

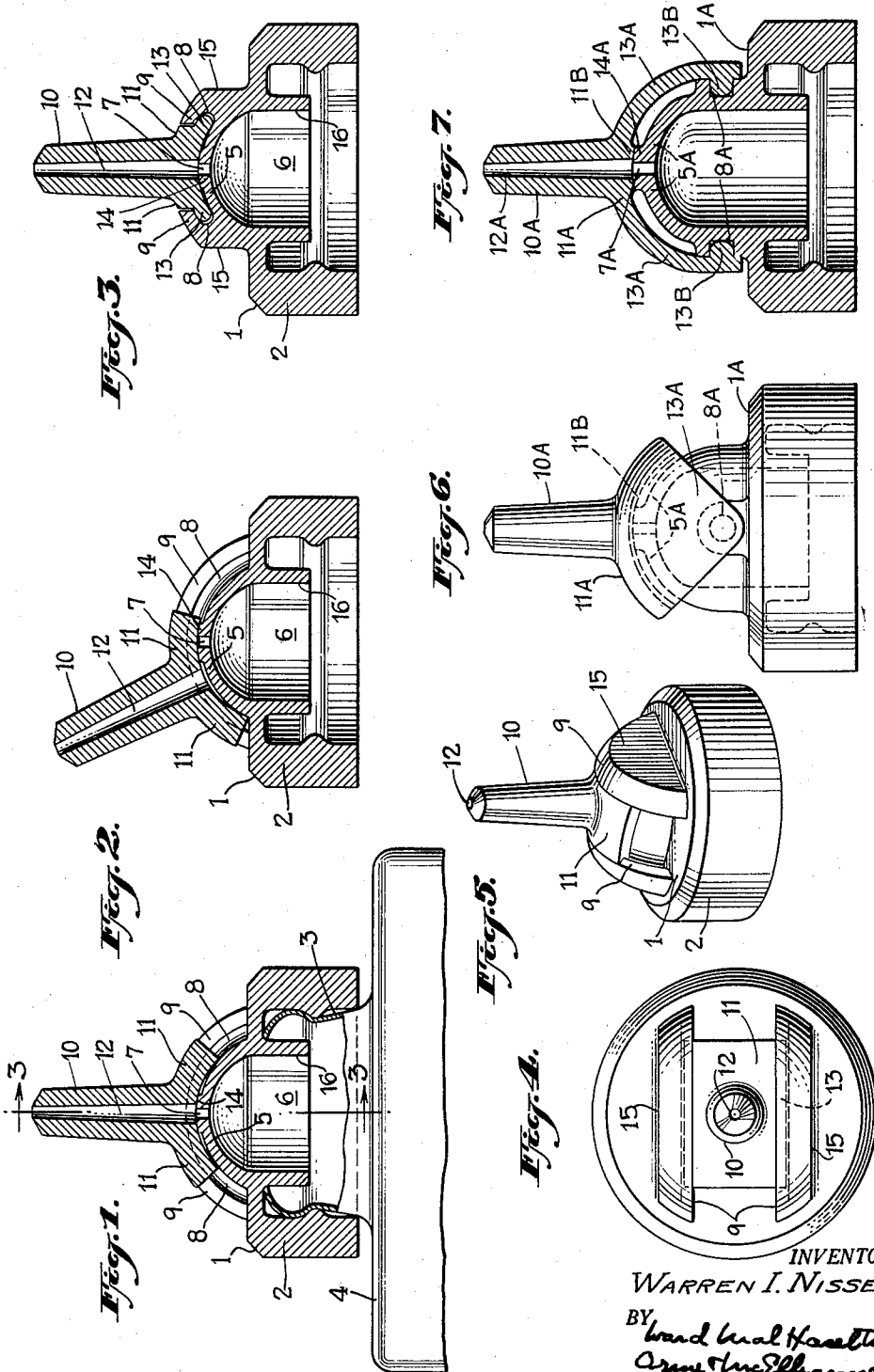
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DISPENSING SPOUT STRUCTURE

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1

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DISPENSING SPOUT STRUCTURE

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The invention relates to a dispensing spout structure appropriate for use upon containers for lighter fluid or other flowable materials, and which is constructed at least in part and preferably throughout of molded plastic such as polyethylene which has substantial resiliency and tends strongly to restore itself to its initial shape or form when deformed or distorted therefrom. The invention aims primarily to provide such a dispensing spout structure wherein the above mentioned elastic, deformation resisting characteristic of polyethylene or equivalent material are effectively utilized to insure the maintenance of liquid tight joints in the spout structure both in dispensing and non-dispensing positions, despite aging and consequent changes in shape or dimensions of the parts. The invention is especially useful in dispensing liquids such as lighter fluid which are particularly prone to seep out at the joints of the spout. Further objects and advantages of the invention will be in part obvious and in part specifically referred to in the description hereinafter contained which taken in conjunction with the accompanying drawings, shows certain preferred forms of dispensing spout which are constructed to operate in accordance with the invention; the disclosure however should be considered as merely illustrative of the invention in its broader aspects.

