Nov. 16, 1937. O. N. WISWELL 2,099,322

MEANS FOR OPENING CONTAINERS

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Fig. 1.

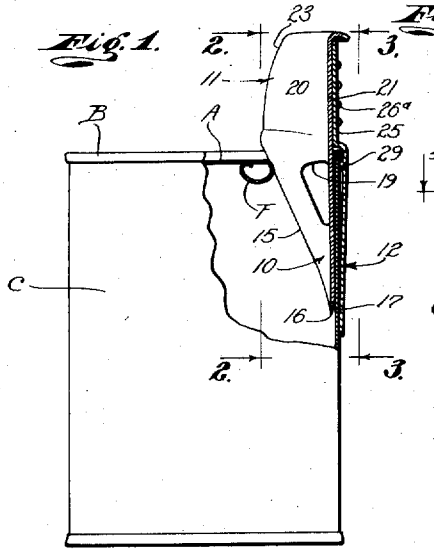


Fig. 2.

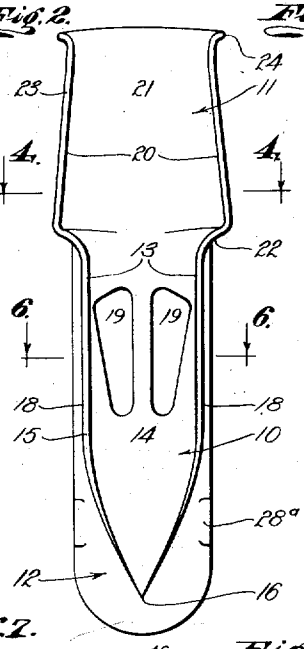


Fig. 3.

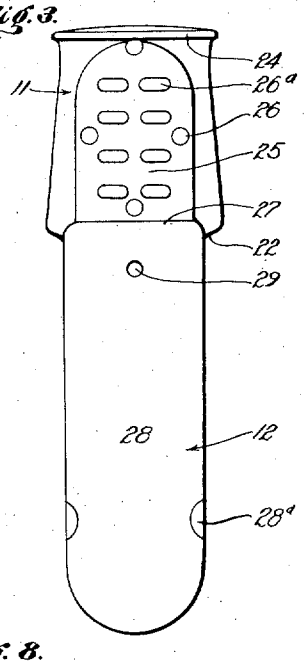


Fig. 4.

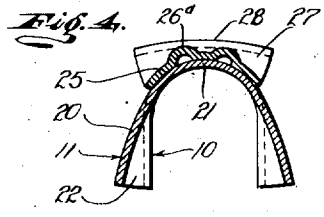


Fig. 7.

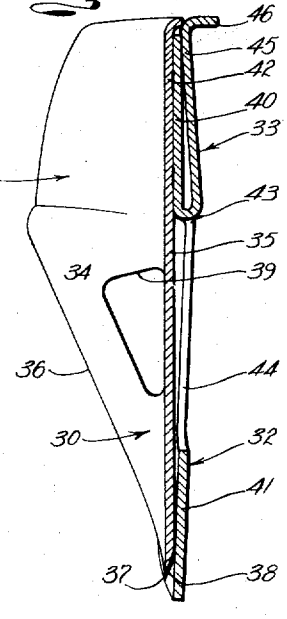


Fig. 8.

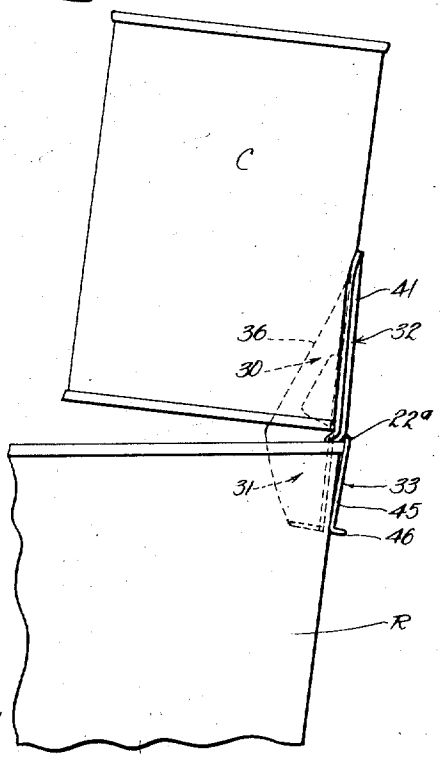


Fig. 5.

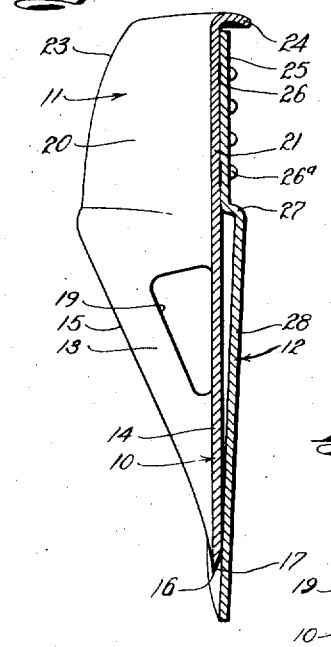
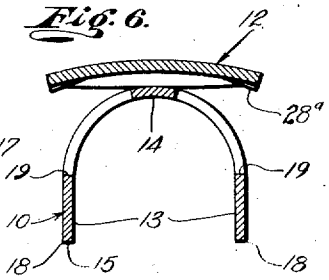


Fig. 6.



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Fig. 9.

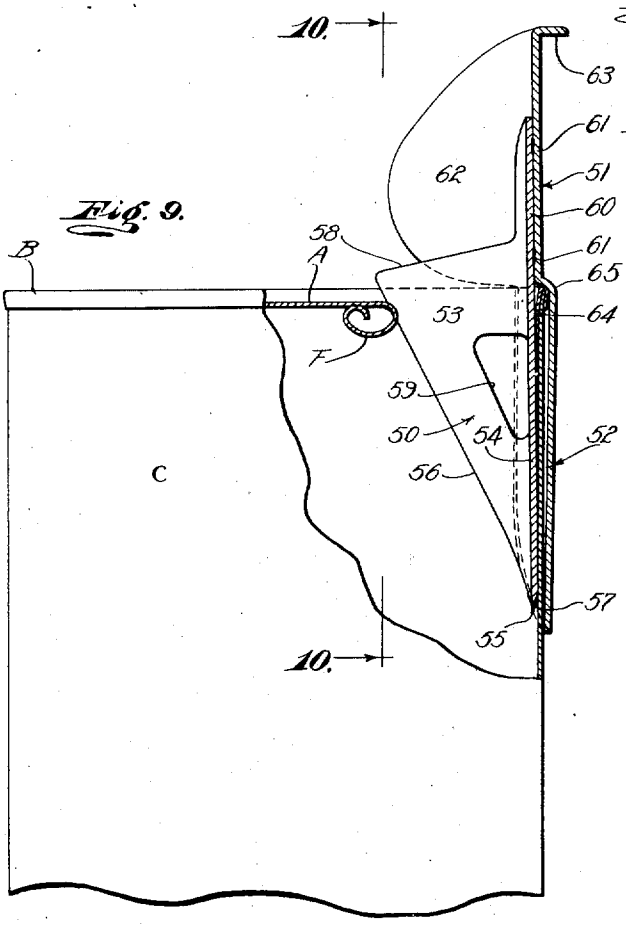


Fig. 10.

