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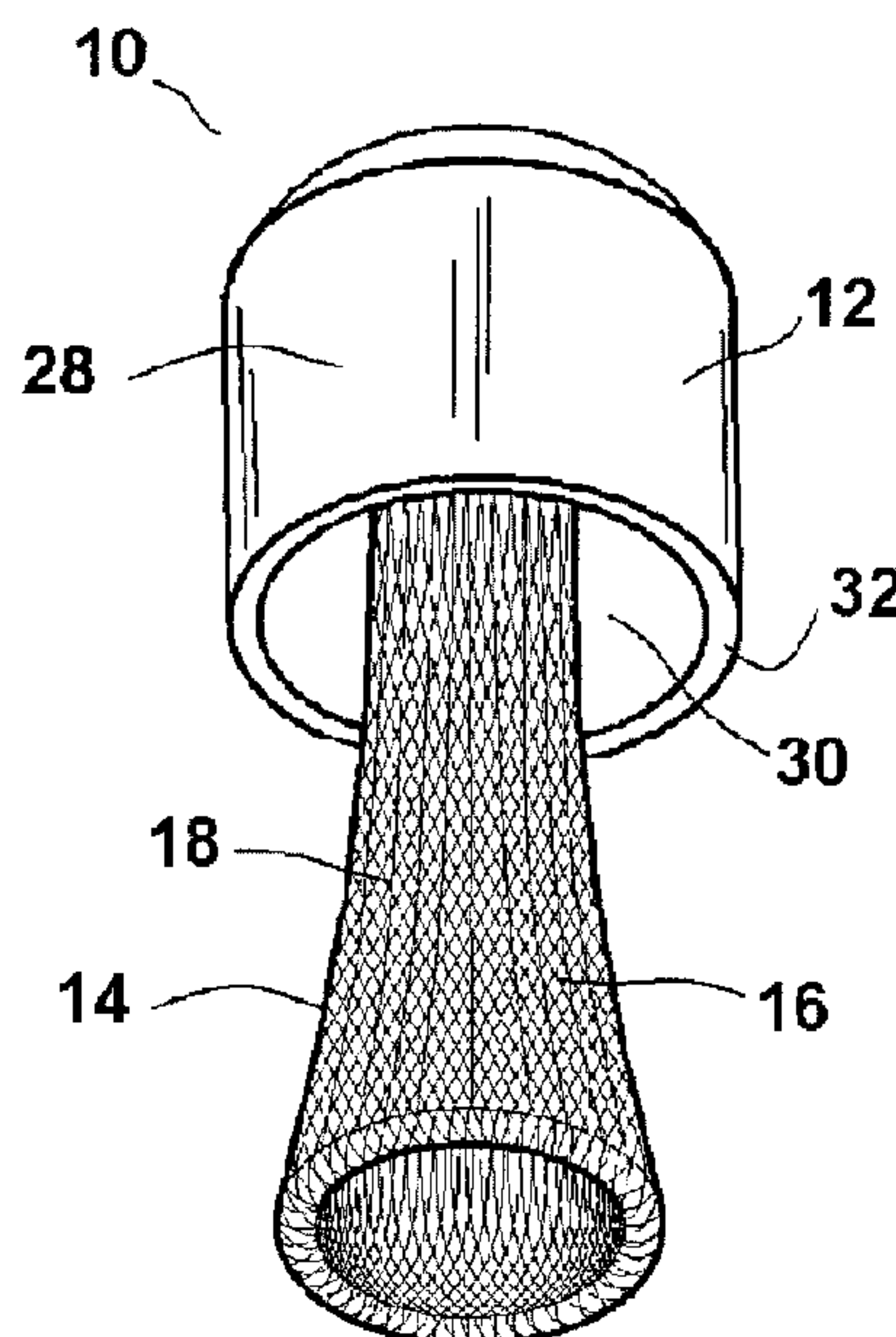
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(54) Titre : JOUET POP-UP INNOVANT COMPRENANT UNE TETE DE RECEPTACLE PRESENTANT UN CORPS DE MANCHON TRESSE ET SON PROCEDE DE FABRICATION ASSOCIE

(54) Title: NOVELTY POP-UP TOY HAVING A RECEPTACLE HEAD WITH BRAIDED SLEEVE BODY AND ITS ASSOCIATED METHOD OF MANUFACTURE



