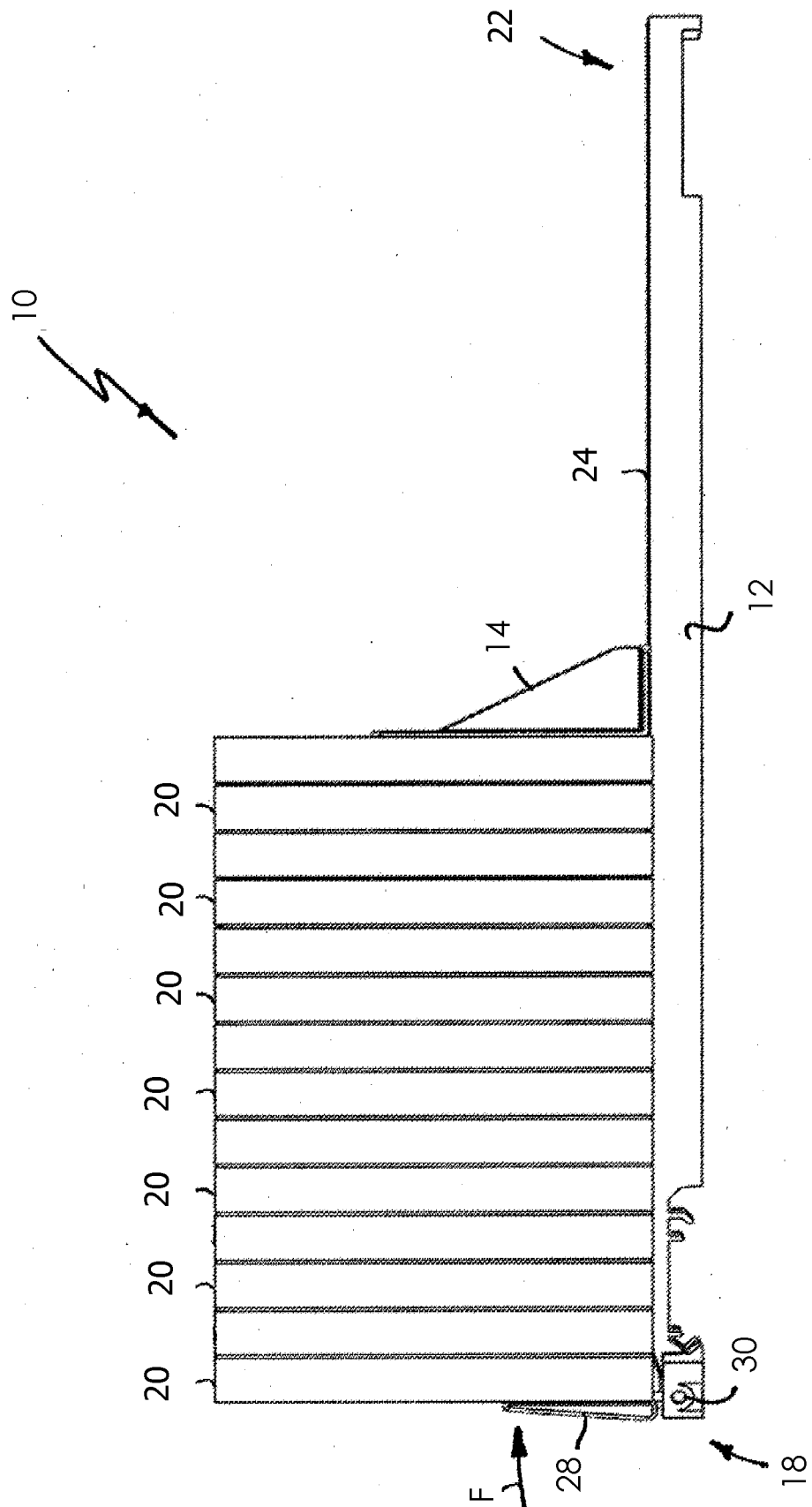