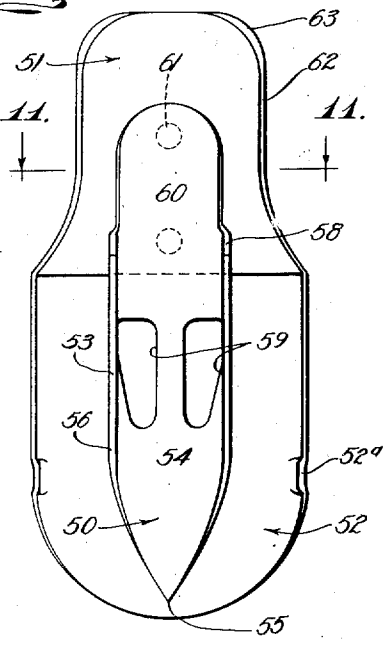


Fig. 11.

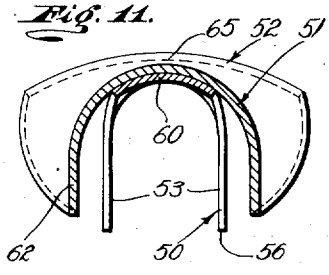


Fig. 12.

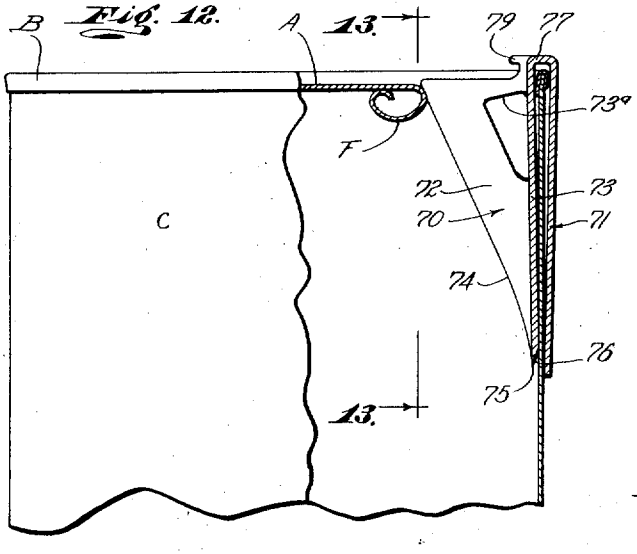
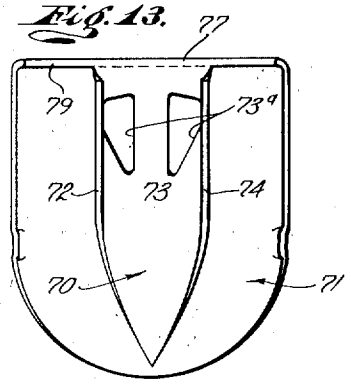


Fig. 13.



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MEANS FOR OPENING CONTAINERS

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Fig. 14.

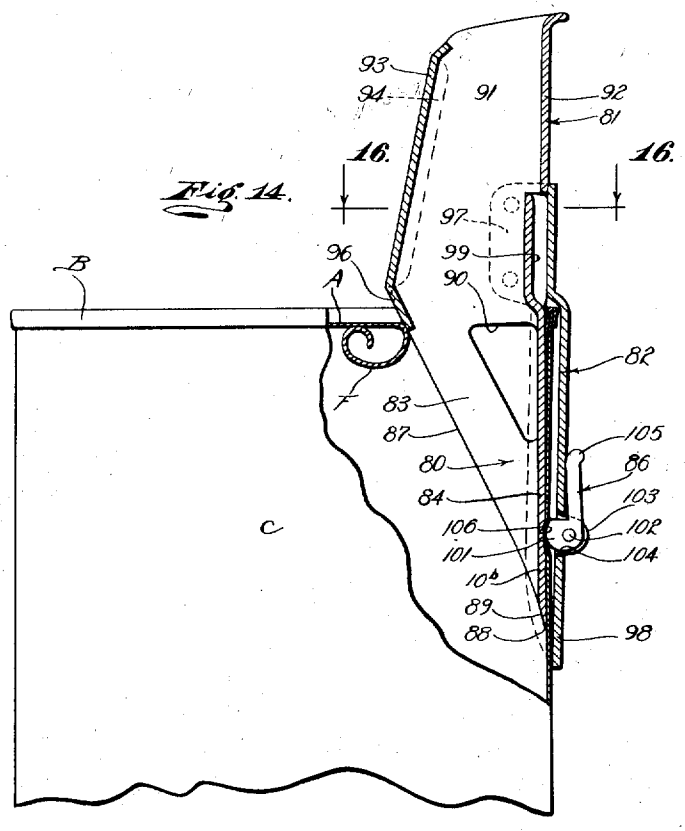


Fig. 15.

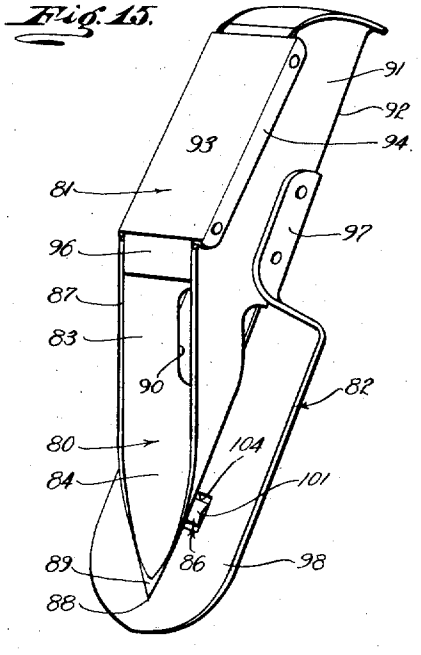
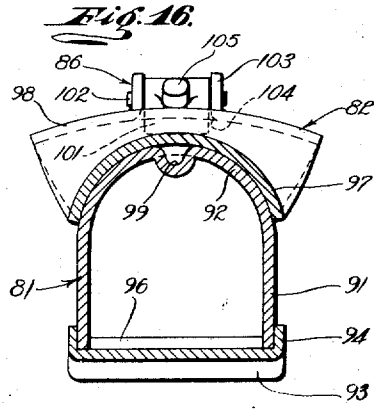


Fig. 16.



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Patented Nov. 16, 1937

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2,099,322

MEANS FOR OPENING CONTAINERS

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Application June 28, 1933, Serial No. 678,063

24 Claims. (Cl. 221—23)

This invention relates to means for opening containers and relates more particularly to devices for opening cans or sealed containers containing lubricating oil and the like. It is an object of the present invention to provide a simple, practical and effective device for opening cans or sealed containers.

Lubricating oils and the like are being marketed in sealed containers to prevent their substitution and adulteration. The containers usually hold a definite quantity of oil, for example, they contain one quart, two quarts, etc., so that the oil does not have to be measured when sold and dispensed. Devices of various characters have been introduced for opening containers of oil, etc., but in most instances, have been large and cumbersome. Certain types of container opening devices have receptacles for receiving the oil from the opened containers from which the oil must be dispensed or poured into the engine of the vehicle, or the like.

