March 25, 1930. W. S. WOODMAN 1,752,134

KNOCKDOWN CONTAINER

Filed May 9, 1928

FIG. 1.

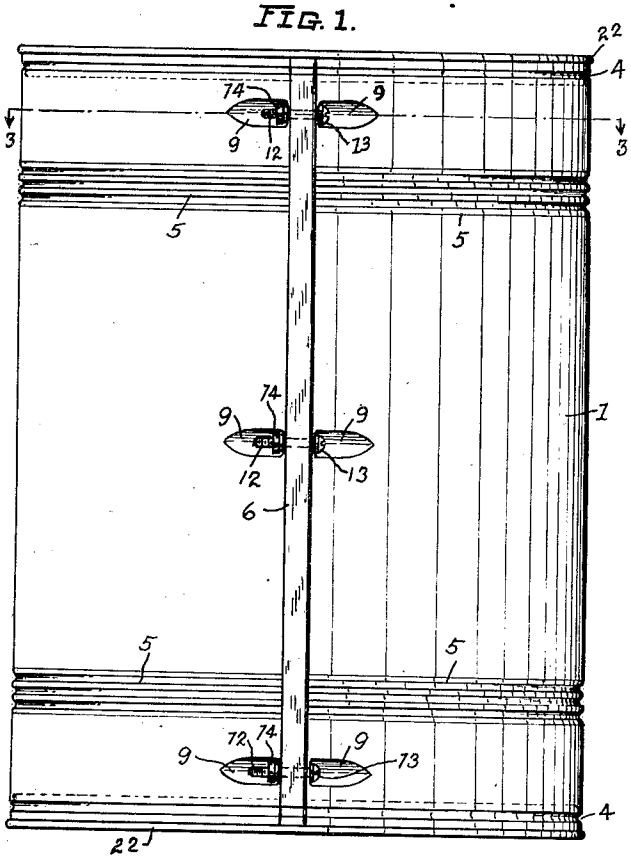


FIG. 2.

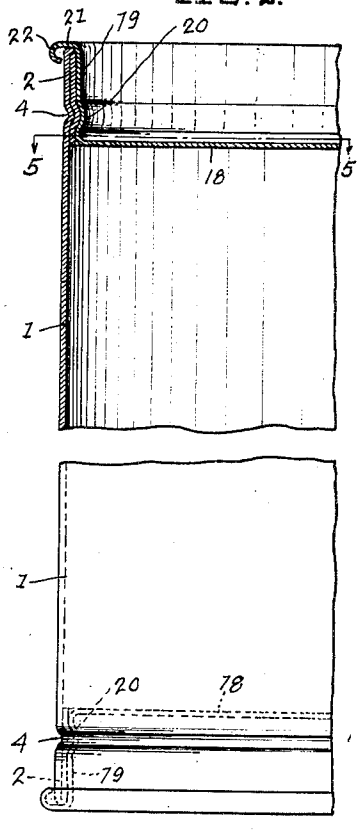


FIG. 4.

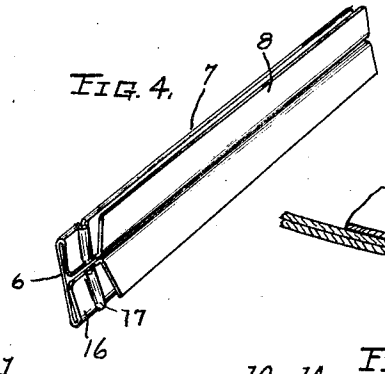


FIG. 5.

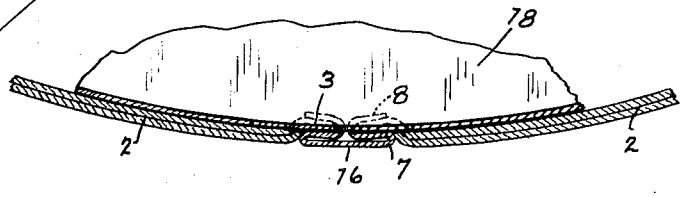
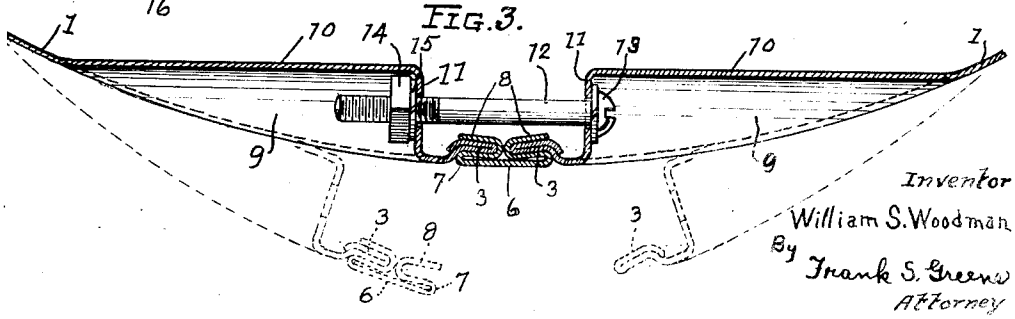


FIG. 3.



