

Dec. 8, 1942.

H. L. CARPENTER

2,304,539

CONTAINER CLOSURE

Filed Jan. 12, 1940

2 Sheets-Sheet 1

Fig. 1.

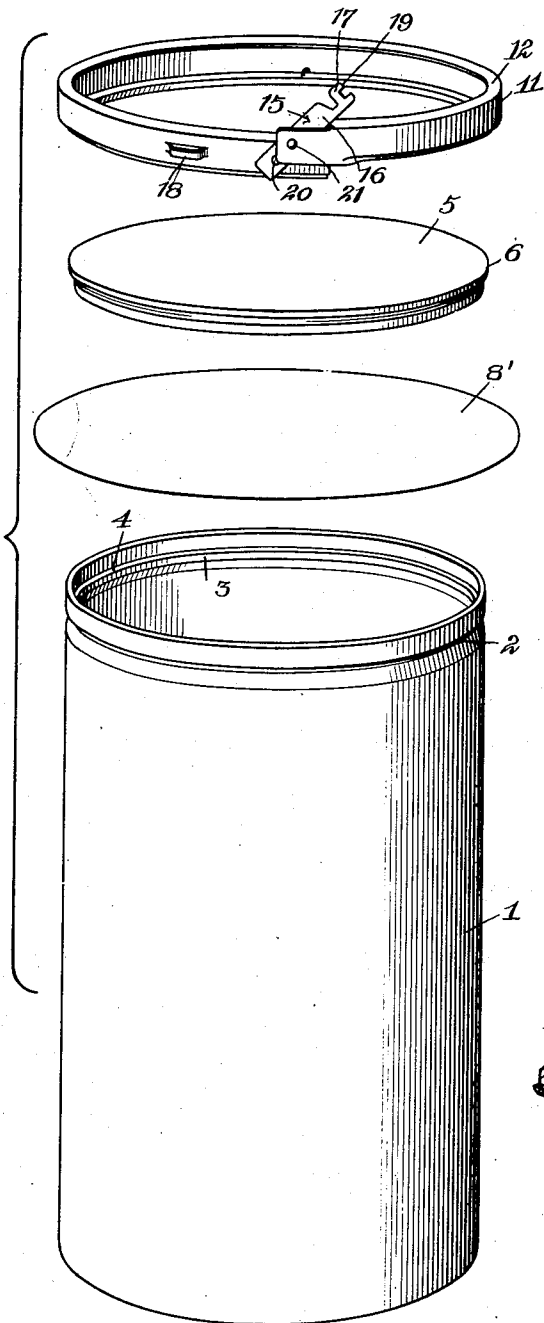


Fig. 2.

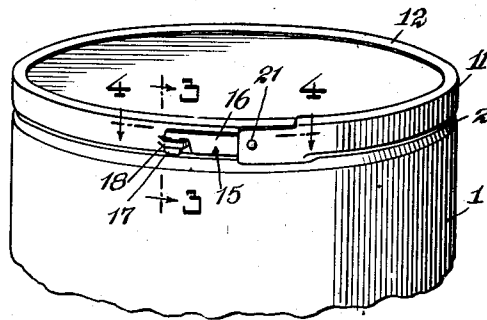


Fig. 3.

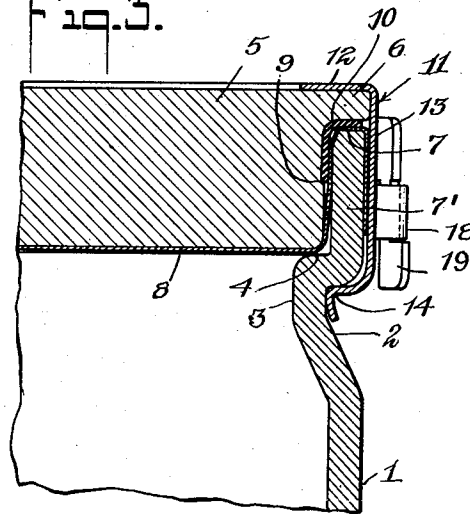


Fig. 4.

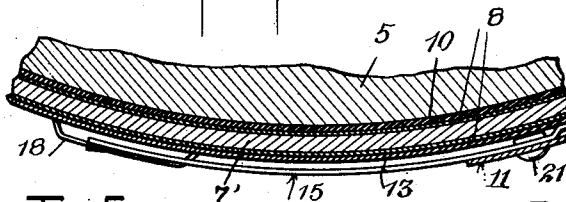


Fig. 5.

