April 6, 1954 E. F. SCHWEICH 2,674,372

CONTAINER

Filed June 14, 1950 2 Sheets-Sheet 1

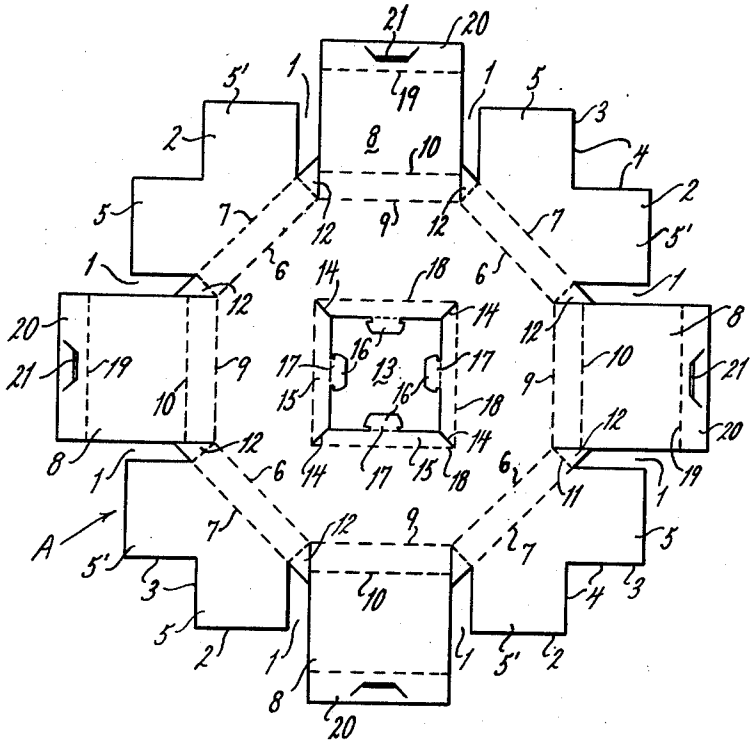

FIG. 1.

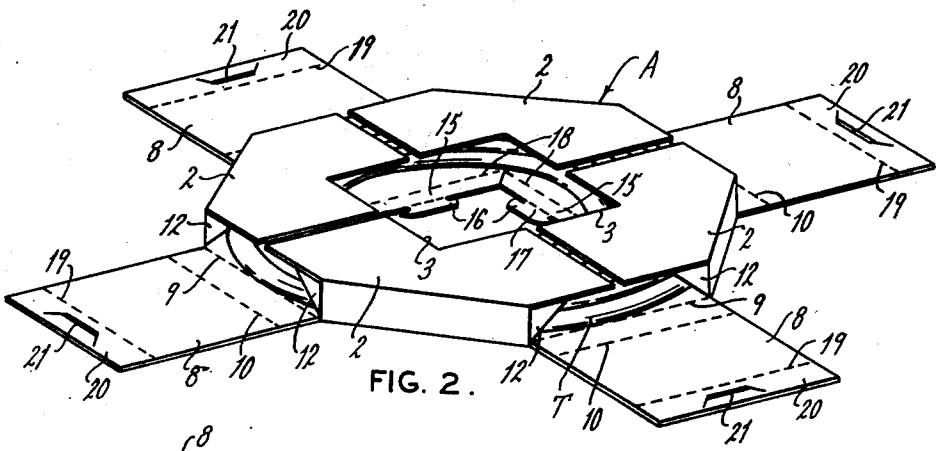

FIG. 2.

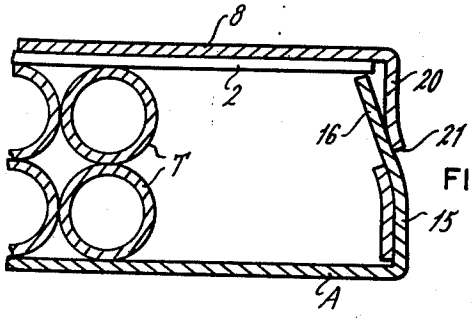

FIG. 4.

