July 13, 1943. J. BAHELKA 2,324,055

SEALING ELEMENT

Filed April 5, 1941

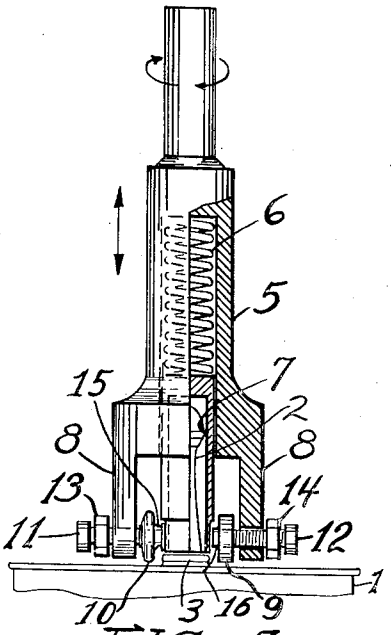


FIG.—3

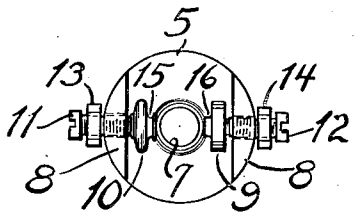


FIG.—4

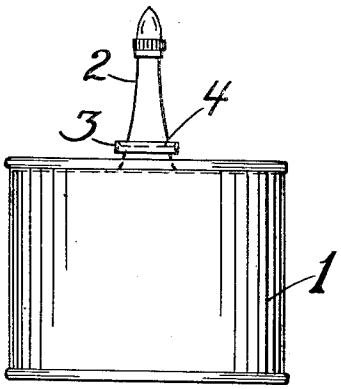


FIG.—2

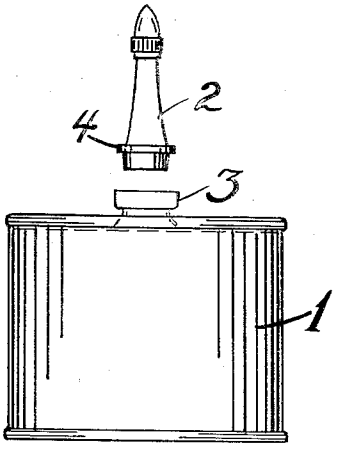


FIG.—1

Joseph Bahelka Inventor

By P. L. Young Attorney

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SEALING ELEMENT

Joseph Bahelka, Linden, N. J., assignor to Stanco, Incorporated

Application April 5, 1941, Serial No. 386,971

3 Claims. (Cl. 113—19)

The present invention is concerned with a method and apparatus for effecting an improved and complete seal between can bodies and spouts. The invention is particularly applicable in industries where the can bodies are filled with the fluid and the spouts thereafter sealed to the can wherein it is essential that the seal between the spout and the can body be completely leakproof.

It is well known in the art to manufacture can receptacles in two integral parts comprising the can body and the spout, which elements are sealed together after the can body is filled with the fluid to be shipped therein. However, many difficulties are encountered in effecting a satisfactory leakproof seal between the spout and the can body. It is necessary that the seal be attained in a relatively short time in order to render operations of this character economical. Furthermore, it is necessary in many operations that no heat or external sealing medium be employed since this would tend to impair the quality and cause deterioration of the fluid product within the can body. It has, therefore, been the practice to manufacture a can body, the opening of which comprises a cylindrical element into which the spout seats. After the can has been filled with the liquid, pressure is applied to crimp and bend over the upper section of the cylindrical element onto a shoulder element of the spout, seating in the cylindrical element in a manner to rigidly retain the spout affixed to the can body and to effect a seal between the respective elements. In order to effect a more thorough seal the cylindrical element of the can is lined with a rubber or an equivalent substance. However, the methods and apparatus heretofore used in effecting this seal have not been satisfactory in making the seal leakproof, particularly when the fluid within the can comprises a relatively low viscosity fluid.