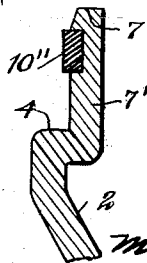
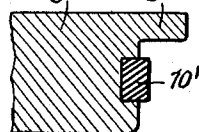


Fig. 5.



WITNESSES

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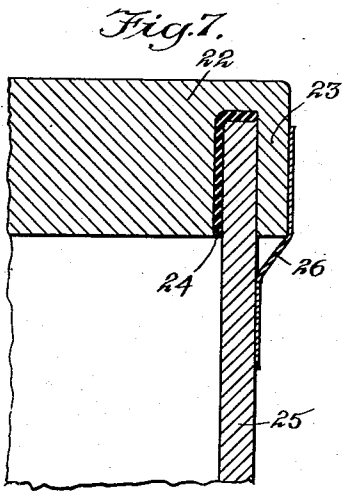
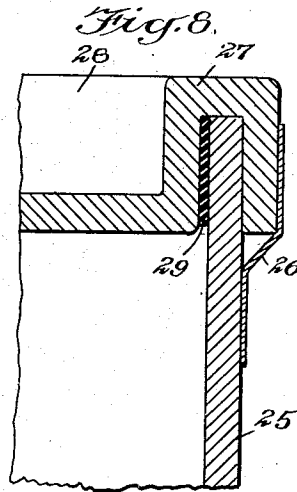
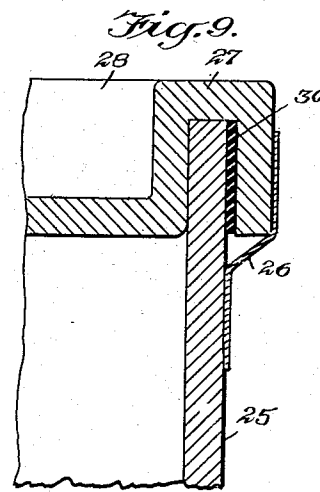
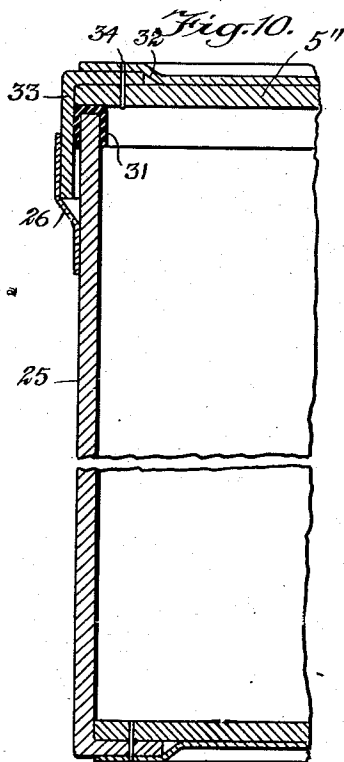
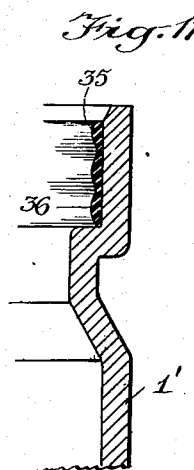
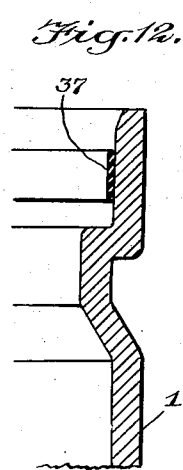
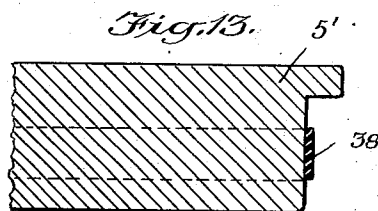
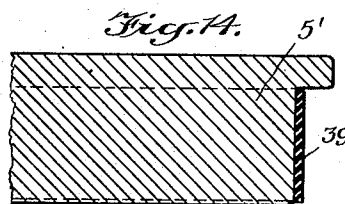
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CONTAINER CLOSURE

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2 Sheets-Sheet 2



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CONTAINER CLOSURE

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Application January 12, 1940, Serial No. 313,539

8 Claims. (Cl. 229—5.7)

This invention relates to containers and particularly to an improved fiber container and closure therefor, an object of the invention being to provide an efficient closure structure which will remain closed until positively opened and which will maintain the container air-tight, water-tight and grease-tight at all times.

