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H. MILLER

2,245,698

PIERCING TAP

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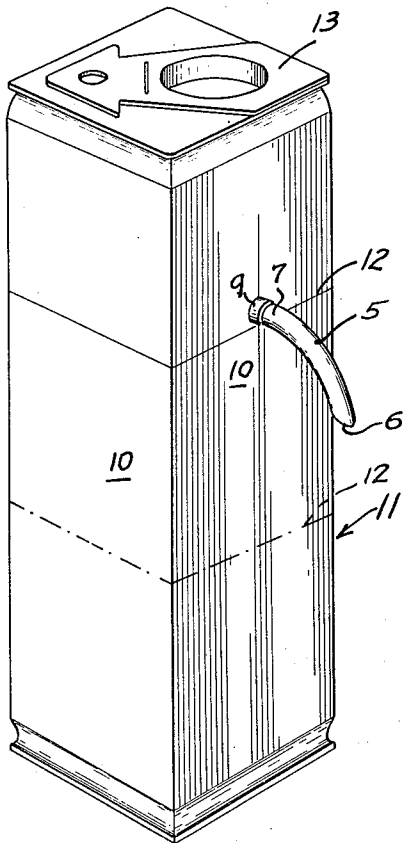


Fig. 1.

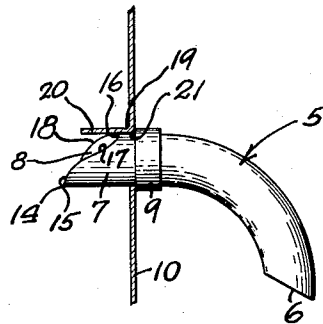


Fig. 2.

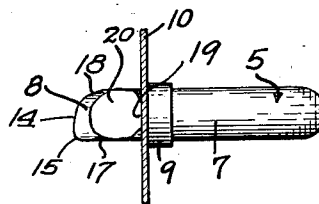


Fig. 3.

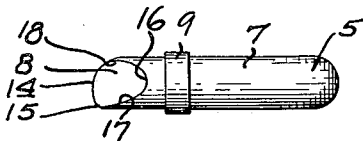


Fig. 4.

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PIERCING TAP

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1 Claim. (Cl. 221-23)

This invention relates to a tap, and particularly to a tap for piercing and tapping the walls of containers.

An object of this invention is to provide a tap adapted to pierce a hole through the wall of a container which hole fits over the intake stem of the tap; said hole being so cut out by the insertion of the tap that the material punched out of the space of the hole is held in an out of way position but remains joined at a point to the wall of the container, thereby preventing the falling of foreign particles or material into the contents of the container.

Another object of this invention is to provide a tap with an outlet and inlet which face in opposite directions, the intake being cut at an angle to the axis of the inlet stem of the tap and the slanting edge of the intake opening being so curved to cut with a shearing action substantially around the circumference of the hole into which the inlet stem fits, leaving an uppermost point of the disc-like piece of cut-out material unsevered so that said piece hangs on the inside of the container wall above the intake of the tap but in an out of way position.

Another object of this invention is to provide a tap whereby a container having comparatively thin or pierceable walls can be tapped at selected levels so as to drain or draw off the contents of the container in predetermined quantities, the levels of discharge may be marked on the exterior of the container.

Another object of this invention is to provide a tap having slanting intake opening provided with a spirally slanting shearing edge which inclines from a cutting lip to an apex with such curvatures so as to cut a hole to snugly fit the outer periphery of the stem of the tap.

Another object of this invention is to provide a tap which is highly useful and simple in construction. Convenience of arrangement, lightness and comparative inexpense of manufacture are further objects which have been borne in mind in the production and development of the invention.

I am aware that some changes may be made in the general arrangements and combinations of the several devices and parts, as well as in the details of the construction thereof without departing from the scope of the present invention as set forth in the following specification, and as defined in the following claim; hence I do not limit my invention to the exact arrangements and combinations of the said device and parts as described in the said specification, nor do I confine

myself to the exact details of the construction of the said parts as illustrated in the accompanying drawing.

