

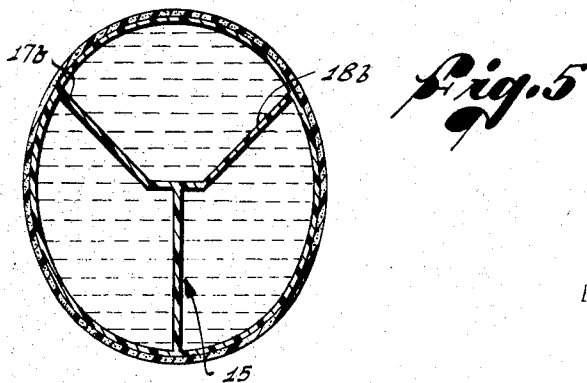
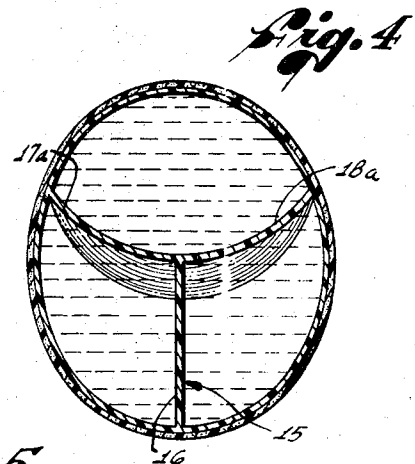
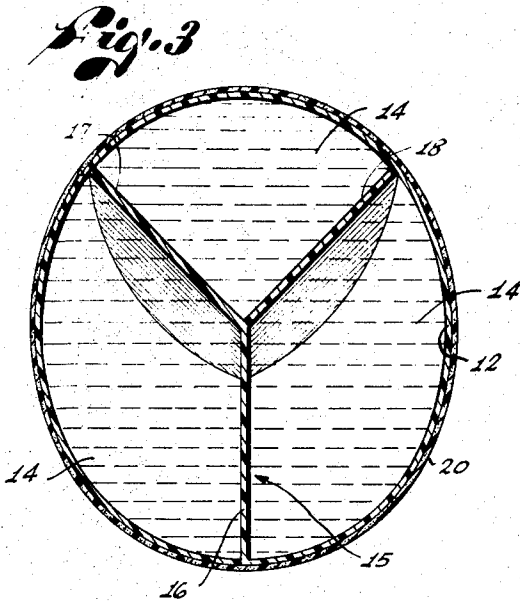
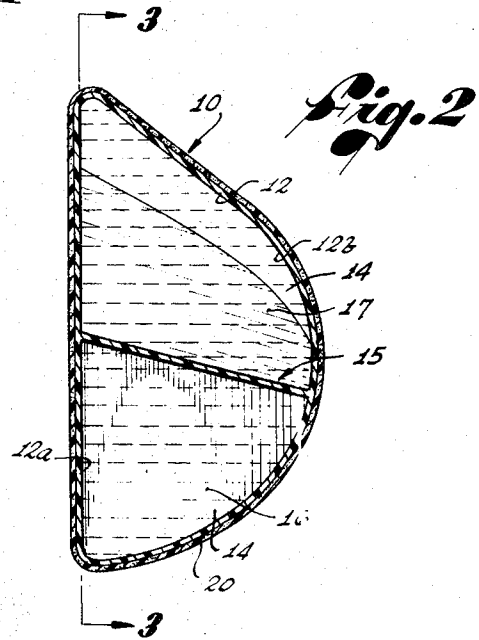
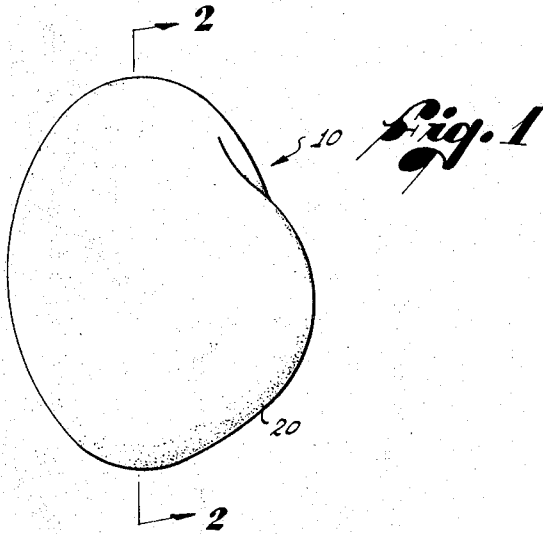
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W. J. PANGMAN