In the drawings:

Fig. 1 is a vertical sectional view of a preferred form of spout, shown as mounted in liquid dispensing position on the neck of a container such as is used in marketing lighter fluid.

Fig. 2 is a view similar to Fig. 1, but showing the spout detached and in sealing or non-dispensing position.

Fig. 3 is a section on the broken line 3—3 of Fig. 1 looking in the direction of the arrows.

Fig. 4 is a top plan view of the spout structure shown in Figs. 1—3.

Fig. 5 is a perspective view of the spout shown in Figs. 1—4.

Fig. 6 is a side view showing detached and in dispensing position, a somewhat modified form of spout structure.

Fig. 7 is a central vertical section of the spout structure shown in Fig. 6 and taken in a plane at right angles to Fig. 6.

Referring first to the form of the invention shown in Figs. 1—5, the spout structure there shown is provided with a base member 1 which may be understood as constructed of polyethylene or the like, the base member having an outer annular skirt 2 which may be forced over the neck 3 of the container 4, to hold the spout structure in operative position on the neck of the container as

2

shown in Fig. 1. In instances where the spout structure is in the form of an attachment to the container proper, appropriate devices will be provided to seal the joint between the spout structure and the container, but since the present invention is not particularly concerned with that phase of the assembly, the same will not be described in greater detail.

The base member 1 is provided with an upper resilient, deformation resisting wall 5 which overlies the liquid conducting space or chamber 6 within the base member, this upper wall having a liquid conducting passage 7 extending therethrough to the space 6. The upper wall 5 of the base member, because of its elasticity, is deformable from the convex, spherical curvature shown in Figs. 1—3, but when so distorted tends strongly to restore itself to its initial natural shape.

The base member is provided at opposite sides of the upper wall 5 with elongated guide ways 8 which have the same general curvature as the upper wall 5 and are directed parallel thereto, these guide ways 8, in the embodiment of the invention under discussion, being provided between the upper surface of the wall 5 and a pair of elastic overhanging lips 9 which are formed directly in the base member 1.

The spout member 10 of the assembly is also preferably constructed of polyethylene or the like, and is provided with a base portion 11 which fits slidably in the guide ways 8 and seats against the upper surface of the wall 5 in the region of the passage 7, the spout 10 having a dispensing passage 12 which registers with passage 7 when the spout is in dispensing position.

The spout 10 is manually adjustable by back and forth movements bodily along the upper surface of wall 5, between the dispensing position shown in Figs. 1 and 3, and the sealing or non-dispensing position shown in Fig. 3. To guide the spout 10 during such movements, its base portion 11 is provided with elongated guides or flanges 13 which respectively engage in the previously mentioned guide ways 8 in the base member. At least one and preferably both of the above mentioned main parts of the spout structure being constructed of elastic material such as polyethylene, the spout member 10 may be inserted in operative position by temporarily distorting the walls of the base member, spout member or both, until the guides 13 are received in the guide ways 8 as shown in Fig. 3, and upon release of the distorting forces, the engaging parts because of their elasticity will tend strongly to return to their initial natural shape, the elastic lips 9 pressing the base portion of the spout member firmly against the upper wall 5 in the region of the passage 7. This pressure slightly depresses and distorts the wall 5 from its natural shape in the region of passage 7, and because of the resiliency of wall 5, this deformation sets up a counter pressure which will maintain a tight seal at the joint between the parts in the region of passage 7, even though there be moderate deviations in their shape or dimensions due either to tolerances in manufacture or shrinkage or warping after aging. In other words due to the elastic pressure in the region of the passage 7, the parts accommodate themselves to each other to ensure that a tight joint in the region of passage 7 will be effectively formed and maintained. To concentrate the sealing pressure in the region of passage 7, preferably one of the engaging parts is provided with

3

a projecting boss 14. In the embodiment of the invention under discussion, such a boss is provided for the above purpose at the portion of the wall 5 which surrounds the passage 7. Preferably an internal depending annular flange 16 extends downwardly from upper wall 5 of the base member, to augment the resistance of the upper wall 5 to distortion when the wall is subjected to pressure as above described. This depending annular flange 16 may be received loosely within the neck 3 of the container as shown in Fig. 1.

As best shown in Fig. 5, the form of the invention under discussion includes upstanding parallel side walls 15 on the base member, in which side walls the guide ways 8 and lips 9 are formed, and between which side walls the upper wall 5 is interposed.

