O. DUCKER.

CAN.

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1,009,654.

Patented Nov. 21, 1911.

Fig. 1.

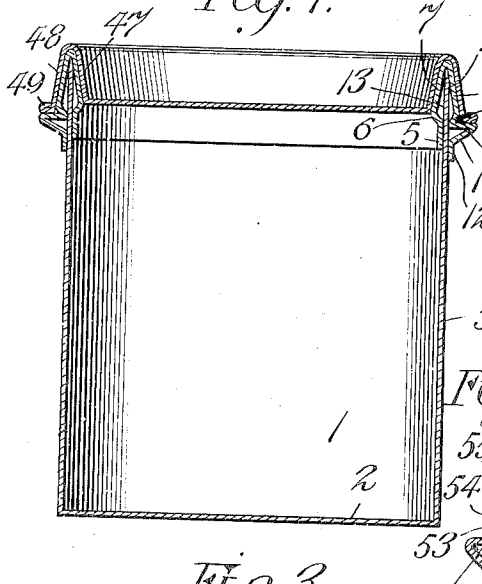


Fig. 2.

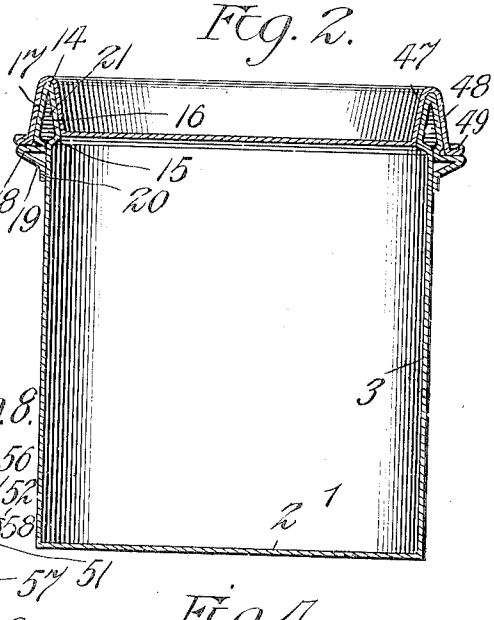


Fig. 8.

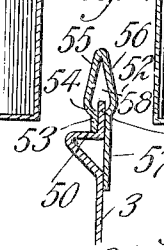


Fig. 3.

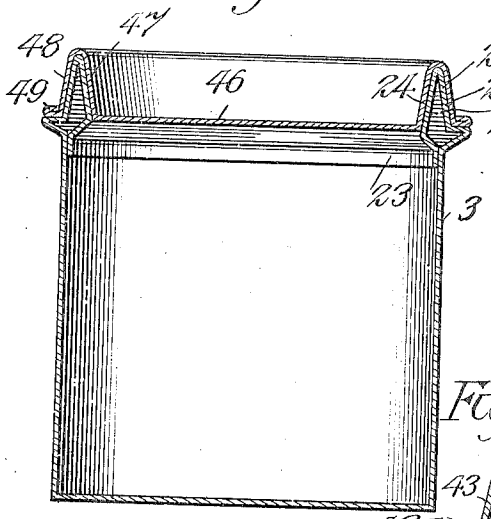


Fig. 4.

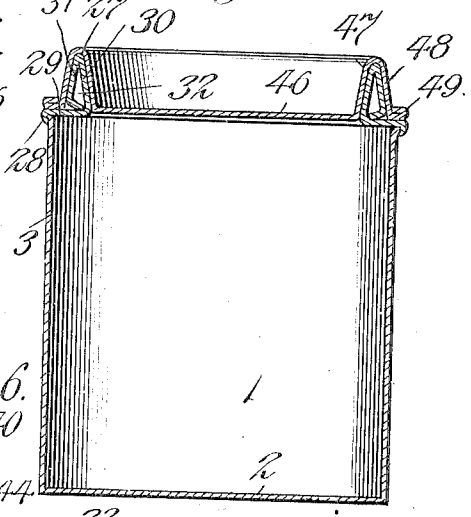


Fig. 6.