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UNITED STATES PATENT OFFICE

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KNOCKDOWN CONTAINER

Application filed May 9, 1928. Serial No. 276,234.

This invention relates to knock-down sheet metal containers, particularly useful for granular or solidified materials and has for one of its main objects to provide a knock-down container composed of parts which can be compactly nested for storage or for shipment to the place of use.

Solids of low melting point such as tar, asphalt, resin and the like are commonly shipped in metallic containers, the materials being introduced into the container in liquid form and afterward solidifying in the container. At the point of use, the sheet metal container is usually cut and torn away from the solid mass of material within it to obtain access to the material. The cutting and tearing away of a metallic container from the solid mass of material within it is a laborious process usually accompanied by a considerable waste of the material.

The present invention has for an object to provide a sheet metal container that can be easily and quickly peeled off from a mass of solid material without damage to the sheet metal of the container and without breaking up the solid mass of material contained therein.

A further object is to provide a knock-down sheet metal container suitable for shipping loose or granular solids, as well as solidified material, the container having heads, either of which may be removed independently of the other and without dismantling the body of the container.

A further object is to provide a knock-down sheet metal container of cylindrical form in which the cylindrical body is formed of a single metal sheet having ends adjoining along one side of the container and in which means directly connecting to the adjoining ends is provided for detachably securing the ends together and for drawing the ends one toward the other to contract the body and cause the same to tightly grip the heads at the ends of the container to securely hold the heads in place.

A further object of the invention is to provide a cylindrical sheet metal container having a one piece sheet metal body provided with edges secured together, as above described, in which the fastening means are located wholly within the cylindrical surface of the body so that they do not interfere with the rolling of the container along a floor or runway.

A further object is to provide a sheet metal container of the character above described, which is composed of a minimum number of parts, all of which are of a form such that they may be rapidly and cheaply produced by metal working machinery.

With the above and other objects in view, the invention may be said to comprise the sheet metal container as illustrated in the accompanying drawings hereinafter described and particularly set forth in the appended claims, together with such variations and modifications thereof as will be apparent to one skilled in the art to which the invention appertains.

Reference should be had to the accompanying drawings forming a part of this specification in which:

Figure 1 is a side elevation of a container embodying the invention.

Fig. 2 is a fragmentary view on an enlarged scale showing the upper portion of the container in vertical section and the lower portion thereof in side elevation.

Fig. 3 is a fragmentary transverse section taken on the line indicated at 3—3 in Fig. 1.

Fig. 4 is a perspective view of the sealing strip employed in the joint between the ends of the metal sheet which forms the cylindrical body of the container.

Fig. 5 is a transverse section taken on the line indicated at 5—5 in Fig. 2.

Referring to the accompanying drawings, tubular body 1 of the container is composed of a single rolled metal sheet having its end edges joined from the top to the bottom of the container at one side thereof by means which will be hereinafter described.

In order to strengthen the top and bottom edges of the container, the side edges of the rectangular sheet which forms the body 1 are bent back upon themselves to provide top and bottom edges 2 of double thickness. The end edges of the sheet, which is of rectangular

form are doubled back upon themselves between the edge portions 2 to provide edges 3 of double thickness. Longitudinal corrugations 4 are rolled in the sheet along the edge portions 2 of double thickness and the rolls between which the sheet is passed to form the corrugations 4 may be formed to roll additional strengthening corrugations 5 intermediate the doubled side edge portions, the corrugations 4 and 5 extending circumferentially around the body of the container when the same is assembled. The end edges 3 of the sheet metal body are offset inwardly beyond the bottoms of the corrugations 5 and the corrugations 5 extend only to the offset edges, the forming rolls being provided with suitable longitudinal recesses to receive the doubled edges 3 of the sheet.

In assembling the container, a sealing strip 6 is interposed between the edges 3 of the sheet metal body and this strip is formed from a flat sheet metal strip by bending the opposite edge portions thereof inwardly toward each other to adjacent the center of the strip and then outwardly to form outer flanges 7 of double thickness and inner flanges 8 of single thickness spaced inwardly of the flanges 7, the flanges 7 and 8 providing between them oppositely facing channels to receive the doubled edges 3 of the sheet. The thickness of the double flanges 7 of the sealing strip correspond substantially to the inward offset of the edges 3 so that the outer substantially flat surface of the sealing strip is substantially flush with the cylindrical surface of the body of the container.

