

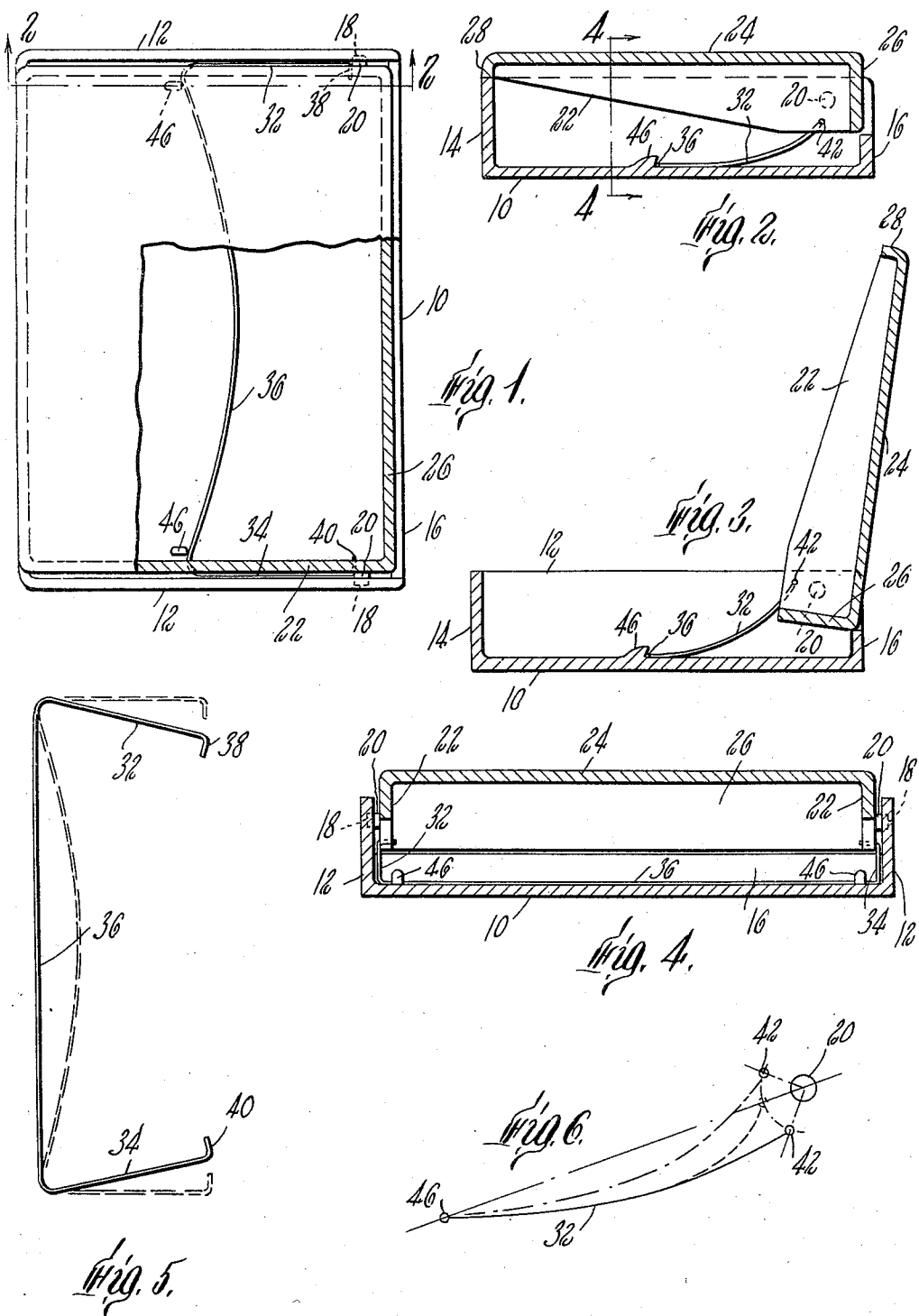
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CONTAINER WITH SNAP-ACTING CLOSURE

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CONTAINER WITH SNAP-ACTING CLOSURE

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This invention relates to a container of the snap-open snap-closed type and pertains more specifically to a container for holding and displaying small articles such as jewelry, pens, pencils, and the like.