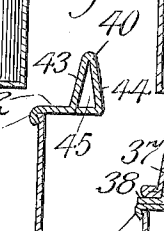


Fig. 7.

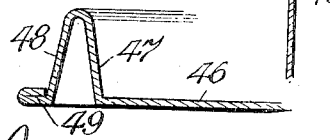
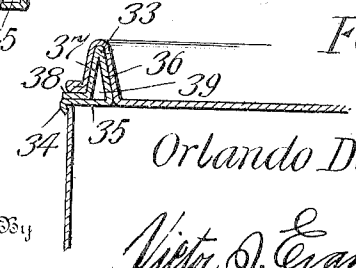


Fig. 5.



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CAN.

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To all whom it may concern:

Be it known that I, ORLANDO DUCKER, a citizen of the United States, residing at Washington, in the District of Columbia, have invented new and useful Improvements in Cans, of which the following is a specification.

The invention relates generally to an improvement in cans and closures therefor, and particularly to a can and closure arranged for a hermetic sealing coöperation of the parts under any and all conditions of use and reuse.

In cans of the present type, as heretofore constructed, provision is made for a sealing coöperation of the can and closure through a frictional grip of the parts primarily dependent upon the inherent resiliency of the metal. For initial use, and for reuse to a comparatively slight extent, such frictional grip may be effective, but an effective sealing of the parts has been proven by experience to have been practically destroyed after the can has been reused two or three times. This ineffective sealing in the reuse of the can results from the gradual loss of resiliency by a continued reapplication of the closure, so that the can is practically ineffective for reuse.

It is the main object of the present invention, therefore, to so construct the can section arranged for coöperation with the closure as to absolutely maintain the initial position and resiliency of the parts without regard to the extent of use, thereby insuring an effective sealing coöperation of the can and closure throughout any extent of reuse of the can.

With the above object in view the invention consists in utilizing, in the closure-cooperating section of the can an inclosed air space, forming an air cushion to provide the desired resiliency of the coöperating part, thereby insuring an exactly identical relation of the parts of the can section under all conditions of use and reuse.

The invention will first be described in the following specification, reference being had to the accompanying drawings, in which:—

Figure 1 is a vertical sectional view of a can and applied closure constructed in accordance with my invention, Figs. 2, 3 and 4 are similar views showing other forms of the closure-coöperating can section, Fig. 5 is a broken vertical sectional view of another form of closure-coöperating can section showing the closure applied, Fig. 6 is a sectional view illustrating another form of can section, Fig. 7 is a broken vertical sectional view showing the closure of my invention, Fig. 8 is a broken sectional view illustrating another form of can section in applied position.

Referring particularly to the drawings my invention in the preferred and modified forms includes three distinct elements, a can body, a can closure, and a closure-cooperating can section, formed on or secured to the can body and arranged to be engaged by the closure to seal the can.

The can body 1 is of any usual or preferred configuration, the form shown having the usual base 2 and circular wall 3.

Referring particularly to Fig. 1, wherein is illustrated the preferred form of the invention so far as the closure-coöperating can section is concerned, it will be noted that said section 4 is made of a piece of material separate from the can body. In transverse section the part 4 is formed near one edge with an annular band 5 equaling in exterior diameter the interior diameter of the can. From the relatively upper end of the band the material of the section 4 is bent inwardly and at an incline to provide a shoulder 6, and projected upwardly from said incline at a relatively outer incline to provide a friction leaf 7, the latter extending to the upper edge of the section 4. From the upper end of the leaf 7 the material is projected downward at a reverse inclination to the leaf 7 to provide a second friction leaf 8, the latter being similar in degree of inclination and length to the leaf 7. From the relative lower end of the leaf 8 the material is projected inward and downward to provide a shoulder 9, similar to the shoulder 6, and from the inner end of said shoulder, the material is projected laterally at right angles to the vertical plane of the section 4 to provide a ledge 10, from which latter the material extends downwardly at an inward incline to provide a brace section 11 for the ledge, and terminates in an annular band 12 projected in parallel relation to the band 5.