3,559,214

COMPOUND PROSTHESIS

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INVENTOR.  
WILLIAM J. PANGMAN  
BY *Forrest J. Lilly*  
ATTORNEY

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3,559,214

## COMPOUND PROSTHESIS

William J. Pangman, 865 Comstock Ave. W., Apt. 12A,  
Los Angeles, Calif. 90024

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9 Claims

### ABSTRACT OF THE DISCLOSURE

A compound prosthesis for surgical implantation is provided with internal partitions that divide the hollow container into a plurality of internal compartments. Each of the compartments is substantially filled with a soft fluid gel which allows the prosthesis to change shape readily, but the compartmentalization minimizes any visible change in shape due to movements of the wearer.

### BACKGROUND OF THE INVENTION

The present invention relates generally to prostheses and more particularly to an improved compound prosthesis which can be implanted within the human body particularly deep to the female breast.

It has become a practice in the field of plastic surgery to place a prosthetic implant in the area of a female breast under any one of various conditions. In cases where cancerous, precancerous, or other abnormal or damaged tissue has been removed, it is possible to insert the prosthesis through the same surgical incision used for removing the tissue. The prosthesis is then a replacement for the removed tissue, and its purpose is to retain the original body contours. An implant of this character provides physical support for surrounding body tissue and organs and by filling any voids that are created by the removal of body tissue preserves the normal outward appearance of the body.

With implants of this character, various problems are involved. One of them is the need of preserving the natural softness and resiliency of the replaced body tissue. Another problem is to retain the implant in position in the body. One type of prosthesis used for this purpose consists of a hollow container made of a rubberlike synthetic plastic material which is molded to the desired size and shape. It is then filled with a liquid plastic material which can be cured; and after curing, becomes a fluid gel. As an example of such material, a silicone rubber is used.

This combination of materials provides the desired degree of softness and resiliency for the replacement of removed tissues. However, because the fluid gel inside the prosthesis does not have enough rigidity to retain a particular shape, it shifts when the wearer changes position, as between lying down and standing up. The membrane or wall of the container is sufficiently flexible that it permits a certain change in shape under the shifting weight of the fluid gel inside the prosthesis.

A prosthesis of this character sometimes produces wrinkles in the upper portion and tends to bulge excessively in the lower portion when the wearer stands or leans forward even though it is properly shaped when the wearer is lying down. When implanted closely under the skin, these wrinkles become visible from the outside and, along with the bulge towards the bottom of the prosthesis, are undesirable from a cosmetic viewpoint.

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Furthermore, the shifting of the contents makes the prosthesis uncomfortable to wear.

Hence, it becomes a general object of the present invention to improve upon the construction of a compound prosthesis of this character to overcome the shift in position of the contents and the consequent change in shape when a highly mobile or fluid gel is used as a filler.

It is a further object of the invention to improve the construction of a compound prosthesis of this character in a manner to cause it to retain more nearly its original shape and size without at the same time rendering the entire prosthesis stiff or lacking in pliability.

### SUMMARY OF THE INVENTION

These objects of the invention have been achieved by providing a compound prosthesis which can be implanted under the skin of a patient and comprises a hollow closed container of a soft, flexible material; partition means dividing the interior of the container into a plurality of separate compartments, the partition means also being flexible; and a quantity of fluid gel substantially filling each of the compartments. A prosthesis designed to replace a female breast generally has a flat rear wall and an outwardly convex front wall, and the partition means comprises a plurality of membranes extending between these front and rear walls.