Another object of the invention is to provide a container having a removable closure including a readily expansible and contractible ring or rim in connection with the closure head and resilient means for taking care of expansion and contraction while the rim or ring is holding the closure in its functioning position.

An additional object is to provide a container with a closure structure formed with a wooden head, or other head which may expand and contract with variations in moisture or temperature, and means for compensating for the expansion and contraction of the head.

A further object, more specifically, is to provide a head for a fiber or other container formed of wood or similar material, with a resilient band arranged on the periphery of the head and acting to maintain an air-tight connection with the container notwithstanding any expansion and contraction of the head.

In the accompanying drawings—

Fig. 1 discloses a container and closure embodying the invention;

Fig. 2 is a perspective view of the upper part of the container shown in Fig. 1 with all the parts in their closed and fully functioning position;

Fig. 3 is an enlarged fragmentary sectional view through Fig. 2 approximately on the line 3—3;

Fig. 4 is a fragmentary circumferential sectional view through Fig. 2 approximately on the line 4—4;

Fig. 5 is a detail fragmentary sectional view through a modified form of head to that shown in Fig. 3;

Fig. 6 is a detail fragmentary sectional view through a modified form of container shell to that illustrated in Fig. 3;

Fig. 7 is a fragmentary sectional view similar to Fig. 3 but showing a modified form of the invention;

Fig. 8 is a view similar to Fig. 7 but showing a further modified form of the invention;

Fig. 9 is a view similar to Fig. 8 but showing a different arrangement of the elastic;

Fig. 10 is a vertical sectional view through part of the container, disclosing a modified form of the invention to that shown in Figs. 5 and 6;

Fig. 11 is a view similar to Fig. 6 but illustrating a different form and position of elastic member;

Fig. 12 is a view similar to Fig. 11 but showing a modified construction;

Fig. 13 is a view similar to Fig. 5 but showing a modified construction and arrangement of elastic member;

Fig. 14 is a view similar to Fig. 13 but showing a different arrangement of elastic member.

Referring to the accompanying drawings by numerals, 1 indicates a container which may be made of fiber, as for instance, a number of fiber sheets secured together by adhesive. This container may have any suitable bottom and at the top is provided with an annular exterior groove 2 pressed therein which results in an annular bead 3 interiorly thereof, having a shoulder 4, and coacting with the body 1 is a head or closure 5 which may be of wood, fiber, a composition of matter, or other desired material. Usually wood is used for the closure of fiber containers for various reasons and in the present instance the head 5 is provided with a flange 6 which overlaps the top edge 7 of the body 1. It is, however, to be understood that the invention could be applied to a head formed without the flange 6.

The annular section 7' of the container 1 is adapted to press against a lining member 8 which is preferably preformed from a disk 8' into the shape shown in Fig. 3 and is then placed in position as shown in Fig. 3. The head 5 is provided with a rather shallow annular groove 9 which accommodates an elastic compensating member 10. This member may be an ordinary annular band or may be L-shaped as shown in Fig. 3. This band may be of various kinds of elastic material, as for instance rubber or elastic amorphous material.

Coacting with the parts just described there is provided a constricting and clamping ring 11 which may be made of suitable material, as for instance metal, and which is provided with an inwardly extending flange 12, a body 13, and an intumed hook portion 14 extending into the groove 2. A suitable constricting and locking structure 15 is provided for moving the ring 11 into its fully functioning position, as shown in Figs. 2 and 3. This constricting and clamping structure includes a lever 16 having a hook portion 17 adapted to be moved through the loop 18 pressed from the material of the ring 11 near one end. The exterior end portion 19 of hook 17 is flared outwardly slightly so that after it is forced through loop 18 it will be swung outward-