(57) **Abrégé/Abstract:**

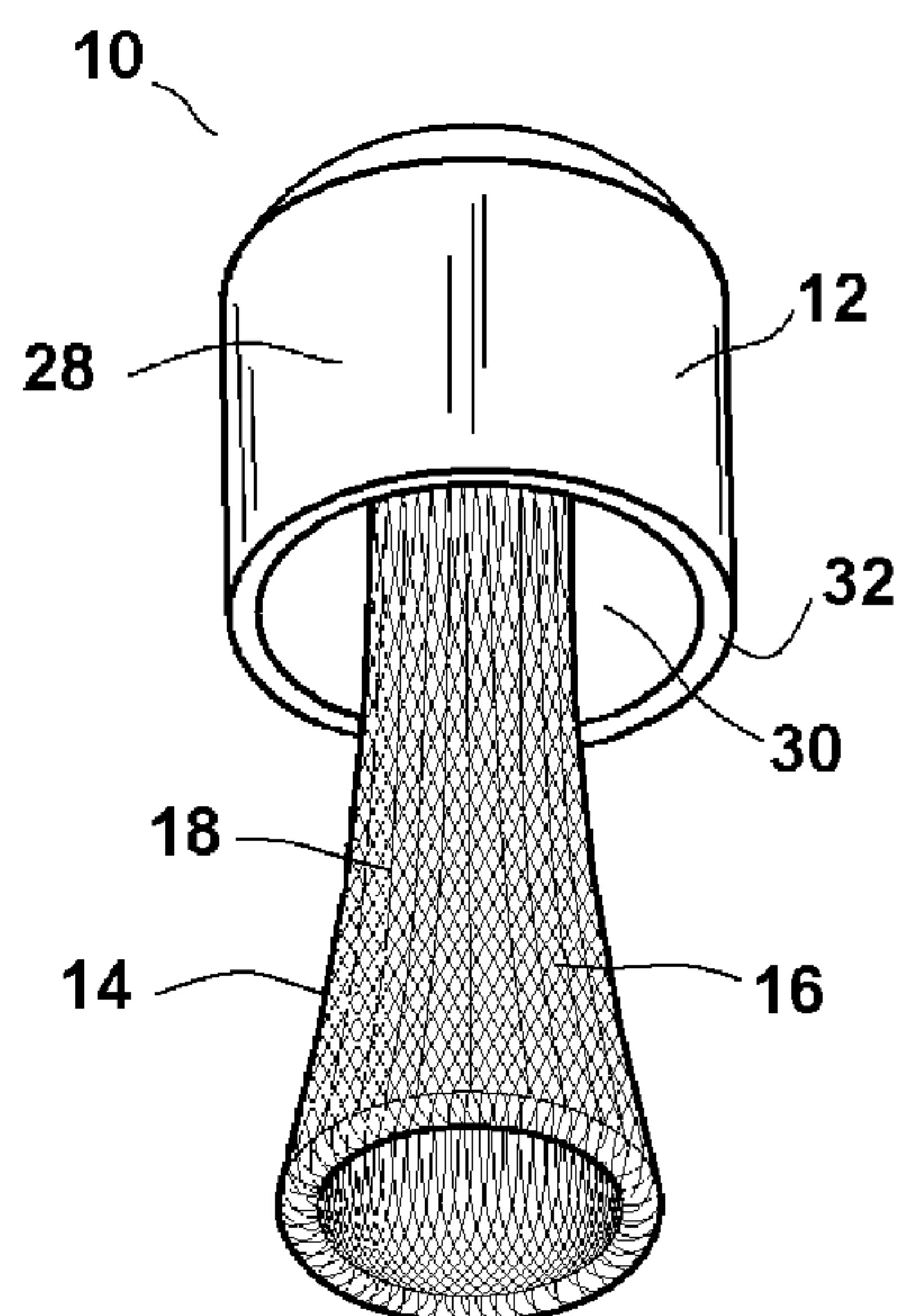
A novelty pop-up toy (10) and its associated method of operation. The pop-up toy (10) has a head section that is supported on a spring element, such as a braided sleeve (14). When the pop-up toy (10) is compressed, the spring element elastically deforms from an uncompressed state to a compressed state. While in the compressed state, the spring element stores energy. If the compression force is suddenly released, the braided sleeve body (14) releases its stored energy and pops back into its uncompressed state. As braided sleeve body (14) returns to its uncompressed state, it rapidly expands, therein providing enough force to propel the entire pop-up toy (10) into the air.

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ATED METHOD OF MANUFACTURE**FIG. 1**

(57) Abstract: A novelty pop-up toy (10) and its associated method of operation. The pop-up toy (10) has a head section that is supported on a spring element, such as a braided sleeve (14). When the pop-up toy (10) is compressed, the spring element elastically deforms from an uncompressed state to a compressed state. While in the compressed state, the spring element stores energy. If the compression force is suddenly released, the braided sleeve body (14) releases its stored energy and pops back into its uncompressed state. As braided sleeve body (14) returns to its uncompressed state, it rapidly expands, therein providing enough force to propel the entire pop-up toy (10) into the air.

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**NOVELTY POP-UP TOY HAVING A RECEPTACLE HEAD WITH
BRAIDED SLEEVE BODY AND ITS ASSOCIATED METHOD OF
MANUFACTURE**

5 TECHNICAL FIELD OF THE INVENTION

In general, the present invention relates to pop-up toys and similar novelty devices having resilient bodies that enable the toy to pop up after having been compressed. More particularly, the present invention relates to toys and novelty devices having components made from braided sleeves.

BACKGROUND ART

In the toy industry, a pop-up toy is the name commonly given to a class of toys that pop up after having been manually depressed. Such toys commonly have coil springs and suction cups. The spring is manually compressed until the suction cup can engage the surface under the toy. The compressed spring acts to free the suction cup. When the suction cup loses suction, the energy stored by the spring is released and the toy jumps or 'pops' up into the air. Such prior art pop-up toys are exemplified by U.S. Patent No. 1,657,936 to Nebel, entitled Jumping Figure Toy, U.S. Patent No. 7,140,945 to Dinhofer, entitled Gyrating Toy; and U.S. Patent No. 2,224,456 to Janas, entitled Toy Doll.

In recent years, toy manufacturers have been becoming more concerned with product safety.

