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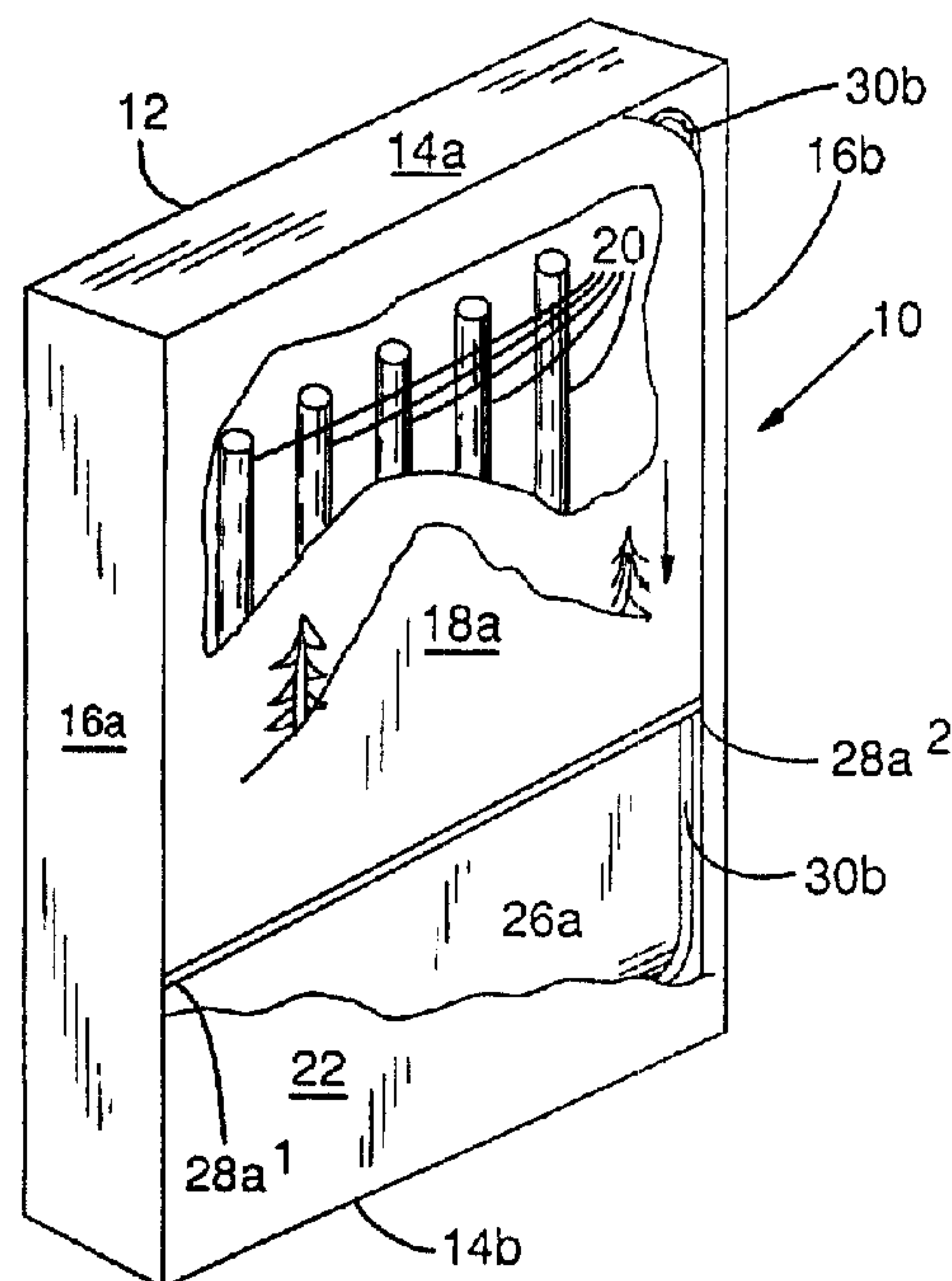
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(54) Titre : DISPOSITIF D'AFFICHAGE SEQUENTIEL DE GRAPHIQUES

(54) Title: SEQUENTIAL GRAPHIC MATERIALS DISPLAY DEVICE



(57) Abrégé/Abstract:

The present invention is a graphic materials display device consisting of a housing (12) containing a source of illumination (20), a number of graphics (18) to be displayed sequentially behind a viewing screen (22), and a programmed motor for operating the mechanism. The graphics can be transparencies, posters, and the like, which are suspended from rods (26), the ends of which ride in shaped channels (30) formed into side members (16) of the housing and are pulled down from above in front of the source of illumination. The ends of the rods are engaged by hooks attached to an endless chain or belt (44) driven by a programmed motor. The rods, and the graphics suspended from them, are stored in a section of the shaped channels which keep them together until they are needed. The graphics removed from the illuminated screen are carried downwards, across the lower portion of the housing, lifted up the rear of the housing and allowed to slide downwards in the shaped channel, where they join other rods in the storage section.