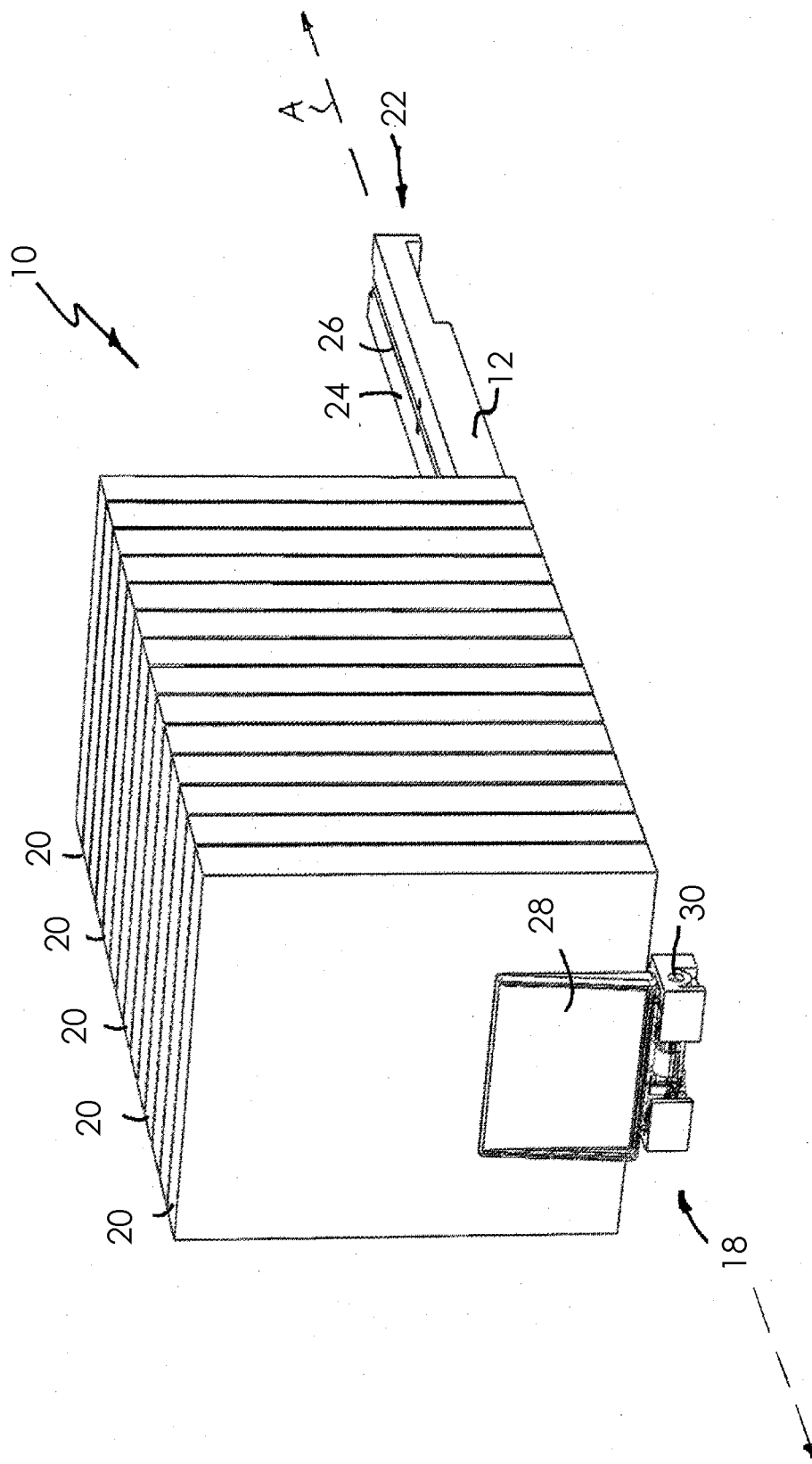