Traditional pop-up toys that use compressed springs have certain inherent safety concerns. First, it is
5 difficult to permanently attach a suction cup or a plastic novelty object to a metal spring. If a child pulls upon a traditional pop-up toy, as often happens, the spring detaches, therein exposing a sharp metal point. Furthermore, exposed metal
10 springs have a tendency to pinch skin when compressed. Exposed metal springs also have a tendency to become entangled in a child's hair.

Recognizing the problems associated with metal springs, the Applicant has invented pop-up toys that
15 utilize braided sleeves instead of coil springs. The braided sleeve is plastic. However, it can store energy like a spring when compressed. The stored energy is sufficient to pop a toy into the air. The Applicant's pop-up toys that use braided sleeves are
20 shown in U.S. Patent No. 7,806,746 to Walterscheid, U.S. Patent No. 8,371,899 to Walterscheid, and U.S. Patent No. D641,433 to Walterscheid.

Although pop-up toys that use braided sleeves do have many advantages over similar toys that use
25 metal springs, the use of braided sleeves does come with some disadvantages. One disadvantage of using a

braided sleeve is that of uneven vertical
compression. Since braided sleeves are made from
hundreds of plastic filaments that are braided
together, it will be understood that certain areas
5 of the braided structure differ slightly. The
difference can be in the density of the braid, the
quality of the filaments or the degree of damage in
the filaments caused by wear. Whatever the cause,
the variations in the braided sleeve cause the
10 braided sleeve to compress unevenly when a downward
force is applied to the braided sleeve. As a result,
the braided sleeve tends to compress more in one
area than another. This causes the braided sleeve to
bend or twist as it is compressed. If the bend
15 becomes severe, the braided sleeve can slip
laterally and expand sideways before the braided
sleeve is fully compressed. Of course, once the
braided sleeve extends sideways, all compression is
lost and the braided sleeve will not pop up.

20 Another disadvantage inherent in braided sleeve
pop-up toys is one of invagination of the braided
sleeve during compression. When a braided sleeve is
compressed, it expands in diameter. Sometimes the
braided sleeve can expand too far. If the braided
25 sleeve expands into a bulge that is too wide, then
the braided sleeve above the bulge can collapse into

the bulge and cause the braided sleeve to invaginate by folding into itself. Again, if such a folding occurs, all compression is lost and the braided sleeve loses its ability to pop up.

5 A need therefore exists for a new structure for a pop-up toy that uses a braided sleeve, yet avoids the problems of side flaring and top folding that are inherent with braided sleeves. These needs are met by the present invention as described and
10 claimed below.

DISCLOSURE OF THE INVENTION

 The present invention is a novelty pop-up toy and its associated methods of manufacture and
15 operation. The pop-up toy has a head that is supported on a braided sleeve body. When the pop-up toy is compressed, the braided sleeve body elastically deforms from an uncompressed state to a compressed state. While in the compressed state, the
20 braided sleeve body stores energy. If the compression force is suddenly released, the braided sleeve body releases its stored energy and pops back into its uncompressed state. As the braided sleeve body returns to its uncompressed state, it rapidly
25 expands, therein providing enough force to propel the entire pop-up toy into the air.

The head of the pop-up toy assembly has a bottom surface. An internal compartment is disposed in the head. The internal compartment is accessible through an opening in the bottom surface of the head. The braided sleeve has a top end and a bottom end. The braided sleeve is selectively compressible between an uncompressed state and a shorter compressed state. The top end of the braided sleeve attaches to the head within the internal compartment. The braided sleeve extends from the bottom end of the head when in its uncompressed state. However, the braided sleeve completely fits within said internal compartment when the braided sleeve is in its compressed state.

BRIEF DESCRIPTION OF THE DRAWINGS

For a better understanding of the present invention, reference is made to the following description of an exemplary embodiment thereof, considered in conjunction with the accompanying drawings, in which:

FIG. 1 is a bottom perspective view of an exemplary embodiment of a pop-up toy assembly;

FIG. 2 is a cross-sectional view of the pop-up toy assembly shown in an uncompressed state;

FIG. 3 is a cross-sectional view of the pop-up toy assembly shown in a compressed state;

FIG. 4 is a front view of the pop-up toy assembly shown in an uncompressed state; and

FIG. 5 shows the embodiment of Fig. 4 immediately after a compression force is removed.

BEST MODE OF CARRYING OUT THE INVENTION

Although the present invention pop-up toy assembly can be configured in many different ways, only a simple embodiment is shown. The embodiment has been selected for ease of understanding and illustration. It should be understood that the selected embodiment is only exemplary and it should not be considered a limitation on the scope of the present invention as defined by the claims.

Referring to Fig. 1 in conjunction with both Fig. 2 and Fig. 3, there is shown a pop-up toy assembly 10. The pop-up toy assembly 10 has a head 12 and a spring element that supports the head 12. The spring element preferably is a braided sleeve

14. The braided sleeve 14 is a tube of interwoven plastic strands. The strands 16 that interweave in a helical pattern are called cross-over strands 16. The strands 18 that run straight along the length of a braided sleeve 14 are called warp strands. The cross-over strands 16 and warp strands 18 are interwoven, therein forming the braided sleeve 14. The resiliency of the braided sleeve 14 is determined by the resiliency and composition of the cross-over strands 16 and warp strands 18 in the weave. The braided sleeve 14 is porous and has interweave openings that are generally less than one square millimeter each. As such, it is impossible for a child to insert a finger or another body part into the weave of the braided sleeve 14.

