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(71) Applicant: DANA VATION TECHNOLOGIES CORP.
[CA/CA]; 21 Roybridge Gate, Woodbridge, Ontario L4H
1E6 (CA).

(72) Inventors: SPASOJEVIC, Igor; 123 Woodycrest Avenue,
Toronto, Ontario M4J 3B3 (CA). TRAN, Michael D.; 150
East Liberty Street, Toronto, Ontario M6K 3R5 (CA).

(74) Agent: CHARI, Santosh K. et al.; CPST Intellectual Prop-
erty Inc., 130 Queens Quay East, East Tower, Suite 809,
Toronto, Ontario M5A 0P6 (CA).

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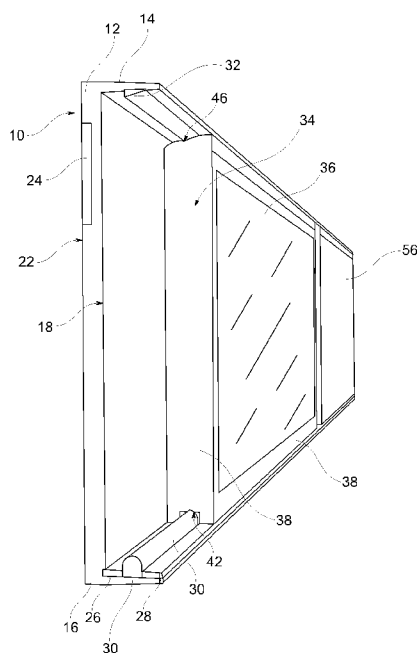


Fig. 5

(57) Abstract: An electronic shelf label system comprises a track adapt-
ed to be connected to a shelf component, wherein the track includes a
channel for accommodating and electrically connecting at least one elec-
tronic shelf label, ESL, and at least one power supply module. The sys-
tem allows multiple ESLs to be powered by a separate power module.
The ESLs and power modules are contained within a common channel.



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1 **ELECTRONIC SHELF LABEL AND SYSTEM**

2 **CROSS REFERENCE TO PRIOR APPLICATION**

3 **[0001]** The present application claims priority under the Paris Convention to U.S. Patent
4 Application No. 63/264,064, filed November 15, 2021. The entire contents of such prior
5 application is incorporated herein by reference.

6 **FIELD OF THE DESCRIPTION**

7 **[0002]** The present description relates to electronic shelf labels and systems.

8 **BACKGROUND**

9 **[0003]** In commercial settings, such as grocery stores and the like, merchandise is
10 displayed on shelves for consumers. In such settings, it is typical for labels to be used to
11 display product information and/or pricing etc. associated with the respective product or
12 products. In some cases, such labels may comprise “shelftalkers” or other such label
13 means. With such display means, the product information is static and any change, such as
14 in pricing, requires replacement of the respective label(s). To address this issue, electronic
15 shelf labels, ESLs or ESL devices, have become common. ESLs incorporate a digital
16 display screen that can be programmed to display the required information associated with
17 merchandise. In additions, the information displayed by ESLs can be controlled, such as
18 with a handheld device, so that the information can be changed as and when desired. As
19 known in the art, ESLs must be associated with a power supply and such power supply often
20 comprises one or more batteries that are provided on each ESL device. One problem
21 encountered with such ESL devices is that changing individual batteries becomes a time-
22 consuming task.

23 **[0004]** To address the above-noted issue, ESL systems have been proposed wherein a
24 separate power source is provided to supply power to one or more ESL devices. Such
25 systems are disclosed, for example, in US 2018/0268745, US 10,453,362, and US
26 10,769,969. These ESL system generally comprise a rail or track that is adapted to be
27 attached to a shelf, with the rail being associated with a power supply module and one or
28 more ESL devices. The power supply modules comprise a plurality of batteries, with the rail
29 including positive and negative leads extending there-along. The ESL devices of the known

1 systems comprise contacts that are adapted to engage the leads in the rails and thereby
2 receive power. In these known systems, the battery packs are typically provided on a rear
3 surface or side of the rail, thereby requiring the rail to be removed from the shelf when
4 batteries require replacement.

5 **[0005]** Another issue associated with the known ESL systems is that the individual ESL
6 units protrude from the rails, thereby making them prone to damage or inadvertent removal
7 from the rail as a result of collision with shopping carts, persons, etc.

8 **[0006]** There exists a need for an ESL system that address at least one of the known
9 deficiencies.

10 SUMMARY OF THE DESCRIPTION

11 **[0007]** In one aspect, there is provided an ESL system comprising a track adapted to be
12 attached to a shelf or shelf component and adapted to receive one or more ESL devices and
13 one or more power modules. In one aspect, the track comprises electrical conductors for
14 conducting electrical power from the power module(s) to the ESL device(s).

15 **[0008]** Thus, in one aspect, there is provided An electronic shelf label system comprising
16 a track, at least one electronic shelf label, and at least one power supply module;

17 **[0009]** - the track being adapted for connection to a shelf component and for supporting
18 the at least one electronic shelf label and at least one power supply module;

19 **[0010]** - wherein:

20 **[0011]** - the track comprises an elongate body having a generally "C" shaped cross-
21 section comprising an elongate panel having front and rear surfaces, first and second edges
22 and opposed ends, the first edge having a first flange and the second edge having a second
23 flange, wherein the first and second flanges extend in a common direction away from the
24 front surface of the track thereby forming a channel therebetween;

25 **[0012]** - the channel being adapted to receive the at least one electronic shelf label and
26 the at least one power supply module;

1 **[0013]** - at least one of the first and second flanges comprising at least one first retaining
2 means to engage the at least one electronic shelf label and the at least one power supply
3 module when received within the channel;

4 **[0014]** - the track comprising conductors for conducting electrical power from the at least
5 one power supply module to the at least one electronic shelf label.

6 BRIEF DESCRIPTION OF THE FIGURES

7 **[0015]** The features of certain embodiments will become more apparent in the following
8 detailed description in which reference is made to the appended figures wherein:

9 **[0016]** Fig. 1 is a front perspective view of a rail or track of an ESL system described
10 herein.

11 **[0017]** Fig. 2 is a rear view of the track of Fig. 1.

12 **[0018]** Fig. 3 is a side elevation view of the track of Fig. 1 according to one aspect.

13 **[0019]** Fig. 4 is a side elevation view of the track of Fig. 1 according to another aspect.

14 **[0020]** Fig. 5 is a side perspective view the track of Fig. 3 in association with an ESL
15 device and a power module described herein.

16 **[0021]** Fig. 6 is a side elevation view of an ESL device according to one aspect. The
17 side elevation of a power supply module being the same.

18 **[0022]** Fig. 7 is a rear view of the ESL device of Fig. 6.

19 **[0023]** Fig. 8 is an enlarged partial view of the track and ESL device shown in Fig. 3.

20 **[0024]** Fig. 9 is a side elevation view of an ESL device according to another aspect. The
21 side elevation of a power supply module being the same.

22 **[0025]** Fig. 10 is a side elevation illustrating the engagement of the adapter rail or track
23 with an ESL device. The engagement of the adapter rail or track and a power supply
24 module being the same.

1 **[0026]** Fig. 11 is side elevation illustrating of the engagement of the adapter rail or track
2 with an ESL device according to another aspect. The engagement of the adapter rail or
3 track and a power supply module being the same.

4 **[0027]** Fig. 12 is a front perspective view of a power module according to one aspect.

5 **[0028]** Fig. 13 is a rear perspective view of the power module of Fig. 12.

