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⑤④ **Device for exercising pelvic floor muscles.**

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⑤⑥ References cited :
EP-A- 0 088 173
EP-A- 0 198 641
CH-A- 336 941
DE-A- 2 121 790
GB-A- 2 058 571

EP 0 392 854 B1

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Description

This invention relates to a device for exercising pelvic floor muscles.

Without exercise, pelvic floor muscles tend to weaken with age, giving rise to problems with bladder control. In women, this weakening is often exacerbated by childbirth. However, many women have no conscious control of these muscles, and find it very difficult to exercise them properly, in order to strengthen them, without assistance.

One known way of providing assistance is by means of a biofeedback perineometer, comprising a vaginal probe connected to an external unit which provides information about changes in vaginal pressure. This encourages conscious control of the pelvic floor muscles. However, this device is not very pleasant to use, and requires regular attendance at a hospital or clinic as an outpatient. Another known way of assisting in the exercise of the pelvic floor muscles involves the use of a set of devices of identical size but differing mass, and is shown in EP-A-0 198 641. One device is inserted into the vagina, where it can be retained by using the pelvic floor muscles, thus exercising them. Such a device also operates on a feedback principle, as any tendency for it to slip out makes the pelvic floor muscles contract to try to retain it. The device can readily be used at home and is also much pleasanter and easier to use than the perineometer, although frequent attendance to a hospital or clinic will still be required, for the mass to be changed as the muscles strengthen. The main disadvantage of these devices is that they are expensive. Each device is made in two parts, one in brass and one in polymethylacrylate, the mass being varied by changing the proportion of the materials. The two parts must be bonded together, and the brass part coated with a physiologically acceptable material, so that a set of up to nine devices is expensive to produce. Because of the expense, it is unlikely that a woman will be given an unused device each time, and this may well not be acceptable to her, even though the device will have been sterilised.

According to the present invention, a device for exercising pelvic floor muscles by insertion into the vagina, comprises a casing having at least two parts and defining an internal cavity, the parts being movable between an open configuration allowing access to the internal cavity and a closed configuration in which the parts are sealingly connected together, and at least one weight adapted to be removably received in the internal cavity, the arrangement being such that in the closed configuration the casing parts defining the internal cavity are adapted to be fully received in the vagina.

Providing a single casing and a separate weight or weights reduces the cost of producing the device, especially as it is only one item, the casing, which

need be physiologically acceptable. It then becomes feasible to provide an unused casing for each woman, although the weights may be re-used if necessary.

A set of two or more weights may be provided. It is then possible to provide the woman with an appropriate set of weights which enables her to vary the mass of the device herself, as the muscles strengthen. This results in better monitoring of her progress by the woman, and less frequent visits to the hospital or clinic.

Preferably the casing is of plastics material. Conveniently, two casing parts are provided to define the internal cavity, with their external outline shaped to allow ease of use. The parts may be a snap fit. A first part (the lower part in use) is preferably substantially conical, with a rounded tip. The casing may also incorporate a retrieval tag. This may be a separate item, releasably and sealingly connected to the first casing part, or it may be formed integrally with that part. A second part (the upper part in use) may be cylindrical, frusto-conical or even part-spherical.

Where a single weight is used it may have a shape complementary to that of the internal cavity, and where a set is provided the whole set fits together to form a similar complementary shape. The weights of a set are preferably of different masses, so that the mass of the device can be varied by choosing one or more weights. Preferably the set of weights includes a rod onto which the other weights fit.

Some embodiments of the invention are illustrated, by way of example, in the accompanying drawings, in which:-

Figure 1 shows a cross-section through a device for exercising pelvic floor muscles;

Figure 2 is an exploded view of the device of Figure 1;

Figures 3 and 4 are similar to Figure 1, but show modifications; and

Figure 5 is a side view of a further modification.

The device shown in Figures 1 and 2 is adapted to be inserted into the vagina of a woman to exercise the pelvic floor muscles. It comprises a multi-part casing 1 with an internal cavity 2 for receiving one or more weights, in this case a set of weights 3, so that the mass of the device can be varied.