An object of the present invention is to provide a simple, compact device that easily cuts an opening in a container and that forms a spout for pouring the contents from the container.

Another object of the invention is to provide a device for opening containers that may be easily driven or forced into an end of a container to cut an opening therein and forms a spout at the opening thus cut adapted to fit into or pour into the oil receiving pipe of an automobile engine, or the like.

Another object of the invention is to provide a device for opening sealed containers that is operable to cut an opening in a container and that forms an effective spout for pouring the contents from the container without leakage or loss of the liquid and without soiling the exterior of the container.

It is another object of the invention to provide a container opening device that includes a cutter for cutting an opening in an end of a container that tightly fits and seals with the walls of the opening and a spout on the cutter adapted to fit in the oil receiving pipe of an engine whereby the device may support the opened inverted container on the filling pipe to thoroughly drain therein.

Another object of the invention is to provide a container opening device of the character mentioned that cuts a large clean unobstructed opening in an end of the container that extends inwardly from its periphery to allow the entire contents of the container to completely drain out when the container is inverted.

Another object of the invention is to provide a container opening device including a cutter for cutting an opening in an end of a container and a spout part on the cutter adapted to automatically and dependably connect with the edge portion of a receptacle or an oil filling pipe for supporting the device and the inverted opened container thereon.

Another object of the invention is to provide a device for opening sealed containers that includes a cutter for making an opening in an end of a container, a spout part for pouring the contents from the container when it is inverted, and a means for dependably releasably connecting the device to the container to remain in the proper position at the opening when the container is inverted to discharge its contents.

Another object of the invention is to provide a device for opening containers that is easy and convenient to use.

It is a further object of the invention to provide a container opening device of the character mentioned that is small and compact and simple and inexpensive of manufacture.

Other objects and features of the invention will be better and fully understood from the following detailed description of typical forms and applications of the invention, throughout which description, reference is had to the accompanying drawings, in which:

Fig. 1 is a view illustrating one form of the invention for opening a container showing the device and a portion of the container in vertical cross section.

Fig. 2 is an enlarged elevation of the inner side of the device illustrated in Fig. 1 taken as indicated by line 2—2 on Fig. 1.

Fig. 3 is an enlarged elevation of the outer side of the device taken as indicated by line 3—3 on Fig. 1.

Fig. 4 is a transverse detailed sectional view taken as indicated by line 4—4 of Fig. 2.

Fig. 5 is a longitudinal detailed sectional view of the type of device illustrated in Figs. 1 to 4 without the holding detent on the guide.

Fig. 6 is an enlarged transverse detailed sectional view taken as indicated by line 6—6 on Fig. 2.

Fig. 7 is a longitudinal detailed sectional view of another embodiment of the invention.

Fig. 8 is a side elevation of the device illustrated in Fig. 7, showing it supporting an inverted open container on a receiving receptacle.

Fig. 9 is a longitudinal detailed sectional view of

still another form of the invention showing it in operative position on an opened container.

Fig. 10 is an elevation view of the inner side of the device illustrated in Fig. 9, being a view taken substantially as indicated by line 10—10 on Fig. 9.

Fig. 11 is a transverse detailed sectional view taken as indicated by line 11—11 on Fig. 10.

Fig. 12 is a longitudinal detailed sectional view of still another form of the invention showing it in operative position on an opened container, a portion of which appears in vertical section.

Fig. 13 is an elevation view of the inner side of the device illustrated in Fig. 12, being a view taken as indicated by line 13—13 on Fig. 12.

Fig. 14 is a longitudinal detailed sectional view of another form of the invention showing it in operative position on an opened container.

Fig. 15 is a perspective view of the inner side of the device illustrated in Fig. 14, and Fig. 16 is a transverse detailed sectional view taken as indicated by line 16—16 on Fig. 14.

The embodiment of the invention illustrated in Figs. 1 to 6 inclusive of the drawings includes, generally, a cutter 10 operable to cut an opening in an end A of the container C, a spout part or spout 11 on the outer end of the cutter 10, and a guide 12 for cooperating with the exterior of the container C.

The cutter 10 is adapted to be driven or forced through the end A of the container C to cut a comparatively large unobstructed opening therein. In accordance with the invention, the cutter 10 is substantially U-shaped in transverse or horizontal cross section, and is comparatively long. The U-shaped cutter 10 has two spaced substantially parallel and vertical side parts 13 and a transverse curved outer part 14 joining and connecting the side parts 13. The active or entering end of the cutter 10 which I will term the lower end, is pitched or inclined. The inner ends or edges 15 of the side parts 13 are inclined downwardly and outwardly, converging toward a point 16 at the extreme lower end of the part 14. The slope or inclination of the lower end of the part 14 adjacent the point 16 is increased so that the point occurs on the lower end of a substantially vertical portion having its side edges converging and joining at the point. In accordance with the invention, the inner edges 15 of the side parts 13 and the converging lower edges of the part 14 are flat. The edges 15 of the side parts 13 are flat and substantially normal to the side surface of the parts 13, while the converging lower edges of the part 14 may have a slight twist or curve due to the shaping of the cutter from a flat blank. It has been found that the cutter 10 is fully operative if its sides are not tapered or beveled. Further, it is preferred to bevel one side or face of the bearing or entering portion of the cutter adjacent the point 16. In the preferred construction, the outer side of the entering portion of the cutter adjacent the point 16 is beveled downwardly to the point as at 17.

When the cutter 10 is driven or forced through the end A of the container C, the point 16 of the beveled convergent end of the cutter first pierces the end of the container and the downwardly converging lower edges of the part 14 continue the cutting action as the downward movement of the cutter continues, widening the cut, and finally, the outer corners 18 of the edges 15 operate to cut or shear the container wall to increase the length of the opening. The flat normal edges 15 of the side parts 13 bear against the flap F formed by the cut, causing it to be rolled downwardly and inwardly and then rolled upwardly toward the end A as illustrated in Fig. 1 of the drawings, leaving the opening formed by the cutter unobstructed. In accordance with the invention, the cutter 10 is shaped and proportioned so that its side parts 13 wedge and seal against the walls of the opening cut in the container end A to dependably retain the cutter in the opening when the container is inverted to pour out its contents and to prevent the loss or leakage of fluid from around the cutter. The sides 13 of the cutter 10 gradually flare or diverge upwardly and outwardly slightly from the lower end of the cutter to the upper end of the cutter so that they become tightly wedged against the side walls of the opening formed in the container end A to prevent the leakage of fluid from around the cutter, and to retain the cutter in the opening. In practice, the upward divergence of the side parts 13 may be comparatively slight. Spaced openings 19 are provided in the wall of the cutter 10 to allow the contents of the container to freely enter the cutter and spout when the container C is inverted to pour out its contents.

