June 8, 1965 P. D. RAND 3,188,157

STACKED DISPENSING CONTAINERS

Filed Nov. 5, 1962

FIG. 1.

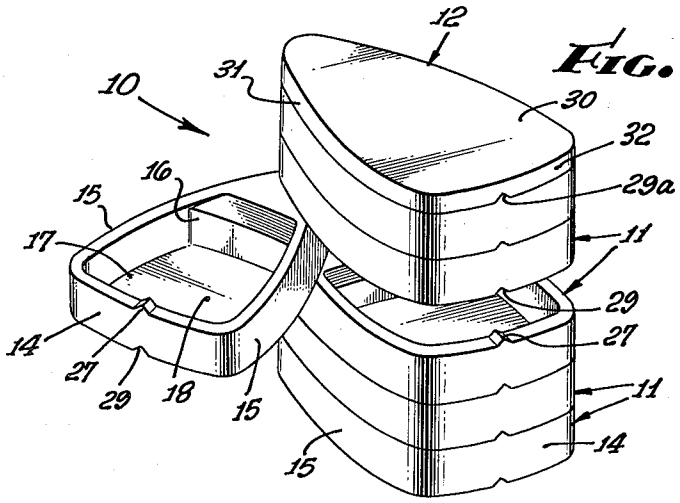


FIG. 2.

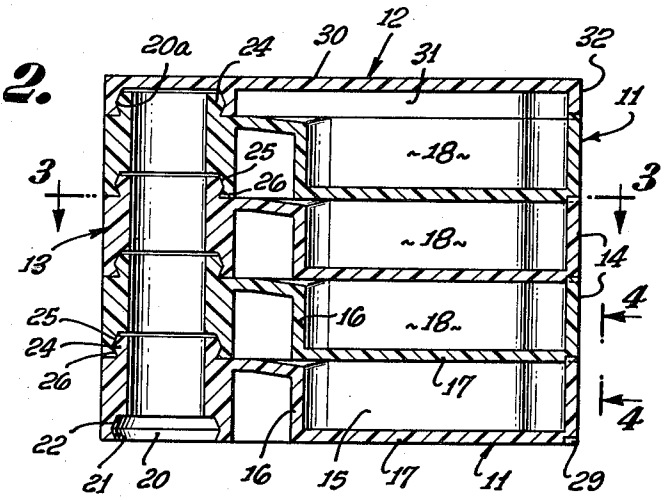


FIG. 3.

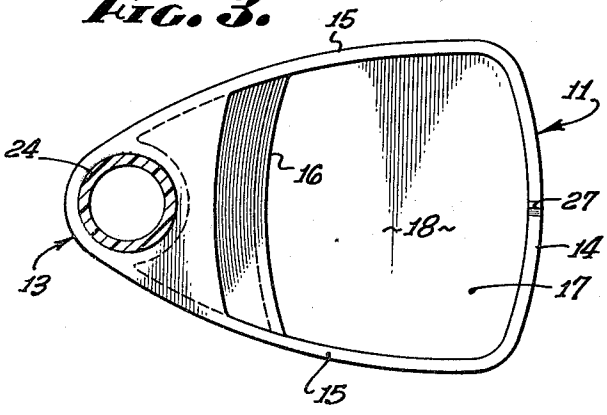
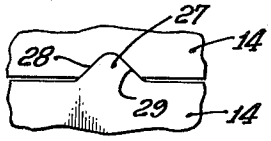


FIG. 4.



INVENTOR.
PAUL D. RAND
BY
Bernard Kriegel
ATTORNEY.

United States Patent Office 3,188,157 Patented June 8, 1965

3,188,157

STACKED DISPENSING CONTAINERS

Paul D. Rand, Sherman Oaks, Calif., assignor to Spatz Corporation, Venice, Calif., a corporation of California

Filed Nov. 5, 1962, Ser. No. 235,455
6 Claims. (Cl. 312—202)

The present invention relates to containers or cases for holding materials, and more particularly to a stacked assemblage of containers capable of retaining different cosmetic materials therewithin.

