

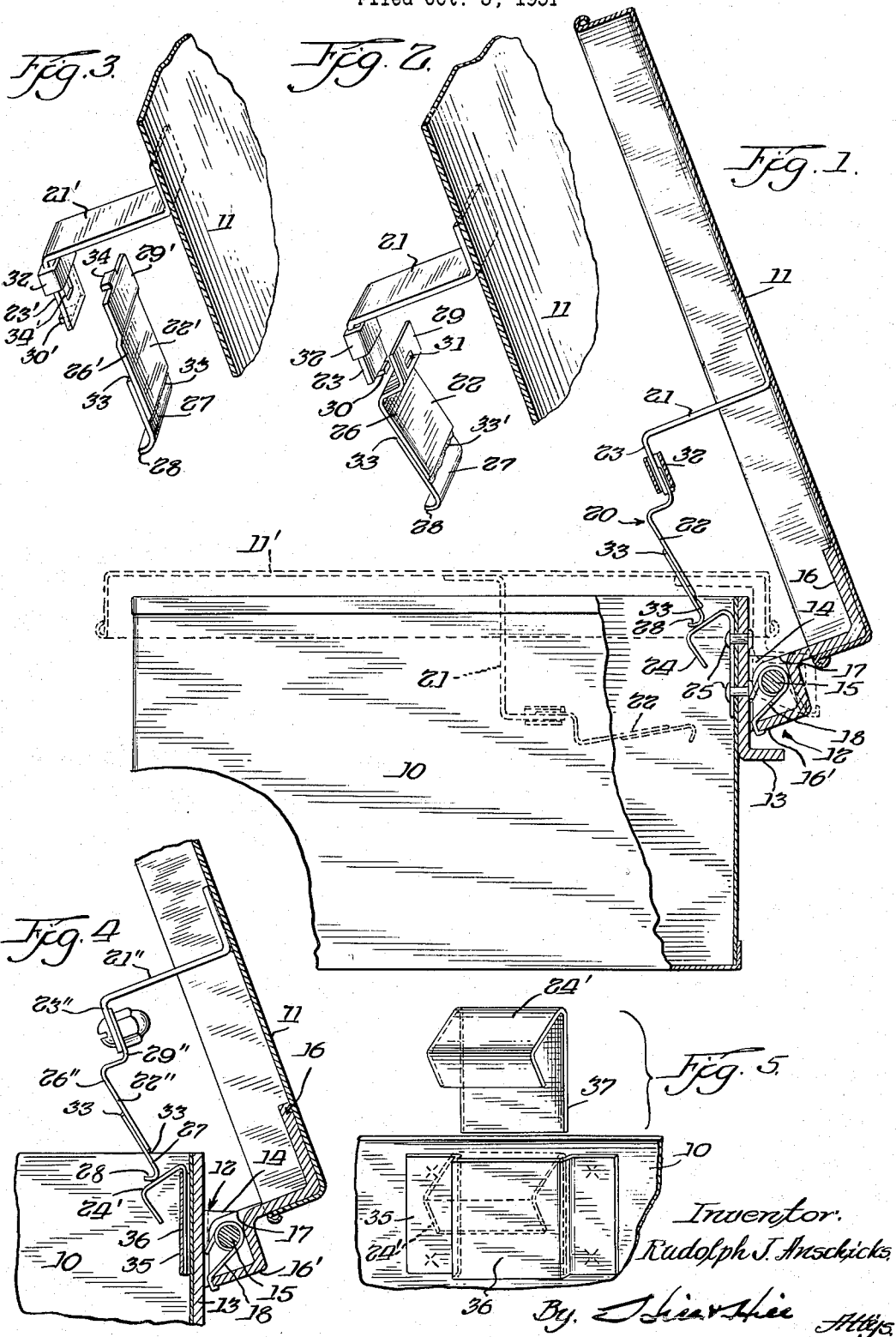
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R. J. ANSCHICKS

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BENCH CAN FOR INFLAMMABLE LIQUIDS

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Inventor.
Rudolph J. Anschicks

By *Shirley* Attys

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BENCH CAN FOR INFLAMMABLE LIQUIDS

Rudolph J. Anschicks, Chicago, Ill., assignor to The Protectoseal Company, Chicago, Ill., a corporation of Illinois

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This invention relates to closure means for containers or receptacles for inflammable liquids, and more particularly to a fusible closure means for a bench can and the like when used for volatile or highly inflammable liquids in which articles may be dipped or submerged and thereby subjected to the cleansing properties of the fluid.

