Dec. 1, 1942. K. R. HALL ET AL 2,303,690

DISPENSING DEVICE

Filed April 8, 1940 2 Sheets-Sheet 1

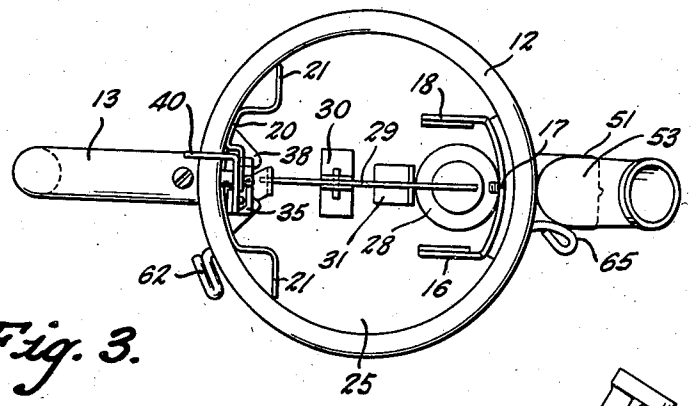


Fig. 3.

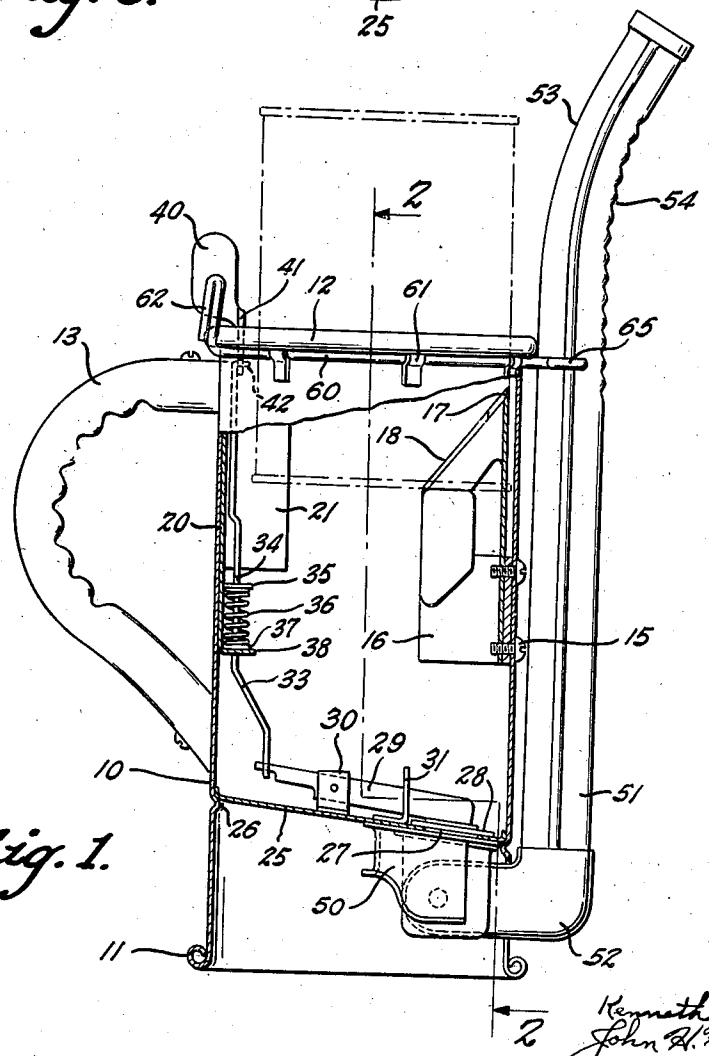


Fig. 1.

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DISPENSING DEVICE

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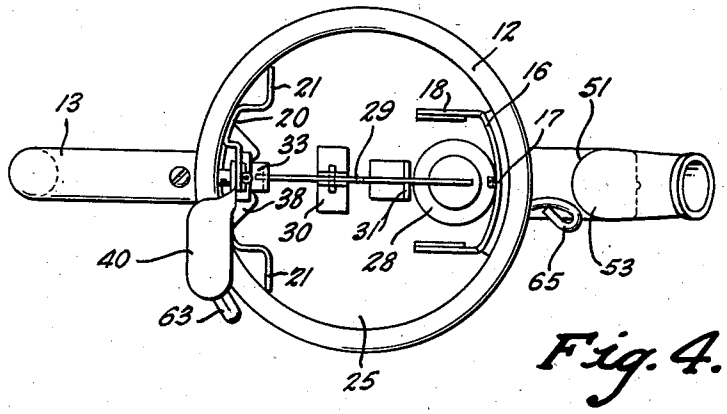


Fig. 4.