FIGURE 2



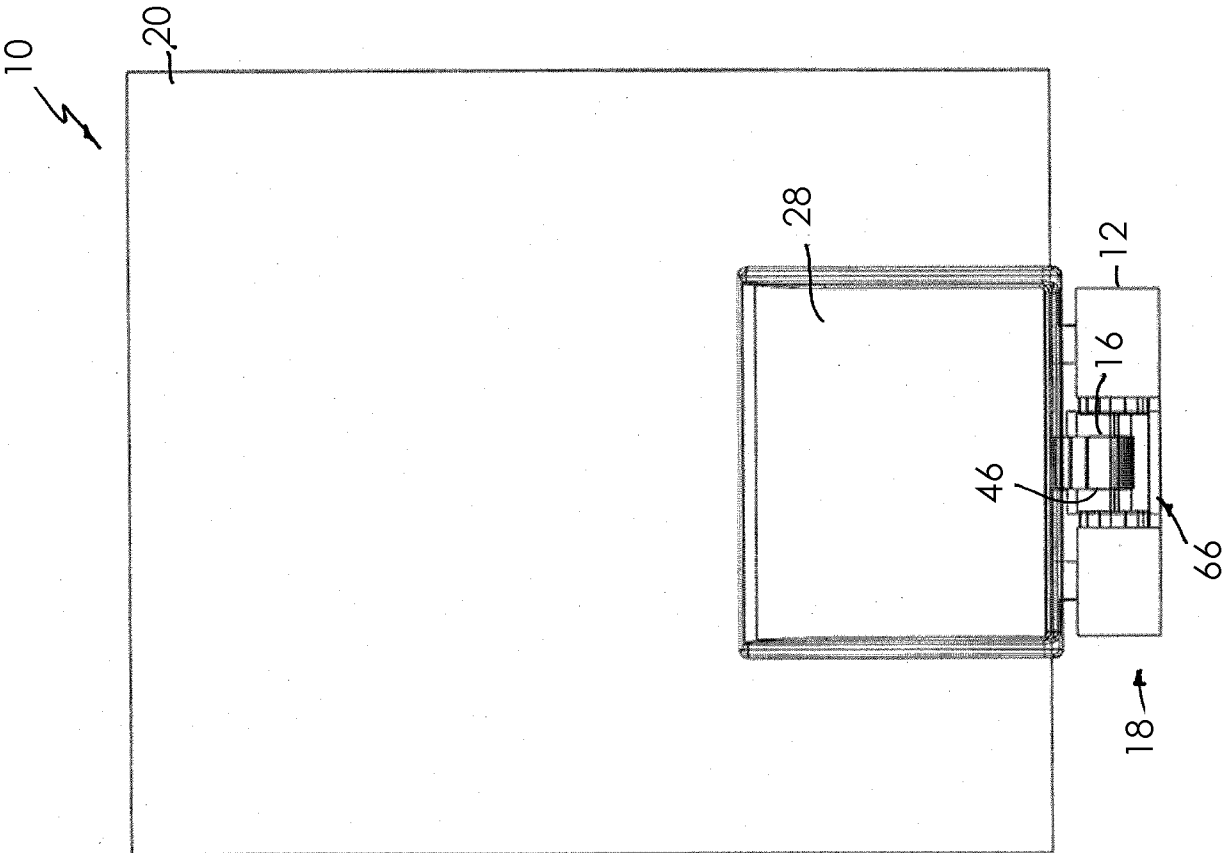




FIGURE 4