In the present invention pop-up assembly 10, the strands 16, 18 of the braided sleeve 14 are plastic. Accordingly, they can be manufactured in any selected color and embody a high degree of flexibility. The braided sleeve 14 can be a single layer tube or a double layer tube. Furthermore the braided sleeve 14 can be cylindrical in shape when not compressed or it can be formed to be frustum shaped with a wide bottom end 20 and a narrow top end 22, as is illustrated.

When the braided sleeve 14 is compressed along its length with a compression force, the braided sleeve 14 shortens and widens. As a braided sleeve body 14 shortens and widens, it stores energy. As soon as the compression force is removed, the braided sleeve body 14 will spring back into its uncompressed state, therein releasing the stored energy. In Figs. 1 and 2, the braided sleeve 14 is shown in its uncompressed state. In its uncompressed state, the braided sleeve 14 has its maximum length L1 between its bottom end 20 and top end 22. In Fig. 3, the braided sleeve 14 is shown in its optimally compressed condition. In its optimally compressed condition, the braided sleeve 14 has a shorter length L2 and a maximum width W2.

When in its optimally compressed condition, the braided sleeve 14 is not over-compressed, so as to be in danger of collapsing and folding into itself. However, the braided sleeve 14 is compressed enough to store the spring energy needed to propel the pop-up toy assembly 10 into the air.

The head 12 of the pop-up toy assembly 10 has an inverted cup shape. That is, the head 12 is hollow and has an open bottom 24. The head 12 has a top surface 26. The top surface 26 is preferably curved to assist in the sliding of a finger off the

top surface 26 during the launching of the pop-up
toy assembly. A peripheral wall 28 extends
downwardly from the top surface 26, therein defining
an interior compartment 30. The interior compartment
5 30 is only accessed through the open bottom 24,
wherein the open bottom 24 is defined by the bottom
rim 32 of the peripheral wall 28. The interior
compartment 30 has an interior depth D1 and an
interior diameter D2. In the shown embodiment, the
10 head 12 has a simple cylindrical shape. It should be
understood that the exterior of the head 12 can be
formed into many complex shapes, such as toy
character shapes.

The top end 22 of the braided sleeve 14 is
15 connected to the head 12 of the pop-up toy assembly
inside the interior compartment 30. The top end
22 of the braided sleeve 14 is coupled to the center
of the head 12 so that the braided sleeve 14 is
concentric with the interior compartment 30 as it
20 extends down the center of the interior compartment
30.

From Fig. 3, it can be seen that the depth D1
of the interior compartment 30 is sufficient to
receive the length L2 of the braided sleeve 14 when
25 it is optimally compressed. Furthermore, the
interior diameter D2 of the interior compartment 30

is only slightly larger than the maximum width W2 of the braided sleeve 14 when optimally compressed. Consequently, it will be understood that when the pop-up toy assembly 10 is placed on an underlying surface 34 and the head 12 is pressed down against the braided sleeve 14, the braided sleeve 14 compresses into the interior compartment 30. The bottom rim 32 of the head 12 contacts the underlying surface 34 just as the braided sleeve 14 reaches its optimal compression. Since the bottom rim 32 touches the underlying surface 34, the entire compressed braided sleeve 14 passes inside the interior compartment 30. The braided sleeve 14, therefore, cannot be further compressed no matter how much downward force is applied to the head 12.

As stated, the interior diameter D2 of the internal compartment 30 is only slightly larger than the maximum width W2 of the braided sleeve 14 when optimally compressed. The interior diameter D2 of the interior compartment 30 is preferably no more than ten percent wider than the maximum width W2 of the braided sleeve 14 in its compressed state. As such, it will be understood that the presence of the braided sleeve 14 in the interior compartment 30 physically prevents the braided sleeve 14 from twisting or bulging laterally to any significant

degree. Consequently, the compression of the braided sleeve 14 into the internal compartment 30 ensures that the braided sleeve 14 will be compressed only to its optimal compression point. Furthermore, it
5 ensures that the braided sleeve 14 will compress vertically and will not bulge in an asymmetrical manner.

The head 12 of the pop-up toy assembly 10 is preferably made from a polymer foam, synthetic
10 rubber, or another soft, lightweight material. As the pop-up toy assembly 10 pops into the air, the use of a soft, lightweight material for the head 12 prevents the head 12 from causing any impact injuries as the toy assembly 10 flies. Furthermore,
15 the use of soft, lightweight material enables the pop-up toy assembly 10 to pop up a significant distance into the air.

The term "head" is intended to include any molded object that rests upon the braided sleeve 14
20 and should not necessarily be considered only the head of a figure having facial features. For example, if the pop-up toy assembly 10 were configured as a rocket, the "head" may be considered the nose cone at the top of the rocket.

25 Referring to Fig. 4 and Fig 5, in conjunction with Fig. 3, it can be seen that in order to operate

the pop-up toy assembly 10, the bottom end 20 of the braided sleeve 14 is placed on the underlying surface 34. A compression force is applied downwardly to the head 12 of the pop-up toy assembly 10. As the compression force builds, the braided sleeve 14 shortens and expands, therein storing energy. The braided sleeve 14 compresses into the interior compartment 30 within the head 12. The interior compartment 30 prevents the braided sleeve 14 from over compression. The interior compartment 30 also prevents the braided sleeve 14 from laterally buckling.