The spout 11 extends upwardly from the cutter 10 and is adapted to be acted upon or struck by the user's hand to cause the cutter to be driven through the end A of the container and forms a means for pouring the contents from the container when it is tipped or inverted. In the embodiment of the invention being described, the spout 11 is integral with the cutter 10 forming a longitudinal continuation of the upper end of the cutter. The spout 11 is substantially U-shaped or trough shaped in horizontal cross section, having side parts 20 integrally joining the side portion 13 of the cutter and having an outer part 21 integrally joining the part 14 of the cutter. The side parts 20 of the spout 11 may be suitably flared outwardly at the upper ends of the cutter so that the parts 13 and 14 converge upwardly toward the upper end of the spout. The increase in the width of the spout 11 may occur at the comparatively broad shoulders 22 where the parts 20 join the parts 13. The spout 11 is designed and proportioned to fit in the oil receiving pipes of automotive engines, etc., and the outer edges 23 of the side parts 20 are rounded inwardly and toward the discharge end of the spout. A laterally or outwardly projecting lip 24 is provided on the upper end of the spout 11. The lip 24 provides a comparatively broad elongate surface adapted to be struck by the hand of the user when the cutter 10 is to be forced or driven through the end wall of the container C. The lip 24 prevents the user's hand from being injured. Further, the lip 24 may act as a pouring lip when the contents of the container are to be poured into an open vessel or the like, but does not in any way interfere with the pouring function of the spout when the spout is inserted in a pipe or comparatively confined receiving opening.

The guide 12 is provided to direct or guide the cutter 10 to make an opening in the end A of the container C that extends inwardly from the periphery of the end A. The guide 12 may also operate to aid in detachably retaining the device on the container C so that the container may be handled and inverted to pour out its contents without displacing the cutter 10. In the particular embodiment of the invention illustrated in Figs. 1 to 6 inclusive of the drawings, the guide 12 is attached to the outer side of the spout

11, and extends downwardly at the outer side of the cutter 10 to project beyond the lower end of the cutter. The shank portion 25 of the guide 12 attached to the spout 11, may be transversely curved to effectively seat or lie against the outer side of the curved portion 21 of the spout. The guide shank 25 may be attached to the spout 11 in any suitable manner, for example, it may be welded to the spout at points 26. Corrugations or ribs 26a may be provided on the exterior of the shank to engage the edge portion of the lubricant filling pipe or receiver of the engine into which the contents of the opened container are to be poured to prevent slipping or undesirable shifting of the spout. The ribs 26a may be arranged in spaced rows as illustrated in the drawings.

The guide 12 is bent outwardly as at 27 in approximately the same horizontal plane as the shoulders 22 so that its main portion 28 for engaging the exterior of the container C is spaced from the outer side of the cutter 10. As the main portion 28 of the guide is provided to slidably engage the exterior of the container C, it may be transversely curved; however, the transverse curvature of the guide part 28 is preferably slight. The lower end of the guide 12 may be suitably rounded. It is a feature of the present invention that the major or main portion 28 of the guide 12 is pitched or inclined downwardly or inwardly toward the lower end of the cutter 10 as clearly illustrated in Figs. 1 and 5 of the drawings. The main portion 28 of the guide is somewhat flexible and its lower end portion may normally bear against the outer side of the cutter 10 at or immediately above its beveled point portion 17. When the cutter 10 is pushed or driven through the end A of the container C, the main portion 28 of the guide 12 is pushed downwardly on the exterior of the container so that its lower end portion passes over the bead B at the peripheral edge of the container until the point 16 of the cutter pierces the end of the container. As the bead B is of increased thickness, the guide 12 is forced to flex or spring outwardly to permit the pointed end of the cutter to pierce the end A of the container immediately adjacent the bead. The beveled face 17 adjacent the point 16 engages the inner side of the bead B to cause the point 16 to penetrate the container end A immediately adjacent the bead and to bend downwardly and outwardly any material that may be left between the point 16 and the bead B. Opposite edge portions 28a of the guide are bent inwardly to engage or bear against the exterior of the container. It will be apparent how the lower end of the main guide part 28 and the portions 28a yieldingly bear against the exterior of the container C during the downward movement of the cutter 10 through the container end A. When the cutter 10 is in its fully operated position, the main part 28 of the guide bears inwardly through its inherent flexibility so that the side wall of the container C is engaged by the portions 28a and is gripped between the end of the guide part 28 and the lower end portion of the cutter 10.

Means may be provided to detachably connect the device to the container C after the cut has been made or to aid in connecting the device to the container after the cutter 10 has formed its opening in the end A of the container. Figs. 1 and 3 of the drawings illustrate a projection or detent 29 at the inner side of the guide part 28 to engage under the bead B as the cutter assumes its final position. The detent 29 may be formed by punching the guide part 28 from its outer side in the manner illustrated in the drawings. When formed in this manner the detent 29 has a rounded or spherically shaped surface for cooperating with the bead B of the container. As the cutter 10 approaches its final down position, the detent 29 engages the bead B forcing the guide part 28 to spring outwardly until the detent assumes the position illustrated in Fig. 1 of the drawings where it bears against the under side of the bead B. It will be apparent how the detent 29 and the portions 28a effectively aid in holding the device on the container C when the container is tilted or inverted to pour out its contents.

It is believed that the operation of the embodiment of the invention illustrated in Figs. 1 to 6 inclusive of the drawings will be readily apparent from the foregoing detailed description. When it is desired to open the container C, the lower end portion of the guide part 28 is positioned against the bead B so that the point 16 of the cutter is disposed immediately above the container end A immediately adjacent its periphery. The lip 24 of the upper end of the guide 11 is then struck a downward blow causing the cutter to be forced or driven through the container end A. The point 16 of the cutter pierces the container end A simultaneously with the springing of the lower end portion of the guide part 28 over the bead B. As described above, the bead B of the container wedges between the beveled part 17 of the cutter and the guide part 28 causing the guide part to spring outwardly and causing the beveled portion 17 of the cutter to bend outwardly and downwardly any material that may remain between the cutter and the bead B so that the opening formed by the cutter terminates at the bead. During the downward movement of the cutter 10, the downwardly converging edges of the cutter part 14 operate to enlarge the hole and the edges 18 continue the cutting action forming an elongate inwardly extending opening in the end of the container. The outer corners or edges 18 effectively cut or shear the end of the container, while the flat edges 15 engage the flap F formed by the cutter causing it to be rolled downwardly and inwardly and then upwardly leaving the opening entirely unobstructed. As the sides 13 of the cutter are slightly upwardly divergent or of greater spacing at their upper ends than at their lower ends, they wedge in the opening formed by the cutter to aid in holding the cutter in position and to provide an effective seal between the cutter and the walls of the opening. Where the guide 12 is provided with a detent 29 as illustrated in Figs. 1 and 3, the detent engages the exterior of the bead B during the final downward movement of the cutter causing the guide part 28 to be sprung outwardly until the detent assumes its holding position where it bears against the under side of the bead B. The contents of the container C may then be poured from the container by suitably tilting the container or by inverting it.