Preferably, partition means divides the interior into three compartments of approximately equal volume, one of the compartments filling substantially the upper one-third of the interior volume of the container. To do this, the partition means may typically comprise a median branch extending upwardly from the bottom of the container to a location near the center of the container and two upwardly diverging branches which extend upwardly away from said central location to form the three separate compartments which are isolated from each other and which are individually substantially filled with the gel. Various other configurations and dispositions of the interior membranes forming the partition means are possible within the scope and spirit of the present invention.

### DESCRIPTION OF THE DRAWING

FIG. 1 is a front and side perspective of a prosthesis embodying the present invention;

FIG. 2 is a vertical median section through the prosthesis shown in FIG. 1;

FIG. 3 is a vertical transverse section on line 3—3 of FIG. 2; and

FIGS. 4 and 5 are views similar to FIG. 3 of variational embodiments of the present invention.

### DESCRIPTION OF A PREFERRED EMBODIMENT

Referring now to the drawing, a prosthesis 10 is illustrated as a hollow closed shell or container having a wall 12 of a soft, flexible material which is impervious to human tissues and to body fluid. This wall is likewise impervious to the soft gel 14 which fills the shell. The wall 12 of the container is made of a material which is soft and flexible and also one that is preferably elastic. As an example of a suitable material, a silicone rubber compound has been used with success. A wall thickness of the general order of 2–4 millimeters has been found to be satisfactory.

The interior space of the hollow container is divided into a plurality of compartments by partition means. The partition means 15 is made from a material similar to the

wall 12 of container so that it has the same characteristics of flexibility and resiliency.

The partition means indicated generally at 15 is a thin membrane of the same material as wall 12. The container has a generally flat rear wall 12a and an outwardly convex front wall 12b joined to the rear wall around the perimeter thereof. Partition means 15 extends between the front and rear walls and is joined to each of them to form a plurality of separate or isolated compartments within the container. Each of these compartments is filled with a quantity of fluid gel 14.

The shape of the membrane forming the container means may vary; but in a preferred arrangement, there is a vertically extending median branch 16 which extends upwardly from the bottom of the container to a location centrally of the container. Above this, the membrane consists of two upwardly diverging branches 17 and 18 which are so arranged and spaced that the three compartments formed thereby are more or less equal in size and accordingly, the upper compartment occupies approximately one-third of the volume of the container. The membrane 15 is preferably thinner than the wall 12 and is consequently more elastic. A thickness of the order of 1-2 millimeters is satisfactory for this purpose.

The upper walls 17 and 18 preferably slope downwardly towards the front wall 12b, as seen in FIG. 2. This slope of the partition is preferred in order to minimize any movement of the gel in the upper compartment; and consequently minimize the change in shape of the prosthesis during the normal range of movements of the wearer while the torso is erect.

For reasons that are more fully explained in my earlier patent on Compound Prosthesis, No. 3,366,975, issued Feb. 6, 1968, it is preferred that container wall 12 be completely surrounded by a covering external layer 20 which is a resilient, foam-type plastic having numerous pores throughout the external layer whereby it is pervious to and can be invaded by body cellular tissue to a limited depth. A suitable material for this purpose is a foamed polyether or a polyurethane which can be bonded to wall 12 so that there is substantial adherence between the two layers 12 and 20 which together provide the complete wall of container 10.

Layer 20 is characterized by small pores which permit it to become invaded by body tissue, thereby causing the implant to adhere firmly to the wall of the chest and to the covering skin and tissues. This adherence to body tissues is most satisfactorily achieved by completely covering wall 12 with the outer layer 20; but it will be realized that it is also within the scope of the present invention to apply the material of layer 20 to less than the entire exterior surface of wall 12.

#### DESCRIPTION OF OTHER EMBODIMENTS

FIGS. 4 and 5 illustrate variational forms of the present invention. In FIG. 4, the shape of the partition means has been altered by making the two branches 17a and 18a of the partition means curved rather than straight, when viewed in cross section. One result of this change in shape is to increase somewhat the proportion of the total interior volume occupied by the upper compartment.