In Fig. 5, it can be seen that once the compression force is released, the braided sleeve 14 rapidly returns to its original uncompressed state. This drives the head 12 upwardly with enough force to cause the pop-up toy assembly 10 to snap back to its uncompressed state and fly away from the flat underlying surface 34.

It will be understood that the embodiment of the present invention that is illustrated and described is merely exemplary and that a person skilled in the art can make many changes to the shown embodiment without departing from the intended scope of the invention. For instance, in the illustrated embodiment, the pop-up toy assembly 10

is shown having a simple cylindrical head 12. It
should be understood that the pop-up toy assembly 10
can have many other shapes, such as a rocket ship,
mushroom, or flower. Thus, the pop-up toy assembly
5 10 can be shaped as a character or any other object
as a matter of design choice. All such variations,
modifications, and alternate embodiments are
intended to be included within the scope of the
present invention as defined by the claims.

WHAT IS CLAIMED IS

1. A pop-up toy assembly comprising:

a head having a bottom surface, wherein an internal compartment is disposed in said head that is open at said bottom surface; and

a braided sleeve having a top end and a bottom end, said braided sleeve being selectively compressible between an uncompressed state and a shorter compressed state, wherein said top end of said braided sleeve attaches to said head within said internal compartment, wherein said braided sleeve extends from said bottom surface of said head when in said uncompressed state and completely fits within said internal compartment when in said compressed state.

2. The assembly according to claim 1, wherein said braided sleeve and said internal compartment are concentric.
3. The assembly according to any one of claims 1 to 2, wherein said braided sleeve is plastic.
4. The assembly according to any one of claims 1 to 3, wherein said braided sleeve stores enough spring energy when in said compressed state to propel said assembly into flight when released.

5. The assembly according to claim 2, wherein said internal compartment has an internal diameter that is no more than ten percent wider than said braided sleeve when said braided sleeve is in said compressed state.
6. The assembly according to any one of claims 1 to 5, wherein said head is molded of plastic foam.
7. The assembly according to any one of claims 1 to 5, wherein said head is molded of a lightweight polymer.
8. The assembly according to any one of claims 1 to 7, wherein said internal compartment prevents said braided sleeve from bending laterally when said braided sleeve is in said compressed state.

