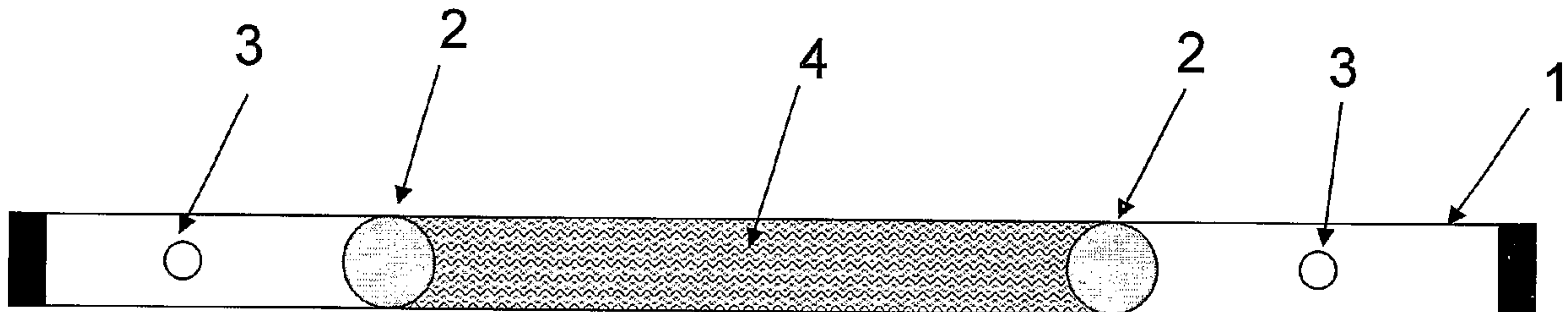




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(54) Titre : RECIPIENT ALLONGE DE DISTRIBUTION DE FLUIDES SANS PLONGEUR AVEC PISTON INTEGRE
(54) Title: PLUNGERLESS ELONGATED FLUID DISPENSING CONTAINER WITH INTEGRAL PISTON



(57) Abrégé/Abstract:

A container for viscous substances having an elongated housing (1), one or more piston (2), and one or more openings (3) where the one or more pistons may slide within the elongated housing to articulate the extraction of the viscous substance.



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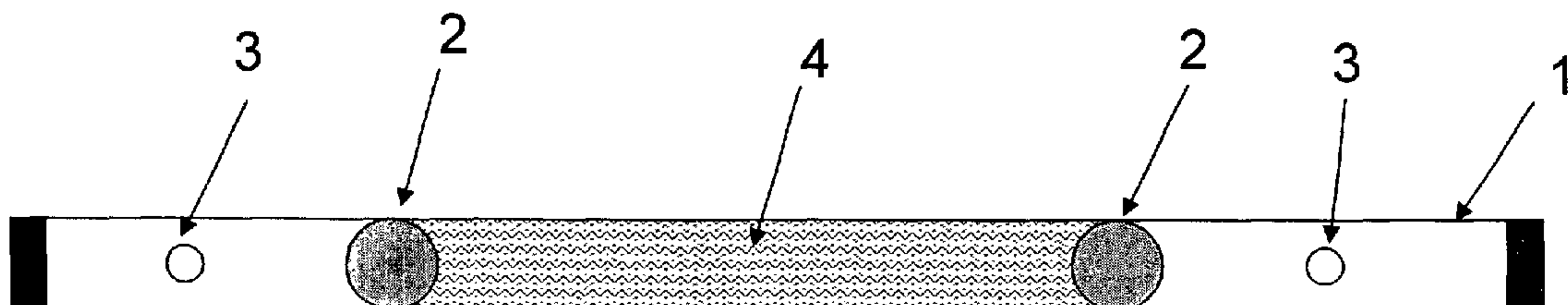
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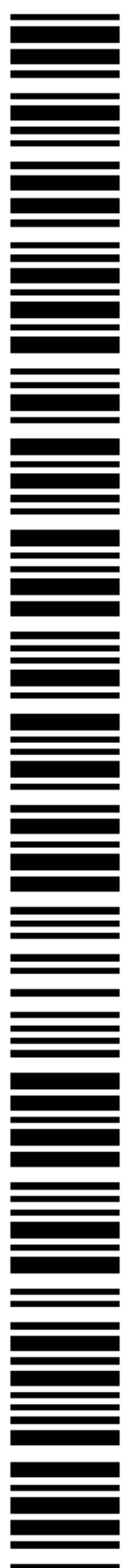
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(54) Title: PATENT APPLICATION OF GARRY TSAUR FOR CONTAINER



(57) Abstract: A container for viscous substances having an elongated housing (1), one or more piston (2), and one or more openings (3) where the one or more pistons may slide within the elongated housing to articulate the extraction of the viscous substance.