The principal object of the invention is to provide a bench can or container for volatile or inflammable fluids and solvents with an improved, novel and efficient means automatically operable to quickly close the can and to stop combustion in the event of inadvertent ignition of the contents of the bench can by accident or otherwise.

Another object of the invention is to provide simple improved means for releasably retaining the cover or the closure of the can in either open or closed position under normal conditions.

Another object of the invention is to provide a simple arrangement embodying a heat responsive means in the form of fusible link means operatively related to the retaining means and operable to render the latter ineffective to retain the can closure in open position in the event of ignition of the fluid or other contents of the tank.

A further object of the invention is to provide a quick-acting fusible link connection between the cover and the retaining means and which when broken will permit the cover to close the bench can.

Another object of the invention is to provide a detachable and replaceable fusible link means.

Still another object of the invention is to provide a detachable and replaceable leaf spring to provide an improved retaining means to permit the closure to normally open and be retained in its opened and closed positions.

Another object of the invention is to provide a closure for a bench can which is spring-biased normally in its closed position, and which is adapted to be biased in its open position with a quick-acting fusible link connection and when the link connection is broken the closure is automatically biased to its closed position.

In order to accomplish the various objects of my invention, a simple bench can and spring-biased closure therefor has been provided with a detachable and separable fusible link detachably affixed to a support bracket on the closure and adapted in the open position of the closure to engage a latch means for releasably retaining the closure in its open position.

Many other objects of the invention will be obvious to those skilled in the art from the disclosure herein given.

To this end, my invention consists in the novel construction, arrangement and combination of parts herein shown and described and more particularly pointed out in the claims.

In the drawings, wherein like reference characters indicate like or corresponding parts:

Fig. 1 is an elevational view, partly in section of a bench can and closure therefor, embodying the features of the present invention;

Fig. 2 is a perspective view, partly in section, illustrating one form of a detachable and separable fuse link of the present invention;

Fig. 3 is a perspective view, partly in section, illustrating another embodiment of the detachable and separable fuse link of the invention;

Fig. 4 is a partial view in elevation, partly in section,

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illustrating a modified form of the separable and detachable fuse link and modified form of the latching means for retaining a closure in open position; and

Fig. 5 is an enlarged, exploded view illustrating the detachable and replaceable retaining and/or latch means for the closure as illustrated in Fig. 4.

As illustrated in the accompanying drawing, the invention is shown in its relation to a bench can 10 of convenient size adapted to contain highly volatile and inflammable fluids, such as, for example, gasoline, solvents or the like intended for washing or cleansing purposes, and the bench can is normally used on the benches of the operators for cleaning connections to be soldered such as in radio and other electronic devices. During the day, as the soldering operations are carried on, closure 11 may be normally raised to its open position, as shown in Figure 1. After the day's work is over, or when the bench can is not in use, the closure 11 is normally biased to its closed position 11' which reduces the fire hazard from having highly inflammable fluids or the like in open containers. The bench can 10 is preferably a small container adapted to hold a minimum of liquid needed for the cleaning operation to reduce the fire hazard.

The closure 11 is adapted to be hinged on the container 25 with a conventional hinge construction 12 comprising a bracket 13 provided with lugs 14 laterally spaced for mounting a pintle 15. The hinge bracket 13 may be riveted, as shown in Fig. 1, to the container or welded thereto, as illustrated in Fig. 4. The cover is provided with a bracket 16 formed as shown in Figs. 1 and 4 to provide a stop 16' to limit the movement of the cover and provided with spaced lugs 17 through which the pintle 15 extends for pivotally mounting the closure on the container. A spring 18 coiled, as shown in Figs. 1 and 4, and formed at one end to engage the free end 16' of the bracket, normally biases the closure to its closed position 11', as shown in Fig. 1.

It will be noted that, when the closure 11 is in its open position as illustrated in Figs. 1 and 4, the greater portion of the closure is positioned on the side to overlie the container from a vertical line, for example extending through the hinge pintle 15 in such a manner that when the closure is released from its open position, the weight of the cover and the bias of the spring 18 will cause the closure to swing downward toward the tank to close the container either in the normal closing operation for covering the container or upon operation of the heat responsive device 20.