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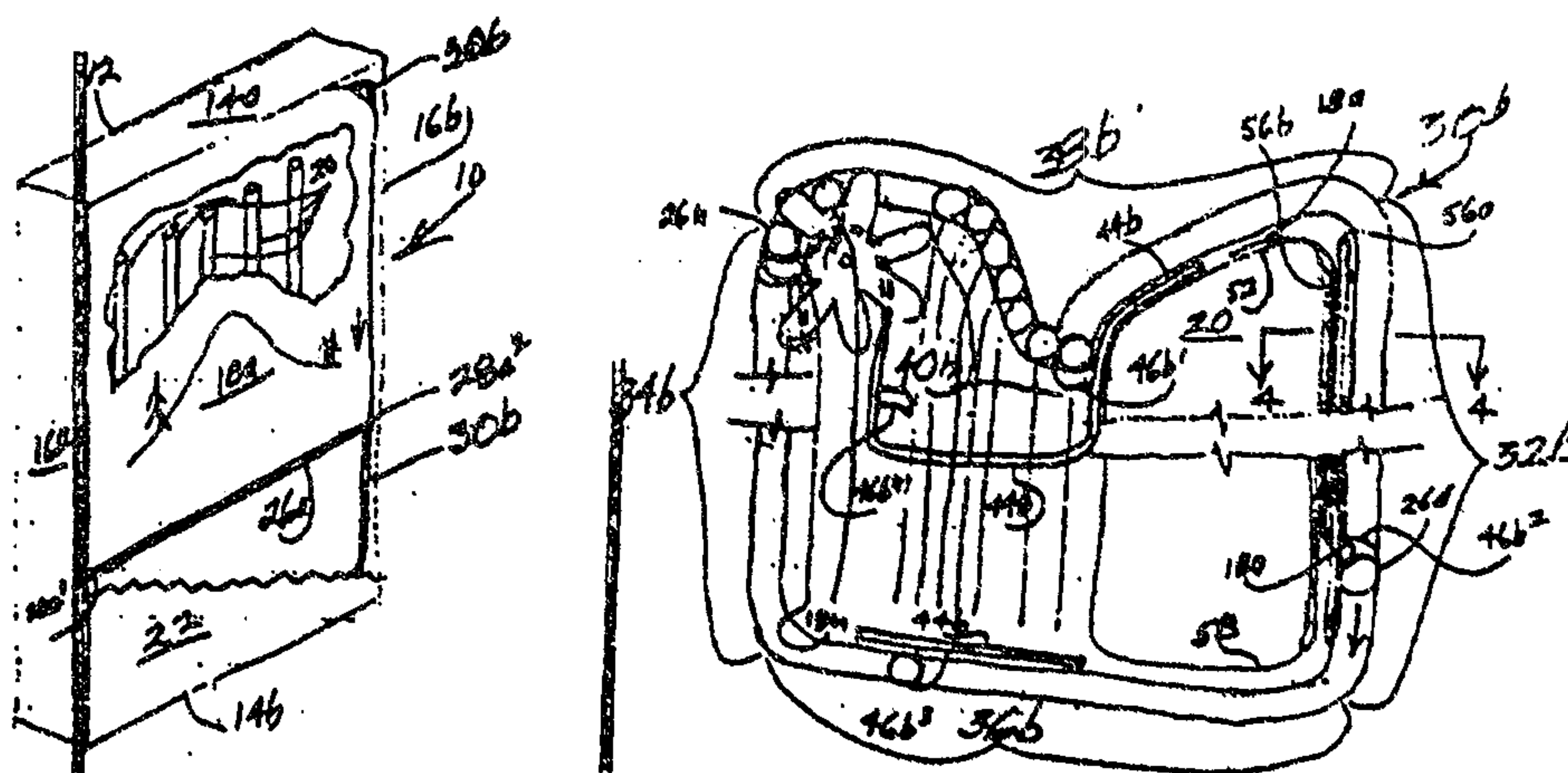
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(57) Abstract

The present invention is a graphic materials display device consisting of a housing (12) containing a source of illumination (20), a number of graphics (18) to be displayed sequentially behind a viewing screen (22), and a programmed motor for operating the mechanism. The graphics can be transparencies, posters, and the like, which are suspended from rods (26), the ends of which ride in shaped channels (30) formed into side members (16) of the housing and are pulled down from above in front of the source of illumination. The ends of the rods are engaged by hooks attached to an endless chain or belt (44) driven by a programmed motor. The rods, and the graphics suspended from them, are stored in a section of the shaped channels which keep them together until they are needed. The graphics removed from the illuminated screen are carried downwards, across the lower portion of the housing, lifted up the rear of the housing and allowed to slide downwards in the shaped channel, where they join other rods in the storage section.

