

June 22, 1965

J. M. ALLEN ETAL

3,190,577

CONTAINER FOR ROLL MATERIAL

Filed April 8, 1963

2 Sheets-Sheet 1

Fig. 1

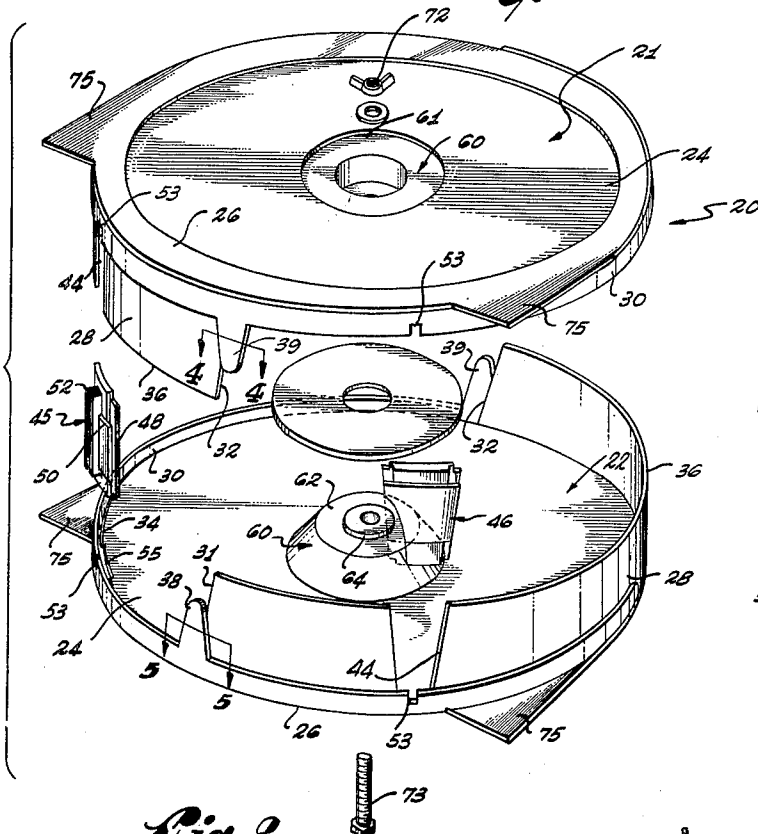


Fig. 4

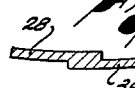


Fig. 5

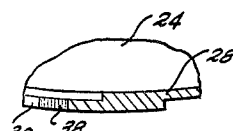


Fig. 8

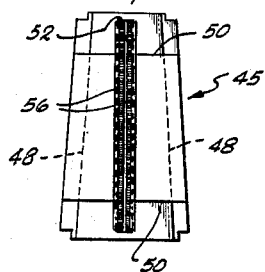
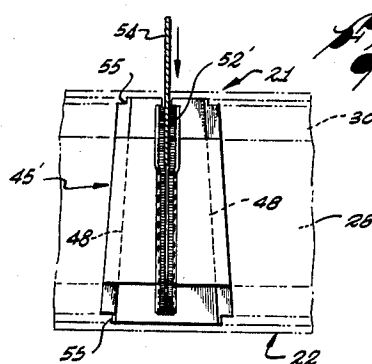