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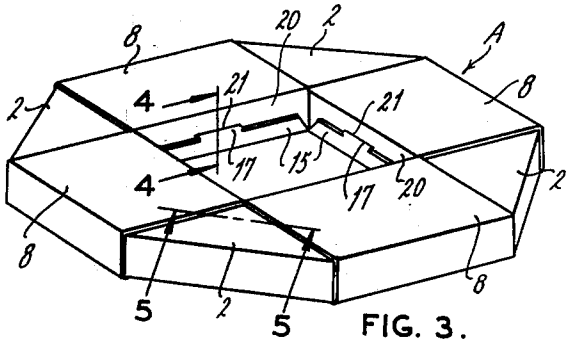

FIG. 3.

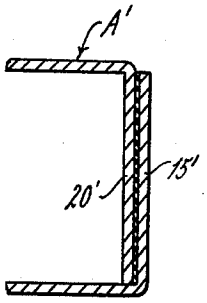

FIG. 8.

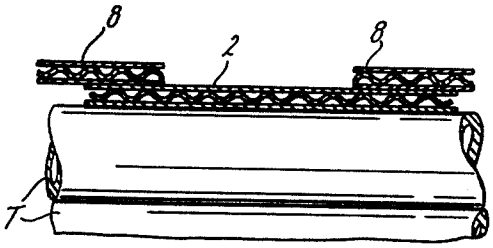

FIG. 5.

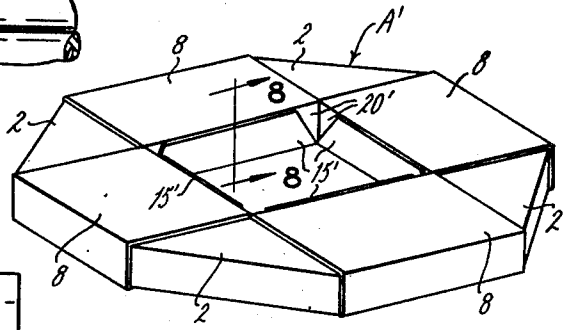

FIG. 7.

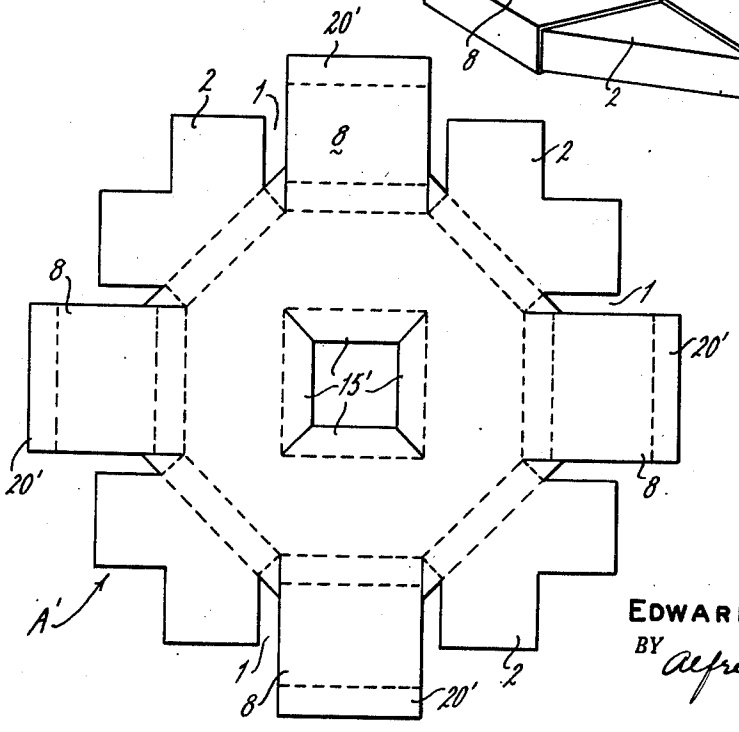

FIG. 6.