An object of the invention is to provide an improved stack of containers releasably held in snug closed relation to one another, with any selected container capable of swinging to open position with respect to any other container or containers.

Another object of the invention is to provide a stack of containers swivelly secured to one another and releasably locked in closed relation to one another, in which the swivel structure and lock structure between the containers forms part of the containers themselves, obviating the need for supplementary swivel or lock elements.

A further object of the invention is to provide a compact assembly of containers swivelly secured to one another, in which the elasticity of the containers releasably holds them in closed stacked relation and also permits any selected container to be released from the remainder of the stack for shifting to open position.

An additional object of the invention is to provide a stack of containers, which is economical to manufacture, and capable of ready assembly in swivelled and releasably locked relation to one another.

This invention possesses many other advantages, and has other objects which may be made more clearly apparent from a consideration of a form in which it may be embodied. This form is shown in the drawings accompanying and forming part of the present specification. It will now be described in detail, for the purpose of illustrating the general principles of the invention; but it is to be understood that such detailed description is not to be taken in a limiting sense, since the scope of the invention is best defined by the appended claims.

Referring to the drawings:

FIGURE 1 is an isometric view of a stack of dispensing containers or cases, with one container in open position;

FIG. 2 is a vertical section through the stack of containers disclosed in FIG. 1;

FIG. 3 is a section taken along the line 3—3 on FIG. 2;

FIG. 4 is an enlarged fragmentary end elevational view taken along the line 4—4 on FIG. 2.

As illustrated in the drawings, a stack 10 of containers 11 is provided, in which the containers may be releasably locked or latched in closed relation with respect to one another, and in which the containers are swivelly assembled with respect to each other so that any selected container can be released and pivoted to an open position with respect to the remainder of the closed stack. An upper container 11 is adapted to close the container immediately therebelow when in alignment therewith, with the uppermost container covered by an upper closure member or lid 12.

Each container 11 is a unitary structure and may be molded from an elastic plastic material, such as polyethylene. It includes a hollow post portion 13 at one end, and an outer end wall 14 at its opposite end, this outer end wall merging into opposed side walls 15 tapering toward one another and converging into the hollow post portion 13. An inner end wall 16 extends between and is integral with the side walls 15 adjacent to the post portion, the inner and outer end walls 16, 14 and side walls 15 being integral with a bottom 17, and forming a chamber or cavity 18 therewith adapted to receive material, which may, for example, be cosmetic materials. For example, the chamber 18 of one container 11 may receive face powder, another container cream rouge, a third container eyeshadow crayons, and the other containers in the stack any suitable materials.

The containers 11 are all identical to one another and are adapted to be stacked upon and swivelly attached to one another. Extending inwardly from the bottom plane of its container, each hollow post portion 13 has a counterbore or socket 20 that includes the tapered outer or end side wall portion 21 converging in a downward direction, and a tapered inner side wall 22 converging in an upward direction and terminating at a shoulder 23 normal to the axis of the hollow post portion. Extending upwardly from the upper horizontal plane of each container, which includes the upper ends of the side and end walls 15, 14 is a pin portion 24 of the hollow post 13. This pin portion has an externally tapered end surface 25 converging in an upward direction and a lower tapered inner surface 26 converging in a downward direction. The pin portion 24 is so dimensioned as to be companion to the counterbore or socket 20 of a container 11 or closure member 12 immediately thereabove.

The outer end wall 14 of each container is provided with part of a releasable lock device for releasably securing adjacent containers to each other. As shown, the outer end wall has an upwardly projecting, centrally disposed projection or protuberance 27, the sides 28 of which taper toward each other. The bottom and outer end walls 17, 14 also have a centrally located recess 29 companion to this projection 27 and of substantially the same dimensions, so that an upper central protuberance 27 on one container 11 can fit within a companion recess 29 in the container immediately thereabove.