Fig. 11



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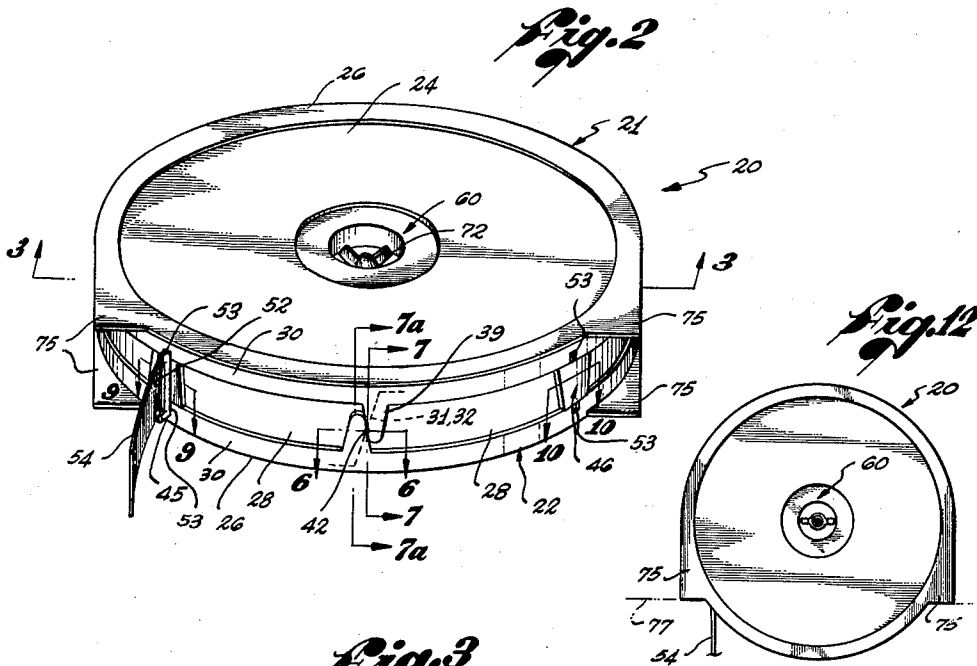
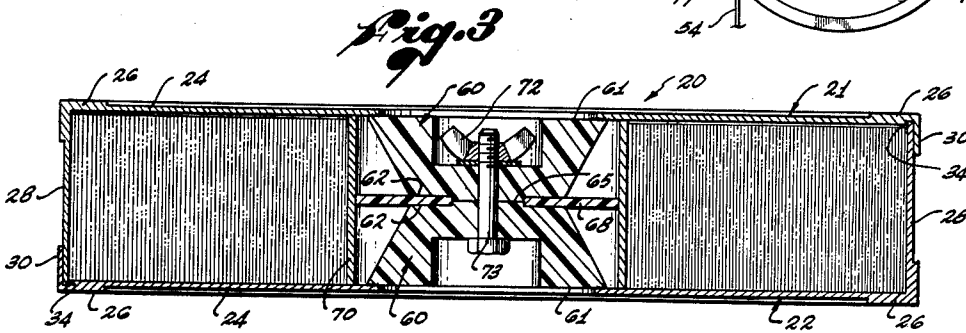
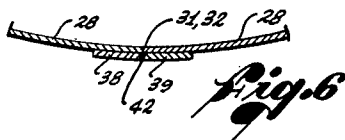
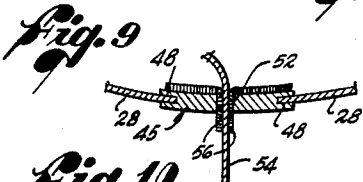
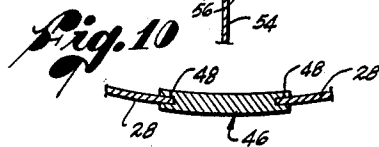
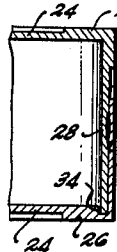
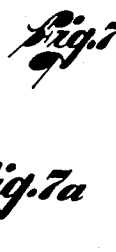
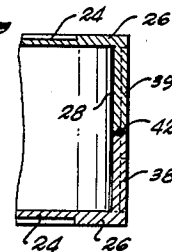
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Filed April 8, 1963

2 Sheets-Sheet 2



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CONTAINER FOR ROLL MATERIAL

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Filed Apr. 8, 1963, Ser. No. 271,397

11 Claims. (Cl. 242-71.1)

This invention relates generally to containers, and more particularly to a new and improved container for storing and dispensing roll material such as photographic film or the like.

