

Aug. 5, 1958

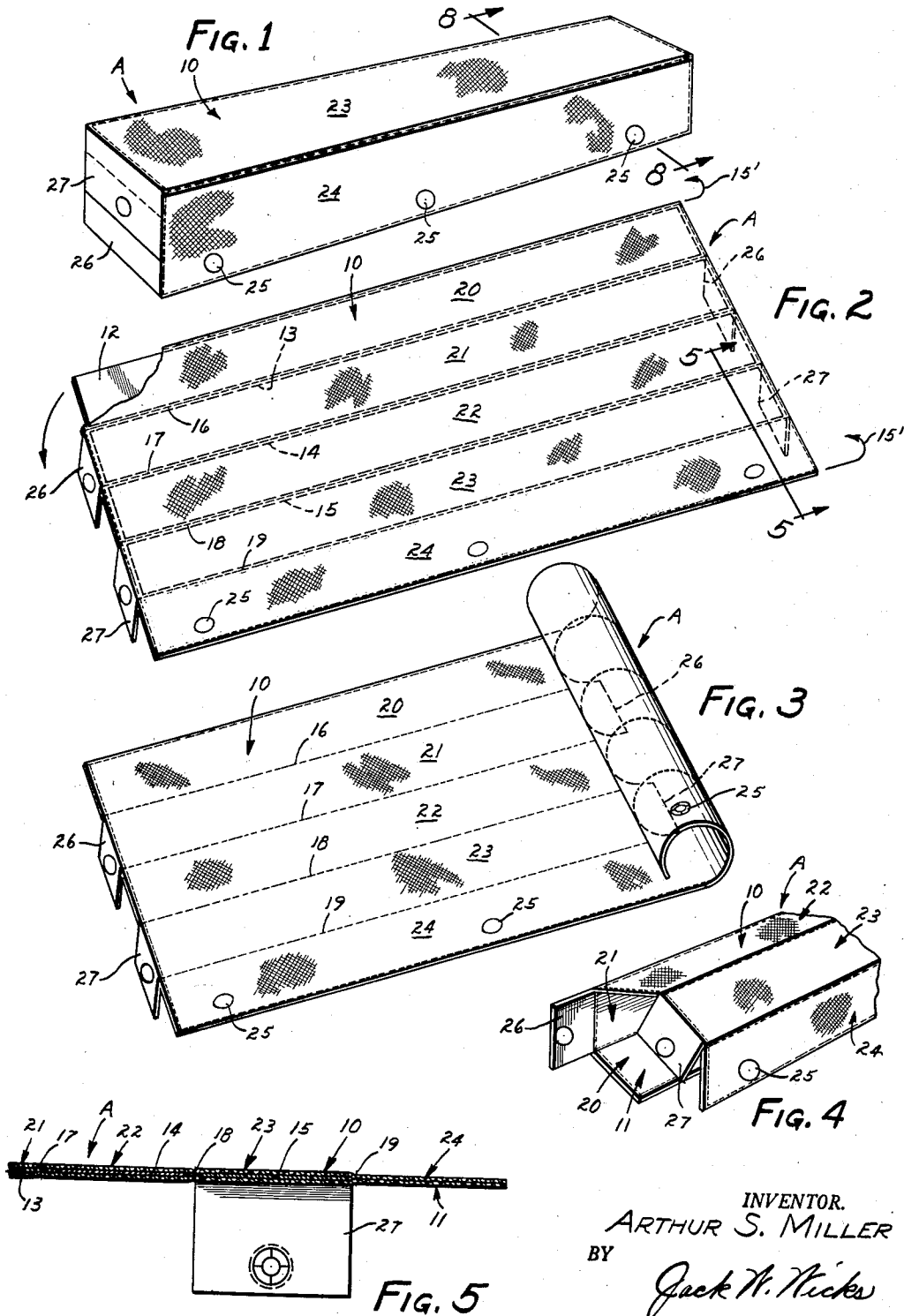
A. S. MILLER

2,845,976

COLLAPSIBLE ROLL-UP CONTAINER

Filed May 14, 1956

2 Sheets-Sheet 1



INVENTOR.
ARTHUR S. MILLER
BY *Jack H. Miller*
ATTORNEY

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A. S. MILLER

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2 Sheets-Sheet 2

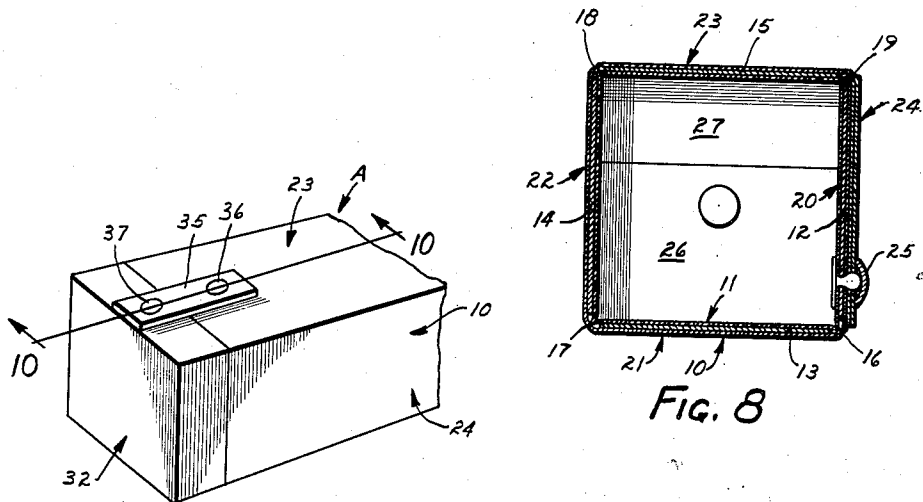
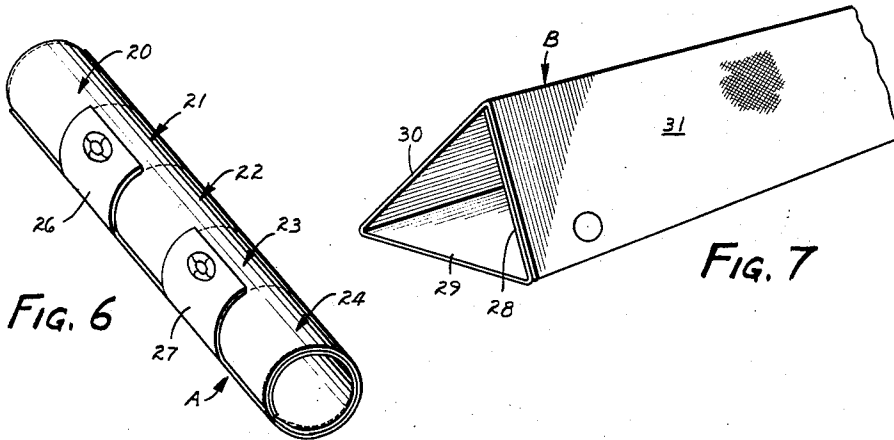


Fig. 9

Fig. 8

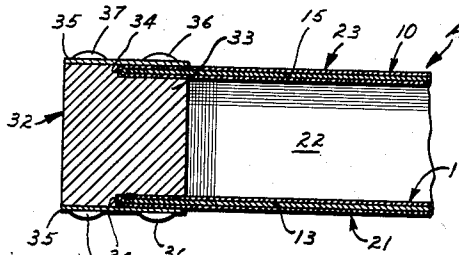


Fig. 10

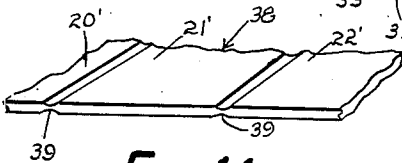


Fig. 11

INVENTOR.
ARTHUR S. MILLER
BY

Jack W. Hicken
ATTORNEY

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COLLAPSIBLE ROLL-UP CONTAINER

Arthur S. Miller, Paynesville, Minn.

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7 Claims. (Cl. 150—52)

My invention relates to an improvement in enclosing means for protection and shipping of an object and more particularly to a container which includes virtually non-penetrable wall members that are semi-rigid when in extended position, and which automatically roll up into a compact form when collapsed.

It is an object of my invention to provide a container which is easily collapsed thereby requiring little storage space and, where necessary, may be easily and cheaply mailed for repeated use by the shipper.

It is also an object of my invention to provide a container which is made semi-rigid by simply forcing the connected body forming members against the stresses causing a tendency of the members to coil to an extended position wherein the edges of the members become straight lines where connected and wherein the faces of the connected members are angularly disposed one to the other. The construction of my body members also provides means for causing the same to collapse and automatically roll up into a compact unit when not in use or for shipping when collapsed.

It is a further object to provide novel means for connecting the body members together which allows the formation of the extended semi-rigid wall members and the collapsing of the same.

I shall not here attempt to set forth and indicate all of the various objects and advantages incident to my invention, but other objects and advantages will be referred to in or else will become apparent from that which follows.

The invention will appear more clearly from the following detailed description when taken in connection with the accompanying drawings, showing by way of example a preferred embodiment of the inventive idea.