ly slightly, as indicated in Fig. 3, and thereby prevent lever 16 from accidentally swinging to an open position. It will be observed from Fig. 1 that the lever 16 is pivotally mounted at 20 to the ring or band 11 at one end and intermediate its length at 21 to the opposite end of the ring or band 11. By this arrangement when the lever 16 is swung over to the position shown in Fig. 2 the ring is appreciably constricted and moved downwardly at its free ends until the parts are overlapped and are positioned as shown in Figs. 2 and 3. This arrangement and action of the parts will cause a proper clamping action and also a constriction of the portion 7' whereby it will pinch the head 5 and make a good airtight connection. Where wood or similar material is used the same will expand and contract under various changing weather conditions. If the parts were arranged as just described without the use of the elastic member 10, this expansion and contraction of the parts would occasionally cause a leakage. To overcome this leakage the elastic member 10 is used and is very much compressed when the ring 11 is brought to its fully functioning position, as shown in Fig. 2. If the head 5 should contract the elastic member or ring 10 would expand and thereby maintain the airtight condition of the respective parts. As a matter of fact, as the parts expand and contract elasticity of member 10 is such that it compensates for this expansion and contraction and thereby always maintains the parts in the proper airtight condition without in any way interfering with the unlocking of the lever 16 and removal of the ring and head.

In Fig. 5 a slightly modified structure to that shown in Fig. 3 is disclosed whereby the elastic member 10' extends at an appreciable distance into the head 5. By reason of this construction the elasticity of member 10' need not be great as the comparatively thin elastic member 10 and yet ample elasticity will be provided to compensate for the expansion and contraction of the parts.

In Fig. 6 a further modified structure is shown wherein the elastic ring or member 10'' is embedded in a suitable groove in the section 7. This elastic member performs the same function as the elastic members 10 and 10'. It will, therefore, be seen that there is presented some form of elastic means between the head and the container so as to compensate continuously for the expansion and contraction of the respective parts and thereby maintain an airtight condition.

Quite often dry powders which are highly hygroscopic are shipped in containers of the present invention and in order to prevent the passage of air into and from the interior of the container it is essential that the head be maintained airtight at all times. The body 1 of the container is laminated fiber and between the laminations adhesive is arranged which makes the body airtight at all times. If desired, an extra lining of air-tight material could be applied to the interior of the container and the head 5 without departing from the spirit of the invention. Also it will be understood that any suitable material may be used as the elastic bands or rings. Rubber has proved to be very satisfactory. Mineral products could also be used where they are sufficiently elastic to accomplish the desired purpose and, in fact, any amorphous material is suitable where sufficient elasticity is presented. Where material is used in which the elasticity is relatively small, there is provided a deep annular groove in the head 5, as shown in Fig. 5, but

where the material used is of greater elasticity then a more shallow groove would be satisfactory either in the head or in the part 7'.

In Figs. 7 to 9, inclusive, various arrangements of cushioning elastic members are provided which are modified structures to that shown in Fig. 3. In Fig. 7 there is presented a solid top 22 which may be made in any desired way and which is provided with a telescoping member 23. An L-shaped elastic member 24 is arranged between the body 25 and the head 22. The strip 26 may be fabric and held in place by adhesive. Also, if desired, a clamping ring, as shown at the top of Fig. 1, may be used without departing from the spirit of the invention. Fig. 8 is a view similar to Fig. 7, but the head 27 has a recess 28 and the elastic member 29 is only interior of the body 25 instead of interior and across the top. Fig. 9 is identical with Fig. 8 except that the elastic member 30 is arranged exteriorly of the body 25 of the container.

In Fig. 10 a U-shaped elastic member 31 is provided and the head 25' extends over and rests on the upper part of the elastic member 31. In this form of the invention a covering sheet 32 is provided and an L-shaped member 33. These members are held together and to the head 25' by suitable stitching 34.

In Fig. 11 the body 1' is constructed the same as shown in Fig. 2, but the elastic member 35 has a flat surface resting against the body 1' and a corrugated surface 36 facing inwardly so as to engage the head. When the ring shown at the upper part of Fig. 1 is used in this form of the invention, the corrugated part is first depressed and some of the body of the elastic member. The parts are preferably so proportioned that the compression when the ring 11 is first applied will be approximately half of the allowable compression. This will permit a ready contraction and expansion of the head without permitting the passage of air.

Fig. 12 is the same as Fig. 11 except that the elastic member 37 is merely a narrow rubber strip held in place by cement or other suitable means.