6 DETAILED DESCRIPTION

7 **[0029]** As used herein, the term “electronic shelf label”, or ESL, will be understood to
8 mean a label that is attached to a shelf, such as at the front edge of a shelf. As known in the
9 art, an ESL includes a digital display screen on which any desired information may be
10 displayed, such as pricing information for products, scannable codes, such as QR codes or
11 the like, associated with products, etc. The present description is not limited to any
12 particular display screen or displayed information. Further, while the present description
13 refers to ESLs that are provided on the front edges of shelves, it will be understood that the
14 ESLs described herein may be adapted for use in other configurations. ESLs are also
15 known to be programmable and either directly or remotely controllable to enable the
16 displayed information to be varied.

17 **[0030]** The terms “top” and “bottom” will be used herein for facilitating the description of
18 certain features. It will be understood that these terms will be used in reference to an ESL or
19 other device when in use on a horizontal shelf. In certain aspects, the devices and systems
20 described herein may also be incorporated, for example, in a vertical orientation.
21 Accordingly, the aforementioned terms are not intended to limit the description in any way.

22 **[0031]** The terms “including”, “comprise”, “comprises”, “comprised” or “comprising” may
23 be used in the present description. As used herein (including the specification and/or the
24 claims), these terms are to be interpreted as open-ended terms and as specifying the
25 presence of the stated features, integers, steps or components, but not as precluding the
26 presence of one or more other feature, integer, step, component or a group thereof as would
27 be apparent to persons having ordinary skill in the relevant art. Thus, the term “comprising”
28 as used in this specification means “consisting at least in part of”. When interpreting
29 statements in this specification that include that term, the features, prefaced by that term in

1 each statement, all need to be present but other features can also be present. Related terms
2 such as "comprise" and "comprised" are to be interpreted in the same manner.

3 **[0032]** The term "and/or" can mean "and" or "or".

4 **[0033]** Unless stated otherwise herein, the articles "a" and "the", when used to identify
5 an element, are not intended to constitute a limitation of just one and will, instead, be
6 understood to mean "at least one" or "one or more".

7 **[0034]** As will become apparent, the present description relates to an ESL system that
8 offers one or more advantages over known ESL devices and systems. In general, the ESL
9 system described herein comprises an elongate adapter rail, or track, that is adapted to be
10 mounted on a desired surface, such as a front edge of a shelf. The track is adapted to
11 removably receive and retain one or more ESL devices, which, as noted above, typically
12 include a digital display screen. The track is also adapted to removably receive and retain
13 one or more power supply modules and to transfer electrical power from such modules to
14 the one or more ESL devices.

15 **[0035]** As noted above, while the present description refers to front edges of shelving,
16 such as found in commercial establishments (grocery stores, hardware stores, etc.), other
17 applications would also be possible. For example, the systems described herein may also
18 be used in a vertical application, wherein the tracks are configured to be secured to vertical
19 support members for shelves or other display systems that are used in commercial
20 establishments.

21 **[0036]** Figs. 1 to 4 illustrate an adapter rail or track according to an embodiment of the
22 present description. The track 10 comprises an elongate body having a generally "C shaped
23 structure defined by a panel 12 and a pair of flanges, comprising a first or top flange 14 and
24 a second or bottom flange 16, extending, respectively, from the top and bottom edges of the
25 panel. As illustrated, the flanges 14 and 16 extend away in a common direction from a front
26 face 18 of the panel, whereby a channel 20 is formed between the flanges 14 and 16 and
27 the front face 18 of the panel 12. As will be discussed further below, the channel 20 is
28 adapted to receive and retain one or more ESLs and/or one or more power supply modules.

29 **[0037]** In general, and as known in the art, rails used for securing ESL devices etc. are
30 formed of a plastic material. For the present description, one or both of the flanges 14, 16

1 are preferably formed of a flexible material that allows the flange or flanges to be flexed with
2 respect to the body of the track 10.

3 **[0038]** In use, the track 10 is secured to shelving or the like as known in the art. This
4 would be achieved by means of any attachments means, such as clips, clamps, extensions,
5 or the like. In one aspect, the rail 10 may include extensions extending rearwardly, such as
6 from one or both of the flanges 14 and 16, with such extensions being adapted to clip or
7 otherwise be attached to shelves or shelving components. The present description is not
8 limited to any particular means of securing adapter rails or tracks to shelf systems. The use
9 of extensions, clips and the like allow the track to be reversibly attached to shelving
10 components. However, in view of the advantages offered by the presently described
11 system, the track described herein may also be permanently affixed to shelves, such as with
12 adhesives or fasteners etc.

13 **[0039]** Fig. 2 illustrates a rear face 22 of the track 10. In one aspect, the rear face 22 of
14 the track 10 may optionally be provided with a metal strip 24 embedded therein. In a
15 preferred aspect, the metal strip 24 is formed of a ferromagnetic material, so as to allow
16 magnets or magnetic materials to be attracted thereto, the purpose of which is explained
17 further herein. As will be appreciated by persons skilled in the art, although the metal strip
18 24 is shown embedded in the rear face 22 of the track 10, it may equally be embedded in the
19 front face 18 thereof. The provision of the metal strip 24 in the rear face is primarily to allow
20 the front face 18 to be provided with a uniform appearance. In this regard, the material
21 forming at least the panel 12 of the track 10 will be understood to be formed of a material
22 that would not impede magnetic attraction between the metal strip 24 provided on the rear
23 face 22 and magnets provided on the front face 18.

24 **[0040]** Figs. 3 and 4, for example, illustrate an aspect of the description wherein the
25 second, or bottom, flange 16 is provided with electrical conductors 26 and 28. As shown in
26 Figs. 1 and 5, the electrical conductors are preferably elongate structures that extend along
27 the length of the track. The conductors 26 and 28 may be formed of any known material
28 that is sufficient for conducting electrical power. As will be discussed further below, the
29 conductors 26 and 28 serve to conduct power from the one or more power modules to the
30 one or more ESLs.

1 **[0041]** In a preferred aspect, the second flange includes a separator 30 extending
2 between the conductors 26 and 28. As will be understood, the separator would serve to
3 electrically separate the conductors and would be preferably made of an insulating material.
4 In another aspect, the separator 30 comprises a raised, elongate bead as illustrated in the
5 figures. As will be discussed further below, with such form, the separator aids in positively
6 locating the power supply modules and/or the ESLs on the track 10.

7 **[0042]** Figs. 3 and 4 illustrate two aspects of the first flange, with the numeral 14 used to
8 identify such element, but with the letter “a” use din Fig. 4 to identify a variation. In Fig. 3,
9 the surface of the first flange 14 facing the second flange 16 is provided with a ridge 32, that
10 is adapted to engage a surface of an ESL and/or power supply module, as described further
11 below. As shown, the ridge 32 is preferably provided with a wedge-shape with a ramped
12 surface extending inwardly into the channel 30. In one aspect, the ridge 32 extends along
13 the length of the track 10. In another aspect, the ridge 32 may comprise a series of
14 contiguous or discontinuous ridge elements. In Fig. 4, the first flange 14a of the track 10a is
15 not provided with a ridge.

16 **[0043]** Figs. 5-7 illustrate an ESL, or ESL device, 34 of the present description. In
17 general, the ESL 34 includes a display screen 36 provided within a casing or enclosure 38.
18 The display screen 36 may comprise a removable display screen module as known in the
19 art. The ESL also includes any known components such as circuitry for power the display
20 screen, a programmable processor, a memory, and a communication transceiver etc. The
21 present description is not limited to any particular type of ESL device.