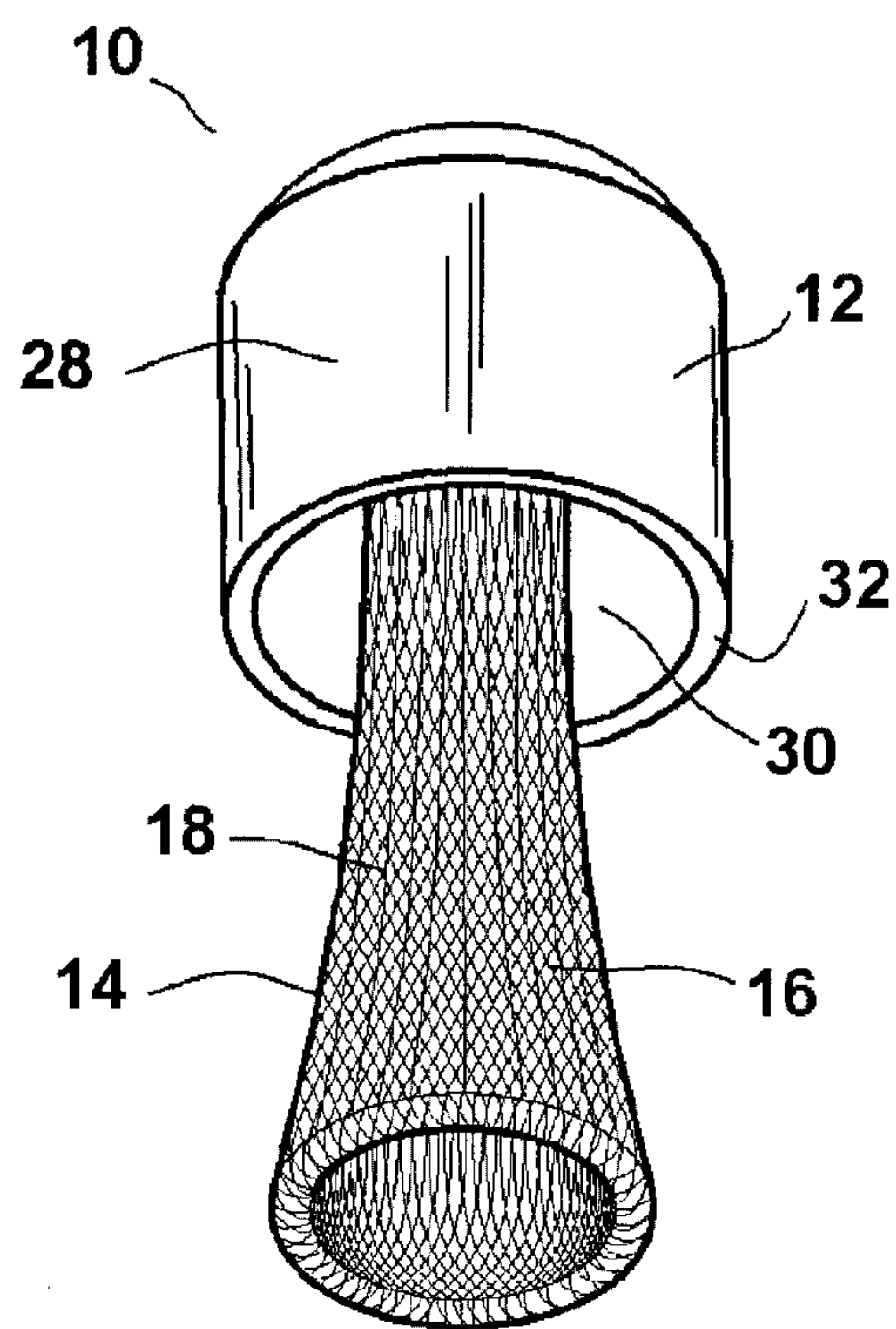


FIG. 1

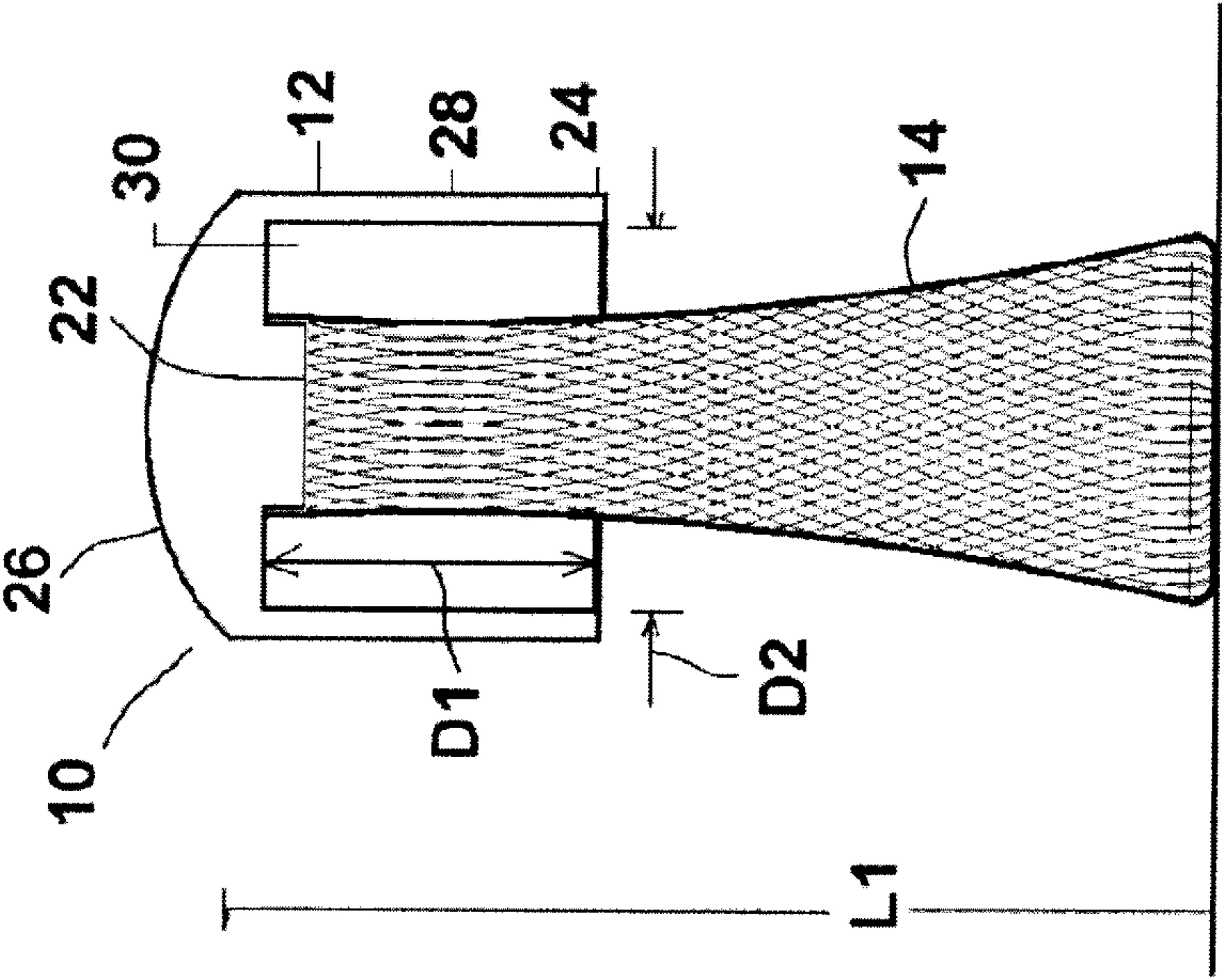