The casing 1 is of a physiologically acceptable plastics material, and is shaped for ease of use. It has three parts 4,5,6 which are releasably and sealingly connected together. The parts 4,5 define the internal cavity 2. The upper part 4 is hollow and of frusto-conical outline, being closed at one end. As its opposite open end it has a groove 7 and projection 8 adapted to engage with a respective projection 9 and groove 10 on an open end of the lower part 5. The two parts 4,5 snap together. The lower part 5 is hollow and substantially conical in outline, with a rounded tip 11 opposite the open end. The tip 11 has an aperture 12 which receives the third part 6, which comprises a re-

trieval tag. The tag 6 has an elongate tail portion 13, and is retained in the lower part 5 by a part-spherical abutment 14, which engages sealingly with the aperture 12.

The set of weights 3 has four brass components, 15,16,17 and 18, which fit together to form a shape corresponding to that of the internal cavity 2. The weight 15 is substantially conical, to fit into the tip 11 of the lower part 5, and has a recess 19 which is adapted to receive part of the component 16, which is a cylindrical rod. The weights 17 and 18 are substantially annular, and fit over the rod 16. The components have different masses, so that one or more of the components can be selected to provide a given mass.

Before use, the casing 1 and weights 3 are sterilised. The tag 6 is then assembled into the lower part 5, an appropriate selection from the set of the weights 3 is made and inserted into the cavity 2, and the upper and lower parts 4,5 are fitted together. The device is then inserted into the vagina of a subject, upper part first. The pelvic floor muscles are exercised by attempting to retain it. The device will normally be left in place for a given length of time, perhaps 10 to 15 minutes, and is then removed by means of the tag 6.

It will usually be necessary for each subject to determine by experiment the appropriate mass which provides the necessary exercise for strengthening the muscles. Normally, up to a certain mass, the device can be retained without any conscious control of the pelvic floor muscles, but for heavier masses conscious control is required. The appropriate mass will usually be the lightest one to require this conscious control. It has been found that, when the device has the appropriate mass, it tends to slip out, and this sensation provides a biofeedback which makes the pelvic floor muscles contract to try to retain it. As the muscles strengthen, heavier masses can be retained.

Once the appropriate mass has been determined initially, the device is used regularly, preferably each day, at home by the subject. The subject can increase the mass herself as the muscles strengthen, simply by snapping the upper and lower parts 4,5 apart, inserting a different selection of weights, and then fitting the parts 4,5 together again. This means that the subject can monitor her progress herself, without needing frequent visits to a hospital or clinic.

Figures 3 to 5 show modifications of the device, in which the shape of the casing 1 is varied in order to suit different subjects. Other variations are of course possible. In Figure 3 the casing 1 has a larger maximum diameter, but uses the same set of weights 3 as in Figure 1. In Figure 3, the upper and lower parts 4,5 are provided with internal ribs 20,21 respectively, with which the weights engage. In a modification, not shown, different sets of weights could be used, with the ribs 20,21 being modified or omitted accordingly.

In Figure 4 the casing 1 and the weights 3 are

modified. The lower part 5 of the casing is the same shape as that of Figure 3, but the retrieval tag 6 is formed integrally with the part 5. The upper part 4 is hemi-spherical. There are five components in the set of weights 3, which has a rod 22 onto which fits all the other components (23 to 26) which are of frusto-conical or cylindrical outline.

In Figure 5 yet another shape of casing 1 is shown, in which the lower part 5 has a shoulder 27, and there is a cylindrical portion 28 on each part adjacent its open end.

Further modifications, not shown, may be made to the casing 1. In particular, different forms of the connection between the parts 4,5 may be used; for example a screw-threaded connection may be provided.

In yet another modification, not shown, the set of weights has fewer or more parts, and may not include the central rod. In an alternative version, not shown, a single weight is used. The shape of the single weight, or of the set, need not be complementary to the internal cavity. The weights may also be of other materials, for example stainless steel, instead of brass.