One object of the present invention is to provide a container having a snap-acting closure member which is biased to open and to closed position respectively.

Another object is to provide a container of the type described of improved and simplified construction which may readily be assembled from a minimum of parts.

Still another object is to provide a container of the type described having a molded plastic base member and closure member with a one-piece spring for biasing the closure member to open and to closed positions respectively.

Other and further objects will be apparent from the drawing and from the description which follows.

In the drawing:

Fig. 1 is a top plan view, partly broken away and in section, showing one embodiment of the present invention with the container in closed position;

Fig. 2 is a view in cross section taken along line 2—2 of Fig. 1;

Fig. 3 is a view in cross section similar to Fig. 2 showing the container in open position;

Fig. 4 is a view in longitudinal section taken along line 4—4 of Fig. 2;

Fig. 5 is a plan view of the spring in its normal unflexed position; and

Fig. 6 is a schematic view showing the relative positions of the spring as the container is opened or closed.

Referring to the drawings, the container comprises a generally rectangular base member 10 having upstanding side walls 12, 12, a front wall 14 and a rear wall 16, the latter being of reduced height. Each side wall 12, 12 carries a socket 18, 18 adjacent its rear end adapted to receive and act as a bearing for a pair of trunnions 20, 20 projecting laterally outwardly from the side walls 22, 22 of closure member 24, so that the two members in assembled relation have the side walls 22, 22 of closure member 24 embraced by the upstanding side walls 12, 12 of base member 10.

Base member 10 and closure member 24 are preferably each a single integral molded plastic member of such size that there is provided a clearance space between the opposing faces of outer and inner side walls 12, 22. The length of each trunnion 20 is such that the closure member 24 may be pivotally connected to base member 10 by temporarily springing apart outer side walls 12, 12 of the base member. The location of the pivotal connection between the closure member and the base member is arranged so that the upper rear edge of closure member 24 abuts against the upper edge of rear wall 16 of the base member when in open position, as seen in Fig. 3, rear wall 16 thus serving both as a stop and, in conjunction with the rear wall 26 of closure 24, serving to seal the container, as seen in Fig. 2. The front wall 28 of

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closure 24 preferably is arranged to abut against front wall 14 of base member 10.

In order to provide the desired snap action, a single integral wire spring element is provided, as shown in Fig. 5, the opposite end portions 32, 34 thereof being bent toward the other to form an acute angle with the midportion 36 thereof, thus providing a pair of convergent legs. Midportion 36, and hence the distance between the legs at their juncture with the midportion, is approximately equal to the distance between the outer faces of inner side walls 22, 22 of closure member 24, as appears best in Fig. 4. The tips 38, 40 of the free ends of the legs are bent at approximately a right angle toward each other and are adapted to be received in bearing apertures 42, 42 in the side walls 22, 22. Apertures 42, 42 in the preferred embodiment shown are located beneath trunnions 20, 20 when the container is in closed position, as shown in Fig. 2.

A stop or abutment 46, 46 is provided on the base member adjacent the base of the side walls 12, 12 approximately midway of their length, stop members 46, 46 preferably being molded integral with base member 10.

In assembling the device the wire spring member is flexed from its normal unstressed position to the position shown in dotted lines in Fig. 5 and tips 38, 40 are inserted in apertures 42, 42 of side walls 22, 22, the flexure of the midportion 36 serving to keep legs 32, 34 pressed closely against the outer face of side walls 22, 22, thus clearing the inner face of the opposing outer side walls 12, 12. Closure 24 is then pivotally connected to base member 10 by springing side walls 12, 12 slightly apart and forcing trunnions 20, 20 into their respective sockets 18, 18. The midportion 36 of the wire spring at its juncture with legs 32, 34 is then forced to the right of stops 46, 46 to flex the leg to arcuate position, as shown in Fig. 3.