For controlling the position of the closure 11 with respect to the container 10, as illustrated in Figs. 1 and 4, a Z-shaped bracket 21 is affixed to the inner face of the closure by welding or other suitable means. A fusible link means 22 is operably connected at its upper end to a free end 23 of the bracket 21. The free end of the fusible link means 22 is adapted in the open position of the closure 11 to engage the retaining means or resilient latch means 24 formed as shown and preferably affixed to the interior of the container by rivets 25 which mount the hinge bracket 13 of the closure 11. It is to be understood that the latch means 24 may be welded or otherwise secured to the container.

Referring to Figs. 1 and 2, one form of the fusible link means and bracket for detachably mounting the fusible link means 22 will be described. The fusible link means 22 is preferably formed from strip metal and comprises an upper part 26 and a lower part 27. The lower part 27 is formed with a curved end 28 adapted to engage the resilient latch means 24, as illustrated in the open position of the closure of Fig. 1. The upper part 26 is formed with an L-shaped end 29 complementary to the free end 23 of the bracket 21. The free end 23 is

provided with a lug 30 complementally formed to an aperture 31 in the L-shaped end 29. The slide 32 is formed complementally to the end 23 and adapted to slide over the end 29 of the fusible link when the lug 30 and aperture 31 are complementally engaged, as illustrated in Fig. 1, to detachably secure the fusible link means 22 in its operable position. The upper and lower portions 26 and 27 of the fusible link means 22 are preferably soldered together, as illustrated at 33, with a low melting point solder adapted to melt preferably within the range of from 135° to 160° F., and it is to be understood that any other range of low melting point solder may be used to operate within the range desired for the ignition point of the particular liquid used in the container.

In mounting the slide 32 on the bracket 21, the slide may be preformed and slipped over the end 23 before the lug 30 is bent into position or the lug 32 may be partially preformed and afterwards bent to its final closed position in position on the bracket 21.

The fusible link means 22 have been preferably fabricated to be detachable and replaceable so that, in the event of the fusible link becoming unsoldered due to the inadvertent ignition of the liquid in the container, a replaceable fusible link may be quickly reinserted without the need of replacing the entire bench can upon the fusing or melting of the link.

In the normal use of the container or bench can, the cover is raised to its open position 11 being normally biased in its open position through the action of the fusible link 22 and the bracket 21 forming a connection between the resilient latch means 24. The end of the link 28 is so shaped as the cover is opened that it engages the upper surface of the latch means 24, as illustrated in Fig. 1. In closing the container, a slight pressure on the closure 11 will move the closure downwardly to release the end 28 from the latch means 24 whereupon the bias of the spring 18 will normally close the closure to its dotted position 11', with the bracket 21 and the fusible link 22 taking the positions as shown in the dotted lines of Fig. 1. Also, with the closure 11 in its open position as shown in Fig. 1, upon the melting of the fusible solder due to the ignition of the fluid within the bench can and/or container, as the position of the cover 11 is unstable, the cover will tend to close under the action of gravity being assisted in addition by the bias of the spring 18 so that, upon the inadvertent ignition of the fluid, the closure automatically covers the container tending to snuff out any flame and preventing the spread of any fire from the container.

Referring to Fig. 3, there is illustrated another modification of the detachable and replaceable fusible link means 22' and its complementally formed bracket 21'. The bracket 21' is affixed to the closure similarly as the bracket 21 of the modification of Fig. 1. In this embodiment, the free end 23' is modified and provided with a lug 30' extending in the opposite direction to that of the embodiment shown in Fig. 2; whereas the lug 30 of the embodiment of Fig. 2 provided a means for attaching the fusible link means 22 and as a stop for the slide 32, in the embodiment of Fig. 3, the lug 30' serves only as a stop for the slide 32 similarly as that of Fig. 2. The upper end of the upper part 26' of the fusible link is shaped as indicated at 29' to be complemental to the end 23' and is also formed with a lug 34 to complementally engage the aperture or opening 34' provided in the lower end 23' of the bracket.

The lower part 27 of the modified fusible link means 22' is similarly formed as that of the fusible link 22 of the embodiment of Fig. 2 and is provided with the curved end 28. The parts 26' and 27 forming a fusible link means 22' are soldered as indicated at 33' with a suitable low melting solder within the same fusing or melting range as described above.