Claims

1. A device for exercising pelvic floor muscles by insertion into the vagina, characterised in that the device comprises a casing (1) having at least two parts (4, 5) and defining an internal cavity (2), the parts (4, 5) being movable between an open configuration allowing access to the internal cavity (2) and a closed configuration in which the parts are sealingly connected together, and at least one weight (3) adapted to be removably received in the internal cavity (2), the arrangement being such that in the closed configuration the casing parts defining the internal cavity (2) are adapted to be fully received in the vagina.
2. A device according to claim 1, in which the casing (1) is of plastics material.
3. A device according to claim 1 or claim 2, in which the casing (1) has two parts (4,5) defining the internal cavity (2).
4. A device according to claim 3, in which the casing parts (4,5) have a snap fit connection.
5. A device according to any preceding claim, in which a first casing part (5), the lower part in use, is substantially conical, with a rounded tip (11).
6. A device according to any preceding claim, in which the casing (1) incorporates a retrieval tag

- (6).
7. A device according to claim 5 and claim 6, in which the retrieval tag (6) is releasably and sealingly connected to the first casing part (5).
8. A device according to claim 5 and claim 6, in which the retrieval tag (6) is formed integrally with the first casing part (5).
9. A device according to any preceding claim, in which a set (3) of two or more weights is provided.
10. A device according to claim 9, in which the weights of a set are of different masses.
11. A device according to any preceding claim, in which the weight or weights (3) have a shape complementary to that of the internal cavity (2).

Patentansprüche

1. Eine Vorrichtung zum Trainieren von Beckenbodenmuskeln durch Einführung in die Vagina, dadurch gekennzeichnet, daß die Vorrichtung ein Gehäuse (1), das mindestens zwei Teile (4, 5) aufweist und einen Innenhohlraum (2) festlegt, wobei die Teile (4, 5) zwischen einer geöffneten Stellung, in der ein Zugang zum Innenhohlraum (2) möglich ist, und einer geschlossenen Stellung, in der die Teile abdichtend miteinander verbunden sind, bewegbar sind, und mindestens ein Gewicht (3) umfaßt, welches entfernbar in dem Innenhohlraum (2) aufgenommen werden kann, wobei die Anordnung so gewählt ist, daß die den Innenhohlraum (2) festlegenden Gehäuseteile in der geschlossenen Stellung vollständig in der Vagina aufgenommen werden können.
2. Eine Vorrichtung gemäß Anspruch 1, wobei das Gehäuse (1) aus einem Kunststoffmaterial gebildet ist.
3. Eine Vorrichtung gemäß Anspruch 1 oder 2, wobei das Gehäuse (1) zwei Teile (4, 5) aufweist, die den Innenhohlraum (2) festlegen.
4. Eine Vorrichtung gemäß Anspruch 3, wobei die Gehäuseteile (4, 5) eine Einrast- bzw. Schnappverbindung aufweisen.
5. Eine Vorrichtung gemäß einem der vorstehenden Ansprüche, wobei ein erstes Gehäuseteil (5), das im Gebrauch das untere Teil ist, im wesentlichen konisch ist und eine abgerundete Spitze (11) aufweist.

6. Eine Vorrichtung gemäß einem vorstehenden Ansprüche, wobei das Gehäuse (1) einen Rückholstreifen bzw. -stab (6) umfaßt bzw. aufnimmt.
7. Eine Vorrichtung gemäß Anspruch 5 und 6, wobei der Rückholstreifen bzw. -stab (6) lösbar und abdichtend mit dem ersten Gehäuse (5) verbunden ist.
8. Eine Vorrichtung gemäß Anspruch 5 und 6, wobei der Rückholstreifen bzw. -stab (6) integral mit dem ersten Gehäuseteil (5) ausgebildet ist.
9. Eine Vorrichtung gemäß einem der vorstehenden Ansprüche, wobei ein Satz (3) aus zwei oder mehr Gewichten vorgesehen ist.
10. Eine Vorrichtung gemäß Anspruch 9, wobei die Gewichte eines Satzes unterschiedliche Massen aufweisen.
11. Eine Vorrichtung gemäß einem der vorstehenden Ansprüche, wobei das Gewicht oder die Gewichte (3) eine die Form des Innenhohlraums (2) ergänzende bzw. eine dieser angepaßte Form aufweisen.