22 **[0044]** The casing 38 of the ESL 34 is adapted to be engaged within the channel 20 of
23 the track. For the present description, features of the casing 38 that serve to enable the ESL
24 34 to be connected to the track 10 will be considered as features of the ESL in general. In
25 this regard, and as best illustrated in Fig. 6, the bottom edge, or base 40 of the ESL 34 is
26 provided an elongate groove 42. The groove 42 is adapted to receive the separator 30, as
27 illustrated in Fig. 5. As will be understood, once the separator 30 is engaged within the
28 groove 42, movement of the base 40 of the ESL 34 away from the channel 20 is prevented.
29 In other words, the engagement of the separator 30 within the groove 42 prevents removal
30 of the base 40 from the channel 20 of the track 10.

1 **[0045]** In one aspect, the top edge 44 of the ESL 34 is provided with a notch 46 that is
2 adapted to engage the ridge 32 of the track 10. As illustrated in Fig. 8, the notch 46 is
3 provided with a surface that faces opposite to the ridge 32. As will be understood this
4 structure allows for the ESL to be snap-fit into the channel 20 by urging the top edge 44 of
5 the ESL into the channel 20. In doing so, the ramped surface of the ridge 32 results in
6 flexion of the first flange 14 until the edge of the ridge 32 is received within the notch 46. In
7 this way, the top edge 44 of the ESL is engaged with the first flange 14, thereby preventing
8 removal of the top edge of the ESL from the channel 20 of the track 10.

9 **[0046]** It will be appreciated that with the structure described above, engagement of the
10 ESL 34 with the track 10 would best be accomplished by first manipulating the ESL 34 to
11 engage the separator 30 of the track 10 within the groove 40 of the ESL 34 and then urging
12 the top edge of the ESL 34 into the channel 20 of the track 10 until the notch 46 engages the
13 ridge 32. Removal of the ESL 34 from the channel 20 may then be accomplished in reverse
14 by bending the first flange 14 to disengage the notch 46 from the ridge 32 and then
15 removing the ESL 34.

16 **[0047]** In one aspect, as illustrated in Fig. 7, the rear surface 48 of the ESL 34 may be
17 provided with one or more magnets 50, such as rare earth magnets, etc. The magnets are
18 arranged so as to be attracted to the metal strip 24 provided on the track 10. As will be
19 appreciated, the engagement of the magnets 50 with the metal strip 24 aids in preventing
20 accidental removal of the ESL from the channel 20 of the track 10.

21 **[0048]** In some aspects where magnets 50 are provided, as discussed above, the need
22 for the notch 46 may be obviated. That is, in some instances, the magnets may be sufficient
23 to retain the ESL 34 in the channel 20 of the track 10. Such aspect of the ESL is illustrated
24 in Fig. 9, where elements previously described are identified with like reference numerals but
25 with the suffix "a" for clarity. As shown in Fig. 9, the top edge 44a of the ESL 34a is provided
26 with a generally smooth surface, without any notch. In this way, the top edge 44a does not
27 engage the first flange 14 of the track. Even in situations where the first flange 14 includes a
28 ridge 32, the top edge 44a of the ESL 34a may only frictionally engage such ridge.

29 **[0049]** Figs. 10 and 11 further illustrate the connection mechanism between the track 10,
30 10a and the ESLs 34, 34a. Specifically, Fig. 10 illustrates the snap-fit connection between
31 the notch 46 of the ESL 34 and the ridge 32 of the first flange 14, and Fig. 11 illustrates an

1 aspect where no such snap-fit occurs. This may be the result of the ESL 34a not having a
2 notch 46 and/or the first flange 14, 14a not having a ridge 32. Fig. 11 illustrates an aspect
3 where both the notch 46 and ridge 32 are not provided. It will be understood that in this
4 aspect, the ESL 34 would be mainly held in place with the magnets engaging the metal strip
5 24.

6 **[0050]** It will also be appreciated that while Figs. 10 and 11 illustrate the connection of
7 the ESLs with the track 10, the same connection will occur with the power supply modules
8 56.

9 **[0051]** The base 40 of the ESL 34 (or 34a) is provided with electrically conductive
10 contacts or leads 52 and 54, which are provided on the bottom surface of the casing 38 (or
11 38a). The leads 52 and 54 are adapted to contact, respectively, the conductors 26 and 28
12 provided on the second flange 16 of the track 10. The leads 52 and 54 serve to supply
13 electrical power to the display screen 36 of the ESL using various circuitry etc. as would be
14 known to persons skilled in the art. The present description is not limited to any particular
15 circuitry for the ESL.

16 **[0052]** The electrical contacts or leads 52 and 54 may each comprise a linear strip of
17 conductive material provided along the base 40 or may comprise one or more discrete
18 contacts, such as pins or the like. As would be apparent to persons skilled in the art, the
19 contacts may comprise any known form, with the understanding that the intent is to conduct
20 electrical signals.

21 **[0053]** The system described herein further comprises a power supply module 56. Figs.
22 5 and 8 illustrate the power supply module 56 in association with the track 10. As shown in
23 Figs. 12 and 13, the power supply module 56 is provided with a similar structure as the ESL
24 34 described above. Namely, the base 58 of the power supply module 56 is provided with a
25 groove 60 that is adapted to engage the separator 30 of the second flange 16 of the rail 10.
26 As will be understood, the engagement of the groove 60 and the separator 30 prevents the
27 base 58 of the power supply module 56 from being separated from the channel 20 of the
28 track 10. Similarly, the top edge 62 of the power supply module 56 may be provided with a
29 notch 64 adapted to engage the ridge 32 of the first flange 14 of the track so as to allow a
30 snap-fit engagement between the power supply module 56 and the track 10. Thus, the side

1 view of the power supply module 56 would have the same appearance as the side view of
2 the ESL as shown in Fig. 6.

3 **[0054]** A front face 66 of the power supply module 56 would preferably be provided with
4 a cover 68, while the rear face 70 of the power supply module 56 includes one or more
5 recesses 72 for receiving a power supply means (not shown). In one aspect, the recesses
6 72 are adapted to contain DC batteries, such as, for example, button or coin type battery
7 cells, which are known in the art for powering ESLs. In the system described herein, the
8 power supply module 56 would comprise a plurality of such batteries so as to supply
9 electrical power to a number of ESLs. Fig. 13 illustrates a power supply module 56 with
10 recesses for three coin batteries. However, it will be understood that the power supply
11 module 56 may comprise any number of batteries. Further, due to their compact and planar
12 shape, coin type batteries are preferred; however, it will be understood that the power supply
13 module 56 described herein may be provided with any other form of batteries. In the
14 preferred aspect, the power supply module is provided with a DC power source (i.e.,
15 batteries), thereby being in the form of a battery pack. However, in another aspect, the
16 power supply module may be powered by an AC source, in which case the module would
17 include or be connected to a transformer to convert the supplied current to DC form and to
18 step down the voltage as needed. It will be understood, in general, that the power supply
19 module will be configured to supply the electrical power necessary to power the ESLs
20 effectively and safely in view of the field of use (i.e., store shelves).

21 **[0055]** Similar to the ESLs described above, the base 58 of the power supply module 56
22 is provided with electrical contacts or leads 74 and 76, which are adapted to electrically
23 connect with the conductors 26 and 28, respectively. For this purpose, the power supply
24 module 56 is provided with the necessary circuitry to allow electrical power from the batteries
25 contained therein to pass to the leads 74 and 76 and ultimately to the conductors 26 and 28
26 of the track 10. It will therefore be appreciated that such power is then delivered to the ESLs
27 that are electrically connected to the track 10. As with the leads 52 and 54 of the ESL, the
28 contacts or leads 74 and 76 of the power supply module 56 may be elongate strips
29 extending along the base 58 or may be discrete contacts or pins.

30 **[0056]** As shown in Fig. 13, the rear face 70 of the power supply module 56 is preferably
31 provided with one or more magnets 78 that are adapted to magnetically engage the metal

1 strip 24 provided on the track 10. As described above with respect to the ESL, the magnets
2 78 serve to locate the power supply module 56 within the channel 20 of the track 10.