SEQUENTIAL GRAPHIC MATERIALS DISPLAY DEVICE

The present invention is, generally, a graphic display device and, specifically, is a display device for publicly displaying in sequence graphic materials of various sizes, and the combined graphic material and suspension therefor.

BACKGROUND OF THE INVENTION

It is desirable that display devices for use in retail locations, shopping centers, transit malls, airports, and the like public places, present different messages (or portions of extended messages) in sequence, and change the message sufficiently often that they hold the attention of the passing public.

Existing display devices often have several shortcomings. Backlighted transparency displays often are limited to a single message continuously displayed. Sequential displays usually contain a library of transparencies through which an automated projector cycles in sequence, but require a great physical depth of display, or a complex and costly optical system, to obtain adequate image size so that a substantial audience can view it simultaneously.

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BRIEF DESCRIPTION OF THE PRESENT INVENTION

The present invention provides image sizes from small to very large in a compact package, sequential presentation of a multiplicity of images, simple and economical image-advancing mechanism, easily replaced

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graphic materials, and economical illumination system.

The present invention includes, along with other similar display devices, a light source, a viewing screen, and graphic images placed between the source of
5 illumination and the viewing screen.

Further, it comprises a rectangular frame having first and second end members, and first and second side members, with the side members having, on their facing surfaces, complementary shaped channels for receiving
10 the ends of a multiplicity of novel rods from each of which are suspended individual graphic materials. The rods are disposed transversely to the side members, and move in the shaped channels, which form a closed loop around the side members. A graphic image is pulled into
15 position immediately adjacent to the viewing screen, with the edges thereof being held by guides on the side members so as to hold the graphic image flat against the screen. The graphic materials are moved into position by spaced hook-like engaging means which engage the rod ends
20 and pull them in the shaped channels. The engaging means are attached, in spaced fashion, to endless chain or belt drive means which move alongside the shaped channels. As a rod is moved from its storage position at the top of the screen, the associated graphic is pulled along after
25 it, and is held between the light source and the viewing screen. After the graphic material has been held in place for a timed period, it is removed and deposited in a storage means, with the graphic hanging below.

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Synchronously, as one graphic material is removed from the screen, another is pulled into place and held there for a timed period, when the cycle is repeated.

In accordance with the present invention, there is
5 provided a graphic display device, comprising: 1) a rod having length, the ends of which are received by channels in a sequential graphic materials display device; 2) a rectangular graphic: a. having a dimension which is less than said length; b. being attached to said rod along one side thereof; c.
10 having, at a line of attachment along said rod, notches on each of said ends thereof.

In accordance with the present invention, there is also provided a display device including: A. a source of illumination; B. a viewing screen; C. means for suspending
15 graphics between said source of illumination and said viewing screen, comprising: 1. a rectangular frame having top and bottom members, and first and second side members, said side members having facing surfaces with complementary shaped channels formed therein; 2. a multiplicity of rods disposed
20 transversely to said side members, the ends of said rods movably received in said channels; a. each of said multiplicity of said rods having suspended therefrom a graphic having edges, said edges being engaged by guides in said first and second side members to hold said graphic therebetween; 3. means for
25 moving one of said rods in said channels so that said graphic associated therewith is held: a. adjacent to said screen; and b. between said screen and said source for a timed period; and 4. means for replacing said graphic after said timed period with another of said graphics.

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BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is an oblique view of the present invention, disclosing the general arrangement and the physical relationships of the major components thereof.

5 FIG. 2 is an interior plan view of the right hand side member of the present invention, disclosing the physical shape and relationships of the various components thereof.

FIG. 3 discloses the shape of a graphic where it is attached to an associated rod.

10 FIG. 4 discloses the relationship of a rod and its associated graphic to the channel and graphic guide structures.

DETAILED DESCRIPTION OF THE PRESENT INVENTION

Turning now to FIG. 1, we see present invention 10, which includes housing 12, top and bottom members 14a and 14b, 15 respectively, and first and second side members 16a and 16b respectively. It also includes graphic 18, and light source 20 (seen through a cut-away portion in graphic 18), shown here as several elongated tubes, e.g., fluorescent lamps. Graphic 18 is positioned immediately behind viewing screen 22 and in front 20 of light source 20, which can have a translucent or frosted

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cover thereon, if desired, to give a uniform illumination to the graphic. Rod 26a is attached to graphic 18a, and ends 26aU and 26aD thereof extend into and move, slidingly or otherwise, in complementary shaped channels 30a and 30b, formed in first and second side members 16a and 16b, respectively, as will now be explained in detail.