The form of the invention shown in Figs. 6 and 7 may be understood as having a base member 1A in general similar to the member 1 previously described, but having an upper resilient, deformable wall 5A which is approximately semi-spherical or semi-cylindrical in shape. In this form of the invention the spout member 10A is provided at its base portion 11A with a pair of opposed downwardly extending wings 13A which embrace opposite sides of the upper wall 5A, and the base portion 11A of the spout is also provided with an arcuate internal ridge 11B which engages a boss 14A surrounding the passage 7A, which later extends through the wall 5A. In this form of the invention the guide ways 8A take the form of sockets which are disposed at the opposite sides of the wall 5A, in which the socket lugs 13B, extending inwardly from the lower ends of the wings 13A, are received. The spout member is thus mounted to swing angularly through a path substantially concentric with the curvature of the wall 5A. The lugs 13B are so positioned with respect to the internal arcuate ridge 11B, that during assembly the engaging parts of the spout have to be distorted to force them into operating relationship, i. e. the natural radius of swing of the internal arcuate ridge 11B about the central axis of the lugs 13B, is somewhat less than the distance between the upper surface of the boss 14A and the central axis of the sockets 8A. Thus during assembly, the parts have to be distorted to force the lugs 13B into position, which distorts the upper wall 5A to depress the boss 14A, and maintains the elastic wings 13A under tension. Elastic pressure is thus maintained between the engaging surfaces of the spout and base member, to insure that a tight joint between the internal ridge 11B and the boss 14A will be maintained. Figs. 6 and 7 show the spout in its dispensing position in which the dispensing passage 12A of the spout registers with the passage 7A of the base member, and as in the case of the embodiment shown in Figs. 1-5, the spout may be moved manually in either direction from its vertical dispensing position, to shut off the flow of fluid from the container.

While the invention has been disclosed as carried out by spout structures of the specific forms above described, it should be understood that changes may be made therein without departing from the invention in its broader aspects, within the scope of the appended claims.

I claim:

1. A dispensing spout structure of the character described including a base member having an upper resilient, deformation resisting wall constructed of polyethylene or the like, said upper wall overlying an interior space within said base member, said upper wall having a resiliently deformable, convexly curved top portion provided with a passage extending therethrough to said space, said base member having guide ways disposed respectively at opposite sides of said upper wall and provided with convexly curved guiding surfaces, a spout member having a base portion disposed intermediate said guideways and overlying and seating against said convexly curved top portion adjacent said passage, said spout member having guides projecting from opposite

4

sides of said base portion which are engageable respectively with said guide ways by relative deformation of the engaging parts, to hold said base portion in pressing relation to said upper wall and thereby produce deformation at the engaging surfaces of said base portion and upper wall to maintain a tight joint between the base portion of the spout member and said top portion of said upper wall, means comprising said guides and guide ways mounting said spout member for movements back and forth along said upper wall, said spout member having a dispensing passage therethrough which moves into and out of registry with said first mentioned passage during the aforesaid back and forth movements of said spout member.

2. A dispensing spout structure of the character described including a base member having an upper resilient deformation resisting wall constructed of polyethylene or the like, said upper wall being provided with a convexly curved resiliently deformable, top portion having a passage extending therethrough to the interior of the base member, said base member having upstanding walls at opposite sides of said convexly curved portion, said walls having curved guide ways therein disposed substantially concentric with said convexly curved portion, a spout member having a base portion lying between said walls and overlying and seating against said top portion of said upper resilient wall adjacent said passage, said base portion having guides projecting from opposite sides thereof and engageable respectively with said guide ways by relative deformation of the engaging parts, to hold said base portion in pressing relation to said upper wall and thereby produce deformation at the engaging surfaces of said base portion and upper wall to maintain a tight joint between the base portion of the spout member and said upper wall, means comprising said guides and guide ways mounting said spout member for rocking movements back and forth along said upper wall, said spout member having a dispensing passage therethrough which moves into and out of register with said first mentioned passage during the aforesaid rocking movements of said spout member.

3. A dispensing spout structure of the character described including a base member having an upper resilient deformation resisting wall constructed of polyethylene or the like, said upper wall being provided with a convex, substantially arcuately curved resiliently deformable top portion having a passage extending therethrough to the interior of the base member, a spout member having a concavely curved base portion overlying and seating against said top portion of said upper resilient wall adjacent said passage, said spout member having wings projecting from opposite sides thereof and respectively overlapping opposite sides of said base member, said wings and opposite sides of the base member having parts engageable by deformation of said members, to hold said base portion in pressing relation to said upper wall and thereby produce deformation at the engaging surfaces of the base portion and upper wall to maintain a tight joint between the base portion of the spout member and said upper wall, means comprising said interengaging parts mounting said spout member for arcuate rocking movements back and forth along said upper wall, said spout member having a dispensing passage therethrough which moves into and out of register with said mentioned passage during the aforesaid rocking movements of said spout member.

4. A dispensing spout structure of the character described including a base member having an upper deformation resisting wall constructed of polyethylene or the like, said upper wall overlying an interior space within said base member, said upper wall having a passage extending therethrough to said space, said upper wall having parallel elongated guideways extending therealong on opposite sides of said passage, a spout member having a base portion overlying and seating against said upper

5

wall in the region of said passage, said spout member having projecting from the opposite sides thereof, elongated guide flanges engaging respectively in said parallel guideways to hold said base portion in pressing relation to said upper wall and thereby maintain a tight joint in the region of said passage, said guide ways and guide flanges constituting means mounting said spout member for bodily movements back and forth along said upper wall, said spout member having a dispensing passage extending therethrough between said guide flanges and which moves into and out of registry with said first men-

5

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6

tioned passage during the aforesaid back and forth movements of said spout member.

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