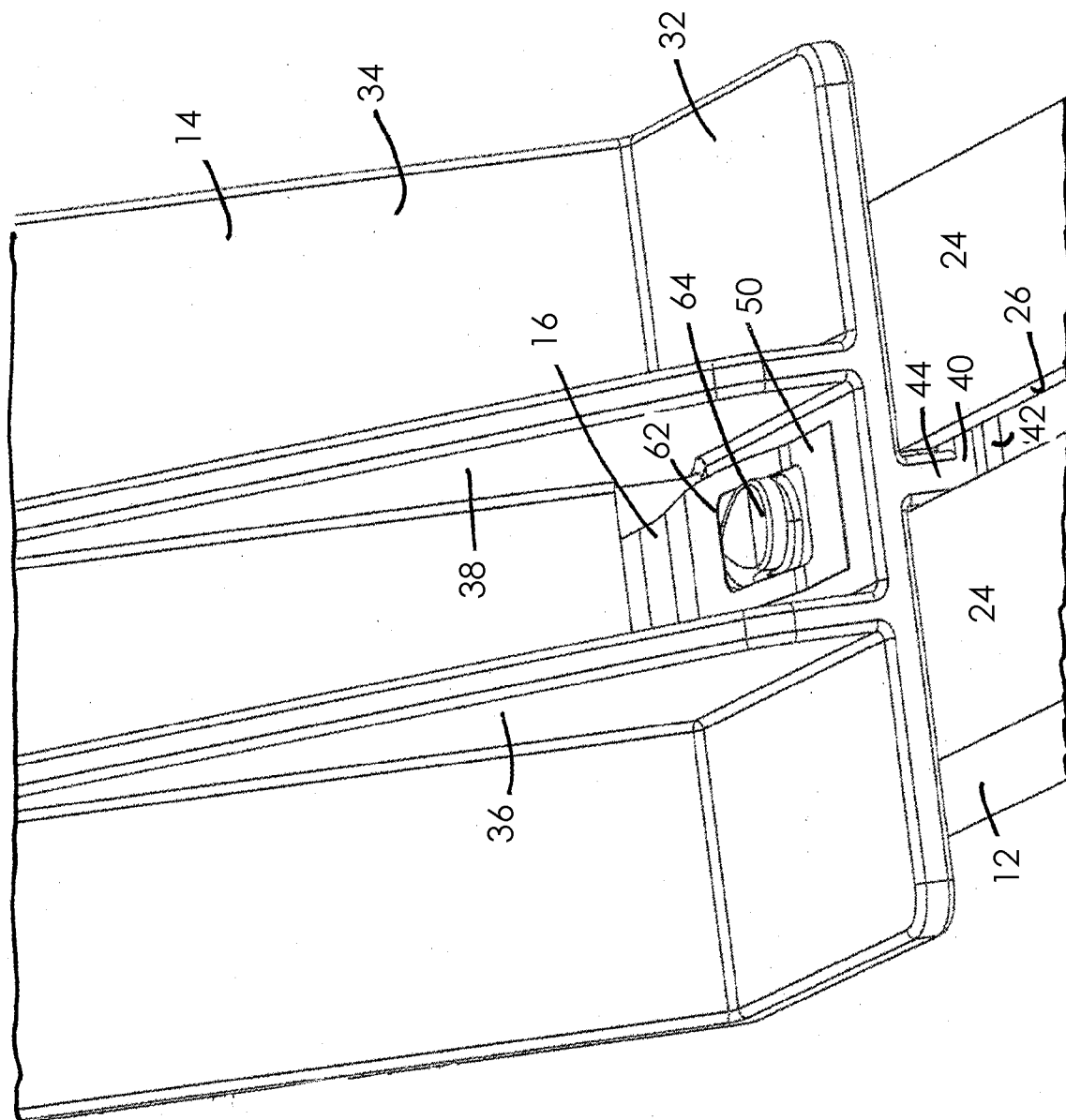


FIGURE 5