When the oil or contents of the container are to be poured into the oil receiving pipe of an automotive engine, or the like, the spout 11 may be inserted in the pipe as the container is inverted, thereby allowing the contents of the container to directly drain from the spout into the pipe. The spout 11 may fit the pipe so that the spout and end A of the container may support the container on the end of the pipe, the ribs 26a aiding

in steadying the device and container. The U-shaped cutter 10, disposed in the unobstructed opening that it has formed in the container end, allows the complete draining of the contents from the container. If desired or found necessary, the container C may be tipped as its contents are poured so that the opening in the end A is in the lowermost part of the container. The openings 19 in the cutter allow the liquid behind the cutter to freely flow out through the spout 11. The cutter 10 wedged in the opening in the container end A and the flexible guide part 29 bearing against the wall of the container dependably retain the cutter and guide in position during the pouring operation. Where the guide part 28 is provided with the detent 29, the detent aids in holding the device in its proper position on the container. After the contents have been poured from the container C, the device may be easily detached or removed from the container by pulling upwardly on the spout 11 to disengage the cutter 10 and the guide 12 from the container. The cutter 10, in tightly wedging in the opening formed in the container end A, prevents the leakage of liquid and aids in retaining the cutter in position. The device is particularly simple and compact, and is easy and convenient to use. The use of the opening device eliminates the necessity of pouring the contents of the container into a receptacle as the spout 11 is adapted to directly pour the liquid from the container.

Figs. 7 and 8 of the drawings illustrate an embodiment of the invention having means for releasably connecting with a receptacle or pipe into which the contents of the opened container are to be poured. The form of the invention illustrated in Figs. 7 and 8 includes, generally, a cutter 30, a spout 31, a guide 32, and means 33 for releasably connecting the device with the receptacle or pipe into which the contents of the container are to be poured.

The cutter 30 is similar to the cutter 10 described above, being substantially U-shaped in horizontal cross section to have spaced vertical side parts 34, and an outer part 35 connecting the parts 34. The outer part 35 is rounded in cross section, and the cutter is comparatively long. The inner edges 36 of the cutter are inclined downwardly and outwardly to converge to a point 37 at the lower end of the cutter. The outer side of the pointed portion of the cutter is beveled downwardly to the point 37 as at 38. Openings 39 are provided in the body of the cutter to permit liquid trapped back of the cutter to drain from the spout 31.

The spout 31 extends upwardly from the cutter 30 and is adapted to handle or discharge the contents of the container opened by the cutter. The spout 31 is in the nature of an integral continuation of the cutter 30 and is substantially U-shaped or trough-shaped in transverse cross section. The outer end of the spout 31 is rounded or bent outwardly as clearly illustrated in Fig. 7 of the drawings. The spout 31 projects from the end of the container after the cut has been made by the cutter 30 to allow the contents of the container to be effectively discharged or poured. In accordance with the invention, the spout 31 is formed and proportioned so that it may be inserted in the oil filling opening or pipe of an engine.

The guide 32 is disposed at the outer side of the cutter 30 and is operable to engage the exterior of the container as the cutter 30 is forced or driven through the end of the container to cause the cutter to make an opening extending inwardly from the peripheral edge of the container end. The guide 32 has a shank portion 40 attached to the outer side of the spout 31 and a main portion 41 disposed at the outer side of the cutter part 35. The shank 40 of the guide may be attached to the spout in any suitable manner, for example, it may be welded to the spout as at 42. The main portion 41 of the guide has its upper end bent outwardly away from the cutter at 43, and is inclined downwardly and inwardly from this point toward the lower end of the cutter. The guiding portion 41 may normally yieldingly bear against the lower end part of the cutter. When a container is to be opened, the lower end portion of the guide part 41 is arranged against the outer side of the bead at an end of the container so that the point 37 of the cutter is adapted to pierce the end of the container immediately adjacent the bead when the downward blow is applied to the device. The guide portion 41, in being flexible, bends outwardly as its lower end passes over the bead on the container and its lower end is adapted to bear against the exterior of the container as the cutting action continues. The guiding part 41, in bearing inwardly against the exterior of the container, operates to aid in holding the device in the proper position on the container when the container is inverted or tipped for the pouring of its contents.

The means 33 for releasably connecting the spout 31 with the receptacle or pipe for receiving the contents of the opened container includes a tongue 45. The tongue 45 may form a part of the piece of material of which the guide 32 is made, and may be formed by making an elongate U-shaped cut 44 in the portion 41 of the guide and bending the tongue outlined by the cut upwardly to have its upper end adjacent the upper end of the spout 31. The opening 44 formed in the guide part 41 to provide the tongue 45 renders the guide part 41 more flexible. The tongue 45 has its lower end spaced from the outer side of the shank 40 and is inclined upwardly and inwardly toward the shank to have its upper end portion bearing inwardly against the shank. An outwardly or laterally projecting lip 46 is provided on the upper end of the tongue 45 and is in substantially horizontal alignment with the upper end of the spout 31. The upper side of the lip 46 and the upper end of the turned or rounded upper end of the spout 31 provide comparatively broad surfaces adapted to be struck by the user's hand when driving or forcing the cutter 30 into the end of the container to open the container.

After the cutter 30 has been driven or forced through an end of the container C to form an opening therein, the container may be inverted so that its spout may be passed into the receiving receptacle R. If it is desired to connect the opening device with the receptacle R to support the draining container C, the outer side of the spout is passed or slid inwardly against the inner side of the lip portion of the receptacle so that this portion of the receptacle is received between the shank 40 and the tongue 45. The tongue 45 is flexible so that it is adapted to spring outwardly when the edge or lip portion of the receptacle is received between the tongue and the shank 40. The tongue 45 springs or bears inwardly against the exterior of the receptacle R so that the wall of the receptacle is gripped between the tongue 45 and the shank 40 and the

opening device is effectively retained in position on the receptacle when supporting the draining opened container C. It will be apparent how the tongue 45 is operable to releasably connect the inverted device with oil receiving pipes or receptacles of various characters. After the contents have completely drained from the container C, the device may be disconnected from the receptacle by moving it upwardly to disengage the tongue 45 from the receptacle and the device may then be disengaged from the emptied container C by pulling the cutter 30 out of the opening in the end of the container. The form of the invention illustrated in Figs. 7 and 8 of the drawings may be designed and constructed to effectively releasably connect with oil receiving pipes and receiving receptacles of various sizes and shapes. The tongue 45 is adapted to dependably connect the spout 31 of the device with a receptacle or pipe and hold it in a position where the shoulders 22a at the lines of joinder of the cutter parts 36 and sides of the spout 31 rest upon the lip or edge of the receptacle or pipe, thereby dependably supporting the container C while it is draining.

The form of the present invention illustrated in Figs. 9, 10 and 11 of the drawings includes, generally, a cutter 50 operable to make an opening in a container C, a spout 51 attached to the cutter 50, and a guide 52 on the spout 51 for engaging the container C to guide the cutter 50.

The cutter 50 is operable to cut a comparatively large clean unobstructed opening in the end A of the container C when it is forced or driven downwardly through it. The cutter 50 is substantially U-shaped in transverse cross section, having substantially parallel longitudinal side parts 53 and a curved part 54 connecting the parts 53. The inner edges 56 of the side parts 53 are inclined downwardly and outwardly to converge at a point 55 on the lower end of the part 54. The pointed lower portion of the part 54 has its outer side beveled downwardly as at 57. The inclined inner edges 56 of the cutter are flat and substantially normal to the side faces of the parts 53. The upper ends 58 of the side parts 53 may be inclined upwardly and outwardly. An upwardly projecting shank 60 is provided on the cutter. The shank 60 may constitute an integral continuation of the curved cutter part 54. Spaced drain openings 59 are provided in the cutter 50 to allow for the drainage of liquid from behind the cutter. The side parts 53 of the cutter may be slightly upwardly divergent so that their outer sides or faces may tightly wedge against the opening formed in the container end A to prevent the leakage of liquid from around the cutter and to aid in holding the device in position on the container. Upon the cutter 50 being forced or driven downwardly through the container end A, the point 55 first pierces or penetrates the container end and the lower end of the part 54, in having upwardly divergent edges, operates to enlarge the opening as it passes downwardly. The flat edges 56 of the side parts 53 engage the flap F formed by the cutter, causing it to be rolled downwardly and inwardly. The outer corners of the inclined edges 56 operate to shear or cut through the container end A leaving clean regular edges that are engaged by the outer surfaces of the parts 53 and 54.