WO 03/089029 A1

PLUNGERLESS ELONGATED DISPENSING CONTAINER WITH INTEGRAL PISTON

BACKGROUND-FIELD OF INVENTION

The present invention relates to a container for storing viscous substances and is easily transportable. The viscous substances contained within the container can be extracted easily and completely without using any tools and without contact with the user.

BACKGROUND-DESCRIPTION OF RELATED ART

Containers that enclose viscous substances to be stored and transported are often inconvenient to use and most requires an applicator or other tools to extract the viscous substance. One conventional design utilizes a soft container that can be squeezed to extract the content through an opening that is generally sealed with a screwed-on cap. This design requires that the user first unscrew the cap to expose the opening and then apply pressure to the body of the container to force the content out through the opening. This design does not allow complete extraction of the content of the container due to the fact that as pressure is

such that, as the pump mechanism is operated, the opening would open to allow the content to be extracted. This design is expensive to manufacture, and requires many small parts to be assembled.

5

SUMMARY OF THE INVENTION

The present invention is a container that stores viscous substances in a sealed environment and is easily transportable. The contents of the container can be easily extracted completely without any tools or contact with the user.

10

The present invention is an elongated container with one or more opening near its ends and with one or more piston with approximately the same profile and dimension as the cross sectional profile of the interior of the elongated housing enclosed in the container that will slide along the length of the elongated housing when urged and extract the contents of the container completely.

15

BRIEF DESCRIPTION OF THE DRAWINGS

20

Figure 1 shows the preferred embodiment of the container with two openings, one near each end of the elongated housing, and two pistons enclosing a viscous substance.

Figure 2 shows another embodiment of the container with two openings that are sealed with covers, one near each end of the elongated housing, and two pistons enclosing a viscous substance.

Figure 3 shows another embodiment of the container with one opening near one end of the elongated housing and a piston enclosing a viscous substance against the unopened end of the elongated housing with a scoring near the unopened end.

Figure 4 shows another embodiment of the container with one opening that is
5 covered near one end of the elongated housing and a piston enclosing a viscous substance against the unopened end of the elongated housing with a scoring near the unopened end.

Figure 5 shows another embodiment of the container with two openings, one near each end of the elongated housing, and two pistons located at the same location as
10 the openings and sealing the openings, enclosing a viscous substance.

Figure 6 shows the position of the pistons after they are urged away from the openings to extract the contents of the elongated housing.

Figure 7 shows another embodiment of the container with two openings, one near each end of the elongated housing, and two pistons retained in a retained position
15 by restrictor and enclosing a viscous substance.

Figure 8 shows the position of the pistons after they are urged away from their retained position to extract the contents of the elongated housing.

Figure 9 shows another embodiment of the container with two openings that are covered, one near each end of the elongated housing, and two pistons retained in a
20 retained position by restrictor and enclosing a viscous substance.

Figure 10 shows the position of the pistons after they are urged away from their retained position to extract the contents of the elongated housing.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

Figure 1 shows the preferred embodiment of the container. The container has an elongated housing 1 with two ends. An opening 3 is located near each of the two ends.
5 Two pistons 2 are enclosed within the elongated housing 1 with approximately the same profile and dimension as the interior profile and dimension of the elongated housing 1 and located between the two openings 3. The two pistons 2 enclose and seal a viscous substance 4 between them within the elongated housing 1. The viscous substance 4 is sealed within the elongated housing 1 until the pistons 2 are urged either
10 by air pressure or physical force to move from their initial position.

The user may simply cover one of the opening 3 with their finger and apply pressure to the air chamber in the elongated housing 1 under the opening 3 at one end to generate an air pressure that will urge the pistons 2 to slide toward the other opening 3 at the opposite end of the elongated housing 1. Since fluids are incompressible, the
15 viscous substance 4 will slide along the elongated housing 1 at the same rate and distance as the pistons 2. Once the piston 2 at the opposite end of the elongated housing 1 slides pass the opening 3 at the opposite end of the elongated housing 1, the viscous substance 4 will exit through the opening 3 at the opposite end of the elongated housing 1 for application. The piston 2 will also scrape the interior surfaces of the elongated
20 housing 1 to completely extract all viscous substances 4 as it slides along the elongated housing 1. The user may also simply apply physical force by squeezing one end of the elongated housing 1 and physically push the piston 2 to slide toward the other end of the elongated housing 1 to achieve the same result.