In the preferred embodiment, described in connection with FIG. 2, rod 26a is one of a multiplicity of rods, 26a . . . 26n, each of which has attached thereto one of a corresponding multiplicity of graphics, 18a . . . 18n, respectively. FIG. 2 is a plan view of the inner surface of second side member 16b, disclosing shaped channel 30b and other components necessary to the structure and operation of display device 10. First side member 16a is, for all practical purposes, a mirror image of second side member 16b.

Channel 30b includes two substantially parallel front and rear sections 32b and 34b, respectively, which parallel the front and rear edges of side member 16b, respectively. Sections 32b and 34b are connected at the lower end of housing 12 by lower connecting section 36b, and at the upper end thereof by upper connecting section 38b, which contains storage section 40b, whose operation will now be described.

In normal operation, all but three or four of rods 26a . . . 26n are suspended in storage section 40b of channel 32b. The others are distributed, as will be described hereinafter, at various positions in channel

32b. Each one of rods 26a . . . 26n has suspended there from one of corresponding graphics 18a . . . 18n, respectively. Housing 12 contains, besides source 20, programmed operation means 42, which includes endless drive means 44a and 44b, on the left and right sides of housing 12, respectively. Endless drive means 44a and 44b contain thereon spaced engaging means 46aU . . . 46aU and 46bU . . . 46bU, each of which are of a size and shape to engage rod ends 26aU . . . 26nU and 26aU . . . 26nU, respectively.

For simplicity of description, the operation will be described in terms of the mechanism and components on the right, or "b" side only of housing 12, the mechanism and components on the left, or "a" side thereof having a mirror image relationship thereto.

Further for simplicity of description, the operation of the present invention will be described as though all of rods 26a . . . 26n, and their associated graphics, are located in storage section 40b of channel 30b at the beginning of the operation. This simplification will be resolved by the end of the explanation.

When programmed operation means 42, which includes a drive motor, begins to operate, source of illumination 20 may be extinguished, if desired, to prevent observation of the process of replacing graphics by on-lookers. On the other hand, movement in a display device often attracts attention, and it may be desirable to leave light source 20 illuminated. Operation means 42

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drives endless drive means 44b so that one of engaging means 46bU . . . 46bU (46bU for convenience), engages rod end 26aU and pulls it along channel 30b to front section 32b, and down along channel 32b until all of graphic 18a is located behind viewing screen 22. At that time, operation means 42 turns the drive motor off, and source 20 is turned on (if it has been extinguished), illuminating graphic 18a for a timed period. At that same time, another of engaging means 46bU . . . 46bU (46bU for convenience), has engaged rod end 26bU of rod 26b, next in line of those in storage.

When graphic 18a is to be replaced by graphic 18b, programmed operation means 42 may extinguish source 20, if desired, and turns on the drive motor to start endless drive means 44b, so that engaging means 46bU pulls rod 26b and graphic 18b into the positions formerly occupied by rod 26a and graphic 18a, respectively while, at the same time, rod 26a and graphic 18a are being moved across lower connecting section 36b and up rear section 34b of channel 32b. The rods can be timed to overlap the previous graphic, if desired to avoid exposing the internal mechanism of the present invention. Depending upon the dimensions of housing 12, the length of endless drive means 44b, and the length of individual graphics 18a . . . 18n with respect to those dimensions, rod 26a will be moved to the top of rear channel section 34b, where it will be engaged by free-wheeling sprocket 48b, while being disengaged by engaging means 46bU. At this time,

operation means 42 turns off the drive motor and light source 20 is turned on if it has been extinguished, to illuminate graphic 18b. Also, a third one (46bU for convenience) of engaging means 46bU . . . 46bU has engaged
5 rod end 26cU. At the next cycle, rod 26b will engage the next section of sprocket 48b, rotating it one step on its axis. When rod 26c arrives at sprocket 48b, it rotates it one more step and, at some point depending upon the size of sprocket 48b and the number of teeth it contains, rod
10 end 26aU passes out of sprocket 48b and rod 26a is free to slide down the slope of storage section 40b under the influence of gravity, to rest against rod 26n. The operation continues in like cyclical manner to display each of the graphics 18a . . . 18n until graphic 18a is the next
15 to be displayed, at which time, one complete cycle of operation has been completed.

