ABSTRACT: Locking device for cover of containers with an elastic rim running around the opening, which device consists of elastic flaps which can be bent round and pressed into the space between the inside of the rim and the container wall into locked position with said wall.
This invention relates to a locking device for covers of containers with rim running at least partly around the opening. The locking device consisting of flaps arranged in the edge of the cover.

Locking devices with a flap which can be bent around a rim have been known earlier, but in these the flap is in principle not elastic but in due course becomes subject to fracture. A flap of common type is made of sheet metal. Locking with a flap of this kind is thus possible only a limited number of times before breakage of the flap occurs.

For containers made of plastic material, however, it is very inadvisable to use a plastically deformable flap since the plastic material does not possess such properties and a foreign element must therefore be embedded in the cover, but this is an expensive and unsatisfactory procedure. For small containers of plastic material, therefore, covers are used which lock by snap action. A secure locking device of this type for large plastic containers, however, e.g. for industrial use, requires large forces for its operation. There is therefore a great need for a simple and reliable locking device for plastic containers, which requires little time and energy for its operation.

The object of the present invention is to eliminate the aforesaid drawbacks and to create a simple and reliable locking device for plastic containers with cover, the which locking device can be operated a virtually unlimited number of times.

This is achieved in the present invention through the fact that the rim of the container and at least a part of each flap of the cover are elastic and that the outer edge of the flap can be bent around the edge of the rim and pressed into the space between the inside of the rim and the wall of the container where it is held in locked position in engagement with said wall or a part projecting from it.

Other purposes and features of the present invention will be apparent from the following account.

Various embodiments of the invention will now be described with relation to the attached drawings, of which

FIG. 1a shows a section through a plastic container with cover and locking device in accordance with the invention,

FIG. 1b shows a section along the line A-A in FIG. 1a,

FIG. 2a shows a modification of the embodiment in FIG. 1a, and

FIG. 2b shows a section along the line B-B in FIG. 2a.

A plastic container 1 has a rim 2 running along the edge of the container. The plastic cover 3 of the container has a corresponding rim 4 with a flap 5 with a thinner folding section 6 in the transition between cover and flap. When the cover 3 is placed on the container, the position of the flap 4 will be as indicated by the dashed line. After fitting of the cover the folding section 6 lies below the lower edge 7 of the rim 2 and the flap is pressed up in the edge of the rim at the same time as the latter may be forced somewhat outwards, since the length D of the flap is greater than the width C of the rim. If the external influence of rim and flap is now removed, the state of equilibrium arises which is indicated by fully drawn lines in FIG. 1b. The cover 3 is held in position merely by the influence of strong vertical forces, as the relatively stiff flap has no tendency to slide round the lower edge 7 of the rim. The only possibility of releasing the flap 5 is to force the container and the rim of the cover apart, for example by gripping under the rim of the container at the side of the flap, so that the outer end of the flap can pass the side of the container level with the folding section 6 of the flap, i.e. so that the lower width C of the rim of the container is equal to length D of the flap. The elastic folding section will then automatically bring the flap back to the position indicated by the dashed line. The force required for bending out the rim of the container, and which is an indication of the security of the lock, can naturally be adapted for various functions and applications, from small household storage vessels to large industrial containers.

FIG. 2b shows a modification of the embodiment in FIGS. 1a and 1b. In this case the flap 8 is given an extra secure hold in locked position by a projection 9 on the lower side of the rim. Instead of a projection, however, one can also arrange a recess for the same function. The folding section 10 of the flap lies in this case rather below the lower edge 12 of the rim. Thus, when the container is opened, the flap can be easily bent outwards and used as handle for removal of the cover. For this purpose the flap has a recess 11 in which a grip can be obtained with one or more fingers, or possibly with a mechanical device, to get a better hold on the flap. Instead of a recess, however, a bead or the like could be used for the same purpose. At the bottom edge of the cover there is a bead 13 to hold the cover with some snap action as an additional locking effect.

What I claim is:

1. In a locking device for a cover of plastic material for a container having a rim running around the opening, the locking device comprising a flap arranged in the edge of the cover, the improvement wherein at least part of the flap is elastic so as to enable the outer end of the flap to be bent around and pressed into the space between the inside of the rim and the wall of the container and to be held in locked position in engagement with said wall, the length D of the flap in the direction out from the edge of the cover being greater than the distance C between the wall of the container and the inside of the rim.

2. Locking device in accordance with claim 1, wherein the outer bendable end of the flap is thinner than the remainder of the flap.

3. Locking device in accordance with claim 1, wherein on the lower side of the rim of the container there is a recess and a projection for removably retaining the flap in locked position.

4. Locking device in accordance with claim 1, wherein the flap is formed with a gripping portion.

5. Locking device in accordance with claim 1, wherein the outer end of the flap, when pressed into the space between the inside of the rim and the wall of the container, is removably retained in locked position in engagement with a projection on said wall.

6. Locking device in accordance with claim 1, wherein the flap is normally in an unfolded, open position owing to the resiliency of the cover material.