Figure 2 shows another embodiment of the container of figure 1 wherein each of the two openings 3 of the preferred embodiment is covered with a cover 5. The cover 5 will further seal the air chambers under the openings 3 to prevent contaminants from entering into the elongated housing 1 and result in a completely sealed elongated housing 1.

Figure 3 shows another embodiment of the container. The container has an elongated housing 1 with two ends. An opening 3 is located near one end of the elongated housing 1. A piston 2 is enclosed within the elongated housing 1 with approximately the same profile and dimension as the interior profile and dimension of the elongated housing 1 and located near the same end as the opening 3. The piston 2 enclose and seal a viscous substance 4 between the piston 2 and the other end of the elongated housing 1 without any openings but with a scoring 6 such that the elongated housing 1 can be broken open at the scoring 6 when bent. The viscous substance 4 is sealed within the elongated housing 1 until the elongated housing 1 is broken open at the scoring 6 and the piston 2 is urged either by air pressure or physical force to move from its initial position to force the viscous substance 4 out of the elongated housing 1.

Another variation of the embodiment shown in figure 3 utilizes a pressure sensitive opening instead of a scoring 6 such that when the piston 2 is urged either by air pressure or physical force to move from its initial position to force the viscous substance 4 against the other end of the elongated housing 1 that is sealed with the pressure sensitive opening, the pressure sensitive opening will open due to the resulting pressure and allow extraction of the viscous substance 4 from the container. The pressure sensitive opening may be created by sealing the end of the elongated housing 1 with just sufficient force to prevent the viscous substance 4 from leaking from the

elongated housing 1 but will break the seal if a predetermined amount of pressure is applied to the pressure sensitive seal.

Figure 4 shows another embodiment of the container of figure 3 wherein the opening 3 is covered with a cover 5. The cover 5 will further seal the air chamber under the opening 3 to prevent contaminants from entering into the elongated housing 1 and result in a completely sealed elongated housing 1.

Figure 5 shows another embodiment of the container. The container has an elongated housing 1 with two ends. An opening 3 is located near each of the two ends. Two pistons 2 are enclosed within the elongated housing 1 with approximately the same profile and dimension as the interior profile and dimension of the elongated housing 1 with one piston 3 located under each of the openings 3 thereby sealing the openings 3. The two pistons 2 enclose and seal a viscous substance 4 between them within the elongated housing 1. The viscous substance 4 is sealed within the elongated housing 1 until the pistons 2 are urged either by air pressure or physical force to move from their initial position as shown in figure 6. When the user squeezes either end of the elongated housing 1, the resulting pressure will urge the pistons 3 to slide away from their initial position toward the other end of the elongated housing 1. Since fluids are incompressible, the viscous substance 4 will slide along the elongated housing 1 at the same rate and distance as the pistons 2. Once the piston 2 at the opposite end of the elongated housing 1 slides away from the opening 3 at the opposite end, the viscous substance 4 will exit through the opening 3 at the opposite end of the elongated housing 1 for application. The piston 2 will also scrape the interior surfaces of the elongated housing 1 to completely extract all viscous substances 4 as it slides along the elongated housing 1.

Figure 7 shows another embodiment of the container. The container has an elongated housing 1 with two ends. An opening 3 is located near each of the two ends. Two pistons 2 are enclosed within the elongated housing 1 with a smaller dimension than the interior dimension of the elongated housing 1 and retained at their predetermined locations by a restrictor 7 and located between the two openings 3. The two pistons 2 enclose and seal a viscous substance 4 between them within the elongated housing 1. The viscous substance 4 is sealed within the elongated housing 1 until the pistons 2 are urged either by air pressure or physical force to move from their predetermined position at the restrictor 7. Once the pistons 2 separate from the restrictor 7 they will allow free movement of the viscous substance 4 within the elongated housing 1. As shown in figure 8, depending on the orientation of the container, the viscous substance 4 may exit from either opening 3.