The spout 51 is provided to pour the contents from the opened container C and projects from the end A of the container when the cutter is in its fully down position after cutting through the end of the container. The spout 51 is of suitable length, and is substantially U-shaped in horizontal cross section. The shank 60 of the cutter extends into the spout 51 and seats outwardly against the inner surface of the spout. The cutter shank 60 may be attached to the spout in any suitable manner, for example, it may be welded to the spout at spaced points 61. The spout 51 is preferably comparatively wide, having wide side parts 62 for preventing the spilling or overflowing of the liquid as it is poured from the container. The edges of the side parts 62 may be suitably curved as illustrated in the drawings. The upper end of the spout 51 is adapted to be struck or acted upon to drive the cutter 50 through the end A of the container and is provided with a laterally or outwardly projecting lip 63 adapted to be struck by the user's hand or by a suitable tool. The spout 51 may be shaped and proportioned so that it may be passed into the oil filling pipe of an internal combustion engine, or the like.

The guide 52 is operable to slidably cooperate with the exterior of the container C to guide the cutter during its penetration of the end A of the container. In the embodiment of the invention being described, the guide 52 is integral with the spout 51 and extends downwardly from the spout at the outer side of the cutter part 54. The guide 52 is comparatively wide, projecting outwardly beyond the side parts 53 of the cutter. The guide 52 may project downwardly beyond the lower end of the cutter 50, and its lower end may be suitably rounded. The upper end of the guide 52 is bent outwardly from the lower end of the spout 51 as at 65, and extends downwardly and inwardly from this point toward the lower end of the cutter 50. The guide 52 may be of curved horizontal cross section to effectively cooperate with the exteriors of cylindrical containers. Opposite edge portions 52a of the guide may be bent inwardly to bear against the exterior of the container to aid in holding the device on the container.

In employing the form of the invention illustrated in Figs. 9, 10 and 11 of the drawings, the device is vertically disposed with the lower end of its guide 52 engaging against the outer side of the bead B so that the cutter point 55 is engaging the end A of the container immediately adjacent the bead B. The lip 63 is then given a downward blow which drives the pointed end of the cutter through the end A of the container. As the cutter pierces the end of the container, the guide 52 is sprung outwardly to readily pass over the bead B while the beveled face 57 of the cutter forces any material between the point 55 and the bead B outwardly against the bead as at 64. As the downward movement of the cutter 50 continues, the inclined edges 56 engage the flap F causing the outer corners of the edges 56 to shear or cut through the end of the container and forcing the flap F to roll downwardly and inwardly. The slightly upwardly divergent side parts 53 of the cutter wedge in the opening thus cut in the container, effectively holding the device in position on the container. The inward bearing of the guide 52 against the exterior of the container also aids in holding the device on the container. After the cut has been made, the container may be tipped or inverted to pour its contents out through the spout 51 which projects from the end A. The entire contents of the container are free to drain out through the U-shaped cutter and spout 51. Any liquid that may be

trapped behind the cutter is free to drain out through the openings **59**. The sides **53** of the cutter, in tightly wedging against the side walls of the opening, positively prevent the leakage of liquid around the cutter. The device may be easily disconnected from the container by pulling upwardly on the spout **51**.

Figs. 12 and 13 of the drawings illustrate a one piece container opening device including a body comprising a cutter **70** and a guide **71**. The cutter **70** is substantially U-shaped in transverse cross section having spaced substantially vertical side parts **72**, and a transversely curved part **73** connecting the side parts. Spaced drain openings **73a** are provided in the cutter **70** to allow for the draining of liquid from behind the cutter. The inner edges **74** of the parts **72** are inclined downwardly and inwardly and join at a point **75** on the lower end of the part **73**. The inclined edges **74** are flat and substantially normal to the side surfaces of the parts **72**, while the pointed lower end of the cutter is beveled at its outer side **76**. The side parts **72** of the cutter are slightly divergent so as to tightly wedge in the opening formed in the end A of the container C.

The guide **71** is adapted to slidably cooperate with the exterior of the container C to guide the cutter **70** to make an opening in the container end A that extends inwardly from the bead B. The guide **71** is located at the outer side of the part **73** of the cutter and is integrally connected with the upper end of the cutter by a connecting portion **77**. The connecting portion **77** extends upwardly from the upper end of the cutter **72** and horizontally outward to join the upper end of the guide **71**. The guide **71** is thus spaced from the cutter part **73** at the upper end of the device. In the preferred construction, the guide **71** is inclined downwardly and inwardly from its upper end toward the lower end of the cutter. The guide **71** is preferably wider than the cutter **70** to project outwardly in opposite directions beyond the cutter side parts **72** and is preferably longer than the cutter **70** so that its rounded lower end extends downwardly beyond the point **75** of the cutter. A substantially horizontal lip **79** is provided along the upper edge of the guide **71**. The lip **79** may project inwardly and may form a continuation of the horizontal part of the connecting portion **77**. The lip **79** and the upper side of the portion **77** present a comparatively wide upper surface adapted to be struck when the cutter is to be driven through the end A of the container C.

The operation of the simple form of the invention illustrated in Figs. 12 and 13 of the drawings is substantially identical with the forms previously described. To open the container C the device is vertically disposed so that its point **75** engages the end A of the container adjacent the bead B and its guide **71** engages the outer surface of the bead. A downward blow is then imparted to the lip **79** and part **77** to drive the cutter **70** through the end A of the container forming a comparatively large unobstructed opening which extends inwardly from the bead B. The flat edges **74** of the side parts **72** operate to roll the flap F inwardly during the cutting of the opening. The contents of the container may be poured or discharged through the U-shaped cutter **70**.

Figs. 14, 15 and 16 of the drawings illustrate an embodiment of the invention intended primarily for opening large containers; however, it is to be understood that the features embodied in this form of the invention are adapted to be utilized in a device for opening containers of any size and character. The form of the invention disclosed in Figs. 14, 15 and 16 of the drawings includes generally, a cutter **80**, a spout **81**, a guide **82**, and means **86** for releasably connecting the device with the container.

The cutter **80** for making an opening in the end A of the container C is substantially U-shaped in horizontal cross section having two substantially vertical side parts **83** and a transversely curved part **84** connecting the parts **83**. The inner edges **87** of the side parts **83** are inclined downwardly and outwardly to join at a sharpened point **88** on the lower end of the part **84**. The outer surface **89** of the pointed portion of the cutter may be beveled downwardly to the point **88**. The inclined edges **87** are flat and substantially normal to the side surface of the parts **83**. Spaced openings **90** are provided in the cutter **80** adjacent its upper end to allow for the drainage of liquid trapped behind the cutter. The side parts **83** of the cutter are slightly divergent to be tightly wedged in the opening in the end A of the container to aid in holding the device on the container.