3 **[0057]** In the above description, the track 10 has been described as having the
4 conductors 26 and 28 on the second, or bottom flange 16 thereof. However, it will be
5 understood that in other aspects, the conductors may be provided on the first, or top flange
6 14. In such case, the other components of the rail 10, ESL 34 and power supply module 56
7 would be reoriented accordingly. In yet another aspect, both the first and second flanges 14,
8 16, may be provided with respective conductors.

9 **[0058]** As discussed above, the track 10 described herein comprises an elongate body
10 that is adapted to be secured to shelving and the like. The track 10 may then be provided a
11 number of ESLs and power supply modules as needed. It will be understood that in some
12 instances it may be desirable for the power supply module(s) on one rail to also provide
13 power to an adjacent rail. In such case, the adjacent rails may be electrically connected to
14 each other in any manner. In one example, a rail joint may be employed that engages
15 adjacent rails and allows for the respective conductors of each rail to be spliced together in
16 an end to end manner so that power from one rail may be passed to the other along a
17 common shelf or adjacent shelves.

18 **[0059]** The presently described system, comprising the adapter rail, or track 10, ESLs
19 34, and power supply modules 56 provide advantages to known ESL systems. One of such
20 advantages is the provision of a power supply module 56 that engages the same channel of
21 the track 10 as the ESLs 34. In this way, the power supply modules are accessible from the
22 front of the track 10, thereby facilitating the replacement or servicing of batteries. As
23 described above, in the known ESL systems, access to the batteries is only possible by
24 dismantling the rail from the shelf. Additionally, by providing the power supply module 56 on
25 the front face of the track 10, the rear face of the rail may be planar, thereby facilitating the
26 connection of the rail to shelving or shelving components.

27 **[0060]** Another advantage of the presently described system is illustrated in the figures.
28 Namely, both the ESLs 34 and the power supply modules 56 are adapted to fit within the
29 channel 20 of the track 10. In this way, both the top and bottom edges of the ESL and
30 power supply module are secured to the track, thereby reducing the possibility of such
31 devices being accidentally dislodged from the rail.

1 **[0061]** Moreover, the first and second flanges, 14 and 16, of the track 10 are sized to
2 fully accommodate the ESLs 34 and power supply modules 56. Thus, the ESLs and power
3 supply modules are completely contained within the channel 20 of the track 10 and, as
4 shown for example in Figs. 5 and 8, the front faces of the ESLs 34, power supply modules
5 56, and the ends of the flanges 14 and 16 are generally flush, without any exposed edges or
6 corners. As will be understood, such an arrangement further serves to reduce the likelihood
7 of the ESLs and power supply modules from being unintentionally separated from the track,
8 such as due to collision (such as with shopping carts) or pulling (such as by being caught on
9 clothing), etc. For this reason, the power supply modules 56 preferably incorporate coin
10 batteries so as to allow such modules to have the same thickness as the ESLs, thereby
11 allowing the two components to be provided within the channel 20 in the same flush manner.

12 **[0062]** By fully containing the ESLs and power supply modules within the channel 20 of
13 the track 10, such devices may be adequately retained in place with only the magnets
14 described above, thereby avoiding the need for any tool or extensive manipulation when the
15 devices are purposely removed.

16
17 **[0063]** Although the above description includes reference to certain specific
18 embodiments, various modifications thereof will be apparent to those skilled in the art. Any
19 examples provided herein are included solely for the purpose of illustration and are not
20 intended to be limiting in any way. Any drawings provided herein are solely for the purpose
21 of illustrating various aspects of the description and are not intended to be drawn to scale or
22 to be limiting in any way. The scope of the claims appended hereto should not be limited by
23 the preferred embodiments set forth in the above description but should be given the
24 broadest interpretation consistent with the present specification as a whole. The disclosures
25 of all prior art recited herein are incorporated herein by reference in their entirety.

26

WE CLAIM:

1. An electronic shelf label system comprising a track, at least one electronic shelf label, and at least one power supply module;
 - the track being adapted for connection to a shelf component and for supporting the at least one electronic shelf label and at least one power supply module;
 - wherein:
 - the track comprises an elongate body having a generally "C" shaped cross-section comprising an elongate panel having front and rear surfaces, first and second edges and opposed ends, the first edge having a first flange and the second edge having a second flange, wherein the first and second flanges extend in a common direction away from the front surface of the track thereby forming a channel therebetween;
 - the channel being adapted to receive the at least one electronic shelf label and the at least one power supply module;
 - at least one of the first and second flanges comprising at least one first retaining means to engage the at least one electronic shelf label and the at least one power supply module when received within the channel;
 - the track comprising conductors for conducting electrical power from the at least one power supply module to the at least one electronic shelf label.
2. The electronic shelf label system of claim 1, wherein the panel of the track further comprises a ferromagnetic strip.
3. The electronic shelf label system of claim 2, wherein the ferromagnetic strip is provided on the front surface or rear surface of the panel.
4. The electronic shelf label system of claim 2 or 3, wherein the at least one electronic shelf label and/or the at least one power supply module comprises at least one magnet adapted to magnetically engage the ferromagnetic strip.
5. The electronic shelf label system of any one of claims 1 to 4, wherein the conductors extend along the length of the track.
6. The electronic shelf label system of any one of claims 1 to 5, wherein the conductors are provided on one of the first and second flanges.

7. The electronic shelf label system of claim 6, wherein the conductors are electrically separated by a separator.
8. The electronic shelf label system of claim 7, wherein the separator extends partially into the channel to form a rib extending along the respective first or second flange.
9. The electronic shelf label system of claim 8, wherein the at least one electronic shelf label and the at least one power supply module include a recess adapted to receive the separator.
10. The electronic shelf label system of any one of claims 1 to 9, wherein the at least one electronic shelf label and the at least one power supply module include electrical contacts for electrically contacting the conductors.
11. The electronic shelf label system of any one of claims 1 to 10, wherein at least one of the first and second flanges includes a second retaining means.
12. The electronic shelf label system of claim 11, wherein the second retaining means comprises a ridge provided on the at least one first and second flange and wherein the at least one electronic shelf label and/or at least one power supply module includes a notch for engaging the ridge when the electronic shelf label and/or the at least one power supply module is/are received within the channel.
13. The electronic shelf label system of claim 11 or 12, wherein the first retaining means is provided on the first flange and the second retaining means is provided on the second flange.
14. The electronic shelf label system of any one of claims 1 to 13, wherein at least one of the first and second flanges is resilient, whereby the at least one electronic label and the at least one power supply module are received within the channel by urging the resilient first and/or second flanges apart.
15. The electronic shelf label system of claim 14, wherein the at least one electronic label and the at least one power supply module are received within the channel by a snap-fit.

16. The electronic shelf label system of any one of claims 1 to 15, wherein the at least one power supply module comprises a battery pack comprising one or more batteries.
17. The electronic shelf label system of claim 16, wherein the one or more batteries are button or coin batteries.
18. The electronic shelf label system of any one of claims 1 to 15, wherein the at least one power supply module is adapted to transfer electrical power from an external source to the at least one electronic shelf label.
19. The electronic shelf label system of any one of claims 1 to 18, wherein the at least one electronic shelf label and at least one power supply module have a thickness and wherein the channel has a depth generally corresponding to said thickness.
20. The electronic shelf label system of any one of claims 1 to 19, wherein the track is adapted to receive a plurality of electronic shelf labels and/or a plurality of power supply modules.