With the foregoing and other objects in view, which will be made manifest in the following detailed description and specifically pointed out in the appended claim, reference is had to the accompanying drawing for the illustrative embodiment of the invention, wherein

Fig. 1 is a perspective view of a container with my piercing tap in position therein.

Fig. 2 is a side view of my tap, the wall of the container being shown in section.

Fig. 3 is a top plan view of my tap in position, a fragmental part of the container wall being shown in section, and

Fig. 4 is a top plan view of the detached tap.

In carrying out my invention I make use of a tubular tap 5. An outlet opening 6 of the tap 5 preferably points downwardly and the tube curves substantially ninety degrees from said outlet opening 6 to an inlet stem 7. An inlet opening 8 on the end of the stem 7 faces upwardly in a direction substantially opposite to the direction of the outlet opening 6. A collar 9 around the stem 7 determines the extent of penetration of the inlet stem 7 through a wall 10 of a container 11, as shown in Figures 1 to 3.

The container 11 is of the usual type with comparatively thin walls as presently employed for dispensing fluid. In the herein illustration the container 11 is of the type used for dispensing milk and is made of stiff waterproof paper or composition board. A marker line 12 around the exterior of the container 11 indicates the level at which the thicker top of the milk usually collects. The container 11 may be also provided at its top with the usual closure flap 13.

The tap is adapted to pierce the wall 10 of the container 11. In order to cut such a hole through the container wall 10 that fits closely around the periphery of the inlet stem 7, I provide a cutting edge on the slanting inlet opening 8 which cuts with a circular shearing action and which pushes the disc-like piece of material so cut to an out of way position without completely severing the cut out piece of material from the wall 10.

The cutting edge around the slanting inlet opening 8 includes a lip edge 14, a protruding rounded corner 15 of which is the leading edge for piercing. The cutting edge then slants substantially spirally to an inner apex 16 at the top of the intake stem 7 and then back to the lip 14. The portion of the edge which leads from the cutting corner 15 to the apex 16 is concavely curved

at 17, and a convex edge 18 continues from the apex 16 to the lip 14 on the other side of the inlet opening 8. This spiral slanting cutting edge penetrates gradually around the circumference of the proposed hole. The round leading corner 15 starts a circular line of cut but the slant of the spiral is such that it does not complete an entire circle but it leaves a point 19 uncut. The apex 16 of the slanting edge with the aid of the convex edge 18 pushes the substantially circular disc-like piece of material 20 into an out of way position above said apex 16. The hole 21 thus cut through container wall 10 snugly fits over the outer periphery of the inlet stem 7 of the tap 5.

In operation, for instance for tapping a milk carton for withdrawing the cream from the top the cutting corner 15 is pushed into the wall 10, then the inlet stem 7 is pressed into the wall 10. When the hole is punched the outlet 6 is directed downwardly, the inlet opening 8 faces upwardly inside of the container. All the material above the level of the inlet 8 drains out through the tap 5. The tap may be left in the wall 10 in this initial position and used as an outlet spout for the container, or if it is desired to empty the container to successive predetermined levels then the tap can be withdrawn and then repeatedly inserted at successive predetermined levels suitably marked on the outside of the container. In this manner the contents of the container can be withdrawn in exact measured quantities.

It is to be noted that this tap may be used as a spigot by turning the spout so that its outlet 6 points upwardly thus the flow can be stopped and then by turning the spout back again to its downward pointing position the flow is resumed. In this manner spilling of the contents is prevented while the container is handled. This tap may be used in connection with containers containing any substance that flows such as fluid, cereal, salt or powder or any granulated material.

The tap herein is unitary in structure; it does not require any adjustment, it operates in a simple manner without severing any part of the wall, yet efficiently drains the contents of a container.

I claim:

A tap comprising an outlet spout, an inlet stem having a slanting inlet opening at its end, a cutting edge formed on the inlet opening being so shaped as to form a rounded cutting lip at one side of the outer edge of the inlet opening and curving around the slant with a concave curvature from one side of said lip and with a convex curvature from the other side of the lip, said concave and convex edges joining at the inner apex of the slanting edge, the convex edge being so curved as to push the cut-away portion of the container wall to an out of the way position above said inner apex of said slanting inlet opening.

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