In handling roll materials, and especially those of the photosensitive variety such as rolls of photographic film, it is customary to house such materials in special containers for storage and/or shipment. Moreover, such containers may frequently be used as magazines from which the roll material contained therein can be dispensed as needed.

In designing such containers, it has, of course, always been a primary objective to minimize the costs attendant upon manufacturing and using such containers. Unfortunately, however, roll material containers heretofore available have left much to be desired insofar as container fabrication costs and efficiency of roll material utilization are concerned. In this latter connection, it has been found that, with containers used as dispensing magazines, the roll size which can be effectively handled by the container is not merely dependent on the volume capacity of the container, but is limited by the friction encountered by the supply roll during rotation of the roll for purposes of dispensing material from the container. Hence, as a practical matter, large capacity magazines have been avoided because of the tendency for the roll material issuing from the large supply roll to bind or tear during dispensing due to the relatively high degree of rotational resistance encountered by the roll within the container. This condition has necessitated the use of a greater number of smaller supply rolls, each with its own container, instead of a fewer number of larger supply rolls and containers. The result is not only an increase in expenditure for the greater number of containers required, but there is also the added inconvenience of changing supply rolls more frequently.

Accordingly, it is an object of the present invention to provide a new and improved container for roll material which overcomes the above and other disadvantages of the prior art.

Another object is to provide a new and improved roll material container which is relatively inexpensive to manufacture.

A further object of the invention is the provision of a roll material container fabricated of two easily mated and identical half sections.

Still another object is to provide an inexpensive, reusable, roll material container with increased roll size capacity and substantially no tendency for the roll material to bind or tear as it is dispensed from the container.

Yet another object of the present invention is the provision of a new and improved roll material container which minimizes the rotational friction encountered by a supply roll in the process of dispensing material from the container.

A still further object is to provide a new and improved roll material container which may be readily sealed in its assembled state to provide an expendable and tamper proof unit.

The above and other objects and advantages of this invention will be better understood by reference to the following detailed description, when considered in connection with the accompanying drawings of illustrative embodiments thereof, and wherein:

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FIGURE 1 is an exploded, perspective view of the structural components of a roll material container in accordance with the present invention;

FIGURE 2 is a perspective view of a completely assembled container, and shows the roll material being dispensed from the container;

FIGURE 3 is a sectional view, taken along the line 3-3 in FIGURE 2, and illustrates the means for reducing rotational friction of the supply roll;

FIGURES 4 and 5 are sectional views, taken along the lines 4-4 and 5-5, respectively, in FIGURE 1, and illustrate the structural relationship of the guiding tabs upon complementary half sections of the container;

FIGURE 6, 7 and 7a are fragmentary sectional views, taken along the lines 6-6, 7-7 and 7a-7a, respectively, in FIGURE 2, and illustrate the manner in which the tabs upon complementary half sections cooperate in the assembled container;

FIGURE 8 is a front elevational view of one type of dispensing insert for use with the container of the present invention;

FIGURE 9 is a fragmentary sectional view, taken along the line 9-9 in FIGURE 2, and illustrating the manner in which the roll material exits through the dispensing insert;

FIGURE 10 is a fragmentary sectional view, taken along the line 10-10 in FIGURE 2, and illustrating the installation of a non-dispensing insert within the container;

FIGURE 11 is a fragmentary, front elevational view illustrating an alternate embodiment of a dispensing insert capable of use with the roll material container of the present invention; and

FIGURE 12 is a front elevational view illustrating the manner in which the roll material container may be typically mounted when used as a magazine.

Referring now to the drawings, and particularly to FIGURES 1-3 thereof, the roll material container of the present invention is designated generally by the numeral 20. The container 20 is formed by two identical half sections 21, 22 which are adapted to mate in a complementary fashion by telescoping into overlapping engagement with one another. The sections 21, 22 may be of plastic, cardboard, metal, or any other appropriate structural material. By virtue of their identical structural configurations, the sections 21, 22 may be cast, molded, stamped, etc., using a single die. The latter not only reduces manufacturing costs for the container, but inventory and assembly procedures are also simplified over the situation where the complementary sections are different and therefore require segregation prior to assembly and subsequent selection during assembly.