Figure 9 shows another embodiment of the container of figure 7 wherein each of the two openings 3 is covered with a cover 5. The cover 5 will further seal the air chambers under the openings 3 to prevent contaminants from entering into the elongated housing 1 and results in a completely sealed elongated housing 1. Furthermore, the resulting sealed air chamber may be pressurized to a positive pressure or a negative pressure such that when one cover 5 is removed, the air pressure, whether positive or negative, in the remaining sealed air chamber will urge the pistons 2 to slide away from their initial position at the restrictors 7 and allow free movement of the viscous substance 4 within the elongated housing 1 and exit through the opening 3 as shown in figure 10.

What is claimed is:

1. A container, comprising:

an elongated housing with at least one opening;

5 at least one piston enclosed within said elongated housing with approximately the same profile and dimension as a cross sectional profile of an interior of the elongated housing, said at least one piston sliding along the length of the elongated housing when urged and separating an interior volume of the elongated housing into a plurality of air chambers;

10 wherein the at least one piston retains a viscous substance within said elongated housing, separating the viscous substance from at least one chamber under the at least one opening, and when the at least one piston is urged to move from an initial position thereof, the viscous substance enters the at least one air chamber and exits through the at least one opening in the elongated housing;

15 wherein said at least one opening comprises an opening located near one end of said elongated housing, the elongated housing further having a scoring near a second end thereof, the container being breakable open at the scoring to allow the viscous substance contained within said elongated housing to be forced out of the container by the piston enclosed within said elongated housing after the piston is urged to move from an initial position thereof.

20 2. The container as in claim 1, wherein the at least one opening is covered with a cover.

3. A container, comprising:

an elongated housing with at least two openings; and

25 at least two pistons enclosed within said elongated housing with approximately the same profile and dimension as a cross sectional profile of an interior of the elongated housing, said pistons sliding along the length of the elongated housing when urged and separating an interior volume of the elongated housing into a plurality of air chambers;

30 wherein the pistons retain a viscous substance within said elongated housing, separating the viscous substance from a chamber under a first one of the openings, and when the pistons are urged to move from an initial position thereof, the viscous substance enters the chamber under the first one of the openings and exits through the first one of the openings;

wherein the first opening is located near one end of said elongated housing and a second, pressure sensitive, of the openings is located near a second end thereof, wherein the

container is able to be forced open at the second pressure sensitive opening to allow the viscous substance contained within said elongated housing to be forced out of the container by the pistons enclosed within said elongated housing after they are urged to move from their initial position.

5

4. The container as in claim 3, wherein the first opening is covered with a cover.

5. A container, comprising:

an elongated housing with at least two openings; and

10 at least two pistons enclosed within said elongated housing with approximately the same profile and dimension as a cross sectional profile of an interior of the elongated housing, said pistons sliding along the length of the elongated housing when urged and separating an interior volume of the elongated housing into a plurality of air chambers;

wherein the pistons retain a viscous substance within said elongated housing,
15 separating the viscous substance from at least one chamber under a first one of the openings, and when the pistons are urged to move from an initial position thereof, the viscous substance enters the chamber under the first one of the openings and exits through the first one of the openings;

each piston being retained at a predetermined location along a length of the elongated
20 housing by a restrictor that reduces an internal cross sectional area of the elongated housing at the predetermined location, wherein, when at least one piston is urged to move from the initial position thereof, the viscous substance exits through at least one of the openings;

wherein the first opening is covered with a cover;

wherein the air chambers are positively pressurized by air pressure, and, after the
25 cover of the first opening is removed, the air pressure in a corresponding chamber urges the first one of the pistons to move from the initial position thereof away from the corresponding chamber and allows the viscous substance to exit through the first opening with the cover removed.

30 6. The container as in claim 5, the chambers in the elongated housing being negatively pressurized by a partial vacuum, wherein, after the cover of the first opening is removed, the vacuum in the corresponding chamber urges the first piston to move from the initial position thereof toward the first opening and allows the viscous substance to exit through the first opening with the cover removed.

7. A container, comprising:

an elongated housing with two sealed ends, and with at least one opening, said at least one opening comprising one first opening located on a wall of said elongated housing near a
5 first one of said sealed ends; and

at least two pistons enclosed within said elongated housing with approximately the same profile and dimension as a cross sectional profile of an interior of the elongated housing, said pistons sliding along the length of the elongated housing when urged and separating an interior volume of the elongated housing into a first chamber located between a
10 first one of said pistons and said first one of said sealed ends and a second chamber located between said second one of said pistons and a second one of said sealed ends;

wherein the pistons retain a viscous substance, within said elongated housing, in said second air chamber between the second one of the pistons and said second one of said sealed ends; and when the second one of the pistons is urged, under pressure applied to the first
15 opening near the first one of said sealed ends, from an initial position thereof towards said second one of said sealed ends, the second one of the pistons forces the viscous substance towards said second one of said sealed ends.