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UNITED STATES PATENT OFFICE

2,674,372

CONTAINER

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Application June 14, 1950, Serial No. 168,037

8 Claims. (Cl. 206—52)

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This invention relates in general to certain new and useful improvements in containers and, more particularly, to a unique one-piece folding carton for packaging flat, circular objects, such as coils of copper tubing, hose, and the like.

It is the primary object of the present invention to provide a carton of the type stated which is fabricated from a single piece of stock with a minimum amount of wastage so as to result in a comparatively economical and low-cost container.

It is a further object of the present invention to provide a carton of the type stated which can be stored and shipped to point of use in flat condition, thereby making it possible to achieve the same type of economy and convenience in packaging flat circular objects as has been heretofore achieved in the application of the "set-up" box technique to the packaging of more conventionally shaped objects and merchandise.

It is also an object of the present invention to provide a container for packaging relatively flat circular objects of the type stated which is much stronger, much more easy to handle and store, and protects the packaged object more securely than conventional cartons heretofore available.

It is an additional object of the present invention to provide a carton of the type stated which can be set up and secured around a relatively flat circular object with a minimum of labor and attendant cost.

With the above and other objects in view, my invention resides in the novel features of form, construction, arrangement, and combination of parts presently described and pointed out in the claims.

In the accompanying drawings (two sheets)—

Figure 1 is a plan view of a preferred form of carton constructed in accordance with and embodying the present invention;

Figure 2 is a perspective view of the carton in partially set-up position around a coil of copper tubing;

Figure 3 is a perspective view of the carton in fully set up and sealed condition;

Figures 4 and 5 are fragmentary sectional views taken along lines 4—4 and 5—5, respectively, of Figure 3;

Figure 6 is a plan view of a modified form of carton constructed in accordance with and embodying the present invention;

Figure 7 is a perspective view of the modified form of carton in fully set-up condition; and

Figure 8 is a fragmentary sectional view taken along line 8—8 of Figure 7.

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Referring now in more detail and by reference characters to the drawings, which illustrate practical embodiments of the present invention, A designates a carton blank which is die-cut or otherwise suitably formed out of a square section of container-board stock, such as corrugated board, fiber board, or any other similar material. The member A is provided along each of its four edges with two inwardly extending parallel slots 1, which are disposed at right angles to the longitudinal margins of the member A from which they extend and sub-divide the member A into four corner flaps 2, each being provided with a symmetrically placed, inwardly extending V cut 3 having right-angularly intersecting margins 4 which sub-divide the flaps 2 into two lateral elements 5, 5'. The corner-flaps 2 are integrally connected to the main body of the member A across a score line 6 and are further provided with a second score line 7 disposed in outwardly parallel relation to the score line 6.

Between each pair of corner flaps 2 along each straight edge of the member A is an intermediate rectangular flap 8 having side margins disposed in spaced parallel relation to the corner-flap margins and being joined integrally to the body of the member A across a score line 9. Each flap 8 is further provided with a second score line 10 disposed in outwardly spaced parallel relation to the score line 9 and joining at its ends with the score line 6 of the adjacent corner-flaps 2. It should also be noted in this connection that the flaps 8 are substantially longer than the flaps 2, but are of the same width, so that the score lines 6, 9, in effect, form a continuous octagon.

The score lines 6, 7, furthermore, are transversely connected at their outer ends by right-angularly disposed score lines 11, which serve to define small, triangular, internal flaps 12 lying between the flaps 8 and the corner-flaps 2 at the inner ends of the slots 1.

In its central portion, the carton blank A is die-cut to provide a central rectangular opening 13 having, at its corners, four diagonal slits 14, each such slit 14 being coincident with a line running from the geometrical center of the blank A radially outwardly through the geometrical intersection of the margins 4. Thus, the four slits 14 define four trapezoidally shaped flaps 15 integrally provided on their free margins with lock-in gears 16 having reduced necks 17.