The slide 32 in the embodiment of Fig. 3 is affixed in position on the free end 23' in the same manner as described with reference to the embodiment of Fig. 2. In the embodiment of Fig. 3, the fusible link is attached similarly as described with reference to the embodiment of Fig. 2; but, instead in the embodiment of Fig. 3, the lug 34 of the fusible link is inserted within the aperture 34' with the slide in the raised position as shown, after which the slide is moved to its lower position, for example, as illustrated in Fig. 1, securely affixing the replaceable fusible link 22' in position. In either of the embodiments of Figs. 2 and 3, the fusible links 22 and 22' are detached or replaced in the reverse order. As the operation of the fusible link in the opening and closing of the container and in the event of the liquid within the container becoming ignited is the same, further description is believed unnecessary.

Referring to Fig. 4, there is illustrated a further embodiment of a fusible link means 22'' adapted to be detachably connected to a modified bracket 21''. The construction of the upper and lower parts 26'' and 27 forming the fusible link are substantially the same as described with respect to the embodiments of Figs. 2 and 3 and therefore need not be further described in detail, and like or similar reference characters indicate the same or similar structures. The only difference of the embodiment of Fig. 4 over that of Figs. 2 and 3 is that the lower end 23'' of the Z-shaped bracket 21'' and the upper end 29'' are formed as shown to receive a securing means in the form of a screw and nut, as shown, for affixing the fusible link means 22'' to the lower end of the Z-shaped bracket 21''. As the operation in the normal opening and closing of the closure 11 is the same using the modified form of fusible link means, and likewise, upon ignition of fluid within the container, further description of the operation is believed to be unnecessary as it is the same as described with reference to the embodiment illustrated in Fig. 1.

Referring to Figs. 4 and 5, there is illustrated a modified form of retaining means or latch means 24'. Whereas in the embodiment of Fig. 1, the latch means 24 was rigidly affixed to the container 10, the modified form 24' is illustrated as being detachable and replaceable. The latch means 24' is preferably formed from spring material such as Phosphor bronze or brass or other suitable material and formed into the latch shape as shown to complementally engage the lower end 28 of any of the embodiments of the fusible links 22, 22' or 22'', as illustrated in Figs. 1 and 2, 3 and 4. In order to support the latch means 24' on the container 10, a bracket 35 formed as illustrated in Figs. 4 and 5, is suitably affixed by welding to the interior of the container. It is to be understood that, in the same welding operation, the hinge bracket 13 may also be welded to the outside of the container. The bracket 35 has an offset portion 36 formed complemental to the lower end 37 of the latch means 24' so that the latch means may be detached and replaced when necessary by detaching the lower end 37 from the complementally formed slot formed by the offset portion 36. For example, referring to Fig. 5, the latch means 24' is simply attached to the bracket 35 by moving the latch means downwardly into the dotted position 24'. The latch means is removed in the reverse order. It has been found desirable to have a detachable and replaceable latch means since in continued use, the opening and closing of the closure 11 tends to cause the latch means to be deformed so that the fusible link does not properly engage the surface of the latch means, as shown in Fig. 1; and also, upon ignition of the fluid within the container, the temperature of the flame tends to reduce the resiliency of the latch means preventing proper bias of the closure to its open position.

It is thus obvious from the above description that a simple form of detachable and replaceable fuse link has been provided, and the fusible link has been so arranged

and constructed that the elements forming the link are simply secured together at their overlapping portions by means of the fusible metal or low melting solder, and the fusible metal is adapted to fuse with the initial heat of combustion upon ignition of the volatile and inflammable fluid within the container.

It is also evident that there has been provided a simple fusible link construction and mounting therefor on a closure in cooperation with a resilient latch means for normally biasing the closure to its open position and upon melting of the fusible metal tends to separate the portions of the fusible link so that the closure will close either under the action of gravity or the combined action of gravity and the bias of the spring tending to return the closure to its normal closed position.

It is also obvious that there has been provided a simple arrangement so that, upon the fusing or the melting of the parts forming the fusible link, the latch means 24 is rendered ineffective in retaining the closure in its open position and the closure will move to its normal closed position thereby excluding oxygen from the container and snuffing out any flame due to the combustion of the fluid contents thereof.