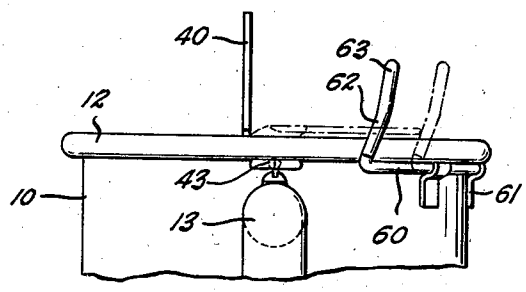


Fig. 5.

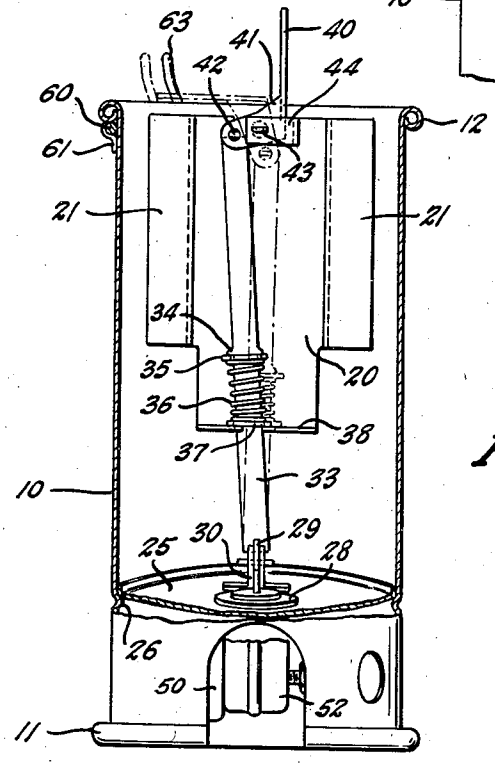


Fig. 2.

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2,303,690

UNITED STATES PATENT OFFICE

2,303,690

DISPENSING DEVICE

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Application April 8, 1940, Serial No. 328,444

5 Claims. (Cl. 221—23)

This invention relates to liquid dispensing devices and more particularly to devices for dispensing a liquid from a closed container.

It is the principal object of the invention to provide a dispenser adapted to receive and open a liquid container and to discharge the contents thereof through an outlet tube controlled by a discharge valve in which the valve is arranged to be simply and automatically closed following each operation so that liquid will not flow into the outlet tube accidentally until it is in its adjusted discharge position to prepare the device for the subsequent operation.

It is a further object to provide a device for receiving and opening sealed containers of lubricant and the like and for dispensing the same through an adjustable spout in which the return of the spout to its raised inoperative position automatically effects the closing of a valve controlling the discharge through the tube to prevent premature passage of liquid into the tube upon opening a subsequent container.

It is a still further object to provide a simple and effective mechanism arranged entirely out of the space occupied by the container and out of contact with the liquid as discharged therefrom for securing such operation.

Other objects and advantages will be apparent from the following description, the accompanying drawings, and the appended claims.

In the drawings,

Fig. 1 is a view partially in side elevation and partially in section showing a dispensing device constructed in accordance with the present invention;

Fig. 2 is a vertical sectional view through the device on the line 2—2 of Fig. 1 and showing in full line position the arrangement of the parts with the valve closed, and showing in dotted line position the arrangement when the valve is in open position;

Fig. 3 is a top plan view of the device with the valve closed;

Fig. 4 is a top plan view of the device with the valve in open position and showing the spout about to effect the closing of the valve; and

Fig. 5 is a side elevational view from the operator's side of the device and showing the two positions of adjustment thereof.

Referring to the drawings which disclose a preferred embodiment of the invention, there is shown at 10 a sheet metal casing preferably substantially cylindrical in form and of a size suitably adapted for receiving the containers which it is desired to handle. The casing is formed with a rolled bottom bead or edge 11, and is likewise formed with a rolled top bead or edge 12. In addition to providing added strength, the lower bead 11 serves as a support for the device and the upper bead provides a smooth wall which acts as a guide for receiving the container as it is inserted into the device. A handle 13 is attached to the wall of the casing the upper part of which extends closely adjacent the bead 12.