This flexure or stress of the legs operating between stops 46 as a first thrust point and aperture 42 as a second thrust point serves to urge these two points apart. As shown best in Fig. 6, aperture 42 in either open or closed position of the container is disposed at one side of a straight line joining the first thrust point 46 and the pivot axis of trunnions 20, the second thrust point 42 being disposed beneath the pivot axis when the container is in closed position. As the closure member 24 is swung about the pivot axis toward open position, legs 32, 34 are first bent or stressed even more, so that some force is required to urge the closure member toward open position until the second thrust point 42 passes the straight line joining the first thrust point 46 and the pivot axis 20 until, when closure 24 is in the fully opened position, the second thrust point 42 is located slightly above and in front of the pivot axis. Since flexure or stress of legs 32, 34 is being relieved after second thrust point 42 passes the line joining first thrust point 46 and the pivot axis, it forces closure member 24 to its fully opened position.

Similarly, in closing the container a slight amount of pressure is required during the initial part of the closing operation in order to urge legs 32, 34 to their fully flexed position when the second thrust point 42 again crosses the line between the first thrust point and the pivot axis, whereupon the subsequent release of stress as the distance between the two thrust points again increases results in the spring urging the closure to closed position.

Although specific embodiments of the invention have been described herein, it is not intended to limit the invention solely thereto, but to include all of the obvious variations and modifications within the spirit and scope of the appended claims.

What is claimed is:

1. A container of the snap-open snap-closed type com-

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prising a base member and a closure member each having generally parallel upstanding side walls with the side walls of one member embracing the side walls of the other member when the container is in closed position with a clearance space between the opposed faces of adjacent outer and inner side walls, a pivotal connection extending between opposing side walls at opposite sides of the container for mounting said closure member for swinging movement about a pivot axis on said base member, and a spring having an elongated arcuate portion extending between said members in said clearance space between opposing side walls for urging them to open and closed position respectively, one end of said arcuate portion engaging one of said members at a first thrust point spaced from said pivot axis and the other end of said arcuate portion engaging said other member at a second thrust point normally displaced from a straight line joining said first thrust point and said pivot axis, said second thrust point passing from one side of said line to the other in a plane perpendicular to said pivot axis as said closure swings from one said position of said members to the other, said arcuate portion urging said thrust points apart at all positions of said members.

2. A container as defined in claim 1 in which means is provided for biasing said arcuate portion against the face of one said side wall to clear the opposing face of the other side wall.

3. A container of the snap-open snap-closed type comprising a base member and a closure member each having generally parallel upstanding side walls, the side walls of one member embracing the side walls of the other member when the container is in closed position with a clearance space between the opposing faces of adjacent outer and inner side walls, a pivotal connection extending between opposing side walls at opposite sides of the container for mounting said closure member for swinging about a pivot axis on said base member to and from open and closed position, and a wire spring mounted between said members to urge them selectively to open and closed position, said spring comprising an integral wire element

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having a midportion with opposite end portions each bent toward the other to provide a pair of convergent legs, each leg being spaced from the other at its junction with said midportion by a distance approximately equal to the distance between the outer faces of said inner side walls, each leg of said spring being connected, adjacent the ends of said midportion, to the member having the outer pair of side walls at a first thrust point, the free ends of said legs being spread apart by flexing of said midportion and each pivotally connected to the member having the inner pair of side walls at a second thrust point, each leg extending into the respective clearance space and being held against the inner wall by flexure of said midportion, each said second thrust point being normally displaced from a straight line joining the corresponding first thrust point and pivot axis, each said second thrust point passing from one side of said line to the other along an arcuate path in a plane perpendicular to said pivot axis as said closure member swings to and from open and closed position, each leg being flexed in all positions of said members to urge said thrust points apart, the flexure being at a maximum at an intermediate position of said members.

4. A container as defined in claim 3 in which said members are generally rectangular with the side walls of the base member embracing the side walls of the closure member with said first thrust points being located on said base member adjacent the base of said side walls approximately midway of their length and said second thrust points being located on the side walls of said closure member beneath said pivotal connection when said members are in closed position.

5. A container as defined in claim 4 in which the tip of the free end of each of the legs is bent at approximately a right angle to its leg, and toward each other, and are received in bearing apertures in the side walls of said closure member at the second thrust points.

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