In the drawings forming part of this application:

Figure 1 is a perspective view of my container in an erected set up position.

Figure 2 is a perspective view of my device in flattened collapsed condition.

Figure 3 is a perspective view of my device in flattened collapsed condition with one end portion thereof rolled up in the direction of its stressed tendency to roll up.

Figure 4 is a partial perspective view of one end of the device in the process of forming or setting up the container from that position shown in Figure 2.

Figure 5 is a section on the line 5—5 of Figure 2.

Figure 6 is my device in its rolled up condition for storage or mailing.

Figure 7 is an alternative form of my device.

Figure 8 is a section on the line 8—8 of Figure 1.

Figure 9 is a perspective view of an alternative form of end closure and support member for my device.

Figure 10 is a section on the line 10—10 of Figure 9.

Figure 11 is a partial perspective view of an alternative form of construction for the body members of the other figures and the hinged connection therefor.

Referring to the drawings in detail, my semi-rigid col-

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lapsible container device A includes the two outer sheet members 10 and 11. The numerals 12, 13, 14 and 15 designate thin sheet ribbon-like spring steel members secured in close spaced relation between the fabric sheets 10 and 11 by means of the stitching 16, 17, 18 and 19. The thin flat spring members 12, 13, 14 and 15 are so formed and positioned that the same tend to coil in the direction of the arrow 15' of Figure 2 and as illustrated in Figures 3 and 6.

With the spring members enclosed between the sheet members 10 and 11 by means of the stitching, it will be seen that the spring members 12, 13, 14 and 15 are thereby hingedly connected together along their longitudinal edges. It is apparent that the sheets 10 and 11 may be plastic and that the members 12, 13, 14 and 15 may be formed of sheet plastic or other material having a permanent tendency to coil.

The members 12, 13, 14 and 15 together with the sheets 10 and 11 form four wall members 20, 21, 22 and 23 of the container device. The wall member 23 has formed on the outer longitudinal edge thereof the flap member 24 having the female snap fastener portions 25 which secure to male fastener portions secured to the wall 20.

The wall members 21 and 23 have formed on the outer ends thereof the flap members 26 and 27 respectively, said flap members 27 having female snap fastener portions secured thereon which secure to the male fastener portions secured to the flaps 26 to thereby close the ends of the device A, Figure 1.

In Figure 7 I have illustrated a further embodiment B of my device which is in the form of a triangular enclosure instead of a rectangular as in Figures 1—6. It is apparent that my enclosure may be polygonal in cross section. The device in Figure 7 is formed of the three walls 28, 29 and 30 together with the flap 31. The walls 28, 29 and 30 are constructed with sheet ribbon spring steel as in the device of Figures 1—6. The walls of the device B are set up in position by means of the same principle as in the device of Figures 1—6 as herein-after described.

The enclosure device in the set up formation of Figure 1 is formed in the following manner: the device is unrolled from the rolled-up condition of Figure 6 to the flattened condition of Figure 2. Then the wall members 20, 21, 22 and 23 are held in extended unrolled position and moved in the direction of the arrow in the upper left of Figure 2 progressively to the position shown in Figure 4 against the stressed tendency to coil as illustrated in Figure 3. As the wall members 20, 21, 22 and 23 are held extended and are brought to approximately the positions shown in Figure 4 from that of Figure 2 and ultimately to that of Figure 1, the same maintain an elongated substantially rigid straight wall formation due to the fact that each wall spring member is held in extended straight line position at the opposed edges due to the same being hinged together by means of the stitching of the sheet members 10 and 11 between the spring members as at 16, 17 and 18. With the wall members 20—24 brought into the position of Figure 4 and ultimately to that of Figure 1, the progressive placing of each wall at right angles to the adjacent wall results in a collective maintenance of all the other walls in the substantially rigid elongated position.

With the wall members in the encompassing position of Figure 1 above described, the flaps 26 and 27 on both ends are snapped into closed position. The flap portion 24 is secured on the wall member 20 by means of the snap fasteners 25 engaging counterparts on the wall 20 to thereby maintain my device in a set-up erected condition. I have thus provided an enclosure with which hinged

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coiled collapsible walls provide highly protective collapsible extended walls.

The walls 20-23 may be made up solely of the coiled spring members 12, 13, 14 and 15 hinged along the opposed longitudinal edges by flexible hinge means, and the sheet members 10 and 11 not used. In such a construction the outer surface of the spring members might be anodized or enameled to provide a decorative appearance therefor.