When the complementary sections 21, 22 are aligned as shown in FIGURE 1 and assembled as shown in FIGURE 2, the container 20 formed thereby is essentially a short, cylindrical drum of circular cross section. Each of the complementary sections 21, 22 provides one end wall and a portion of the circular, cylindrical side walls which combine to make up the drum-like container 20.

Each of sections 21, 22 includes a circular end wall or base member 24. Each base 24 may, if desired, be provided with a thickened peripheral rim 26 for additional strength. From the reinforced rim 26, a plurality of cylindrical wall sections extend at right angles to their respective base member 24. The cylindrical side walls of each section 21, 22 include a taller wall section 28 and a wall section 30 which is shorter in height. The shorter wall 30 extends from the outermost edge of the rim 26 upon the base 24, whereas the taller wall 28 is offset inwardly from the outermost edge of the base by a distance equal to the thickness of the shorter wall 30.

As best seen in FIGURE 1, the taller wall 28, where

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it meets with its respective base 24, extends slightly more than half way around the circular circumference of its base. As the wall 28 proceeds away from its respective base 24, its terminal edges 31, 32 are tapered or cut back with a constant slope, so that the peripheral length of the wall 28, as defined by its cross section in successive planes parallel to its base, shortens as the wall extends further away from its base. However, the slope of the terminal edges 31, 32 is selected so that, at the height of the wall 28 corresponding to the position of a median plane through the container 20 in its assembled state, the wall cross section extends exactly halfway around the circumference of the container. In other words, the slope of the terminal edges 31 and 32 is selected so that these edges intersect the median plane at points which are 180° apart about the center of the container.

The reason for the aforesaid construction is that, in assembling the container, the terminal edge 32 of the half section 21 will abut the terminal edge 31 of the half section 22. Conversely, the terminal edge 31 of the section 21 will abut the terminal edge 32 of the section 22. If, at the median plane of the assembled container 20, each of the walls 28 extended more than half way around the circumference of the container, the sections 21 and 22 could not be fitted together. On the other hand, if the walls 28 extend less than half way around the circular circumference of the container at the median plane, the terminal edges of both of the taller walls 28 would not abut each other upon assembly, and would thereby produce a sloppy fit which would be neither precise nor light-tight.

The shorter wall 30 extends around the outer periphery of the base 24 for at least the remaining portion of the circular circumference not traversed by the taller wall 28 where it meets the base. On the other hand, the shorter wall 30 may extend about the entire periphery of the base 24 to further enhance the strength of the container.

Each base 24 of the half sections 21, 22, adjacent the inside face of the shorter wall 30, is provided with a channel-like recess 34 of sufficient width to receive the leading end 36 of the taller wall 28 extending from the other half section. Hence, as will be apparent in FIGURES 1-3, when the complementary sections 21, 22 are aligned in opposed, laterally reversed positions (see FIGURE 1) and are subsequently brought together, the two sections telescope relative to each other to form the container 20 (see FIGURES 2 and 3). In this connection, the outer, shorter wall 30 of each section overlaps the inner, taller wall 28 of the other section, the leading end 36 of each of the taller walls 28 engaging and seating within the recess 34 behind the respective shorter wall overlapping it.

The snug engagement of the terminal edges 31, 32 of each of the taller walls 28 with the opposing edges 32, 31, respectively, of the taller wall 28 in the other section, together with the overlapping relationship between the taller and shorter walls in the assembled container, combine to produce a relatively light-tight unit suitable for storing roll material of the photosensitive type within the container. However, to further improve the light-tight characteristics of the container 20, as well as to improve the ease with which the sections 20, 21 can be aligned during assembly of the container, each of the shorter walls 30 is provided with a pair of diametrically opposed, tapered tabs 38, 39. These tabs 38, 39 overlap the terminal edges 31, 32, respectively, of the taller wall 28 to a distance at least slightly beyond the point where the median plane of the container would intersect these terminal edges.