The containers 11 can be assembled to one another because of the elasticity of the material of which they are made. Thus, the pin portion 24 of one container can be forced into the socket portion 20 of a container thereabove, the pin portion contracting inwardly to some extent and the socket portion expanding outwardly to some extent, until the pin portion is disposed fully within the socket portion, whereupon the material reassumes its initial shape, with the tapered end wall 21 of the socket or counterbore 20 engaging and underlying the tapered inner side wall or surface 26 of the pin portion, and with the tapered inner side 22 of the socket contiguous the end tapered side 25 of the pin. Because of the coengageable and overlapping tapered surfaces 21, 26 and 22, 25, the containers 11 are prevented from moving axially with respect to one another, but they can swivel or swing with respect to one another, the pin portion 24 turning relatively within its companion counterbore or socket portion 20 of the container thereabove.

When the pin 24 is disposed within the socket 20, and when a pair of adjacent containers 11, 11 are in alignment with one another, the protuberance 27 on a lower container is disposed substantially fully within the recess 29 of the container thereabove, releasably locking or holding the upper and lower containers 11, 11 in aligned and snug relation with one another, the bottom 17 of an upper container engaging the upper ends of the side and end walls 15, 14 of a lower container to close its chamber or cavity 18.

The tapered end 25 of the pin portion facilitates insertion of the pin portion into a socket portion 20, camming or stretching the socket material outwardly, the pin portion also being forced inwardly. The making of the post portion hollow or tubular reduces the resistance to inward compression or deformation of the pin portion. The extent of deflection or deformation of the pin

portion and socket portion is insufficient to exceed the elastic limit of the material of which the containers are made, so that the pin portion and companion socket portion will return to their initial shapes, following full insertion of the former in the latter, to provide an interlocking swivel between the parts. The uppermost container **11** can be covered by the closure member **12** which has a top **30** and a lower counterbore or socket portion **20***a*, substantially the same as a counterbore or socket **20** of a container **11**, adapted to receive the pin portion **24** of the uppermost container. The closure member **12** has side walls **31** converging toward its socket portion **20***a* which merge into an outer end wall **32**. The side walls **31**, end wall **32**, and socket portion **20***a* depend from the top **30** of the closure member and have the same perimetric shape as the underlying post portion **13**, sides **15** and end wall **14** of the container therebelow. The end wall **32** of the closure member **12** also has a central recess **29***a* to receive the upwardly extending protuberance **27** of the container **11** immediately therebelow.

Any number of containers **11** may be stacked upon one another, being releasably locked in closed, stacked relation with respect to one another by the reception of the protuberance **27** of each container in the recess **29** of the container immediately thereabove. The uppermost container is closed by the cover or lid **12**, being held downwardly upon it with its recess **29***a* receiving the lock protuberance **27** of the container immediately therebelow. If it is desired to gain access to the cavity or chamber **18** of any container, a lateral pressure is exerted upon such container, preferably adjacent to its outer end wall **14** for maximum leverage. The elasticity of the material will cause the containers above and below the one against which the pressure is exerted to deflect upwardly and downwardly from such container sufficiently so that the tapered projection **27** of the container is cammed out of the companion recess **29** of the container thereabove, the projection **27** of the container therebelow being cammed outwardly from the recess **29** of the selected container that is to be swung to open position. In this manner, the selected container **11** is released from the stack **10** and can be swung laterally with respect to the containers above and below it by virtue of the pivoting of its pin portion **24** in an upper socket **20** and of its socket portion **20** on the pin **24** therebelow. The selected container can be pivoted to an open position as far as desired, such as disclosed in FIG. 1, for example.

After suitable material has been placed within or removed from the cavity or chamber **18** of the selected container, the latter can be swung back to closed position and relocked in place, all containers springing back to their initial positions.