When rods 26a . . . 26n are in storage section 40b, corresponding graphics 18a . . . 18n are hanging down therefrom under the influence of gravity. As disclosed in FIG. 3, graphics 18a . . . 18n have a cutout
20 50a and 50b at each end thereof, the function of which will be now be explained, in connection with FIGS. 3 and 4. When rod 26a is pulled forward from storage section 40b toward front section 34b of channel 32b, graphics
25 18a is pulled onto curved slide 52, which is, preferably, part of the structure of light source 20. As rod 26a continues to be pulled down into front section 34b of channel 32, cutout 50b passes over first projecting guide

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54b, keeping the right edge of graphic 18a behind guide 54b, while rod 26a moves in front thereof. As graphic 18a is pulled further, the right edge thereof encounters second guide 56b, keeping graphic 18a in position between guides 54b and 56b, preventing wrinkling thereof and consequent distortion of the image. When graphic 18a is fully in position, it extends upward from rod 26a to the top of screen 22, and adjacent thereto. As graphic 18a is removed from the display position on the next cycle, it is pulled onto second curved slide 58, which is preferably a part of the housing of light source 20, and which guides it across the lower end of housing 12 to where it can hang freely from upwardly ascending rod 26a until needed once more.

15 It must be re-emphasized that, for simplicity, the foregoing description is written in terms of the components of the right-hand side of the housing only, and that similar components on the left-hand side thereof will be operating in lock-step.

20 Those skilled in the art will see many substitutions which can be made in the present invention without departing from the spirit or intent thereof. As examples, the viewing screen may be translucent or frosted, when the present invention is used with transparencies.

25 The graphic materials can be posters, charts, or other graphic materials, in addition to being transparencies, translucencies or "translight" materials, etc. Curved slides 52 and 58 may be separate components from light

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source 20, and light source 20 may use other light elements than fluorescent tubes. Endless drive means 44b may be, preferably because of its silent operation, an endless belt, but an endless chain, cable or other endless means to which engaging means 46a . . . 46n can be attached are within the contemplation of the present invention. The rod ends may have thereon bushings to separate them slightly so that when engaging means 46a . . . 46n contact them, clicking noises may be reduced or eliminated. The rods themselves can have a shape in cross-section other than round, where the space to be spanned between side members requires resistance to bending. A triangular cross-section, for example, would resist sagging of the rod. Rod ends 28a, 28b are preferably round for ease of movement in channels 30a and 30b. Further, the graphics themselves may be permanently attached to the rods, or may be replaceable thereon. A further possible embodiment is that the graphics may be inserted in transparent holders attached to the rods. These holders could be similar to the familiar plastic "baggies" with ZIPLOC or similar closures thereon, facilitating easy and convenient replacement of the graphics. The transparent holders themselves could also be replaceable, making for great flexibility in the use of the present invention.

The terms and expressions which have been employed in the foregoing specification are used therein as terms of description and not of limitation, and there is

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no intention, in the use of such terms and expressions,
of excluding equivalents of the features shown and
described, or portions thereof, it being recognized that
the scope of the invention is defined and limited only by
5 the claims which follow.

WHAT I CLAIM AS MY INVENTION IS:

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CLAIM 1. A graphic display device, COMPRISING:

1. a rod having length, the ends of which are received
by channels in a sequential graphic materials display
device;
- 5 2. a rectangular graphic:
 - a. having a dimension which is less than said
length;
 - b. being attached to said rod along one side thereof;
 - c. having, at a line of attachment along said
10 rod, notches on each of said ends thereof.

CLAIM 2. The graphic display device of CLAIM 1, wherein
said graphic is replacably attached to said rod.

- 15 CLAIM 3. The graphic display device of CLAIM 1, wherein
said graphic is replacably contained in a transparent
container attached to said rod.

- CLAIM 4. The graphic display device of CLAIM 1, wherein
20 said graphic is replacably contained in a replacable
transparent container attached to said rod.

CLAIM 5. The graphic display device of CLAIM 1,
including:

- 25 A. a source of illumination;
- B. a viewing screen;

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(CLAIM 5, continued):

- C. means for suspending said graphic between said source of illumination and said viewing screen, COMPRISING:
- 5 1. a rectangular frame having top and bottom members, and first and second side members, said side members having facing surfaces with said channels formed therein;
 2. a multiplicity of said rods disposed transversely to
10 said side members, said ends of said rods movably received in said channels;
 - a. said channels in said said members being shaped, said shapes being mirror images of each other;
 - 15 b. each of said multiplicity of said rods having suspended therefrom one of said graphics, said graphic having edges being engaged by guides in said first and second side members to hold said graphic therebetween;
 - 20 3. means for moving one of said rods in said channels so that said graphic associated therewith is held;
 - a. adjacent to said screen; and
 - b. between said screen and said source for a timed period; and
 - 25 4. means for replacing said graphic after said timed period with another of said graphics.