FIG. 5 illustrates another modification in the shape of the interior partition means 15 in that the branches 17b and 18b have an angular configuration when viewed in cross section. Furthermore, the downward slope of the partition from rear wall 12a forwardly has been eliminated, and the partition elements 16, 17b, and 18b are all substantially normal to the general plane of rear wall 12a.

FIGS. 4 and 5 illustrate only two of various possible modifications of the shape and arrangement of the branches of the interior partition means. From this, it will be realized that the exact proportion of the interior volume allocated to the partitions can be varied; and likewise, the number of compartments can be more or less

than three. In any case, each of the compartments is substantially filled with a fluid gel. Because of the flexible and elastic nature of the wall 12 and the partition means as well as the fluid nature of the contents 14 of the prosthesis, the prosthesis as a whole has a soft, pliant characteristic; but the presence of the partition means forming the plurality of internal compartments minimizes any overall change in shape of the prosthesis as a result of a change in position of the prosthesis with movements of the wearer.

From the foregoing description, it will be understood that various changes in the detailed construction and arrangement of the elements of the prosthesis may occur to persons skilled in the art without departing from the spirit and scope of the present invention. Accordingly, it is to be understood that the foregoing description is considered illustrative of, rather than limitative upon, the invention disclosed herein.

I claim:

1. A compound prosthesis for implanting under the skin of a surgical patient, comprising:

a hollow closed container having a pair of spaced walls of a soft, flexible material compatible with and impervious to human tissues and body fluid, one said wall being a rear wall and substantially flat while the other wall being a front wall of outwardly convex configuration joined to the rear wall;

partition means dividing the container into a plurality of separate compartments, the partition means being flexible membranes extending between and connected to the front and rear walls; said membranes being in a generally Y-configuration;

and a quantity of soft fluid gel substantially filling each of the compartments.

2. A compound prosthesis as in claim 1 in which the partition means comprises a membrane forming one compartment of substantially the upper one-third of the interior volume of the container.

3. A compound prosthesis as in claim 1 in which the partition means divides the interior into three compartments of substantially equal volume.

4. A compound prosthesis as in claim 1 in which the partition means comprises a median branch extending upwardly from the bottom of the container to a location central of the container and two upwardly diverging branches extending upwardly from said central location to form three separate compartments of which one is substantially above said central location.

5. A compound prosthesis as in claim 3 in which one compartment of substantially one-third the interior volume of the container is disposed substantially above the center of the container.

6. A compound prosthesis as in claim 1 in which the partition means comprises membranes that are thinner and more easily deformed than the exterior wall of the container.

7. A compound prosthesis as in claim 1 in which the outer wall of the container is a silicone rubber about 2-4 millimeters thick and the partition means are membranes of a silicone rubber about 1-2 millimeters thick.

8. A compound prosthesis as in claim 1 in which the container has a generally flat rear wall and an outwardly convex front wall,

and the partition means extending between said two walls comprises a median branch extending down from a location central of the container and diverging branches extending upwardly away from the central location to form three compartments within the container;

the partition means being thinner and relatively more flexible than the outer walls.

9. A compound prosthesis as in claim 1 which also includes an external layer of a resilient, foam-type plastic having numerous pores throughout whereby the external layer is relatively pervious to body fluids on body cellu-

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lar structure, said layer covering and being bonded to at least a portion of the container.

References Cited

UNITED STATES PATENTS

|           |        |           |      |
|-----------|--------|-----------|------|
| 146,805   | 1/1874 | Cox       | 3—36 |
| 2,593,002 | 4/1952 | Bernhardt | 3—36 |
| 2,636,182 | 4/1953 | Freedman  | 3—36 |
| 2,842,775 | 7/1958 | Pangman   | 3—36 |

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|           |         |         |         |
|-----------|---------|---------|---------|
| 2,864,372 | 12/1958 | Buckley | 128—481 |
| 3,293,663 | 12/1966 | Cronin  | 3—36    |
| 3,366,975 | 2/1968  | Pangman | 3—36    |

5 CHARLES F. ROSENBAUM, Primary Examiner  
J. B. MITCHELL, Assistant Examiner

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