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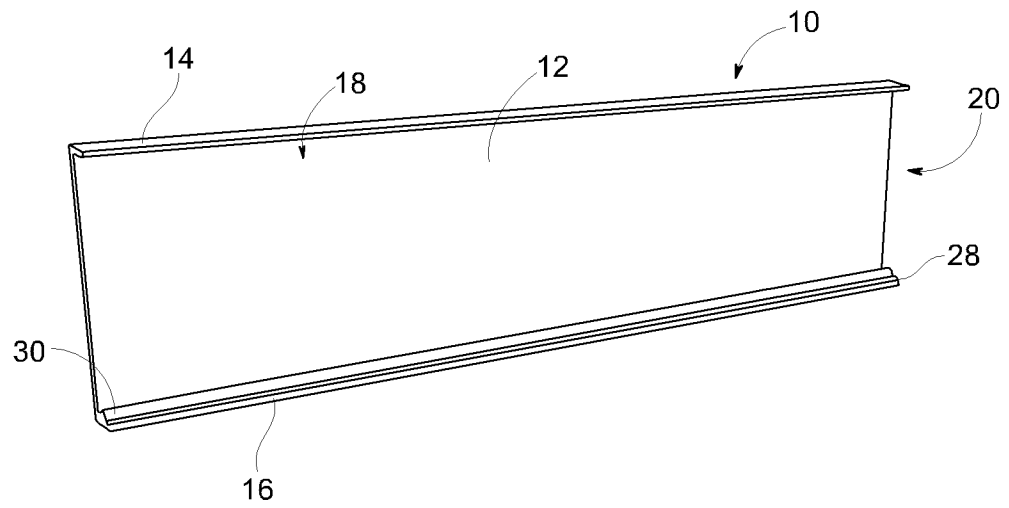