If access is desired to the uppermost container, a lateral force imposed on the closure member **12** will cause the underlying protuberance **27** to cam it upwardly free from such protuberance, allowing the closure member to be swung to an open position with respect to the uppermost container. The elasticity of the material of which the closure member **12** is made will permit its deflection sufficiently to insure release of the underlying protuberance **27** from its locking recess **29***a*. When the uppermost container is again to be covered, the closure member **12** is swung back to its closed position, the protuberance **27** of the uppermost container again snapping into the recess **29***a* of the closure member to hold it in snug relation to the upper container, closing the chamber **18** of the latter.

If only one container **11** is to be used, the closure member **12** can be swivelly assembled thereon and shifted to an open position whenever access to the cavity **18** is desired, whereupon the closure member is returned to its closed position over such container.

From the foregoing description, it is evident that a stack **10** of containers have been provided which can be swivelly secured to one another without the need for any

supplementary elements. The containers can be releasably locked to one another in snug closed relation without the necessity for any supplementary lock elements. The interior of any container can be made accessible at any time merely by exerting lateral pressure thereon, which will vertically deflect the stack of containers sufficiently to allow the protuberance and recess of the selected container to be freed from the companion recess and protuberance of the containers thereabove and therebelow. In the case of the closure member, it can be shifted to open position by elastic deformation of its material sufficiently to enable the protuberance of the uppermost container to release from the recess of the closure member, the latter then springing back to its initial shape. Each container **11**, as well as the closure member **12**, can be manufactured economically, as by injection molding. Any desired number of containers are capable of assembly to one another simply by snapping the pin portion **24** of one container into the socket portion **20** of an adjacent container. The pin **24** of an uppermost container is readily snapped into the companion socket **20***a* of the closure member **12**.

I claim:

1. In combination: a plurality of containers arranged in stacked relation and each having a chamber therein; each container being an integral structure of elastic material; a swivel interconnecting adjacent containers, said swivel comprising a single pin portion of one container disposed within a single socket portion of an adjacent container, an upper container being adapted to be placed in contiguous alignment with a lower container to close the chamber of said lower container, said pin portion having a maximum unrestricted outside diameter greater than the minimum unrestricted inside diameter of said socket portion to permit insertion of said pin portion in said socket portion as a result of deflection of said pin portion and socket portion, whereupon return of said portions to their original shapes retains said pin portion in said socket portion and prevents relative axial movement between said pin portion and socket portion; releasable lock means between adjacent containers opposite said pin portion and socket portion comprising a protuberance on and integral with one container disposed within a recess of an adjacent container to releasably hold an upper container in closed position over a lower container, said protuberance being removed from said recess to release said lock means by axially deflecting one of said containers at said protuberance relative to an adjacent container.

2. In combination: an integral container member of elastic material having a chamber therein; an integral closure member of elastic material adapted to be disposed over said chamber to close the same; one of said members having a single pin portion disposed within a single socket portion in the other of said members to provide a swivel between said members to permit said closure member to turn about the axis of said pin portion and socket portion, said pin portion having a maximum unrestricted outside diameter greater than the minimum unrestricted inside diameter of said socket portion to permit insertion of said pin portion in said socket portion as a result of deflection of said portions, whereupon return of said portions to their original shapes retains said pin portion in said socket portion and prevents relative axial movement between said pin portion and socket portion; and releasable lock means between said members opposite said pin portion and socket portion comprising a protuberance on one member disposed within a recess of said other member to releasably hold said closure member in closed position over said container, said protuberance being removed from said recess to release said lock means by axially deflecting one of said members at said protuberance relative to said other member.

3. In combination: a plurality of containers arranged

in stacked relation, each container being an integral structure of elastic material and having a chamber therein and a single hollow post, an upper container being adapted to be placed in contiguous alignment with a lower container to close the chamber of said lower container, said post comprising a socket portion at one end thereof and a pin portion at the opposite end thereof; the socket portion of one container receiving the pin portion of an adjacent container to provide a swivel between adjacent containers permitting said containers to turn about the axis of their respective hollow posts; said pin portion having a maximum unrestricted outside diameter greater than the minimum unrestricted inside diameter of said socket portion to permit insertion of said pin portion in said socket portion as a result of deflection of said portions, said pin portion and socket portion of adjacent containers having interlocking means thereon to hold said adjacent containers in assembled relation.