Adjacent the edges 3 at each end thereof, the sheet metal body of the container has inwardly pressed indentations or recesses 9 and these recesses are so arranged that recesses on opposite sides of the joint between the ends of the sheet are in transverse alinement. The recesses 9 decrease in depth away from the edges 3 having bottom walls 10 lying in a plane spaced inwardly from the sealing strip 6 and merging into the cylindrical surface at their outer ends. The inner end walls 11 of the recesses 9 are disposed substantially at right angles to the bottom walls 10 and to the outer surface of the sealing strip interposed between the ends 3 of the sheet. The inner end walls 11 of the recesses have apertures to receive transverse clamping bolts 12 which extend across the space between transversely alined recesses inwardly of the sealing strip 6. The bottoms 10 of the alined recesses are in longitudinal alinement and lie in a chord of the cylinder so that the bolts 12 can be readily inserted endwise through the openings in the inner walls 11 of the recesses. Each bolt has a head 13 at one end engageable with the wall 11 of one recess and and at its opposite end is threaded to receive a nut 14 which bears upon the outer side of the wall 11 of the other recess so that as the bolt is screwed into the nut, the opposed edges 3 are drawn toward each other and into tight engagement with the grooves of the sealing strip 6. If desired, suitable washers 15 may be interposed between the nuts 14 and the walls 11 against which the thrust of the nuts is imposed.

The sealing strip 6 extends the full length of the container and has its opposite ends flush with the top and bottom edges thereof. The flanges 8 of the sealing strip are coextensive with the doubled edges 3 of the sheet metal body and terminate adjacent the inner edge of the doubled portion 2 at the top and bottom of the container.

At the ends of the sealing strip, the flanges 8 are cut away to provide flat end portions 16 and at the corners of the metal sheet which forms the body 1 of the container, the doubled portions 2 are cut away to provide a space between the ends of the doubled portions equal to the width of the sealing strip to receive the flat end portions 16 of the sealing strip. The end portions 16 of the sealing strip are also provided with transverse corrugations 17 which aline with the corrugations 4 and the doubled edge portions 2 of the body so that the circumferential corrugations adjacent the upper and lower edges of the body are continuous throughout the circumference of the body.

At each end of the container, there is a one-piece cupped head 18 in the form of a sheet metal stamping which has a cylindrical flange 19 which has a close fit within the doubled edge portion 2 of the cylindrical body and this flange is provided adjacent the base thereof with a circumferential corrugation 20 which is formed to receive the corrugation 4 of the body. The flange 19 of each head has an outwardly bent outer edge portion 21 which extends outwardly over the doubled edge 2 of the body and is bent back upon itself to form a rounded edge 22.

In assembling the container, the end edges 3 of the body portion 1 are brought into approximity, the sealing strip 6 is inserted between them and the bolts 12 are then passed through the end walls 11 of the recesses 9 and the nuts 11 are screwed onto the bolts. In order to permit insertion of the heads, the bolt 12 positioned midway between the ends of the container may be first tightened while the bolts adjacent the ends of the container are left loose. This will permit the end edges of the sheet metal body to spring apart at either end of the container so that either head can be put in place by pressing it into the end of the cylindrical body, forcing the body portion of the head past the corrugations 4 and causing the corrugation 30 to spring into the corrugation 4 of the head. After one head has been put in place, the bolt adjacent this head is tightened to cause the body to securely grip the same after which the container may

be inverted and filled with the material to be shipped. After the material is put in the container, the remaining head may be sprung into the open top of the container after which the clamping bolt adjacent the top of the container will be tightened to securely hold this head in place. If the container is filled with solidified material, the container can be quickly peeled off from the solid material by removing the bolts 12, separating the edges 3 of the sheet and rolling the solid cylinder of material off of the sheet metal body 1. If desired, the container may be again used since none of the parts are damaged in removing the container from the solid mass of material. When the container is used for shipping loose or granular solids, the material may be removed from the container simply by loosening the clamping bolt at the top of the container and removing the head.

It will be apparent that the present invention provides a knockdown sheet metal container composed of a minimum number of parts and that each of these parts is of very simple construction, capable of being rapidly manufactured by standard sheet metal working machinery.

Furthermore, all of the parts may be made of relatively light metal so that the cost of materials as well as the cost of manufacture is quite low.

What I claim is:

1. A knockdown container comprising a tubular body formed of a single metal sheet having its end edges adjoining from the top to the bottom of the container, the adjoining end portions of said sheet having transversely alined external recesses formed therein adjacent the top and bottom of the container, bolts having their ends in said alined recesses and connecting the adjoining ends of said sheets, and heads fitting in opposite ends of said body, said heads and body having interfitting circumferential portions for locking the heads in place when the body is contracted upon the heads by tightening said bolts.