In Fig. 13 the head 5' is provided with a narrow elastic band 38 held in place by cement or otherwise. In Fig. 14, the same general idea is provided except that the elastic member 39 is half the full width of that part of the head 5' which fits within the container.

I claim:

1. In a container having a fiber body and a closure therefor arranged in the end of the body and contacting with the body, a circumferentially extending metallic clamping rim divided at one point fitting over the end of the container carrying said closure, and means for reducing the diameter of said rim and also locking the rim against removal, said means including a loop pressed from said rim near one end and a swinging lock pivoted at one end to one end of said rim and pivoted intermediate its length to the other end of said rim, said swinging lock having at its free end a hook with the end thereof twisted to extend out of the plane of the lock, the parts being proportioned to permit said hook to pass through said loop when the lock has been swung for reducing the diameter of said rim, said twisted part automatically moving to one side of the opening of the loop as soon as it has been forced through the loop whereby the hook cannot become accidentally disengaged from the loop.

2. A container comprising a fiber body, a clo-

sure fitting in one end of said body and contacting therewith said closure being made of different material than the body and having a different coefficient of expansion and contraction under varying conditions of atmosphere and temperature, an elastic circumferential member arranged between the periphery of said closure and said body, and a constricting clamping ring surrounding said body opposite said closure said elastic member being partially compressed when the container is assembled.

3. A container comprising a fiber body formed to present a substantially air-tight structure under ordinary atmospheric pressure, a closure made from material having a different coefficient of expansion and contraction than the body under varying conditions of atmosphere and temperature fitted in one end of said body, and an elastic circumferential member arranged between the periphery of said closure and said body, and a constricting clamping ring surrounding said body opposite said closure said elastic member being in partially compressed condition.

4. A container comprising a fibrous body, a closure fitting in one end of said body said closure being made of different material than the body and having a different co-efficient of expansion and contraction under varying conditions of atmosphere and temperature, an elastic circumferentially positioned rubber member arranged between the periphery of said closure and said body and embedded in one of the contacting members, and a constricting clamping ring surrounding said body opposite said closure said elastic member being in partially compressed condition when the clamping ring has been constricted.

5. A container comprising a fiber body, a closure fitting in one end of said body said closure being made of different material than the body and having a different co-efficient of expansion and contraction under varying conditions of atmosphere and temperature, a band of elastic material arranged between the periphery of said closure and said body, said elastic member being embedded in the said closure and projecting therefrom sufficiently to continuously engage said body, and a constricting clamping ring surrounding said body opposite said closure said band of elastic material being in partially compressed condition when the clamping ring has been constricted.

6. A container comprising a fibrous body, a

closure fitting in one end of said body said closure being made of different material than the body and having a different co-efficient of expansion and contraction under varying conditions of atmosphere and temperature, and an elastic circumferentially positioned member formed of amorphous material arranged between said closure and said body with a portion of the elastic member embedded in one of the facing surfaces, and a constricting clamping ring surrounding said body opposite said closure said elastic member being in partially compressed condition when the clamping ring has been constricted.

7. A container comprising a fibrous body formed with substantially air-proof adhesive arranged between the layers of fibers of said body, a wooden closure head fitting in one end of said body, an elastic ring arranged between said closure and said body, a metal ring surrounding said body at the end carrying said head, said ring being provided with a flange overlapping said closure, and a constricting and locking means carried by said ring functioning to vary the diameter of the ring and to hold the ring in its reduced diameter when in functioning position said elastic ring being in partially compressed condition when the metal ring has been constricted.

8. A container comprising a body formed of a plurality of layers of fiber with substantially water-proof adhesive arranged between said layers, a closure fitting in one end of said body said closure being made of different material than the body and having a different co-efficient of expansion and contraction under varying conditions of atmosphere and temperature, a substantially air-proof member covering the inner surface of said closure and extending between the periphery of the closure and the body, said closure having a flange overlapping the end of said body while the main portion of the periphery part extends within said body, a rubber ring arranged between the peripheral part of said closure and said body, said ring having an extension fitting between said flange and said body, and a constricting rim surrounding said body opposite said ring, said constricting rim having a portion fitting over the periphery of the body and a portion overlapping said flange said rubber ring being in partially compressed condition when the constricting rim has been constricted.

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