As thus constructed the closure-coöperating section includes two annular bands between which the wall of the can is to be embraced, and a plurality of friction leaves of identical length and inclination extend-

ing beyond the annular band. The section 4 is engaged with the can body by passing said section over the upper edge of said body in a manner to dispose the bands 5 and 12 on the inner and outer sides of said body respectively. Preferably, though not necessarily, the extreme upper edge of the wall 3 of the can body rests snugly in the apex formed by the converging friction leaves 7 and 8, as shown in Fig. 1. The section 4 is secured to the can body by soldering the free edges of the bands 5 and 12 to the respective surfaces of the body, thereby sealing the section 4 in place. With the section 4 constructed and secured as described, it will be noted that there is formed within the section 4, that is between the friction leaves 7 and 8 an inclosed air space 13, forming an air cushion whereby the friction leaves 7 and 8 are maintained in their original positions without regard to the number of times the closure is used.

In Fig. 2 the closure-coöperating can section 14 is in effect a duplicate of the section 4 in the preferred form, though in this form said section is integral with the can body, thereby dispensing with the necessity for the band 5. In the form shown in Fig. 2 the material of the wall of the can body is projected laterally and upwardly to provide a shoulder 15, then upwardly and outwardly to provide a friction leaf 16, then downwardly and outwardly to provide a friction leaf 17, then bent laterally to provide an edge 18, and inwardly to provide a brace section 19 and downwardly to provide a band 20, the latter being sealed to the outer surface of the can body in an obvious manner. In this form also a closed air space or chamber 21 is formed between the friction leaves 16 and 17, identical in function with the air space 13 of the preferred form.

In Fig. 3 the closure-coöperating section 22 is practically identical to that shown in Figs. 1 and 2, being however in this instance formed integral with the can wall but reversely constructed from that shown in Fig. 2. That is the outer band 22 is projected as an integral part of the can body, and the closure section terminates in an inner band 23, soldered or otherwise secured to the interior surface of the wall. The form of section is identical with that previously described having the opposing friction leaves 24 and 25 inclosing an air space 26.

In Fig. 4 the closure-coöperating can section 27 differs slightly in construction from that shown in Figs. 1 to 3 inclusive. In this instance the section is independent of the can body and is terminally formed with a lip 28 to engage the body from which the material of the section is projected inwardly relative to its position on the can body to provide a ledge 29, directly overlying the interior of the can. From the inner edge of the ledge 29 the material is projected upwardly at a relatively outward incline to provide a friction leaf 30, from the upper terminal of which it is projected downwardly at an outward incline to provide an opposing friction leaf 31, the lower end of which terminates slightly above the ledge 29, as shown. From the lower end of the leaf 31 the material of the section is bent inwardly and soldered or otherwise secured to the ledge 29 approximately at its juncture with the leaf 30. In this instance also the opposing friction leaves 30 and 31 inclose an air space or cushion 32, having an identical function with the air cushion of the preceding forms.

In Fig. 5 the construction of the closure-coöperating section 33 is similar to that shown in Fig. 4, including a lip 34, a ledge 35, a friction leaf 36, and a second opposing friction leaf 37, the latter, however, in this form terminating in contact with the ledge 35 with the material being projected outwardly from the lower edge of said leaf in direct contact with the ledge 35 to provide a flange 38 terminating coincidently with the outer or free edge of the ledge 35 and being soldered or otherwise secured to said ledge at this point. An inclosed air space 39 is also a direct result of this construction.

In Fig. 6 the can section 40 is similar to that shown in Figs. 4 and 5, varying, however, in that the material, after being formed to provide a lip 41 and ledge 42 is projected vertically at an inward incline to provide an outer friction leaf 43, then projected downwardly and inwardly to provide an inner opposing leaf 44, the material being terminally bent toward the ledge 42, being secured to said ledge at its juncture with the outer leaf and forming in effect a continuation of the ledge. An inclosed air space 45 is also formed by this construction.