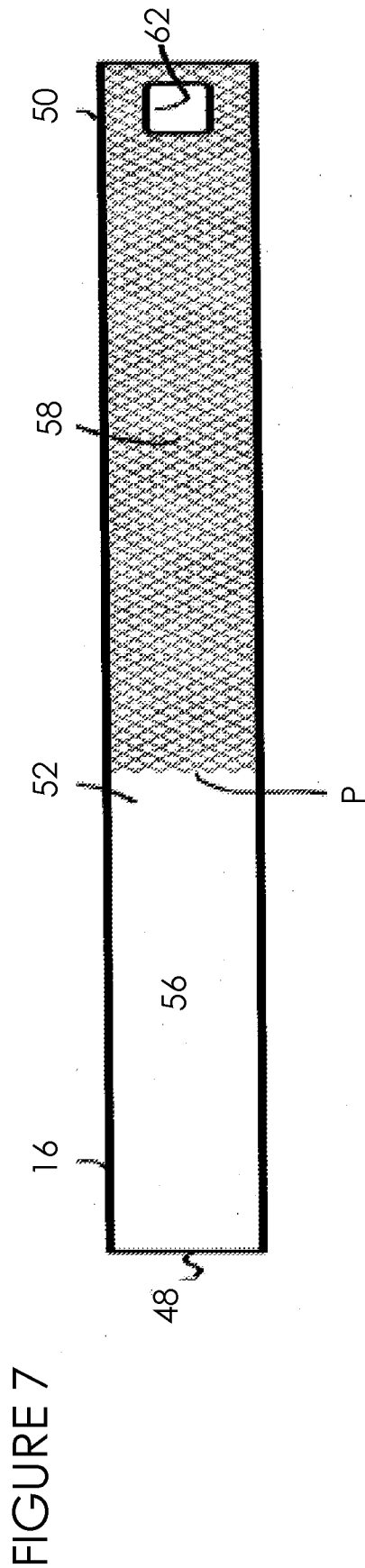
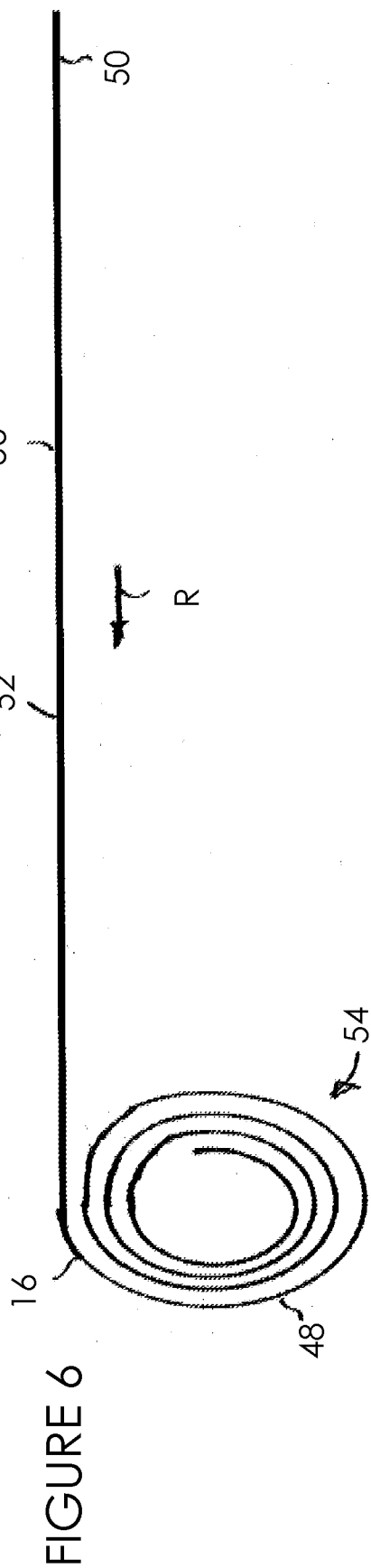