FIG. 2

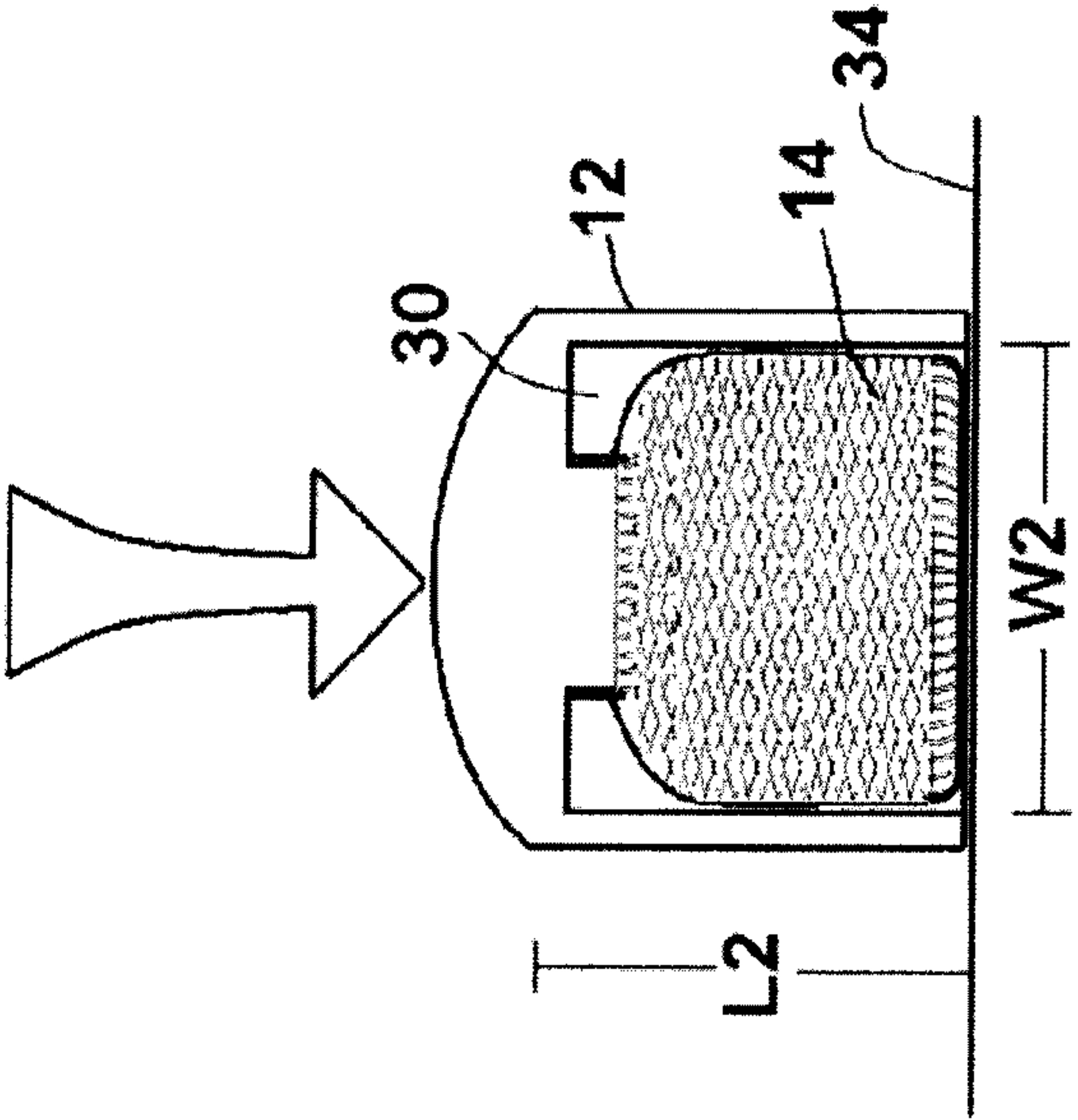


FIG. 3