Within the casing and bolted to the inner wall thereof by means of bolts 15 is a cutting knife assembly 16, the knife being arranged substantially in U-shape, having an upwardly projecting point 17 and side portions 18 for forming the opening in the lower end of the container as it is inserted. The knife is spaced a short distance from the adjacent wall of the casing so that the side wall of the container passes therebetween, the opening thus being made immediately adjacent the wall of the container, thus providing for complete discharge of the contents thereof. Cooperating with the knife and located on the opposite side of the casing is a guide plate 20 having a central portion which is suitably attached to the inner casing wall, and formed with inwardly extending shouldered portions 21 which have a predetermined spacing with respect to the knife so as to provide for guiding the container as it is inserted, and causing the knife to form the opening in the manner described. It is customary to provide containers of lubricating oil of a predetermined diameter, and given capacity, and it is thus apparent that with this fixed relationship of parts as described, any container having the proper diameter is adapted to be received and handled in the device. In some cases the capacity of the containers is varied by difference in the axial length thereof, and it will be clear in the present case that the present invention provides for receiving containers of any suitable dimensions without regard to length.

In the lower portion of the casing there is formed a bottom wall 25 suitably resting upon inturned beads 26, and sloping from one side of the casing to the other, the lowermost portion of the wall being formed with an outlet opening 27. This opening is controlled by a valve 28 which is carried upon an arm 29 pivotally mounted upon upstanding brackets 30 suitably fastened as by welding to the bottom wall 25. A guide bracket 31 is also preferably provided in the form of an angularly bent member fastened to the wall 25 and having a guide slot therein through which the arm 29 can operate in a vertical plane.

The valve is arranged to be actuated by a toggle mechanism including a toggle link 33 which is connected at its lower end to arm 29. Link 33 extends upwardly toward the top of the casing on the side adjacent the handle and is formed with a shoulder 34 against which there presses a washer 35 yieldably urged upward by compression spring 36. The lower end of the spring 36 bears against a washer 37 through which the link 33 freely passes, and which in turn is supported upon an outturned flange 38 formed integrally with the guide plate 20. At its upper end the link 33 is pivoted to a manually operable member 40 which has a leg 41 bent at right angles thereto, and pivotally connected to link 33 by pin 42, the lever itself being pivotally mounted at 43 upon a bracket 44 preferably formed as an offset integral part of the guide plate 20. Member 40 is formed as a flat member adapted to be engaded by the thumb of the operator who is supporting the device from the handle, so that when desired the member 40 may be actuated from its upright position as shown in Figs. 1 and 2 to its lowered position as shown in Fig. 4. In its lowered or flat position the axis of toggle link 33 moves slightly beyond the center line of pivot 43 and thus is yieldably retained in this position.

As will be evident from the description of the mechanism, with the manually operable member 40 in its upwardly extending position, link 33 will be raised by spring 36, and the valve 28 will be maintained in its downward or closed position. Upon the manual actuation of lever 40 to its lowered position as shown in Fig. 4, the toggle link 33 will be depressed against the action of spring 36, and the valve 28 will be opened, and the spring 36 yieldably retains the parts in the position with the valve open. However upon application of a limited lifting force to the manually operable member 40, the toggle will be broken, and the spring 36 will promptly act with a snap action to restore the valve to normal closed position.

Beneath the opening 28 there is located a discharge fitting 50 for receiving the liquid discharged through the opening, and providing for flowing the same into a discharge outlet tube 51. This tube is formed with a part 52 which is pivotally mounted upon the fitting 50, providing for a swinging adjustment of position of the tube from its raised or inoperative position through an arc of approximately 180° to permit of direct downward discharge from the container if desired. Sufficient friction is maintained so that the casing and container will be held in any desired position when supported from the spout. The discharge tube has a curved outer surface 53 at its topside and is preferably provided with a series of serrations 54 upon its underside which are adapted to cooperate with the receiving vessel into which the spout is placed, such as the crankcase opening of an engine, to provide a proper and firm support for the entire assembly during the discharge of the liquid therefrom.