The spout **81** is provided to pour the liquid from the container and projects from the end A of the container when the cutter has fully entered the opening that it has cut in the end A. The spout **81** extends upwardly from the upper end of the cutter **80** and includes side parts **91** that are integral continuations of the side parts **83** of the cutter, and a curved outer side part **92** which is on the integral continuation of the cutter part **84**. The parts **91** and **92** of the spout may be of substantial length. The inner edges of the side parts **91** may be inclined downwardly and inwardly as illustrated in the drawings. A plate or section **93** extends between the inclined edges of the side parts **91** to close the open side of the U-shaped spout-forming portion. The section **93** has flanges **94** overhanging the side parts **91** that are attached to the side parts in any suitable manner. In the particular case illustrated in the drawings, the flanges **94** are attached to the side parts **91** by welding. The upper end of the spout **81** is adapted to be struck or acted upon to force the cutter **80** to penetrate the end A of the container. The upper edges of the spout parts **91** and **92** are bent or turned over laterally to present comparatively broad upper surfaces adapted to be struck by the hand of the user. The upper edge portion of the section **93** may be turned inwardly to provide for an effective pouring action. A lip or tongue **96** is provided on the lower end of the section **93** and extends downwardly between the side parts **83** of the cutter. The tongue **96** is inclined at substantially the same angle as the edges **87** and is operable to seal with the outer surface of the rolled flap F when the cutter is in its fully down position to prevent leakage around the spout. The tongue **96** is preferably sufficiently long to project into the interior of the container C as illustrated in Fig. 14.

The guide **82** is provided to guide the cutter **80** to penetrate the end A of the container C at a point immediately adjacent the bead B. The guide **82** includes a shank **97** connected to the spout **81**, and a main guide portion **98** for engaging the exterior of the container. The shank **97** seats against the exterior of the spout part **92** and has ears attached to the outer surfaces of the spout parts **91** by welding, or the like. The main portion **98** of the guide extends downwardly

at the outer side of the cutter part 84 to a point below the lower end of the cutter. The upper end of the guide portion 98 is spaced outwardly from the cutter part 84 and the guide portion 98 is inclined downwardly and inwardly toward the lower end of the cutter. The main guide portion 98 may be flat or slightly curved in horizontal cross section, and may be considerably wider than the cutter 80. The portion 98 of the guide 82 is adapted to slidably engage the exterior of the container C when the cutter is driven through the end of the container and bears against the container to aid in holding the device in its proper position as the contents are poured from the container.

The embodiment of the invention being described includes means for carrying leakage from between the outside of the cutter and the container to the spout 81. A channel or drain groove 99 is provided in either the shank of the guide 82 or the portion 92 of the spout. In the particular case illustrated in the drawings, the groove 99 is provided in the spout portion 92. The groove 99 communicates with the space between the cutter 80 and guide 82 so that any leakage from around the cutter drains downwardly into the groove 99 when the container is in its inverted position and is free to drain out through the groove 99 into the interior of the spout. The liquid flowing or draining out through the spout 81 entrains or draws the leakage liquid from the groove 99, thus effecting a complete removal of leakage from around the cutter.

The means 86 for releasably connecting with the container C is operable to dependably attach the opening device to the container after the cut has been made in the container end A so that the container may be inverted and its contents poured out without danger of displacement of the device or shifting of the cutter 80 from its proper position. The means 86 includes a pivoted latch or cam 101 carried by a pivot pin 102. The opposite end portions of the pivot pin 102 are held in openings in ears 103 projecting outwardly from the main portion 98 of the guide 92. The ears 103 may be formed by making a suitable opening in the guide part 98 and bending the material outwardly in opposite directions. The opening 104 formed in the guide part 98 to provide the ears 103 is adapted to pass the active end of the holding cam 101 so that it may engage the exterior of the container C. A suitable handle 105 is provided on the cam 101 to provide for its easy operation. A comparatively shallow recess or indentation 106 is provided in the exterior of the cutter part 84 at a point opposite the opening 104 to receive the wall portion of the container that may be acted upon and bent inwardly by the cam 101, thus insuring a more effective gripping or holding action. The cam 101 is in a normal or unactuated position where it does not project from the inner surface of the guide part when the cutter is forced onto the container.

The upper end of the spout 81 is adapted to be struck or acted upon to drive the cutter 80 into the end of the container so that its point 88 pierces the end A at a point immediately adjacent the bead B. The guide part 98 slidably engages the exterior of the container during the downward movement of the cutter. The outer corners of the inclined edges 87 of the cutter shear or cut the container end enlarging and elongating the opening. The flat edges 87 engage the flap F, rolling it inwardly. Upon the cutter 80 assuming its fully down position, the tongue 96 wedges inwardly against the flap F to seal therewith. The slightly divergent side parts 83 of the cutter also wedge against the wall of the opening. If necessary or believed desirable, the cam 101 may be pivoted and forced against the wall of the container to clamp it against the guide part 84. This securely attaches the device to the opened container. The container may then be tipped or inverted to discharge its contents through the spout 81. The U-shaped cutter 80 permits the free discharge of the contents out through the spout 81. Any leakage from around the cutter 80 drains downwardly to the groove 99 through which it may pass out to the interior of the spout 81. The openings 90 in the cutter allow the free drainage of liquid from behind the cutter. When the container is emptied or when it is desired to disconnect the opening device from the container, the container may be righted and the handle 105 pivoted to disengage the cam 101 from the container whereupon the spout 81 may be engaged and pulled upwardly to disengage the guide and cutter from the container.

Having described only typical forms and applications of my invention, I do not wish to be limited or restricted to the specific forms and applications herein set forth, but wish to reserve to myself any modifications or variations that may appear to those skilled in the art or fall within the scope of the following claims;

Having described my invention, I claim:

1. A device for opening containers including, a cutter of substantially U-shaped cross section operable to cut an opening in the container and adapted to project from the container to form a spout therefor, and a member in connection with the cutter for engaging a wall of the container to guide the cutter to make the opening in an end of the container immediately adjacent its line of joinder with said wall, the member being approximately the same width as the cutter, there being an opening in the cutter to allow for the drainage of liquid from between the cutter and said wall.

2. A device for opening sealed containers including, a cutter operable to cut an opening in a container, a spout on the cutter to project from the container and adapted to pour the contents of the container into a liquid receiving object, and a spring slip on the spout for gripping said object to connect the spout with the said object.

3. A device for opening sealed containers including, a cutter operable to cut an opening in a container, a spout on the cutter to project from the container and adapted to pour the contents of the container into a liquid receiving object, and a spring member in connection with the spout for cooperating with the said object to releasably attach the spout thereto.

4. In a device for opening sealed containers, a cutter including spaced side parts having edges converging to a point operable to pierce a wall of a container, the spacing of the said parts increasing as the side parts extend longitudinally away from the point whereby the external side surfaces of the side parts wedge in the opening made by the cutter as cutting action continues.