4. In combination: a plurality of containers arranged in stacked relation, each container being an integral structure of elastic material and having a chamber therein and a single hollow post, said post comprising a socket portion at one end thereof and a pin portion at the opposite end thereof; the socket portion of one container receiving the pin portion of an adjacent container to provide a swivel between adjacent containers permitting said containers to turn about the axis of their respective hollow posts; said pin portion having a maximum unrestricted outside diameter greater than the minimum unrestricted inside diameter of said socket portion to permit insertion of said pin portion in said socket portion as a result of deflection of said portions, said pin portion and socket portion of adjacent containers having interlocking means thereon to hold said adjacent containers in assembled relation and prevent relative axial movement between said pin portion and socket portion; and releasable lock means between adjacent containers opposite said pin portion and socket portion comprising a protuberance on one container disposed within a recess of an adjacent container to releasably hold an upper container in closed position over a lower container, said protuberance being removed from said recess to release said lock means by axially deflecting one of said containers at said protuberance relative to an adjacent container.

5. In combination: a plurality of containers arranged in stacked relation, each container being an integral structure of elastic material and having a chamber therein and a single hollow post, an upper container being adapted to be placed in contiguous alignment with a lower container to close the chamber of said lower container, said post comprising a socket portion at one end thereof and a pin portion at the opposite end thereof, said socket portion having a tapered end wall converging in a direction outwardly of said socket portion and a tapered inner wall converging in a direction inwardly of said socket portion, said pin portion having a tapered end surface conforming to said tapered inner wall of said socket, said pin portion having another tapered surface conforming to said end wall, whereby forcing of said pin portion in said socket portion deflects said portions to permit full assembly of said pin portion in said socket and overlapping of said socket end wall with the inner tapered surface of said pin portion to hold said adjacent containers in assembled relation and to provide a swivel between adjacent containers permitting said containers to turn about the axis of their respective hollow posts.

6. In combination: a plurality of containers arranged in stacked relation, each container being an integral structure of elastic material and having a chamber therein and a single hollow post, an upper container being adapted to be placed in contiguous alignment with a lower container to close the chamber of said lower container, said post comprising a socket portion at one end thereof and a pin portion at the opposite end thereof, said socket portion having a tapered end wall converging in a direction outwardly of said socket portion and a tapered inner wall converging in a direction inwardly of said socket portion, said pin portion having a tapered end surface conforming to said tapered inner wall of said socket, said pin portion having another tapered surface conforming to said end wall, whereby forcing of said pin portion in said socket portion deflects said portions to permit full assembly of said pin portion in said socket and overlapping of said socket end wall with the inner tapered surface of said pin portion to hold said adjacent containers in assembled relation and to provide a swivel between adjacent containers permitting said containers to turn about the axis of their respective hollow posts and to prevent relative axial movement between said pin portion and socket portion; and releasable lock means between adjacent containers opposite said pin portion and socket portion comprising a protuberance on one container disposed within a recess in an adjacent container to releasably hold said containers in said contiguous alignment, said protuberance being removed from said recess to release said lock means by axially deflecting one of said containers at said protuberance relative to an adjacent container.

References Cited by the Examiner

UNITED STATES PATENTS

1,256,306	2/18	Glanton	312—201
2,396,932	3/46	Slaton	312—201 X
2,582,421	1/52	Essman	312—201
2,714,269	8/55	Charles	24—116.1 X
3,003,839	10/61	Bloom	312—111

FOREIGN PATENTS

66,181	2/45	Denmark.

FRANK B. SHERRY, *Primary Examiner.*

CHANCELLOR E. HARRIS, *Examiner.*