8. The container as in claim 7, wherein at least the first one of the openings is
20 covered with a cover.

9. The container as in claim 7, said at least one opening comprising a second opening near a second one of said sealed ends, said first piston being located under said first opening and said second piston located under said second opening, wherein, under a pressure
25 resulting from a user squeezing the first sealed end, said first and second pistons slide away from their initial position toward said second sealed end, and when said second piston slides away from said second opening, the viscous substance exits through said second opening.

10. The container as in claim 9, wherein at least one of said first and second
30 openings is covered with a cover.

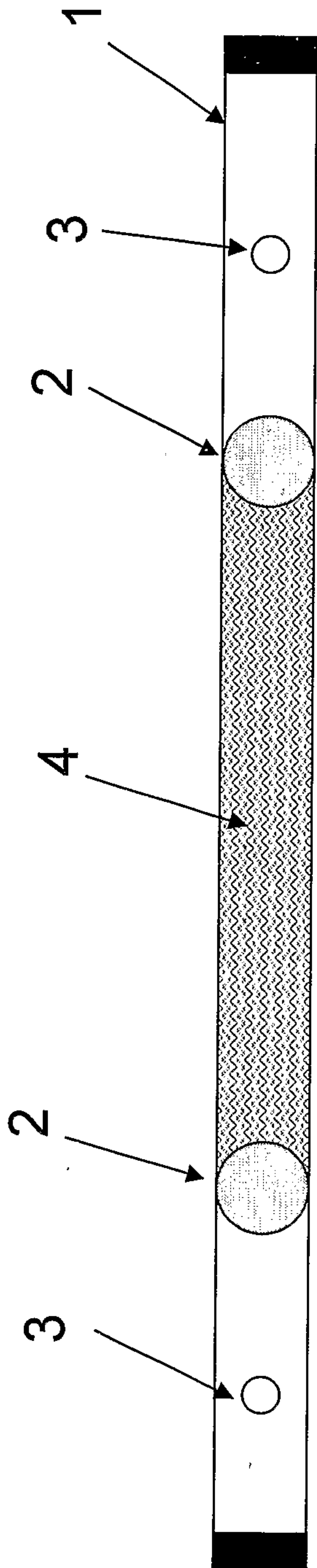


Figure 1

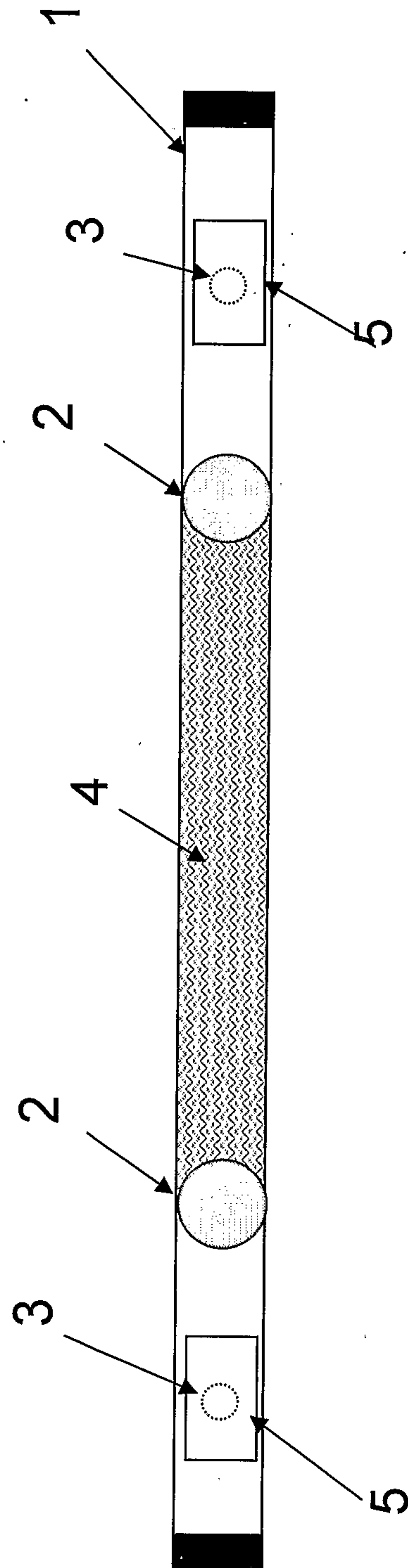


Figure 2

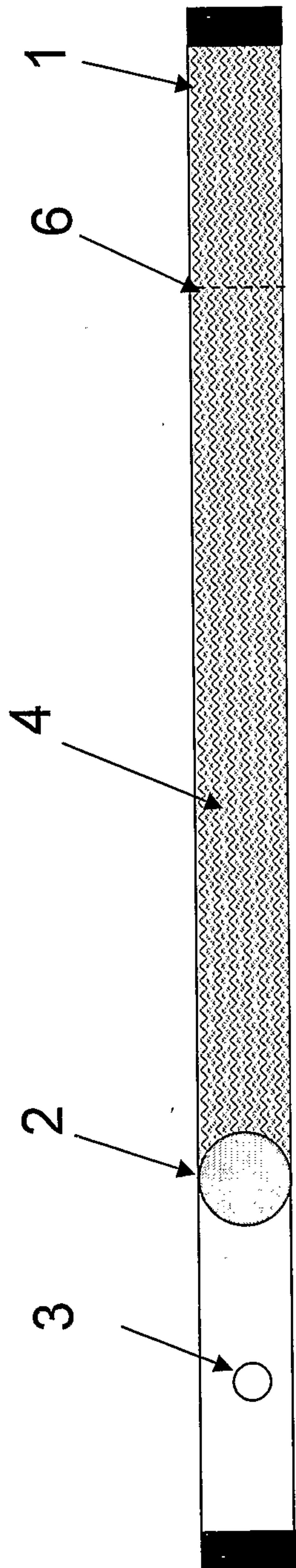


Figure 3

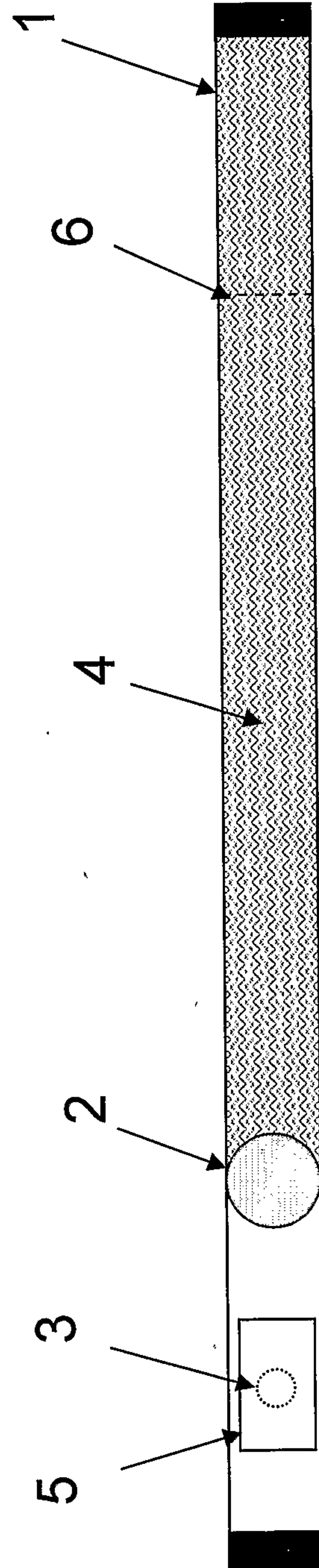