I have now discovered an apparatus by which can bodies and spouts may be effectively sealed in an economical manner and by which the seal between the respective elements is made leakproof. My invention may be readily understood by reference to the drawing illustrating embodiments of the same in which:

Fig. 1 is a view of the can parts;

Fig. 2 is a view of the assembled can;

Fig. 3 is a side view partially in cross-section of a sealing element; and

Fig. 4 is a bottom view of the sealing element.

Referring specifically to Figure 1, the integral parts of the can comprising the can body 1 and can spout 2 are shown. The can body is filled through a cylindrical element opening 3 after which the can spout 2 is seated therein. The upper surface of the cylindrical element 3 is then crimped and bent over shoulder 4 of the can spout 2 in a manner to rigidly attach the spout securely to the can body and to effect a leakproof seal between the respective elements. The assembled can spout and can body are shown in Figure 2.

In accordance with my invention, I propose to effect an improved seal, which has heretofore not been attained, by means of an improved sealing element. My element is adapted to be rotated at any satisfactory speed and is, furthermore, adapted to be moved in a vertical direction by suitable means. The element may be readily understood by reference to Figure 3. The element comprises a plunger housing 5 adapted to be rotated or moved in a vertical direction by suitable means. The plunger housing contains a plunger spring element 6 adapted to be compressed between an upper section of the plunger housing and a cylindrical hollow plunger 7. The plunger housing comprises integral therewith two shoulder elements 8 having attached thereto within the housing a guiding element 9 and a seaming element 10. The guiding element 9 and the seaming element 10 are attached to the respective shoulder elements by means of set screw elements 11 and 12 and lock nut elements 13 and 14. The guiding element 9 and the seaming element 10 preferably comprise elements having concentrically disposed extended shoulders 15 and 16 respectively.

The shoulder elements 15 and 16 forming an integral part of the guiding element 9 and the seaming element 10 are shown in detail in Figure 4. The surface of the shoulder 15 of seaming element 10 comprises a grooved convex surface designed in a manner that the lip of element 3 will pass along the inner surface of element 10 as the housing moves downwardly. The lip of element 3 will be rolled over toward the center of rotation as the housing element rotates and moves downwardly. As the housing moves further downward the lip of 3 is curved along the grooved convex surface of 15 through an angle of 180°, and is sealed on the top of element 4. The head of spout 2 during the operation extends within the hollow cylindrical plunger 7 and is retained tightly in its seat in can body 1 by means of plunger 7, the head of which exerts a pressure on shoulder 4. The tension of plunger 7 is maintained by means of spring element 6. The plunger housing is rotated along with seaming

element 10 around lip 3 on can body 1, sealing lip 3 as described. During the operation, guiding element 9 is functioning to maintain the desired tension on lip 3.

The apparatus may be varied considerably. The invention essentially comprises utilizing a seaming element and guiding element as described, in which the guiding element is disposed at an angle of about 180° with respect to the seaming element, and the seaming element comprises a grooved convex surface.

I claim:

1. Apparatus as described adapted for rigidly attaching and sealing a can spout having a circular shoulder integral therewith to a can body, the opening of which comprises a circular cylindrical element into which the shoulder of the can spout seats, which comprises a housing element adapted to be rotated and moved in a vertical direction, said housing element having two lower extending shoulders, a guiding element rigidly attached to one shoulder, a seaming element rigidly attached to the other, said seaming element being characterized by a grooved convex surface, means for regulating the seaming element in a manner that as the housing element moves downwardly the seaming element contacts the lip of the cylindrical circular element of the can, rolling the same inwardly toward the center of rotation of said housing element, a hollow cylindrical plunger within said housing element, a spring element adapted to maintain tension as said cylindrical element is moved upwardly, said cylindrical element being adapted to maintain pressure on the shoulder of said can spout and retain the same in the cylindrical seat of said can body.

2. Apparatus as defined by claim 1, in which said seaming element and said guiding element are approximately at an angle of 180° with respect to one another.

3. Apparatus as defined by claim 1, in which the grooved convex surface of said seaming element is of a character to turn the lip of the cylindrical element through an angle of about 180°.

JOSEPH BAHELKA.