As shown in FIGURES 2 and 4-7a, the tabs 38, 39 of opposing sections 21, 22 serve to align the sections during assembly, and also serve to overlie the junction between the terminal edges 31, 32 of each of the taller walls 28 in the assembled container 20. The ease of

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alignment of the sections 21, 22 facilitated by the tabs 38, 39 is most appreciated in working with photosensitive materials, where assembly of the container 20 may be carried out in a photographic darkroom and the sense of feel must be relied upon more than the sense of sight to accomplish alignment of the sections.

With the container assembled as shown in FIGURE 2, the only points through which light can possibly enter the container are at the intersections, indicated by the numeral 42 in FIGURES 2, 6 and 7, between the junctions of the terminal edges 31, 32 and the junction lines defined by abutting edges of the tabs 38, 39. However, light leakage at these points can be effectively avoided by applying a suitable sealant, such as opaque rubber, wax or the like, to these points. Once this has been accomplished, the container 20 is rendered completely impervious to light, and photosensitive roll materials may be stored therein without fear of fogging due to leakage of light into the container.

When it is intended to use the container 20 as a magazine from which its roll material contents may be dispensed, suitable means must be provided to permit the roll material to exit from the container 20. However, in providing such means, the advantages afforded by utilizing identical complementary sections 21, 22 must not be obviated. To this end, each of the taller walls 28 embodies an identically located, tapered slot 44 (see FIGURE 1). By virtue of these slots 44, each section 21, 22 is adapted to receive a selected one of a pair of inserts 45, 46 used with each container 20.

As shown in FIGURES 1, 2, 8 and 9, the insert 45 is provided with a taper to match that of the slot 44, into which it is adapted to be inserted. To this end, the tapered sides of the insert 45 are channeled at 48 to slidably receive the edges of the wall 28 defining the slot 44, during installation of the insert within the slot. In view of the tapered sides of both the insert 45 and the slot 44, a wedging action is provided which more positively seats the insert 45 upon proper installation. The outer face of the insert 45 is also provided with shoulders 50 (see FIGURES 1 and 8) adapted to seat against the shorter walls 30 of both sections 21, 22 when the container 20 is completely assembled.

To facilitate issuance of material from within the container 20, the insert 45 is provided with a central, slotted aperture 52 parallel to the cylindrical axis of the container 20. The upper and lower ends of the slot 52 are in registry with corresponding slots 53 in both the upper and lower shorter walls 30 when the container is assembled (see FIGURE 2). The roll material contents of the container 20 can be dispensed from the container by threading the lead strip 54 (see FIGURES 2 and 9) through the aperture defined by the slots 52, 53.

If the strip 54 is photosensitive, and it is desired to shield undispensed portions of the roll material from fogging light, the slotted aperture 52 may be lined with a pair of flexible, opaque flaps 56 of felt, velvet or the like, substantially as shown in FIGURES 8 and 9.

To facilitate threading of the lead strip 54 through the aperture 52, an alternate embodiment 45' of the slotted insert is shown in FIGURE 11. The major distinction between the insert 45' and the insert 45 is that the slot 52' in the insert 45' extends completely through one of the ends of the insert, so that the insert may be split apart for edgewise insertion of the lead strip 54. If the insert 45' is used instead of the insert 45, assembly of the container 20 serves to hold the insert together by virtue of the tapering sides defining the slot 44 and the overlapping engagement of the shorter walls 30. If desired, the base 24 of each section 21, 22, adjacent the inner face of the shorter wall 30, may be recessed as at 55 (see FIGURES 1 and 11) and adapted to engage an upper or lower end, respectively, of the insert 45 or 45' when the container is assembled.