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CLAIM 6. A display device including:

- A. a source of illumination;
- B. a viewing screen;
- C. means for suspending graphics between said source of
5 illumination and said viewing screen, COMPRISING:
 - 1. a rectangular frame having top and bottom members,
and first and second side members, said side members
having facing surfaces with complementary shaped
channels formed therein;
 - 10 2. a multiplicity of rods disposed transversely to said
side members, the ends of said rods movably received
in said channels;
 - a. each of said multiplicity of said rods having
15 suspended therefrom a graphic having edges,
said edges being engaged by guides in said
first and second side members to hold said
graphic therebetween;
 - 3. means for moving one of said rods in said channels
so that said graphic associated therewith is held:
20 a. adjacent to said screen; and
b. between said screen and said source for a
timed period; and
 - 4. means for replacing said graphic after said timed
period with another of said graphics.

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CLAIM 7. The display device of CLAIM 5 or 6, wherein said means for replacing includes:

1. means for moving said one of said rods by engaging said ends thereof, and moving it in said channels so that said graphic attached thereto is withdrawn from between said source and said screen; and
2. means for engaging another of said rods by said ends thereof and moving it in sequence behind said one of said rods so that said another of said graphics replaces said graphic between said source and said screen.

CLAIM 8. The display device of CLAIM 7, wherein said means for engaging includes a pair of endless drive means with a multiplicity of spaced engaging means arranged thereon, wherein one of said engaging means from each of said pair of said drive means simultaneously engages one of said rods by said ends thereof.

CLAIM 9. The display device of CLAIM 8, wherein is included a freely rotating shaft having on each end thereof sprockets, said sprockets receiving said ends of said rods from said spaced engaging means and, by rotation thereof, depositing said rods in sequence in a storage section of said channel.

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CLAIM 10. The display device of CLAIM 9, wherein said storage section includes a portion of said shaped channels:

1. into which said sprockets deposit said rods with
5 said graphics hanging therefrom; and
2. from which said spaced engaging means engages said rods to move said graphics between said source and said screen.

10 CLAIM 11. The display device of CLAIM 10, wherein said storage section is a section of said channel, sloping downward from where said rods are deposited therein by said sprockets and whereby said rods are free to move therein by gravity.