In order to provide an interlocking mechanism effective to assure the closing of the outlet valve following the actuation of the device, and in preparation for a subsequent use, an operating rod 60 is provided adjacent the upper portion of the casing and in a position where it is located out of the space occupied by the container so that as the container is inserted or removed in the dispenser, no interference with such operation, or with the operation of the dispenser mechanism itself, occurs. This is conveniently accomplished by mounting the rod for slidable or shiftable movement on the outside of the casing adjacent the underside of bead 12. For this pupose a relatively stiff rod is provided and is held in place against the bead by a plurality of lugs or clips 61 suitably fastened to the outer wall of the casing, and looped over the rod to maintain it in desired operative position while permitting shifting or sliding movement thereof. At the end adjacent the handle, the rod 60 is provided with an upward cam portion 62. This cam portion is preferably formed integrally as a part of the rod, bent upon itself, and suitably formed to provide a lower sloping cam surface 62 and an upper more steeply inclined part 63. The rod and the portions 62 and 63 are located in such position that they are adapted to interengage with the manually operable member 40 when the same is moved from its vertical position to its horizontal position. As indicated in Fig. 5, movement of member 40 from the solid to the dotted line position will first result in contact of the edge thereof with the part 63, further movement of the member 40 thus causing the shifting of the rod around the periphery of the casing. Such movement continues as the member 40 is pressed downwardly into contact with the portion 62, until in the final horizontal position thereof the maximum shifting movement has been imparted to the rod 60. Since the rod follows the circular contour of the casing, it moves in an arc around the outer periphery of the casing.

At its other end the rod 60 is also formed with a forwardly and horizontally extending cam member 65, likewise preferably formed integrally and by bending the end of the rod back upon itself as shown. When the rod has been shifted by the movement of the member 40, cam portion 65 occupies the position shown in Fig. 4, where it extends into the path of the spout 51, and is adapted to be engaged by the curved wall 53 of the spout as it is returned to its raised or inoperative position. Forceful movement of the spout to such raised position following any dispensing operation thus results in engagement with the cam portion 65, causing the shifting of the rod in the reverse direction to that previously described, the final raising of the tube to its normal inoperative position as shown in Fig. 3 being such as to restore the rod to its original position. However in the course of such movement, the sloping cam surface 62 has caused the lifting of the manually operable member 40 and as such member is lifted, only a relatively slight movement is required to move the toggle link 33 over center, following which the spring 36 rapidly snaps the valve closed, and the member 40 into its upstanding position.

The operation of the device will be evident from the foregoing. With the valve closed, and the spout in raised inoperative position, a container is inserted into the device by a downward pressing movement which causes an opening to be made in the bottom wall thereof with the complete discharge of the contents thereof into the casing. None of this liquid passes into the discharge tube, hence such tube may be adjusted to a downward position as desired, and inserted into the crankcase or other opening without danger of wasting any of the liquid, or of dropping any of it upon the parts of the mechanism in transit. When fully adjusted and ready for discharge, the manually operable member 40 is actuated by the thumb of the operator to its lower position, effecting concurrent opening of the valve to permit discharge of the liquid, and

the setting of the interlocking rod 60. Upon completion of the filling operation, the device is withdrawn from the opening, and the spout flattened back to its raised or uppermost position, such swinging movement of the spout resulting in the camming of the interlocking rod as above described, with resultant immediate closing of the discharge valve so that the device is again placed in position for proper operation upon subsequent use. It will be clear that this mechanism is extremely simple and effective in operation, and being located entirely out of the space occupied by the container, does not interfere with the normal insertion or withdrawal of the container and is not within the path of the liquid as discharged from the container.

While the form of apparatus herein described constitutes a preferred embodiment of the invention, it is to be understood that the invention is not limited to this precise form of apparatus, and that changes may be made therein without departing from the scope of the invention which is defined in the appended claims.

What is claimed is:

1. A dispensing device of the character described for dispensing liquid from a closed container comprising a cylindrical casing, a handle extending from said casing adjacent the upper part thereof, knife means supported on said casing for forming an opening in said container for the discharge of the contents thereof into said casing, said casing having an outlet opening in the lower part thereof, a substantially non-bending discharge spout communicating with said outlet, means for pivotally mounting said spout on said casing for adjustment from a lowered operative position to a raised inoperative position, valve means controlling said outlet, means for actuating said valve means to open and closed position including a manually operable member positioned adjacent the upper part of said casing, toggle mechanism of which said member forms a part and adapted to yieldably retain said manually operable member and said valve means in either closed or open position, an arcuate shaped operating rod conforming with the cylindrical wall of said casing, means for supporting said rod upon said casing wall for angular shifting movement about the periphery thereof and out of the space occupied by said container, said rod having a portion in position to be engaged and shifted by said spout upon upward pivotal movement thereof to its inoperative position and having another portion adjacent and engageable directly with said toggle mechanism to cause the breaking of said mechanism in said shifted position for effecting movement thereof and of said valve means to closed position, said toggle mechanism upon subsequent opening of said valve effecting return shifting movement of said operating rod.