The insert 46 is structurally identical to the insert 45 in

every respect, with the exception that it lacks the slotted aperture 52. Hence, the purpose of installing the insert 46 in the slot 44, as shown in FIGURES 2 and 10, is merely to seal off the slot 44 in one section after the slotted insert 45 has been installed in the slot 44 of the other section.

The means for reducing rotary friction, so that a larger supply roll may be used with the container 20, with substantially no tendency of the roll material to bind as it is dispensed, is best observed in FIGURES 1 and 3 of the drawings. A frusto-conical core member 60 projects inwardly of the container 20 from the center of each of the complementary half sections 21, 22. The base 61 of each of the core members 60 is appropriately affixed to the base 24 of its respective section, or, if desired, the core members 60 may be integrally formed with their respective sections 21, 22.

The leading face 62 of each core member 60 has a coaxial, circular projection 64 of reduced diameter. The circular projections 64 abut one another at 65 (see FIGURE 3) upon assembly of the container 20 and thus provide a reduced diameter hub upon which a circular washer or spacer element 68 is mounted.

The outer diameter of the spacer 68 exceeds the maximum diameters of the core members 60, and is selected to provide a snug fit within the internal bore of a spool 70 upon which the supply of roll material is wound. Hence, the spool 70 and its supply of roll material rotate with the spacer 68 about the hub provided by abutment of the projections 64. Sidewise displacement of the spacer 68 is effectively prevented by the confronting faces 62 of the core members 60, the spacing between these confronting faces being just sufficient to permit minimum clearance for free rotation of the spacer with respect to the core members.

By virtue of the smaller diameter of the hub formed by the projections 64, rotation of the spool 70 about the hub, as opposed to rotation about the larger diameter spacer 68, results in considerably reduced rotational friction. Hence, there is less tendency towards binding of the roll material as it is unwound from the spool 70 and dispensed from the container 20.

In assembling the container 20, the projections 64 may be held in abutment at 65 by any appropriate means, as by the nut and bolt assembly 72, 73, an appropriate adhesive, or by heat welding confronting faces of the projections to hold them together. This arrangement facilitates maintenance of precise spacing tolerances between the pair of base members 24 in the assembled container. Thus, binding or side slippage of the roll material within the container from either excessive or unduly restricted container width, respectively, is effectively prevented. Moreover, the core members 60 reinforce the container 20 against crushing or cracking.

Referring now to FIGURE 12, and again to FIGURES 1 and 2, it will be observed that each of the complementary sections 21, 22 of the container 20 may be provided with projections or ears 75 for mounting the container upon an appropriate surface such as 77 in FIGURE 12. This is particularly useful where the container 20 is used as a film magazine for a camera and, in this connection, the ears 75 may assume any structural configuration consistent with the particular requirements of the instrumentation with which the container 20 is to be used.

It will be apparent from the foregoing that, while particular forms of our invention have been illustrated and described, various modifications can be made without departing from the spirit and scope of our invention. Accordingly, we do not intend that our invention be limited, except as by the appended claims.

We claim:

1. In a container for storing roll material, the combination of: a pair of structurally identical half sections, each section having a base member and taller and shorter cylindrical side walls extending from said base member, the

taller side wall of each section being offset inwardly from the shorter side wall of the same section, the shorter side wall of each section overlapping the taller side wall of the other section in telescoping relation, the taller side wall of each section having a slot therein; and a pair of inserts, each insert being adapted to seat within the slot in one of said taller walls, one of said pair of inserts having a slotted aperture therein, the other said pair of inserts being imperforate.

2. A light-tight container for roll material, comprising: a pair of structurally identical half sections in opposed, laterally reversed alignment, each of said sections having a circular base member and taller and shorter side walls extending perpendicularly therefrom, the taller side wall traversing a 180° arc at the median plane of the assembled container and being offset inwardly from the shorter side wall, the shorter side wall traversing at least the remaining portion of the periphery of its base member not traversed by the taller wall, the shorter side wall of each section overlapping the taller side wall of the other section in telescoping relation; and means for rendering the junction between the taller walls of opposed sections light-tight.