The slits 14, at their inner ends, are connected by score lines 18, forming, in effect, a rectangular pattern. It should be noted in this connection that the distance between the score lines 18 and the margins of the rectangular opening 13 is

substantially equal to the distance between the score lines 6, 7, and 9, 10, for purposes presently more fully appearing.

Finally, the intermediate flaps 8 are provided inwardly of their outer transverse margins with score lines 19 in the formation of a closure flap 20, which is further provided with centrally located locking slots 21 for cooperation with the locking ears 16, as will presently be more fully discussed.

In use, the carton blank A is laid down flatwise upon a suitable table, floor, or other flat surface, which may be conveniently available, and a coil of tubing T is laid down flatwise thereupon concentric with respect to the opening 13. It should be noted that the carton blank A is laid out and designed for the type and size of coil which is to be packaged therein, so that the coil, when properly centered on the carton blank A, will be substantially tangent to the center points of the score lines 6 and 10.

Furthermore, the distance between the score lines 6, 7, and the score lines 9, 10, are substantially equal to the diameter of the tubing or, in other words, the thickness of the coil T. Similarly, the dimensions of the inside rectangle formed by the score line 18 is such that the corners of this rectangular pattern will approximately be tangent to the interior circle of the coil. In the case of small diameters, it may be desirable to cut-off or foreshorten the corner flaps 2.

Thereupon, the flaps 2 are folded up, so that the area lying between the score lines 6, 7, will, in effect, become short vertical walls and the remainder of the flap 2 is folded over likewise on top of the coil T, as shown in Figure 2. The small triangular tabs 12 are thereupon folded inwardly to lie in the plane of the next adjacent side of the octagon, also substantially as shown in Figure 2. Thereupon, the flaps 8 are folded up and then over into the position shown in Figure 3.

Suitable adhesive, such as silicate of soda, is applied beneath the folded-over portions of the flaps, 2, 8, and preferably, though not necessarily, along the inside rectangular opening in the region of the overlying flaps 15, 20.

Finally, the ears 16 are inserted through the slots 21 to complete the container and enclose the coil T, substantially as shown in Figures 4 and 5.

It should be noted that, when the container is completely pasted together, the triangular flaps 12 will close the outer corner and the corner flaps 8 will overlie and be pasted down upon the triangular projecting portions of the flaps 12, forming a complete interlock at each corner and imparting unusual rigidity and strength in the corners of the finished container.

It will also be apparent that the inside flaps 15, being adhesively secured to the downwardly folded flaps 20, will thus form a securely interlocked central hub, so to speak, which will snugly engage the tubing coil T at least at three, or probably four, points around its interior diameter, so that, when the container is placed upright on one of its eight sides, as would usually be the case for handling and shipping, a substantial portion of the weight will be suspended by this hub-like internal structure, thereby preventing all of the weight of the coil T from bearing down upon one of the side walls of the container or otherwise imposing rupturing stress upon the container, as would be the case with conventional types of containers heretofore in existence. The container of the present invention, furthermore, embraces the coil T at eight points around its outer periphery, snugly housing it against all normal tendencies to bend or otherwise deform itself in the course of careless handling.

Actually, the eight corners of the container are extremely strong and will resist damage if the container is accidentally dropped on one of such corners. In addition to this, there is much less empty space in such corners than there is in the conventional rectangular type of package. Therefore, there is materially less likelihood of the corners breaking or being otherwise damaged. Containers of the present invention can be stored in a suspended fashion by inserting a horizontal or substantially horizontal hook or supporting bar (not shown) through the rectangular aperture. It has been found in actual practice that a number of packages can be very easily stored for ready access in this manner.

The container of the present invention is, furthermore, exceptionally easy to handle in storage and in shipment and is less likely to be handled carelessly or damaged. For example, the package handler can very readily lift a package, formed with one of the containers of the present invention, by inserting his hand through the central aperture and grasping the inner edges or faces, thus being enabled to carry a package of fairly large size, weight, and bulk under his arm in a highly convenient manner. Finally, containers of the present invention can be very easily handled by being rolled about on their octagonal edges very much in the manner of a disk or wheel. It has been found that even in the case of very heavy packages, this rolling action will not in any way damage or seriously harm either the container or its contents.