Fig. 1

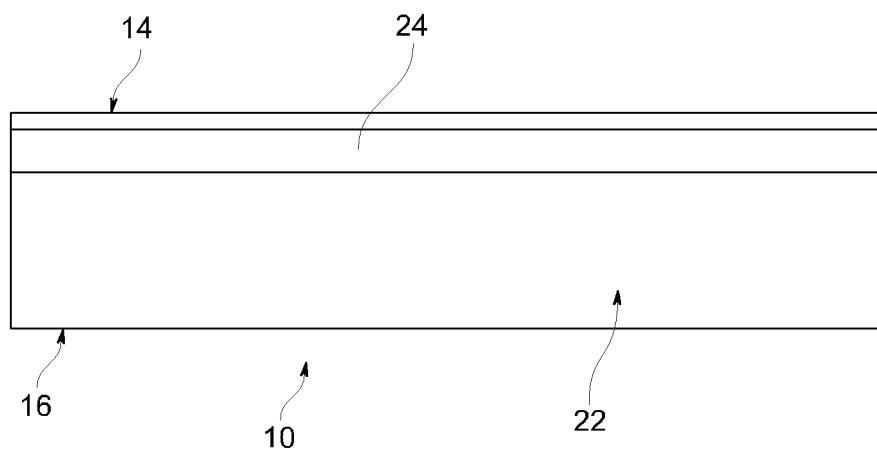


Fig. 2

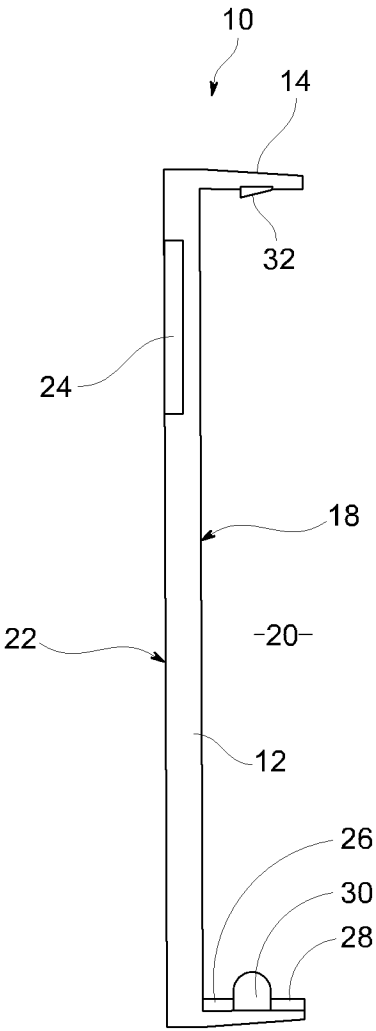


Fig. 3

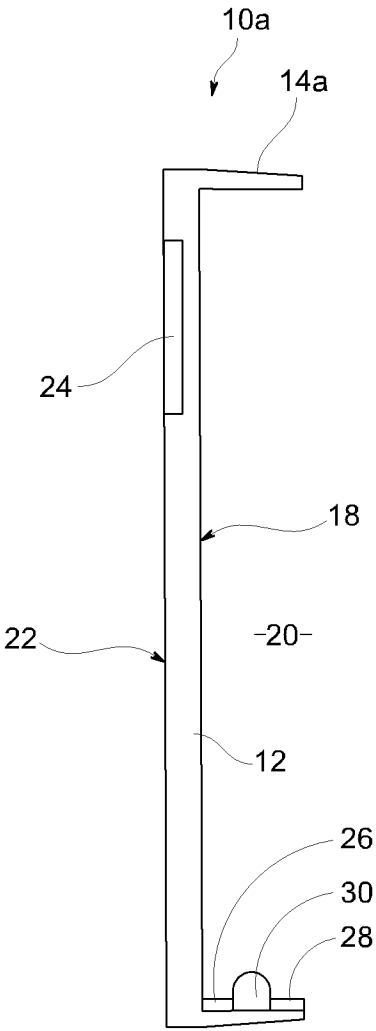


Fig. 4

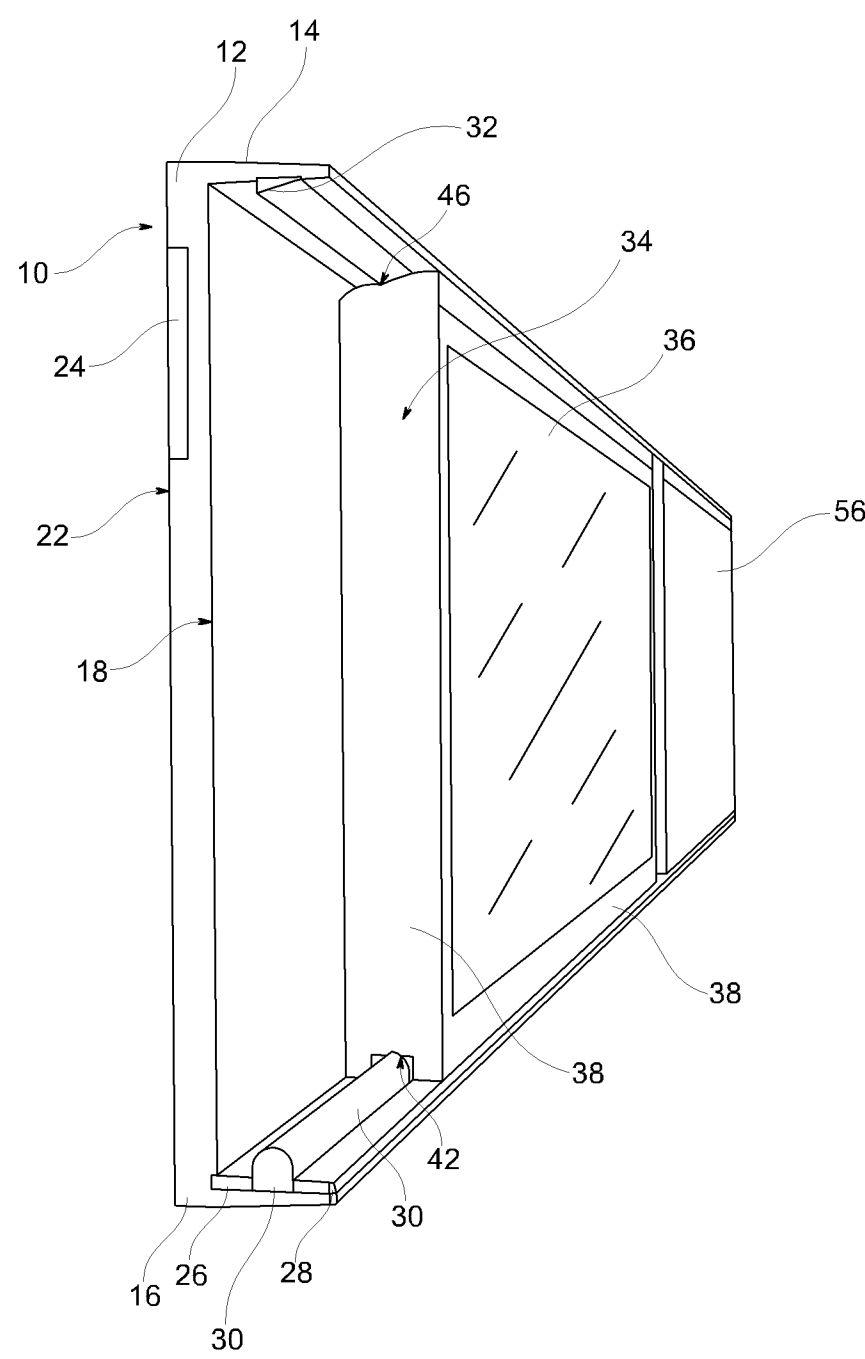


Fig. 5

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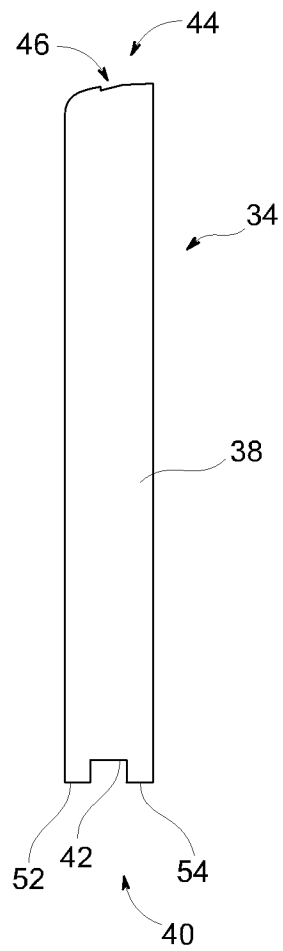