2. A dispensing device of the character described for dispensing liquid from a closed container comprising a casing, knife means supported on said casing for forming an opening in said container for the discharge of the contents thereof into said casing, said casing having an outlet opening in the lower part thereof, a discharge spout communicating with said outlet and mounted on said casing for adjustment from a lowered operative position to a raised inoperative position, valve means controlling said outlet, means for actuating said valve means to open and to closed position including a manually operable member positioned adjacent the upper part of said casing, an operating rod shiftably supported on the exterior wall of said casing, said rod having a cam portion adapted to be engaged by said manually operable member in the open position thereof, said rod also having a cam portion in position to be engaged by said spout in its inoperative position to cause shifting movement thereof and the resultant restoring of said manually operable member and said valve means to closed position.

3. A dispensing device of the character described for dispensing liquid from a closed container comprising a substantially cylindrical casing, knife means supported upon the inner wall of said casing for forming an opening in the container as such container is inserted thereinto, said casing having an outlet opening in the lower part thereof, a discharge spout communicating with said outlet and mounted on said casing for adjustment from a lowered operative and discharging position to a raised inoperative position, valve means controlling said outlet, a toggle mechanism for effecting the actuation of said valve means, said toggle mechanism including a manually operable member movable from a closed to an open position for actuating said valve to yieldably retain said valve in open position, and interlock means for restoring the valve to closed position following the operation of the device including an operating rod having an arcuate shape generally corresponding with that of said casing, means for supporting said rod against the wall of said casing for arcuate shifting about the circumference thereof, said rod having a portion adapted to engage with and to break said toggle mechanism and to be engaged and shifted by said toggle mechanism when said manually operable member is moved to said open position, said rod also having a portion in position to be engaged by said spout when the latter is moved to its inoperative position to thereby cause return shifting movement of said operating rod with resultant engagement thereof with said toggle mechanism to break said mechanism and effect return of said manually operable member and said valve means from open to closed position.

4. A dispensing device of the character described for dispensing liquid from a closed container comprising a substantially cylindrical casing, knife means supported upon the inner wall of said casing for forming an opening in the container as such container is inserted thereinto, said casing having an outlet opening in the lower part thereof, a discharge spout communicating with said outlet and mounted on said casing for adjustment from a lowered operative and discharging position to a raised inoperative position, valve means controlling said outlet, a toggle mechanism for effecting the actuation of said valve means, a manually operable member movable from a closed to an open position for actuating said valve through said toggle mechanism to yieldably retain said valve in open position, and interlock means for restoring the valve to closed position following the operation of the device including an operating rod movably supported on the exterior wall of said casing adjacent the upper end thereof said rod having a portion engagable by said manually operable member to cause the shifting thereof, said rod also having a portion in position to be engaged by said spout when the latter is moved to its inoperative position to thereby cause return shifting movement of said

operating rod with resultant release and return of said manually operable member and said valve means from open to closed position.

5. A dispensing device of the character described for dispensing liquid from a closed container comprising a substantially cylindrical casing having an upper bead, knife means supported upon the inner wall of said casing for forming an opening in the container as such container is inserted thereinto, said casing having an outlet-opening in the lower part thereof, a discharge spout communicating with said outlet and mounted on said casing for adjustment from a lowered operative and discharging position to a raised inoperative position, valve means controlling said outlet, a toggle mechanism for effecting the actuation of said valve means, a manually operable member movable from a closed to an open position for actuating said valve through said toggle mechanism to yieldably retain said valve in open position, and interlock means for restoring the valve to closed position following the operation of the device including an operating rod slidably mounted upon the exterior wall of said casing in position adjacent said bead for arcuate sliding movement around the outer periphery of said casing to cause the tripping of said toggle mechanism and the release and return of said manually operable member to closed position, said rod having portions engagable respectively with said spout in the raised position thereof and with said manually operable member in the open position thereof.

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