3. A container as set forth in claim 2, wherein said means includes a pair of diametrically opposed tapered tabs extending from the shorter side wall of each of said sections and overlying the terminal edges of each taller wall to a point further removed from said base member than the median plane of the assembled container.

4. A light-tight container for roll material, comprising: a pair of structurally identical half sections in opposed, laterally reversed alignment, each of said sections having a circular base member and taller and shorter side walls extending perpendicularly therefrom, said base member having a channel adjacent the inner surface of said shorter side wall, the taller side wall traversing a 180° arc at the median plane of the assembled container and being offset inwardly from the shorter side wall, the shorter side wall traversing at least the remaining portion of the periphery of its base member not traversed by the taller wall, the shorter side wall of each section overlapping the taller side wall of the other section in telescoping relation, each taller side wall engaging the channel in the base member of the other section, the taller side wall of each section abutting the taller side wall of the other section to form a pair of junctions therebetween, the taller side wall of each section having a tapered slot therein; a pair of inserts having tapered sides and channeled edges and each adapted to seat within one of the tapered slots in said taller side walls, one of said pair of inserts having a slotted aperture therein, the other insert being imperforate; and a pair of diametrically opposed tapered tabs extending from the shorter side wall of each of said sections, the pairs of tabs of both sections cooperating in the assembled container to completely overlie the pair of junctions between the taller walls of the two sections.

5. A container as set forth in claim 4, including a plurality of mounting ears extending from each of said half sections.

6. In a roll material container formed by overlapping engagement of identical sections in telescoping relation, a pair of inserts comprising: a first, substantially imperforate insert having tapered sides of constant slope, each side having a channeled terminal edge adapted to slidably receive a mounting edge presented by one of said sections; and a second insert substantially duplicating the structural configuration of said first insert but having additionally an elongated, slotted aperture therein through which strips of material may egress, the channeled terminal edges of said second insert being adapted to slidably receive mounting edges presented by the other of said sections.

7. A pair of inserts as set forth in claim 6, including a pair of light impervious, flexible flaps lining the slotted aperture of said second insert.

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8. A pair of inserts as set forth in claim 6, wherein said slotted aperture extends through an outer peripheral edge of said second insert, whereby said insert may be spread apart for insertion of strip material into said aperture.

9. In a dispensing magazine for roll material, a pair of core members abutting to define a reduced diameter hub of circular cross section; a substantially planar spacer element mounted between said core members upon said hub for rotation about said hub, the outer diameter of said spacer element being greater than the maximum outer diameters of said core members.

10. In a container for roll material, the combination comprising: a pair of coaxial, substantially frusto-conical core members extending from opposite ends of said container, said core members having confronting faces with abutting projections defining a circular cross section hub of reduced diameter; a substantially circular spacer element rotatably mounted upon said hub between the confronting faces of opposing core members, the outer diameter of said spacer element being greater than the maximum outer diameter of each core member.

11. In a container for storing and dispensing roll material, the combination comprising: a pair of substantially identical half sections in telescoping relation to form said container; a pair of coaxial, substantially frusto-conical

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core members, each core member being affixed by its base to one of said sections and extending into said container at the center of said container, each core member having a circular cylindrical projection extending from its frustum face, the projection of each core member abutting the projection of the other core member to provide a circular, cylindrical hub of reduced diameter; a circular, substantially planar spacer element mounted for rotation about said hub and held in close-fitting, slidable engagement between opposing frustum faces of said core member, the outer diameter of said spacer element being greater than the maximum outer diameter of each of said core members; and a supply spool having a central bore of a diameter equal to the outer diameter of said spacer element, said supply spool being mounted upon said spacer element and adapted to rotate with said spacer element.

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