Fig. 6

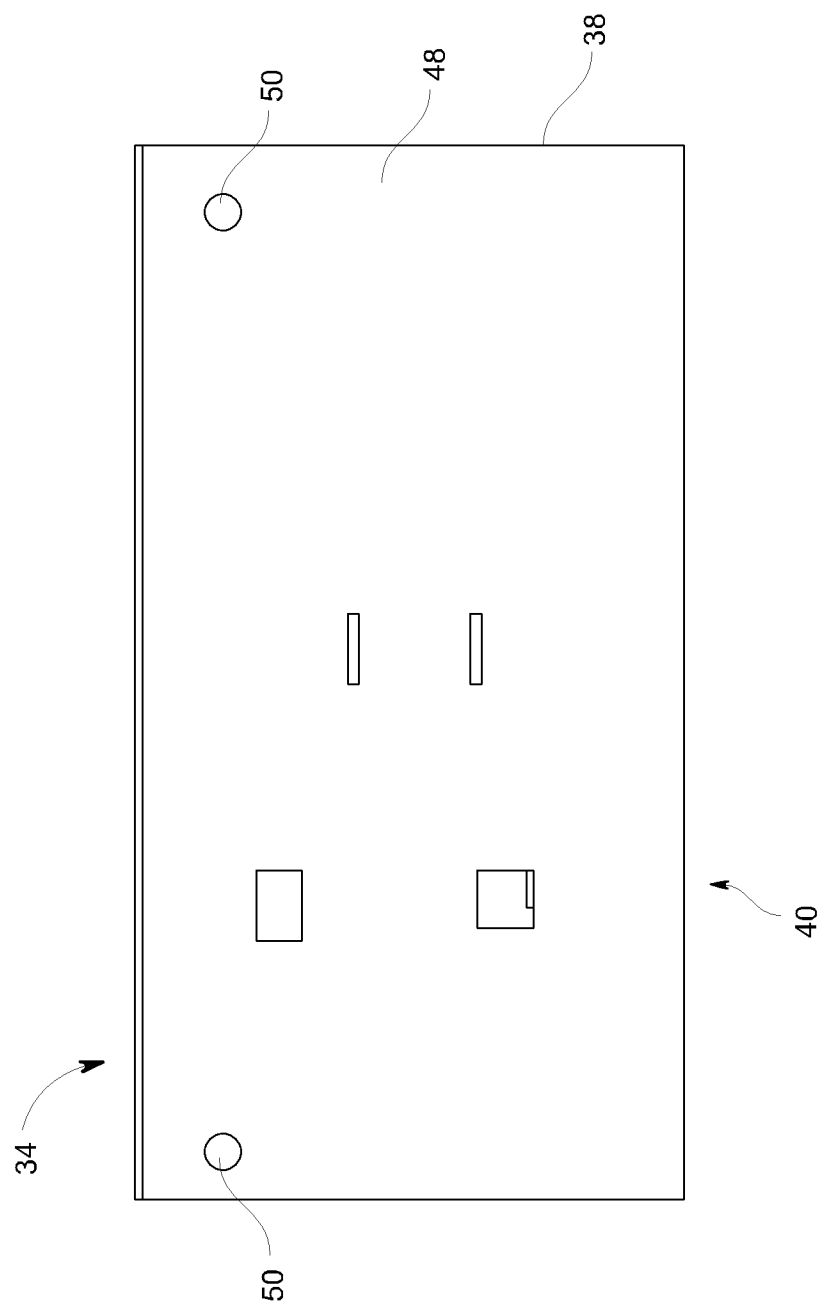


Fig. 7

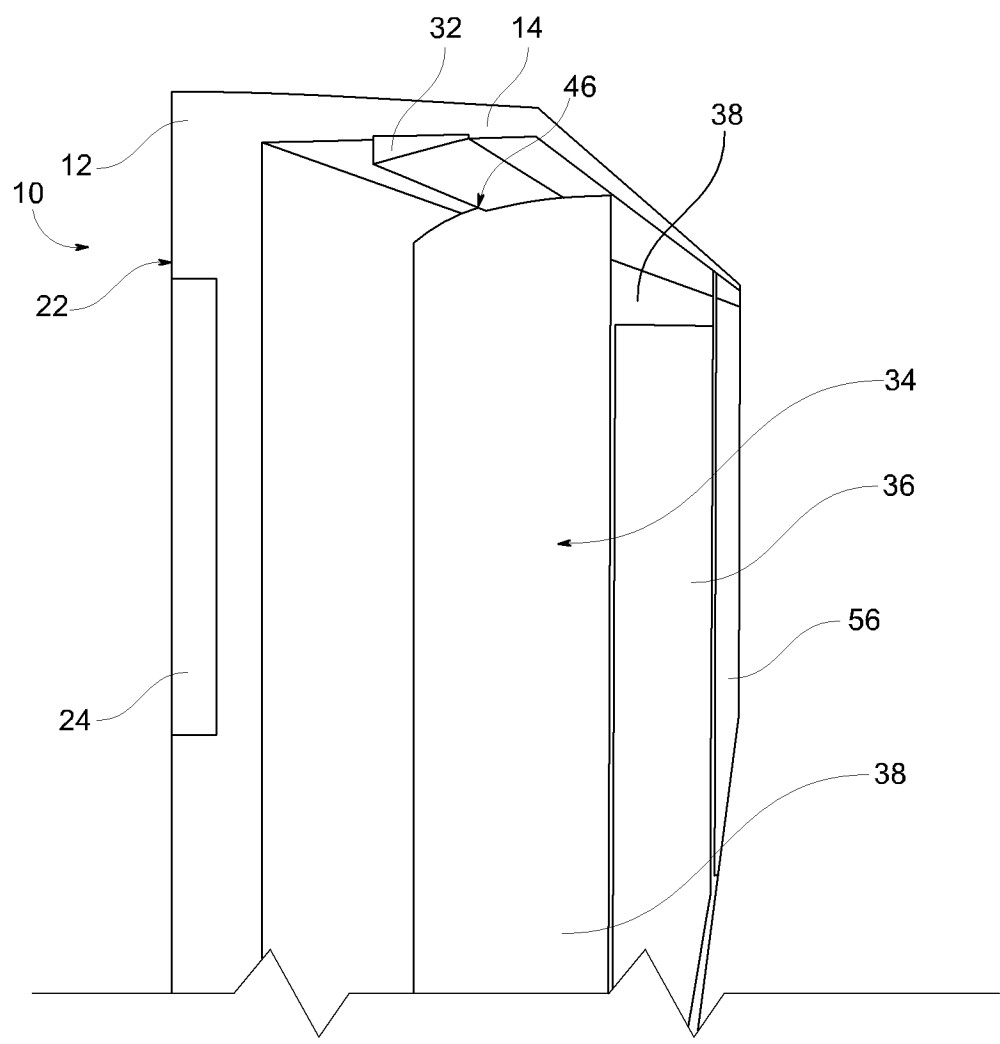


Fig. 8

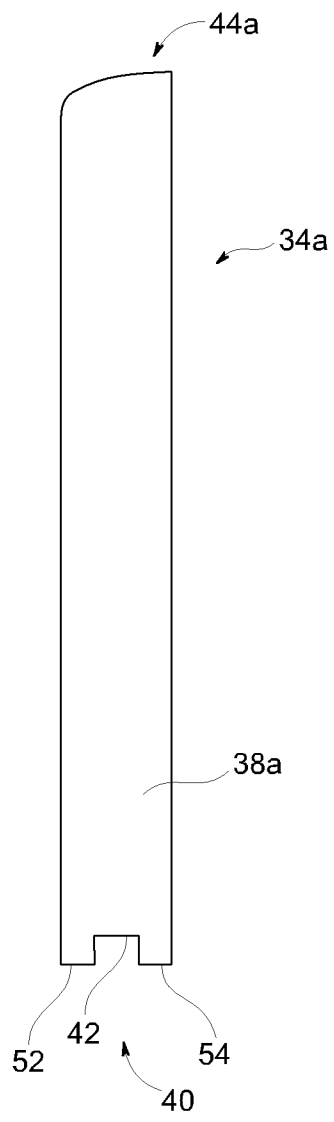


Fig.9

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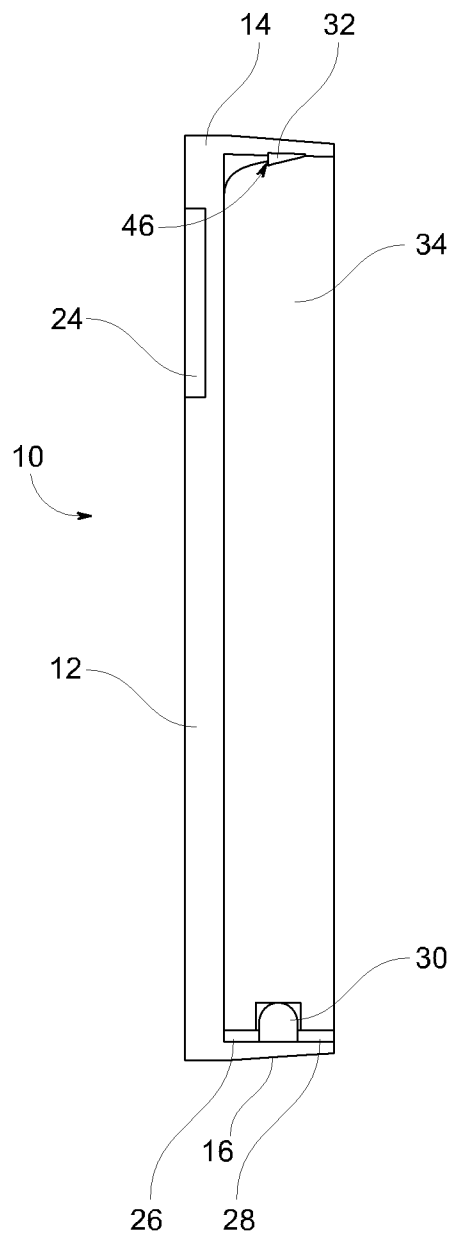