It is also evident that in order to place the bench can in condition for further use upon the melting of the fusible link means, it is only necessary to detach the upper part of the fusible link from its supporting bracket and replace it by a new link of any one of the embodiments disclosed; and also, if the resilient latch means has become inoperative in any manner due either to use or because of any combustion of the contents within the can, a new latch means may be readily replaced in accordance with the disclosure with respect to the embodiment of Figs. 4 and 5. It is also obvious that the latch means 24 of the embodiment of Fig. 1 may be simply replaced by removing rivets 25 and replacing the latch means 24.

It will be observed from the foregoing description that the present invention provides a novel construction and arrangement whereby the cover of the bench tank or container embodying the invention may, under normal conditions, be retained in either its opened or closed position, and wherein simple and novel means have been provided for automatically closing the cover in the event of ignition of the fluid or liquid contents of the tank.

Furthermore, the present invention provides a simple and quick-acting fusible link connection between the cover for the container and the resilient retaining means which when broken will permit the cover to close either under the action of gravity or the combined action of gravity and the spring biased closure.

It is to be understood that the present invention is not limited to the precise construction and arrangement shown and described, as the same may be variously modified without departing from the spirit and scope of the invention as set forth in the appended claims.

What I claim as new and desire to secure by Letters Patent is:

1. As an article of manufacture, a replaceable and separable fusible link means for a safety container including a hinged cover and a bracket mounted thereon, said bracket including a stop and latch means slidably mounted thereon, complementally formed means on said link means and said bracket for restricting longitudinal movement of the link means relative thereto, and said latch means comprising a slide member adapted to be slidably mounted on said bracket and to slidably engage said link means to restrict transverse movement of the link means relative to said bracket for detachably attaching said link means to said bracket.

2. In a container structure for inflammable fluids, the combination of a container body and a hinged cover therefor, a bracket having a transverse inwardly extending portion carried by said cover, latch means carried by said container body, replaceable and separable link means adapted to operatively connect the transverse portion of

said bracket and said latch means for supporting the cover in an open position relative to said container body, said link means including separable link members secured together by a fusible material, one of said link members being complementally formed to the transverse portion of the bracket operative to restrict relative movement between the bracket and such link member in one direction, and a slidable member carried by said transverse portion of the bracket and releasably engageable with such link member for normally maintaining said complemental means in operative relation and detachably secure the link means to the bracket, separation of said link members upon fusing of the fusible material being operable to permit the cover to move into a closed position relative to the container body.

3. As an article of manufacture, a replaceable and separable fusible link means for a safety container including a hinged cover and a bracket mounted thereon, said bracket provided with a downturned end parallel to the cover, and a resilient latch means adapted to be engaged by the fusible link means in the open position of the cover, said latch means formed with a V-shaped end with the upper leg inclined downwardly toward the interior of the container, said fusible link means including an upper offset portion parallel to the cover and complementally formed to the downturned end of the bracket member and adapted to be detachably connected thereto, said fusible link means including upper and lower separable link members, and the free end of the lower link member of said fusible link means being arcuately formed to provide a cam surface and complementally formed to engage and disengage the upper leg of said latch means.

4. The combination in a container for inflammable fluids including a hinged cover therefor, of a relatively rigid bracket member carried by the cover, said outer end of said bracket being L-shaped with the base thereof parallel to the cover, a resilient stop member operatively mounted in the container and fusible link means operatively connecting said bracket and stop members when the cover is in an open position to support the latter in such a position, said resilient stop member formed with a V-shaped end with the upper leg inclined downwardly toward the interior of the container, said fusible link means comprising separable link elements rigidly connected together by a fusible material, one of said link elements including an upper offset portion parallel to the cover and being detachably secured to the complementally formed base of the bracket member and rigidly carried by said bracket member, and the other link element being arcuately formed to provide a cam surface releasably engageable with said resilient stop member, the stop member having sufficient resiliency to permit manual movement of the link means into and out of engagement therewith and sufficient stiffness to support the link means in position to maintain the cover in open position relative to the container, and upon separation of said link elements permit the cover to move into a closed position.

5. The combination in a container for inflammable fluids as set forth in claim 4, wherein said resilient stop member comprises a downwardly extending detachable portion, and a bracket affixed to the container and complementally formed to the downwardly extending detachable portion, whereby the resilient stop member is adapted to be detachably replaced.

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