5. A device for opening containers including, a cutter of substantially U-shaped cross section adapted to cut an opening in a container, a tubular spout on the cutter forming an unbroken longitudinal continuation thereof and adapted to project from the container, and a member on the spout for cooperating with an

external side wall of the container to guide the cutter, the cutter having an opening in its wall to allow fluid to drain from around the cutter.

6. A device for opening containers including, a cutter adapted to cut an opening in a container, a spout on the cutter to project from the container, a member for cooperating with a side wall of the container to guide the cutter to cut the opening immediately adjacent the peripheral bead of the can, and a pivoted cam on the member to clamp against the said side wall against the cutter to releasably attach the device to the container.

7. A device for opening containers including, a cutter adapted to cut an opening in a wall of a container, a spout on the cutter forming an unbroken continuation of the cutter and adapted to project from the container, and means for draining leakage liquid into the spout from around the exposed exterior of the cutter at the outer surface of said wall.

8. A device for opening containers including, a cutter adapted to cut an opening in a wall of a container, a spout on the cutter to project from the container, means for guiding the cutter, there being a drainage duct at the spout for carrying leakage liquid into the spout from around the exposed end of the cutter at the outer surface of the wall.

9. A device for opening cans including a cutter adapted to be forced through a wall of a can to form an opening therein, a longitudinal spout projecting from the outer end of the cutter to project from the can, and means for guiding the cutter during the forming of the opening, the cutter being substantially U-shaped in cross section having spaced side parts, the side parts being flared laterally to have an inclined shoulder facing said wall where the cutter joins the spout to wedge in the opening to seal with the can and retain the device on the can.

10. A device for opening cans including a cutter adapted to be forced through a wall of a can to form an opening therein, a longitudinal channel shaped spout on the outer end of the cutter projecting from the can and adapted to be inserted in a receptacle, and detents on the spout to cooperate with the receptacle to prevent slipping of the spout.

11. A device for opening sealed containers including, a cutter operable to cut an opening in a container, a spout in connection with the cutter, and a projecting lip on the upper end of the spout presenting a substantial upwardly facing surface adapted to be struck to cause the cutter to penetrate the container.

12. A device for opening containers including, a cutter having a point, a guide for engaging an external side wall of a container to guide the cutter to cut an opening in an end of the container adjacent its edge, the cutter being flared longitudinally to gradually increase in width as it extends outwardly form its point to tightly fit said opening, and a spout joining the cutter and forming a longitudinal continuation thereof to pour the contents of the container from the opening.

13. A device for opening sealed containers including, a cutter operable to cut an opening in a container, a spout of substantially U-shaped cross section on the cutter for pouring the contents from the container, a laterally projecting lip integral with the spout and extending along a substantial portion of the upper end of the spout and presenting a substantial upwardly facing surface adapted to be acted upon to force the cutter through a wall of the container, and a guide on the spout for engaging an external side wall of the container.

14. A device for opening sealed containers including, a cutter operable to cut an opening in a container, a spout on the cutter extending longitudinally from the cutter to project from the container, and a guide on the spout shaped and related to the cutter to engage an external side surface of the container at points spaced beyond the opposite longitudinal edges of the cutter to guide the cutter, the guide having parts to bear against the container at spaced points to hold the device thereon after the opening has been made.

15. A device for opening cans including a cutter adapted to cut an opening in a wall of a can, an extension on the cutter adapted to project from the can to form a pouring spout, and a member connected to the extension and adapted to engage the can to guide the cutter, there being a drain port between contacting parts of the extension and member extending outwardly from the cutter.

16. A device for opening cans including a cutter adapted to cut an opening in a wall of a can, an extension on the cutter adapted to project from the can to form a pouring spout adapted to be inserted in a receptacle, a guide in substantially side by side relation to the cutter to engage an external side wall of the can, a shank on the guide attached to the extension, and detents on the shank adapted to cooperate with the receptacle to steady the device.

17. A one-piece can-piercing spout having a hollow sheet metal body with a tapered point at one end and an outwardly turned arcuate flange at the other end, said arcuate flange extending at substantially right angles to the wall of said body to radially strengthen the same and serving as a flat surface against which the hand strikes to drive the pointed end through a wall of a can.

18. A one-piece sheet metal can-piercing spout formed from a single blank to provide an arcuately bent elongated central body portion angled at one end to form a cutting edge, and an outwardly turned and arcuately extending flange at the opposite end of said body, said flange being coextensive with the cutting edge of the body, whereby to render said body and cutting edge rigid when pressure is exerted upon the flange.

19. A device for opening sealed containers including, a cutter operable to cut an opening in a container, a spout in connection with the cutter of sufficient extent to project a substantial distance from the container when the cutter is in the container, and a projecting lip on the upper end of the spout rigid with the spout and presenting a substantial upwardly facing surface adapted to be struck to cause the cutter to penetrate the container.

20. A can piercing spout including a sheet metal body bent to form a curved wall terminating at one end in a can piercing point and having substantially flat side walls projecting from the curved wall, and a wall extending between and joining the outer edges of the side walls.

21. A can piercing spout including a sheet metal body bent to form a curved wall terminating at one end in a can piercing point and having substantially flat side walls projecting from the curved wall, and a flat wall extending between and joining the outer edges of the side walls.

22. A can piercing spout including a sheet metal body bent to form a curved wall terminating at one end in a can piercing point and having substantially flat side walls projecting from the curved wall, and a wall extending between and rigidly joining the outer edges of the side walls.

23. A can piercing spout including a sheet metal body bent to form a curved wall terminating at one end in a can piercing point and having substantially flat side walls projecting from the curved wall, an outwardly turned flange at the other end of the body to strengthen the body and form a part to be engaged by the operator, and a wall extending between and joining the outer edges of the side walls.

24. A can piercing spout including a sheet metal body bent to form a curved wall one end portion of which is shaped to have converging cutting edges joining to form a can piercing point, the body having substantially flat side walls projecting from the curved wall, an outwardly turned arcuately extending flange at the opposite end of the body opposite the cutting edges to render the body rigid and to form a part to be engaged by the user, and a wall rigidly joining the outer edges of the side walls.

OZRO N. WISWELL.

CERTIFICATE OF CORRECTION.

Patent No. 2,099,322. November 16, 1937.

OZRO N. WISWELL.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 8, first column, line 63, claim 12, for the word "form" read from; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 26th day of December, A. D. 1939.

Henry Van Arsdale,
Acting Commissioner of Patents.

(Seal)

22. A can piercing spout including a sheet metal body bent to form a curved wall terminating at one end in a can piercing point and having substantially flat side walls projecting from the curved wall, and a wall extending between and rigidly joining the outer edges of the side walls.

23. A can piercing spout including a sheet metal body bent to form a curved wall terminating at one end in a can piercing point and having substantially flat side walls projecting from the curved wall, an outwardly turned flange at the other end of the body to strengthen the body and form a part to be engaged by the operator, and a wall extending between and joining the outer edges of the side walls.

24. A can piercing spout including a sheet metal body bent to form a curved wall one end portion of which is shaped to have converging cutting edges joining to form a can piercing point, the body having substantially flat side walls projecting from the curved wall, an outwardly turned arcuately extending flange at the opposite end of the body opposite the cutting edges to render the body rigid and to form a part to be engaged by the user, and a wall rigidly joining the outer edges of the side walls.

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