The closure adapted for use with all of the can sections described consists of a single disk of material stamped or otherwise formed to provide a central plate 46, from which the material is projected upwardly and relatively outwardly to provide a friction leaf 47, then downwardly and relatively outwardly to provide a friction leaf 48, the peripheral edge of the disk being projected laterally in a plane with the plate 46 and then formed in a return bend on itself and terminating in contact with the outer surface of the leaf 48. This construction materially reinforces the leaf 48 and at the same time provides a double thickness of material 49 at the peripheral edge of the closure to protect said edge against distortion in prying or otherwise removing the closure from the can. In the formation of the clo-

sure it is to be understood that the distance between the friction leaves 47 and 48, at any given point, is slightly less than the distance between the outer surfaces of the friction leaves of the can section at a similar point, whereby to induce the desired sealing friction between the parts in coöperation.

The inclosed air space of the closure-cooperating can section is a material feature of the present invention. In the use of such air space a chamber is formed which is in effect perfectly resilient. The use of such chamber insures that the friction leaves of the can section will at all times and under all conditions occupy their normal relative positions. There is, therefore, no possibility of the friction leaves of the can section being distorted from their original positions by a continued reapplication of the closure, hence the sealing effect of the closure remains unimpaired notwithstanding reuse. This feature is of material importance in containers of this character as it permits the continual reuse of the container with as complete a sealing effect from the closure in the last use as in the original application. The air cushion serves to insure accurate correlative positions of the friction leaves of the can section, tending, as will be evident, to return these leaves to an absolutely normal position after removal of the closure and the release of said leaves from the frictional grip of the closure, it being understood that the closure is assembled with the can section for sealing purposes by forcing the friction leaves of the closure into engagement with the relatively outer surfaces of the friction leaves of the can section. The relative heights of the friction leaves of the sections on the can and of the closure are such that when in position the lip 49 of the closure rests directly upon the ledge of the can section. The closure may be removed by a prying action between the lip 49 and the ledge of the can section, the double thickness of material at the closure lip, and the coöperative part of the can section, effectively prevent any distortion of these parts in removing the closure. The can described provides, therefore, for an effective sealing by a properly constructed closure without regard to the number of times said closure may be used, thereby limiting the reuse of the can only by the life of the material used. Furthermore, the specific formation of the can section, particularly that shown in Figs. 1 to 3 inclusive provides a practically unobstructed can wall, thereby producing a can which may be readily and quickly cleansed, as interior obstruction is practically avoided. By forming the interior surface of the can of practically unbroken surface throughout its length, no shoulder or obstruction is formed to permit the accumulation of the material within the can, hence the can of this construction may be quickly and perfectly cleansed, which presents an additional and important feature tending to and permitting its reuse, and avoids objections of this character heretofore present in containers of this type.

In Fig. 8 is shown a construction wherein the essential air cushion of the previously described forms is still retained with, however, a more pronounced variation in the structure. In this form the can wall 3 is shaped near its upper end to provide the ledge 50 similar to the ledge 10 of the form shown in Fig. 1, being projected therefrom to provide an extension 51 in the plane of the can wall. The section 52 is provided initially with an annular band 53 arranged to encircle and bear against the outer surface of the can immediately above the ledge 50, projected from said band at an outward incline, as at 54, and projected from said section 54 to provide frictional leaves 55 and 56 corresponding to the friction leaves of the remaining forms. The material of the section is then projected downwardly within the can to provide a band 57 which extends below the ledge 50 and is secured to the inner surface formed by the can, it being understood that parts 53 and 57 are hermetically sealed to the wall 3. The opening of the ledge 50 on the inner surface of the can is thus covered to avoid accumulation of material therein, and the air space 58 is included between the friction leaves 55 and 56.

Having thus described the invention what is claimed as new, is:—

1. A can body having a cover receiving section projected above the upper edge of the body and shaped to provide downwardly and relatively outwardly inclined friction leaves, the space between said leaves being sealed against air admission, and a cover to engage said leaves, said cover being shaped to compress the leaves toward each other to compress air between them.

2. A can body having a cover receiving section bent to form a laterally projecting ledge and projected from the ledge in the form of spaced relatively inclined leaves, the space between the leaves being sealed against air admission, and a cover arranged to frictionally engage the leaves to compress the air between them and having a lip to rest upon the ledge of the section.

In testimony whereof, I affix my signature in presence of two witnesses.

ORLANDO DUCKER.

Witnesses:
K. ALLEN,
AIMEE BROWN.