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FIG. 1

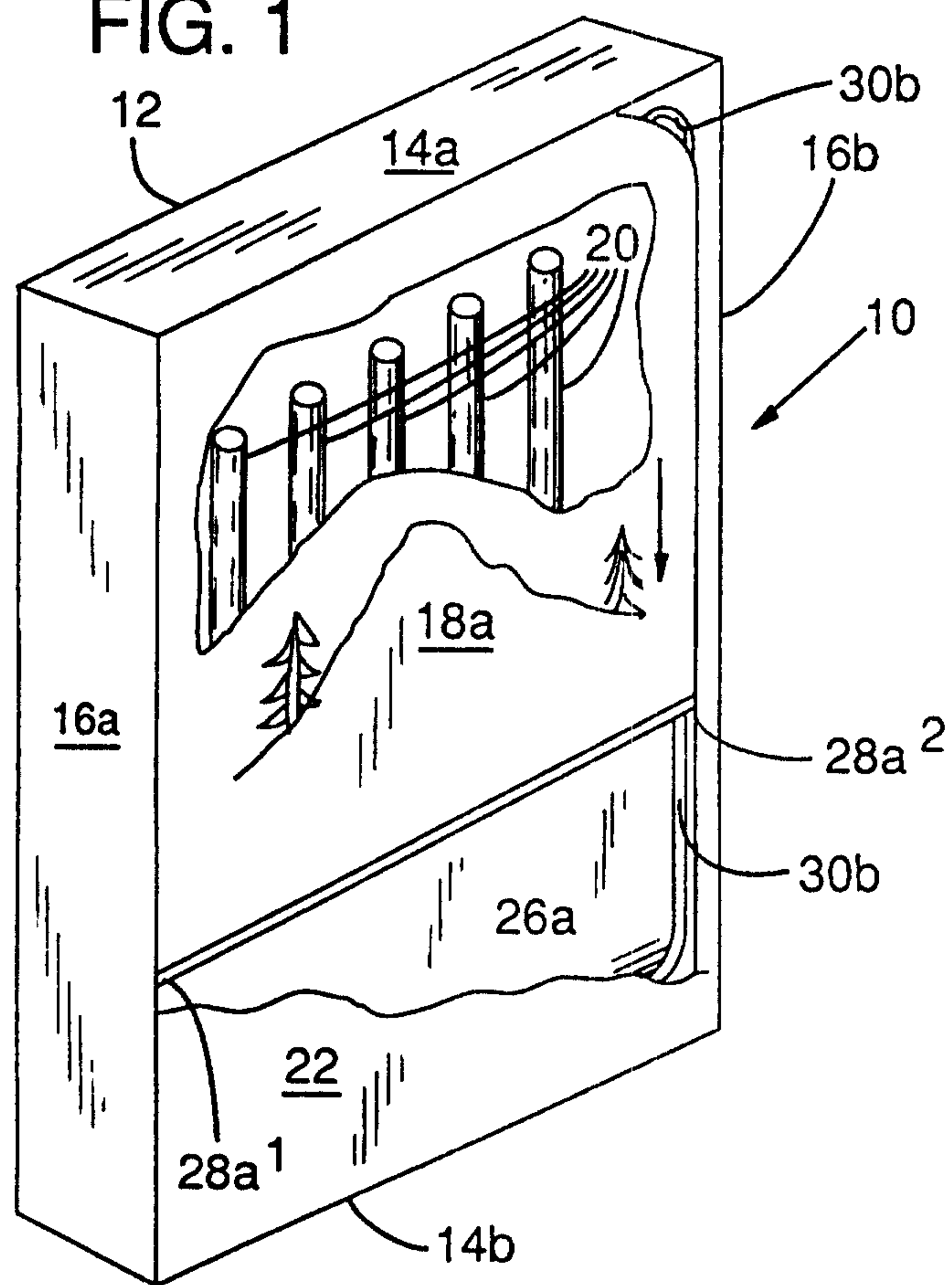
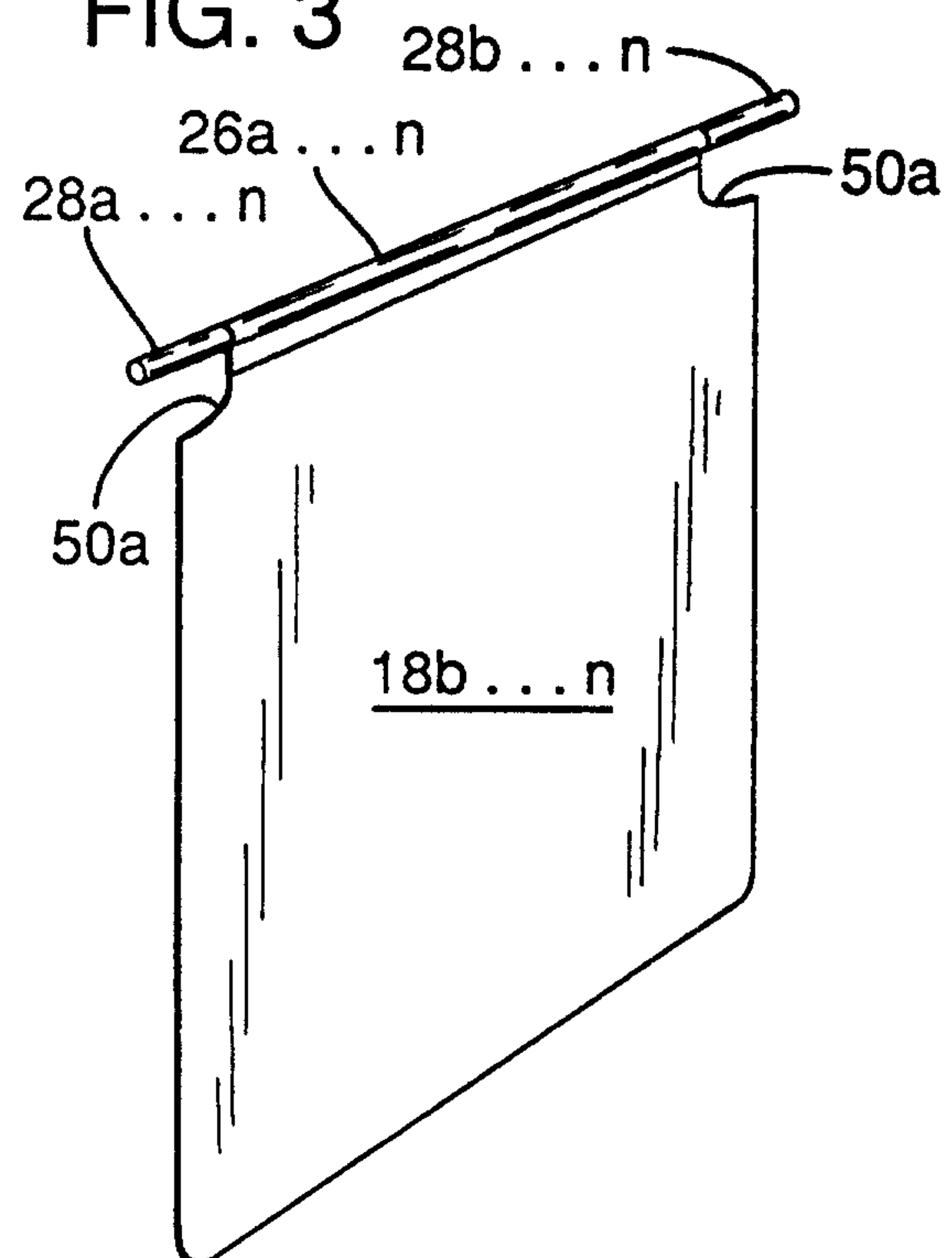