If desired, it is possible to provide a modified form of carton blank A', which is substantially identical with the previously described carton blank A except that the locking ears 16 of the latter are omitted and instead internal flaps 15' are provided which are somewhat wider than the corresponding flaps 15 and flaps 20' are provided from which the locking slot 21 is omitted, as shown in Figure 6. The flaps 15', 20', are secured together solely by gluing, as shown in Figures 7 and 8.

Although, in the preferred embodiment herein described, reference has been made to the use of corrugated cardboard as the material of construction, it is, of course, obvious that other similar types of material can be used with facility. In fact, containers of the present invention can be fabricated of fiber board, sheet metal, and a wide variety of other materials, depending upon the particular type of object which is to be packaged therein. It should also be apparent that the containers of the present invention can be varied in size and shape to accommodate various different sizes and types of circular disk-like or coiled objects.

It should be understood that changes and modifications in the form, construction, arrangement, and combination of the several parts of the container may be made and substituted for those herein shown and described without departing from the nature and principle of my invention.

Having thus described my invention, what I claim and desire to secure by Letters Patent is:

1. A carton-blank adapted to be folded up to

form a folding carton for flat torus-like objects, such as copper tubing and the like, which carton blank comprises an octagonal main section having a centrally located rectangular aperture bounded by four inwardly extending upwardly bendable flaps, said main section further being provided along each of its peripheral margins with radially projecting flaps adapted to fold inwardly into partially overlapping relation to form a top wall for the carton, said radially projecting flaps being of sufficient length to extend to the centrally located aperture and being cooperable closure-wise with the inwardly extending flaps when the latter are bent into upright position for forming a completely closed carton.

2. A carton-blank adapted to be folded up to form a folding carton for flat torus-like objects, such as copper tubing and the like, which carton blank comprises an octagonal main section having a centrally located rectangular aperture bounded by four inwardly extending upwardly bendable flaps, said main section further being provided along each of its peripheral margins with radially projecting flaps adapted to fold inwardly into partially overlapping relation to form a top wall for the carton, said radially projecting flaps being of sufficient length to extend to the centrally located aperture and being cooperable closure-wise with the inwardly extending flaps when the latter are bent into upright position for forming a completely closed carton, and a locking ear on each of the inwardly extending flaps each for engagement with one of the radially projecting flaps.

3. A carton-blank adapted to be folded up to form a folding carton for flat torus-like objects, such as coils of tubing and the like, said blank comprising an eight sided main section having eight straight peripheral edges, a rectangular central aperture the sides of which are parallel to alternate peripheral edges of the main section, rectangular flaps hingedly connected to and extending radially outwardly from said alternate edges, and four polygonal flaps hingedly joined to and extending radially outwardly respectively from the four edges of the main section which extend between the aforementioned alternate edges, said polygonal flaps each having a V-shaped notch in its outer transverse margin subdividing it into two rectangular tabs respectively parallel to the adjacent rectangular flaps, said polygonal flaps being adapted to fold inwardly over the main section in upwardly spaced relation thereto and into marginal abutment with each other to form a substantially complete top wall for the carton, with their V-shaped notches in substantial registration with the margins of the rectangular aperture, said four rectangular flaps respectively being adapted to fold retentively over adjacent tabs of two successive polygonal flaps.