Figure 4

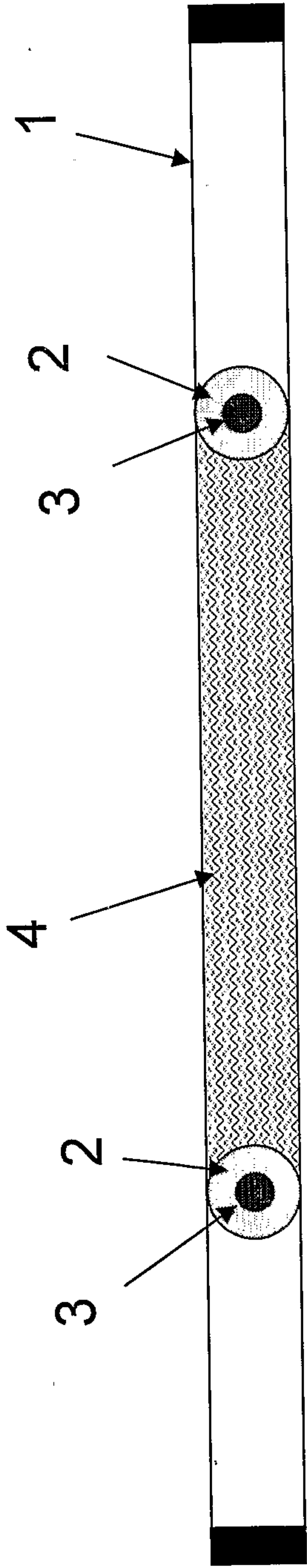


Figure 5

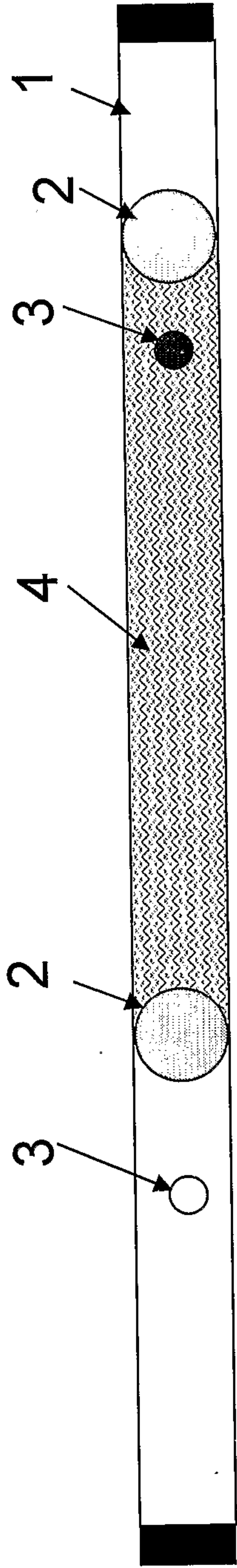


Figure 6

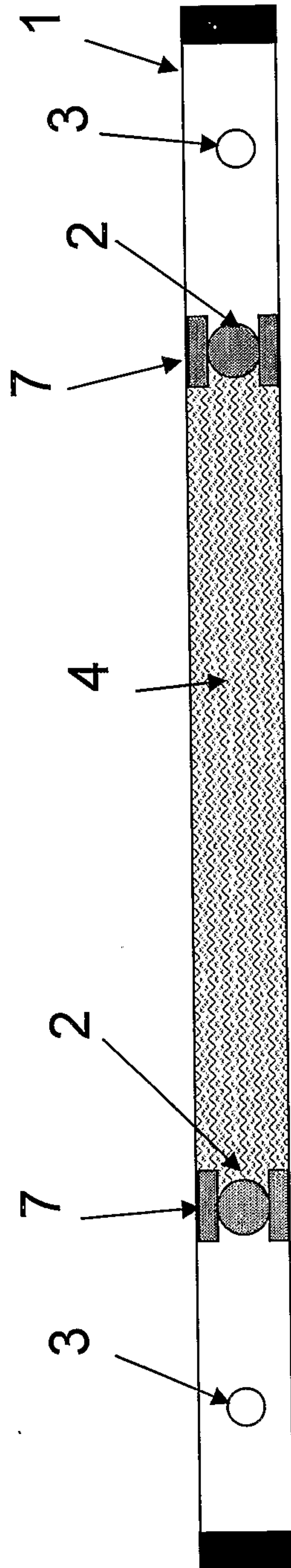


Figure 7

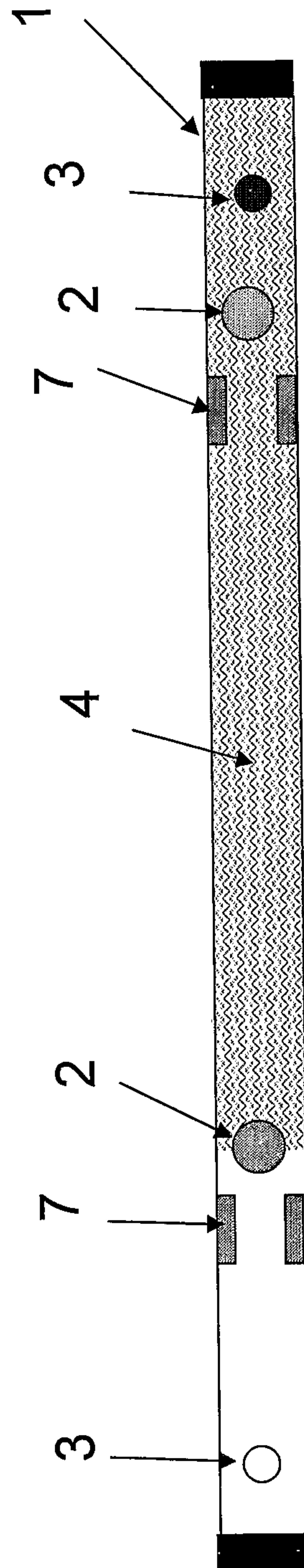


Figure 8

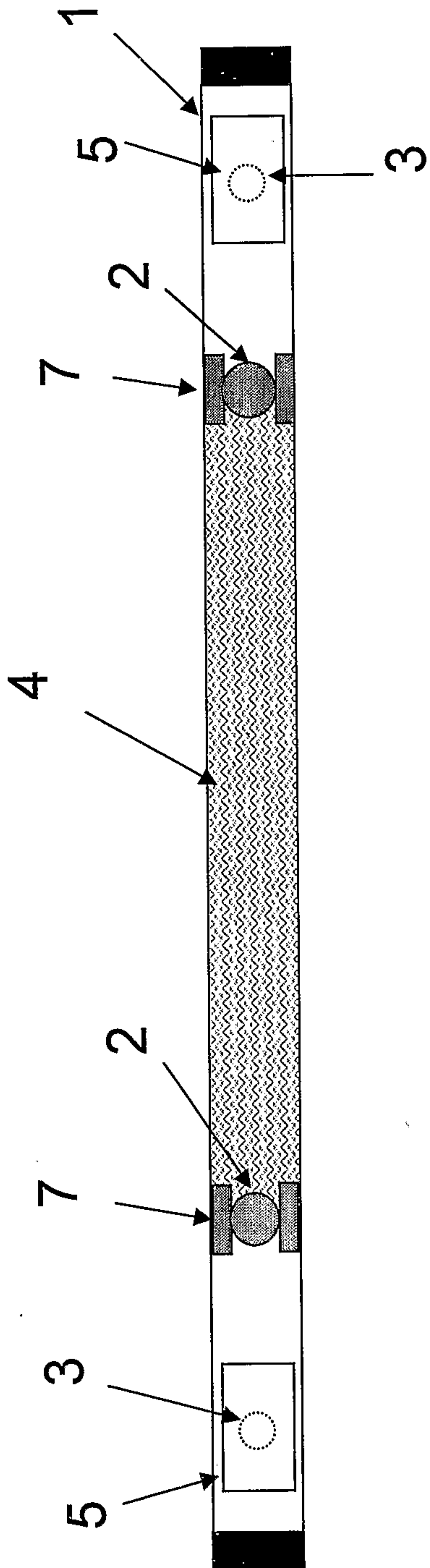


Figure 9

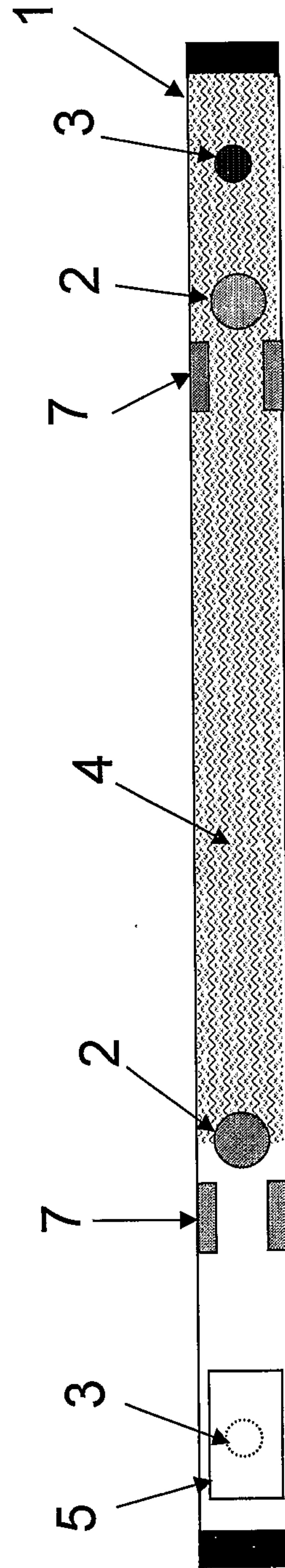


Figure 10