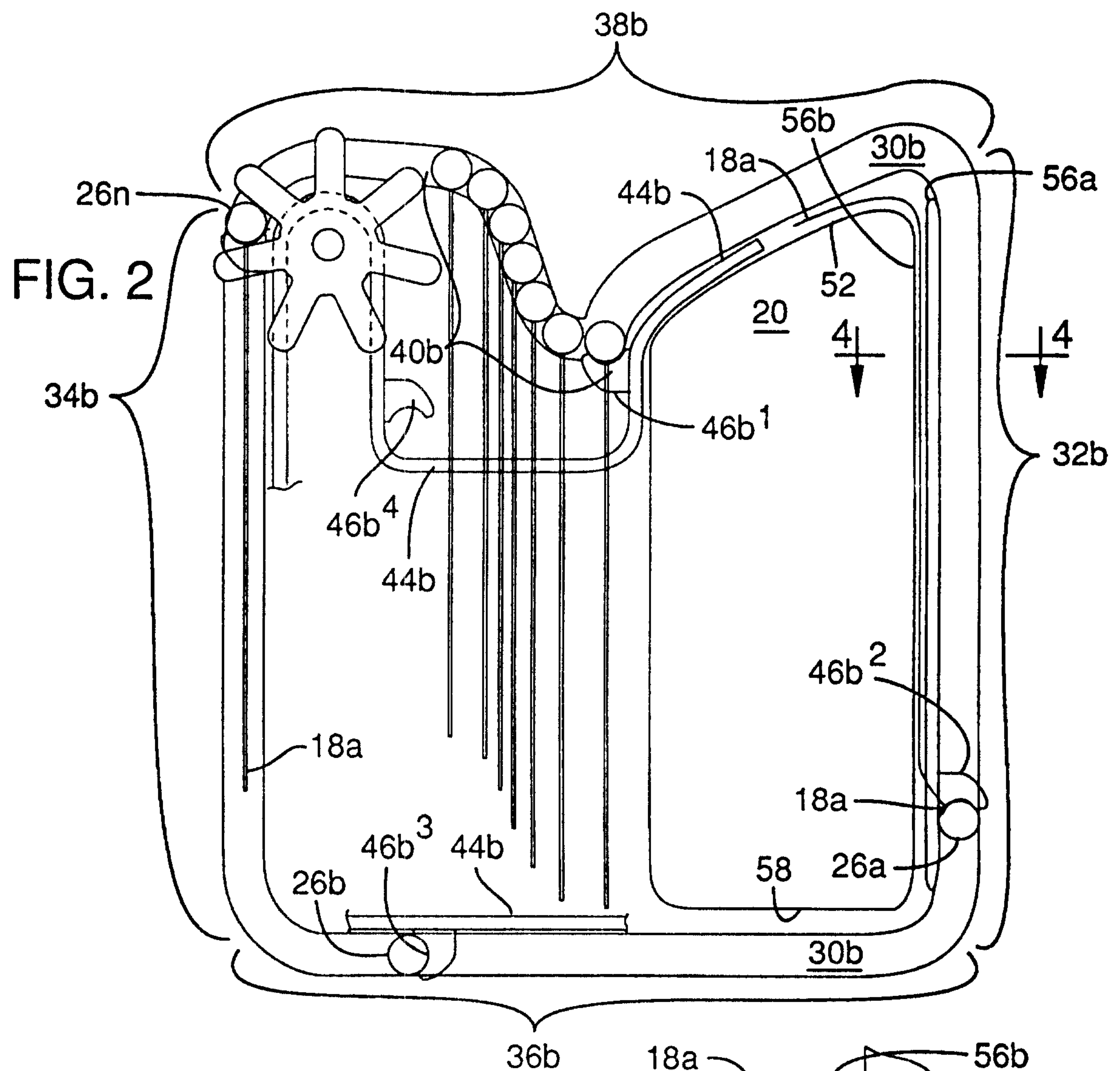


FIG. 3



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**FIG. 4**