4. A carton-blank adapted to be folded up to form a folding carton for flat torus-like objects, such as coils of tubing and the like, said blank comprising an eight sided main section having eight straight peripheral edges, a rectangular central aperture the sides of which are parallel to alternate peripheral edges of the main section, rectangular flaps hingedly connected to and extending radially outwardly from said alternate edges, and four polygonal flaps hingedly joined to and extending radially outwardly respectively from the four edges of the main section which extend between the aforementioned alternate edges, said polygonal flaps each having a V-

shaped notch in its outer transverse margin subdividing it into two rectangular tabs respectively parallel to the adjacent rectangular flaps, said polygonal flaps being adapted to fold inwardly over the main section in upwardly spaced relation thereto and into marginal abutment with each other to form a substantially complete top wall for the carton, with their V-shaped notches in substantial registration with the margins of the rectangular aperture, said four rectangular flaps respectively being adapted to fold retentively over adjacent tabs of two successive polygonal flaps, and narrow rectangular flaps formed on the margins of the rectangular aperture for engagement with the free edges of the rectangular flaps to form a closed carton.

5. A carton-blank adapted to be folded up to form a folding carton for flat torus-like objects, such as coils of tubing and the like, said blank comprising an octagonal main section having eight endwise adjoining peripheral edges and polygonal flaps, said polygonal flaps being joined to and extending radially outwardly from alternate peripheral edges of the main section and being adapted to fold inwardly over the main section in upwardly spaced relation thereto and into marginal abutment with each other to form a substantially complete top wall for the carton, four rectangular flaps joined to the main section along peripheral edges intermediate to said alternate peripheral edges and being adapted to fold retentively over adjacent portions of two polygonal flaps, said main section being provided with a centrally located rectangular aperture, the sides of which are parallel respectively to said intermediate edges, and means for securing the free edges of the rectangular flaps to the main section in such overlying relation to form a closed carton, said means comprising four auxiliary flaps respectively formed integrally with the main section and extending along the margins of the centrally located rectangular aperture, each of said auxiliary flaps having locking ears for engagement in matching slots formed in the rectangular flaps.

6. A carton-blank adapted to be folded up to form a folding carton for flat torus-like objects, such as coils of tubing and the like, said blank comprising an octagonal main section having eight endwise adjoining peripheral edges and polygonal flaps, said polygonal flaps being joined to and extending radially outwardly from alternate peripheral edges of the main section and being adapted to fold inwardly over the main section in upwardly spaced relation thereto and into marginal abutment with each other to form a substantially complete top wall for the carton, four rectangular flaps joined to the main section along peripheral edges intermediate to said alternate peripheral edges and being adapted to fold retentively over adjacent portions of two polygonal flaps, said main section being provided with a centrally located rectangular aperture, the sides of which are parallel respectively to said intermediate edges, and means for securing the free edges of the rectangular flaps to the main section in such overlying relation to form a closed carton, said means comprising four auxiliary flaps respectively formed integrally with the main section and extending along the margins of the centrally located rectangular aperture, each of said auxiliary flaps and matching flaps formed on the rectangular flaps adapted to overlap the auxiliary flaps for adhesive securement thereto when the carton is set up.

7. A carton-blank adapted to be folded up to form a folding carton for flat torus-like objects, such as copper tubing and the like, which carton blank comprises a polygonal main section having a number of sides greater than four and being provided with a centrally located rectangular aperture bounded by four inwardly extending upwardly bendable flaps, said main section further being provided along each of its peripheral margins with radially projecting flaps adapted to fold inwardly into partially overlapping relation to form a top wall for the carton, said radially projecting flaps being of sufficient length to extend to the centrally located aperture and being cooperable closure-wise with the inwardly extending flaps when the latter are bent into upright position for forming a completely closed carton.

8. A carton-blank adapted to be folded up to form a folding carton for flat torus-like objects, such as copper tubing and the like, which carton-blank comprises a polygonal main section having a number of sides greater than four and being provided with a centrally located rectangular aperture bounded by four inwardly extending upwardly bendable flaps, said main section further being provided along each of its peripheral margins with radially projecting flaps adapted to fold

inwardly into partially overlapping relation to form a top wall for the carton, said radially projecting flaps being of sufficient length to extend to the centrally located aperture and being cooperable closure-wise with the inwardly extending flaps when the latter are bent into upright position for forming a completely closed carton, and a locking ear on each of the inwardly extending flaps each for engagement with one of the radially projecting flaps.

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