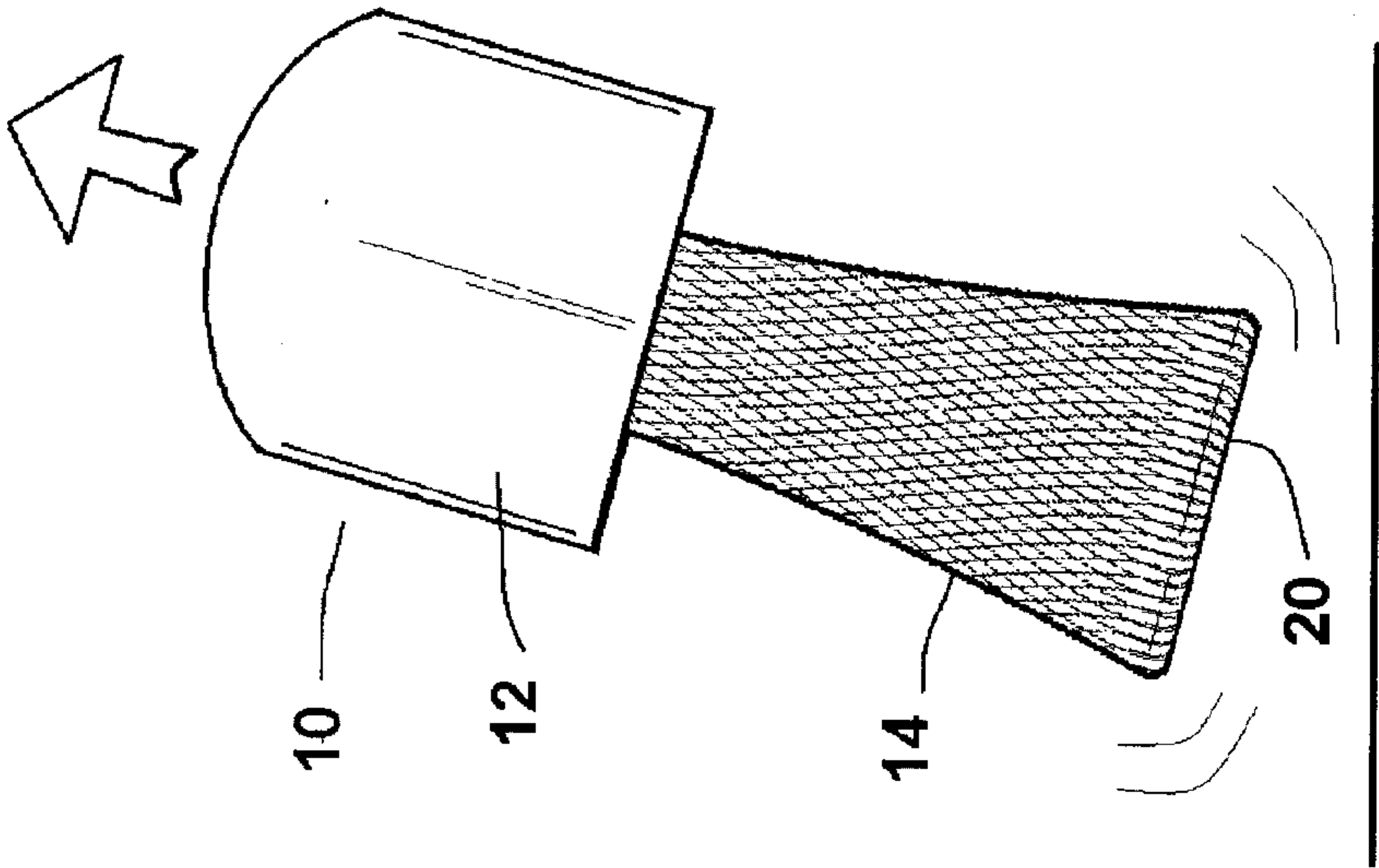


FIG. 5

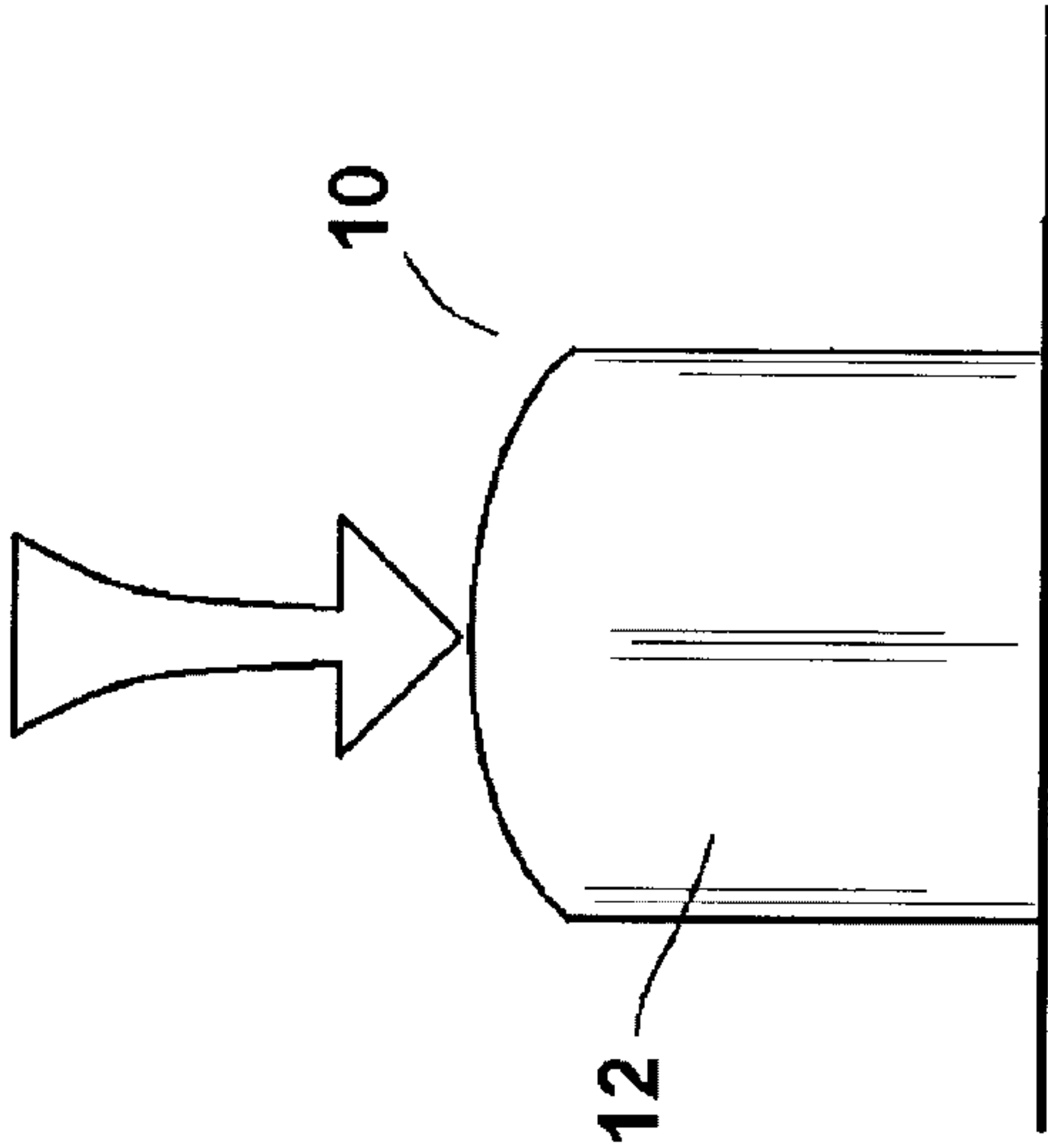


FIG. 4