Fig. 10

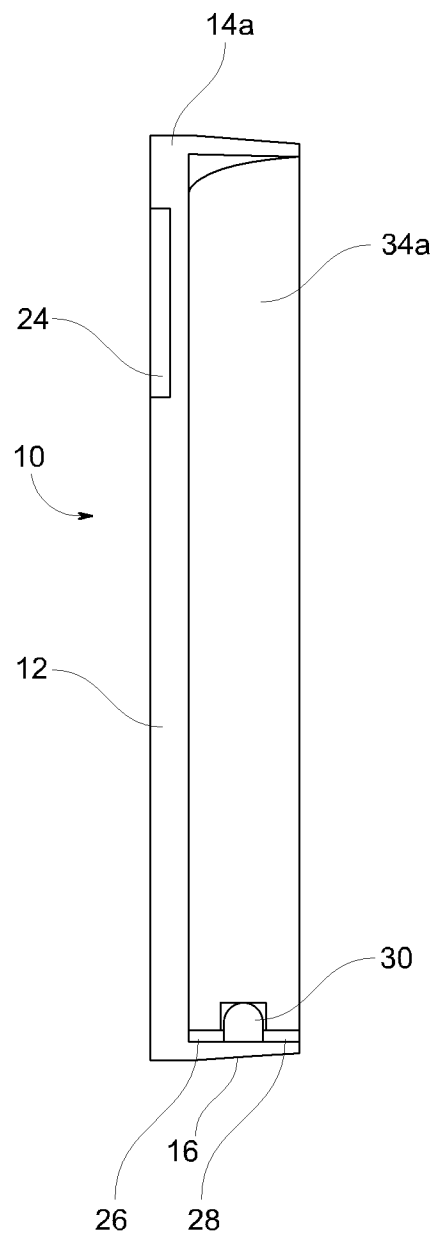


Fig. 11

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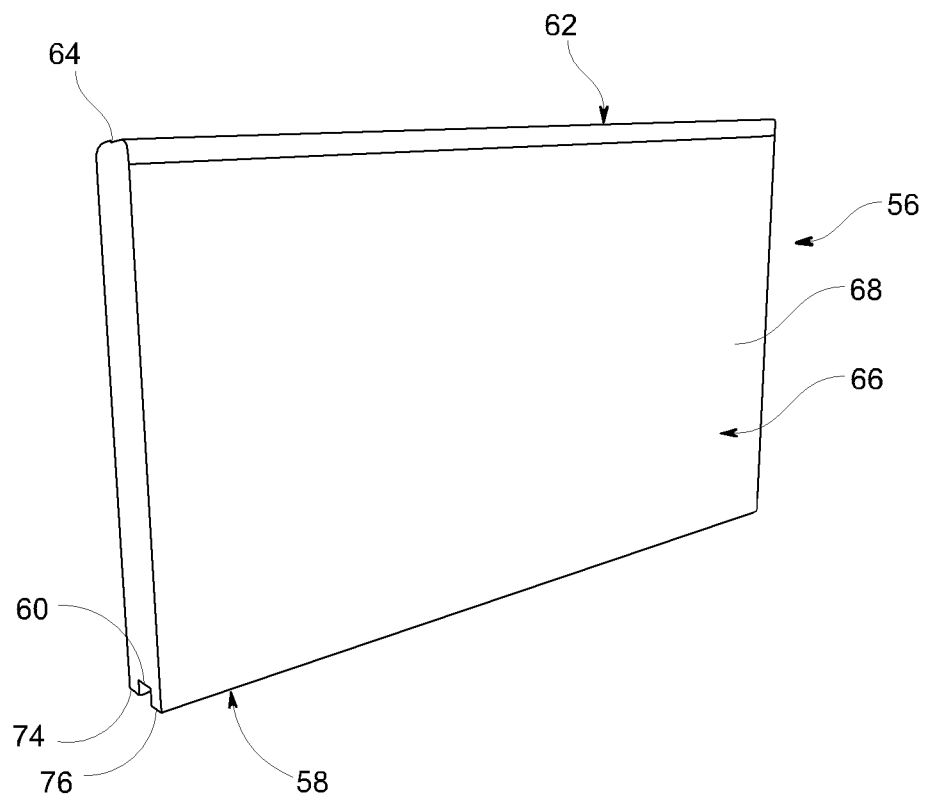


Fig. 12

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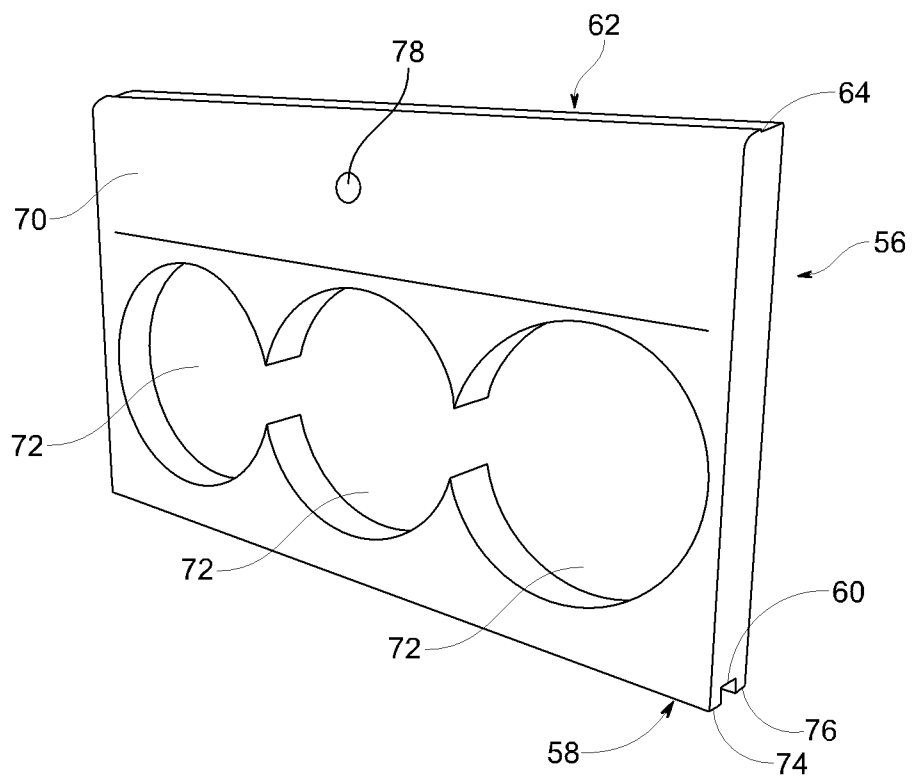


Fig. 13

INTERNATIONAL SEARCH REPORT

International application No.

PCT/CA2022/051675

A. CLASSIFICATION OF SUBJECT MATTER

IPC: **G09F 3/20** (2006.01), G06Q 30/0241 (2023.01), **H02J 7/00** (2006.01)CPC: **G09F 3/208** (2020.01), G09F 3/204 (2020.01), H02J 7/00 (2020.01)

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)

IPC: **G09F 3/20** (2006.01), **H02J 7/00** (2006.01)CPC: **G09F 3/208** (2020.01), G06Q 30/0241 (2020.01), G09F 3/204 (2020.01), H02J 7/00 (2020.01)

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

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

QUESTEL-ORBIT (FAMPAT database); Canadian Patent Database (via Intellect); Google

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
<u>X</u> Y	US2019080633A1, (BOTTINE) 14 March 2019 (14-03-2019) - refer to figs.1-8; paras.0007, 0055, 0064-0067, 0082-0083	<u>1, 5 and 10-20</u> 2-4 and 6-9
<u>X</u> Y	WO2020249231A1, (RÖSSL) 17 December 2020 (17-12-2020) (US20220253617A1 equivalent of the above document used for English translation) - refer to figs.1, 4 & 7; paras.0025, 0058, 0068	<u>1, 5, 10, 11, 14-16 and 18-20</u> 2-4, 6-9, 12 and 13
<u>X</u> Y	US2012044056A1, (BYUN et al.) 23 February 2012 (23-02-2012) - refer to figs.1-4, 7 & 8; paras.0033, 0036, 0053, 0062-0063	<u>1, 5, 10, 11, 13-15 and 18-20</u> 2-4, 6-9, 12 and 13

☒ Further documents are listed in the continuation of Box C.☒ See patent family annex.

* “A” “D” “E” “L” “O” “P”	Special categories of cited documents: document defining the general state of the art which is not considered to be of particular relevance document cited by the applicant in the international application earlier application or patent but published on or after the international filing date document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) document referring to an oral disclosure, use, exhibition or other means document published prior to the international filing date but later than the priority date claimed	“T” “X” “Y” “&”	later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art document member of the same patent family
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Date of the actual completion of the international search
16 December 2022 (16-12-2022)Date of mailing of the international search report
16 January 2023 (16-01-2023)Name and mailing address of the ISA/CA
Canadian Intellectual Property Office
Place du Portage I, C114 - 1st Floor, Box PCT
50 Victoria Street
Gatineau, Quebec K1A 0C9
Facsimile No.: 819-953-2476

Authorized officer

Ishtiaque Ibne Rashid (819) 639-7889

INTERNATIONAL SEARCH REPORT

International application No.

PCT/CA2022/051675

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
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Y	KR100900004B1, (KIM et al.) 28 May 2009 (28-05-2009) (Machine translation of the above document into English provided by Questel-Orbit) - refer to abstract; figs. 2, 4 & 5a-b	6-9, 12 and 13
A	WO2021182962A1, (VAN HERP et al.) 16 September 2021 (16-09-2021) (Machine translation of the above document into English provided by Questel-Orbit) - refer to entire document	1
A	WO2021032278A1, (RÖSSL) 25 February 2021 (25-02-2021) (Machine translation of the above document into English provided by Questel-Orbit) - refer to entire document	1
A	DE102008009356A1, (RENZEL) 20 August 2009 (20-08-2009) (Machine translation of the above document into English provided by Questel-Orbit) - refer to entire document	1
A	US2020176906A1, (PAGANO et al.) 04 June 2020 (04-06-2020) - refer to entire document	1
A	US2009179825A1, (ENARVI et al.) 16 July 2009 (16-07-2009) - refer to entire document	1
A	US2002146282A1, (WILKES et al.) 10 October 2002 (10-10-2002) - refer to entire document	1

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.

PCT/CA2022/051675

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INTERNATIONAL SEARCH REPORT

International application No.

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