FIGURE 8

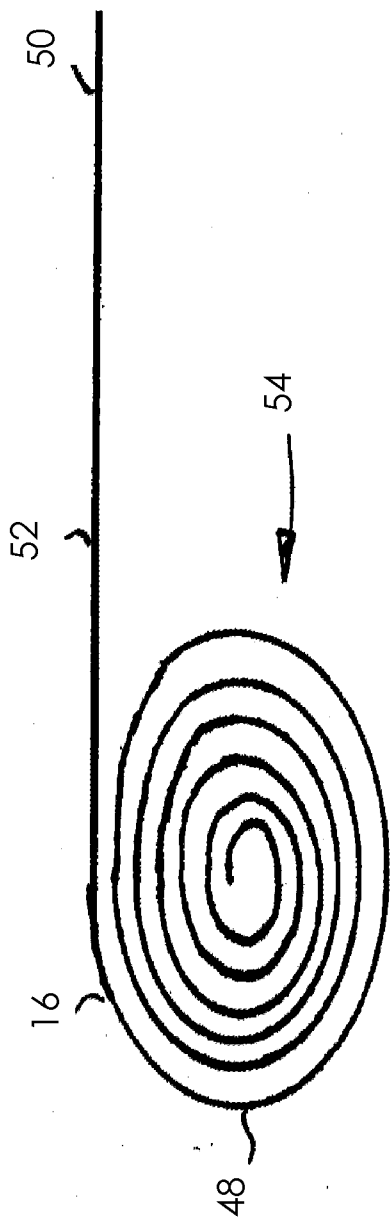


FIGURE 9

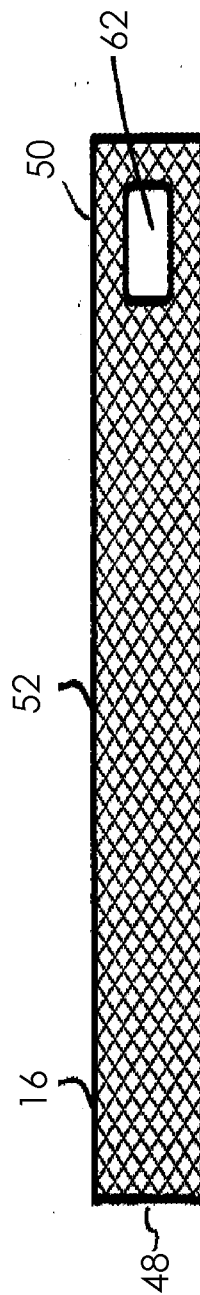
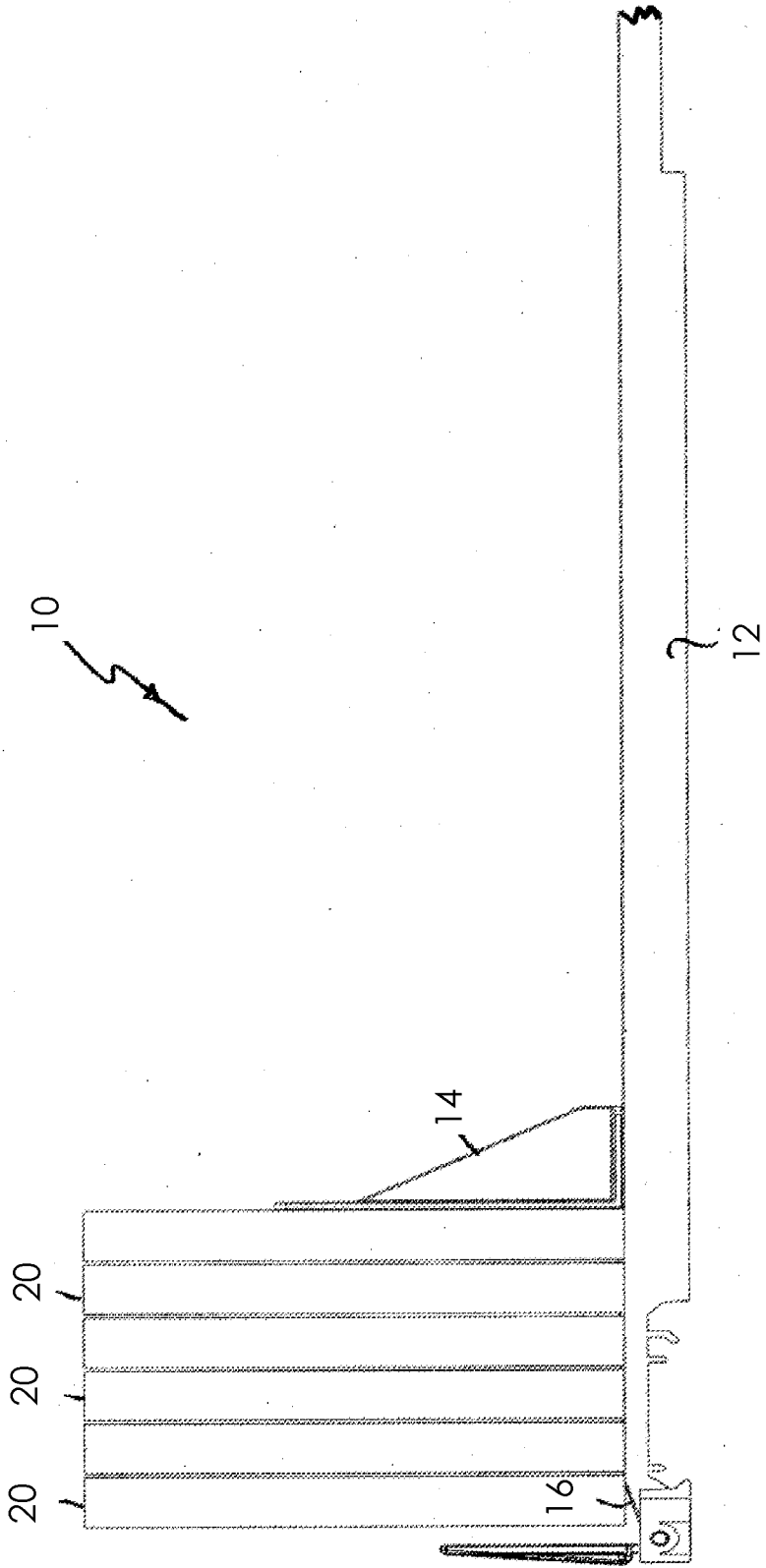
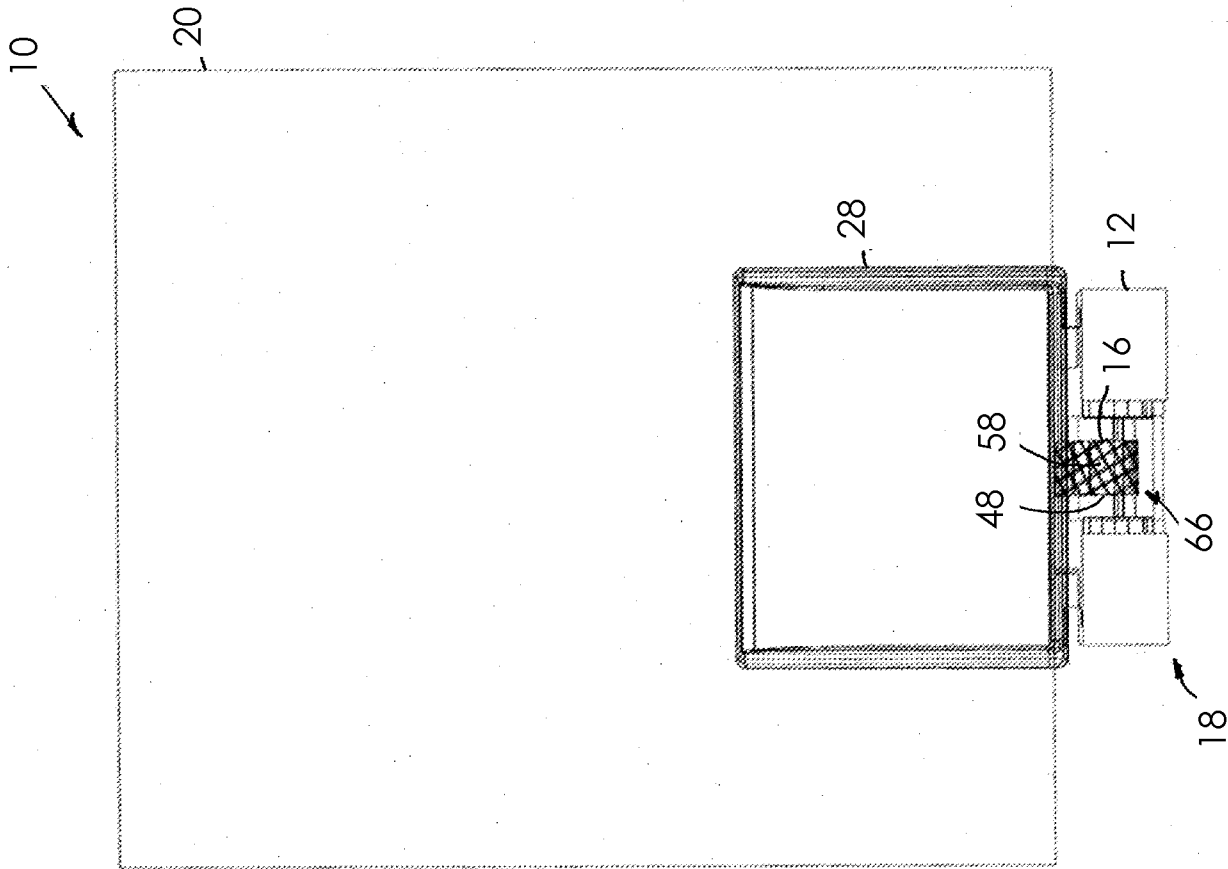


FIGURE 10





INTERNATIONAL SEARCH REPORT

International application No

PCT/US2012/031496

A. CLASSIFICATION OF SUBJECT MATTER

INV. A47F1/12
ADD.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

A47F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 743 428 A (RANKIN VI ALEXANDER [US]) 28 April 1998 (1998-04-28)	1-10, 12-15, 18-20
Y	column 2, line 56 - column 3, line 57 figures 1-3	11,16,17
Y	----- US 5 203 463 A (GOLD STEVEN K [US]) 20 April 1993 (1993-04-20) column 5, line 47 - line 68 figure 9c -----	11,16,17



Further documents are listed in the continuation of Box C.



See patent family annex.

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Date of the actual completion of the international search

12 June 2012

Date of mailing of the international search report

19/06/2012

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European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040,
Fax: (+31-70) 340-3016

Authorized officer

van Hoogstraten, S

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2012/031496

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 5743428	A	28-04-1998	US 5649363 A	22-07-1997
			US 5743428 A	28-04-1998

US 5203463	A	20-04-1993	NONE	