In Figures 9 and 10 is illustrated an alternative form of construction for closing and supporting the ends of the device A when in the set-up position illustrated in Figure 1. In Figure 9 the wall 23 and the flap 24 are visible, and in Figure 10 the walls 21, 22 and 23 are visible. Further provided is the plug end member 32 which is generally cubicle in formation and formed with the reduced portion 33 thereby providing the shoulder 34 against which the outer ends of the walls 20-23 abut when the reduced portion 33 is inserted within the walls as illustrated.

I further provide the strap members such as 35 which are secured to the walls 21 and 23 by means of the rivets 36 and have secured to the outer ends thereof the female portion 37 of a snap fastener which engages the male portion of the fastener secured to the plug 32. With the plug 32 in position and the straps secured, the enclosing device A is completely closed and supported as shown in Figure 1. It is apparent that the device A may be of any length desired, and if desired, may be easily mailed to the shipper in the formation illustrated in Figure 6.

In collapsing my container A from the set-up position illustrated in Figures 1 and 8 to that illustrated in Figure 6, the flap 24 is unfastened, and the walls 20, 21, 22, and 23 are easily placed from the positions of Figure 8 to the flattened positions of Figure 2. As the wall members 20-23 even approach the flat positions of Figure 2 they automatically coil as in Figure 3 thence to the fully coiled position of Figure 6.

Further, the cross sectional area of my container A may be made substantially the size of the article it is to contain whereby the article tends to stabilize and support the walls 20-23.

In addition, the hinged wall members such as 20-23 and the hinge connections therefor may be made up of a single sheet of plastic 38, Figure 11, which has a permanent tendency to coil in the formation indicated in Figures 2 and 3. The sheet 38 also has formed therein, either by molding or by means of a roller, the elongated strip-like areas 39 which form the wall sections 20', 21', and 22' and allow the same to be hingedly manipulated at the points 39 as hereinbefore set forth regarding the members 20-23 and particularly illustrated in Figure 4. Thus, the main enclosing body portion of the device A or B may be made of one piece of sheet plastic, and at the time the piece 38 is formed the hinge points, such as 39, may also be formed.

With further regard to placing the device in the encompassing position of Figure 1 from that shown in Figure 2, the same may be moved in the opposite direction of the arrow on the upper left of Figure 2 into a position similar to that of Figure 4 but with the outer surfaces 10 and 11 reversed, thence to the completed position of Figure 1.

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In this position the walls tend to curl slightly inwardly at the ends while if placed in the position of Figure 1 as hereinbefore described and illustrated, the outer ends of the walls tends to curl slightly outwardly.

The invention is not to be understood as restricted to the details set forth since these may be modified within the scope of the appended claims without departing from the spirit and scope of the invention.

Having thus described the invention, that which I claim as new and desire to secure by Letters Patent is:

1. In a collapsible container device, a series of flat members each formed with a tendency to coil and hingedly connected along the adjacent longitudinal edges thereof for placement in an encompassing formation, and means for securing said flat members in the encompassing formation.

2. In a collapsible container device, a series of hingedly connected flat members each having a tendency to coil in the same direction, means for closing the ends of said flat members when the same are placed in an elongated encompassing formation, and means for securing said flat members in the encompassing formation.

3. In a collapsible container, a series of formable wall members each having a tendency to coil and hingedly connected along adjacent longitudinal edges for placement in an enclosing formation, and means for closing the ends of the enclosing formation.

4. In a container blank, a series of flat members each formed with a tendency to coil and hingedly connected along adjacent longitudinal opposed edges thereof, and means on each of the outermost of said flat members for connecting one with the other.

5. In a container blank, three or more flat members each formed with a tendency to coil, and hinge means connecting the longitudinal opposed edges of said flat members.

6. In a container blank, a plurality of spaced flat members each formed with a tendency to coil, an outer and an inner cover sheet member positioned on said flat members, and means securing said cover members together where said flat members are spaced to thereby hingedly connect said flat members.

7. In a collapsible container, a plurality of flat wall members each having a tendency to coil, means for hinging the horizontally opposed edges of said wall members placed in parallel relation to permit placement in an enclosing formation, and means formed on the outermost of said wall members for maintaining said wall members in the enclosing formation.

References Cited in the file of this patent

UNITED STATES PATENTS

801,579	Flora	Oct. 10, 1905
1,040,300	Fitzgerald	Oct. 8, 1912
1,174,566	Graham	Mar. 7, 1916
1,387,597	Fetters	Aug. 16, 1921
1,449,468	Walter	Mar. 27, 1923
2,252,023	Mulnix	Aug. 12, 1941
2,611,529	Curri van	Sept. 23, 1952
2,693,894	Elmendorf	Nov. 9, 1954