2. A knockdown container comprising a tubular body formed of a single metal sheet having its end edges adjoining from the top to the bottom of the container, the adjoining end portions of said sheet having transversely alined external recesses formed therein adjacent the top and bottom of the container and intermediate the top and bottom thereof, a sealing strip having oppositely disposed grooves to receive the edges of said sheet, bolts extending across the space between each pair of alined recesses within said sealing strip and connecting the adjoining ends of the sheet, and heads adapted to be forced into the opposite ends of the tubular body when the end bolts are loose and to be clamped within the ends of the tubular body when the bolts are tightened.

3. A knockdown container comprising a tubular body composed of sheet metal having edges adjoining from the top to the bottom of the container, the sheet metal adjacent the adjoining edges having transversely alined pressed in recesses, a sealing strip interposed between adjoining edges of the sheet metal, said strip being formed to overlie said adjoining edges and to provide oppositely disposed grooves to receive said edges, bolts extending across the spaces between said recesses within the sealing strip for drawing said edges into tight engagement with said sealing strip, and heads fitting in opposite ends of the tubular body, said heads and said body having interfitting circumferential portions by which said heads are held in place.

4. A knockdown container comprising a cylindrical body formed of a single metal sheet having its side and end edges bent back to provide edge portions of double thickness, the end edges being inwardly offset with respect to the body of the sheet, said sheet having bolt receiving recesses formed therein adjacent said inwardly offset ends, a sealing strip having oppositely facing grooves to receive the ends of said sheet, the outer face of said strip being substantially flush with the outer surface of the cylindrical body, bolts positioned in said recesses and extending across the space between the adjoining edges of the sheet within said sealing strip, and stamped sheet metal heads having peripheral flanges fitting within the doubled edges of the sheet metal body at the ends of the container, the doubled edges of the sheet metal body and the flanges of the head having interfitting corrugations rolled therein.

5. A knockdown container comprising a cylindrical body formed of a single metal sheet having its side and end edges bent back to provide edge portions of double thickness, the end edges being inwardly offset with respect to the body of the sheet, said sheet having bolt receiving recesses formed therein adjacent said inwardly offset ends, a sealing strip having oppositely facing grooves to receive the ends of said sheet, the outer face of said strip being substantially flush with the outer surface of the cylindrical body, bolts positioned in said recesses and extending across the space between the adjoining edges of the sheet within said sealing strip, and stamped sheet metal heads having peripheral flanges fitting within the doubled edges of the sheet metal body at the ends of the container, the doubled edges of the sheet metal body and the flanges of the head having interfitting corrugations rolled therein, said head having peripheral portions extending outwardly over the edges of said body and overlying the ends of said sealing strip to hold the same against endwise movement.

6. A knockdown container comprising a cylindrical body formed of a single metal

sheet having end edges adjoining along one side of the body, said sheet having its side and end edges bent back upon the body of the sheet to provide edge portions of double thickness, the end edges being offset inwardly, a folded sheet metal sealing strip interposed between said end edges and having flange portions bent to provide oppositely facing grooves to receive said edges, the outer surface of said strip lying flush with the exterior cylindrical surface of said body, indentations in said body on opposite sides of the sealing strip, said indentations being transversely alined and having end walls adjacent the sealing strip projecting inwardly past said strip, bolts extending through the end walls of said indentations and within the sealing strips, said bolts lying wholly within the periphery of the body, stamped sheet metal heads having cylindrical flanges fitting within the ends of the body, said flanges having outwardly extending reversely bent outer edge portions fitting over the edges of the body and engaging the ends of the sealing strip to hold the same against endwise movement.

7. A knockdown container comprising a tubular body composed of sheet metal having edges adjoining from the top to the bottom of the container, the sheet metal adjacent the adjoining edges having transversely alined pressed in recesses, a sealing strip interposed between adjoining edges of the sheet metal, said strip being formed to overlie said adjoining edges and to provide oppositely disposed grooves to receive said edges, and bolts having their ends in the alined recesses and extending across the spaces between said recesses within the sealing strip for drawing said edges into tight engagement with said sealing strip.

8. In a knockdown container, a cylindrical body formed of a single metal sheet having its end edges bent back to provide edge portions of double thickness, the end edges being inwardly offset with respect to the body of the sheet, said sheet having transversely alined pressed in bolt receiving recesses therein adjacent said inwardly offset end edges, a sealing strip having oppositely facing grooves to receive the doubled inwardly offset edges of said sheet, the outer face of said strip being substantially flush with the outer surfaces of the cylindrical body, bolts positioned in said recesses and extending across the space between the recesses within the sealing strip for drawing said edges into tight engagement with said strip.

In testimony whereof I affix my signature.

WILLIAM S. WOODMAN.