Revendications

1. Dispositif pour faire faire de l'exercice aux muscles du plancher pelvien moyennant son insertion dans le vagin, caractérisé en ce que le dispositif comporte un boîtier (1) comportant au moins deux parties (4,5) et définissant une cavité interne (2), les parties (4,5) étant déplaçables entre une configuration ouverte permettant l'accès à la cavité interne (2) et une configuration fermée, dans laquelle les parties sont appliquées de façon étanche l'une contre l'autre, et au moins un poids (3) apte à être logé de façon amovible dans la cavité interne (2), l'agencement étant tel que, dans la configuration fermée, les parties du boîtier définissant la cavité interne (2) sont à même d'être entièrement logées dans le vagin.
2. Dispositif selon la revendication 1, dans lequel le boîtier (1) est réalisé en matière plastique.
3. Dispositif selon la revendication 1 ou 2, dans lequel le boîtier (1) comporte deux parties (4,5) définissant la cavité interne (2).
4. Dispositif selon la revendication 3, dans lequel les parties (4,5) du boîtier comportent un système de raccordement à encliquetage.
5. Dispositif selon l'une quelconque des revendica-

tions précédentes, dans lequel une première partie (5) du boîtier, la partie inférieure en cours d'utilisation, est sensiblement conique et comporte une pointe arrondie (11).

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6. Dispositif selon l'une quelconque des revendications précédentes, dans lequel le boîtier (1) contient une languette de retrait (6).
7. Dispositif selon les revendications 5 et 6, dans lequel la languette de retrait (6) est raccordée de façon amovible et étanche à la première partie (5) du boîtier. 10
8. Dispositif selon les revendications 5 et 6, dans lequel la languette de retrait (6) est réalisée d'un seul tenant avec la première partie (5) du boîtier. 15
9. Dispositif selon l'une quelconque des revendications précédentes, dans lequel il est prévu un ensemble (3) de deux ou d'un plus grand nombre de poids. 20
10. Dispositif selon la revendication 9, dans lequel les poids d'un ensemble ont des masses différentes. 25
11. Dispositif selon l'une quelconque des revendications précédentes, dans lequel le ou les poids (3) ont une forme complémentaire de celle de la cavité interne (2). 30

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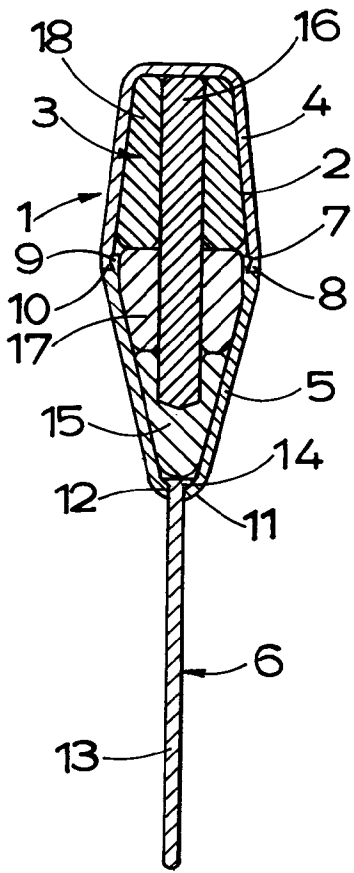


FIG. 1.

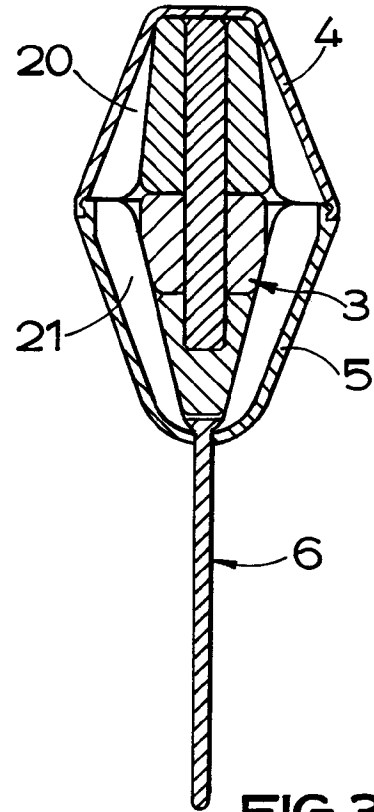
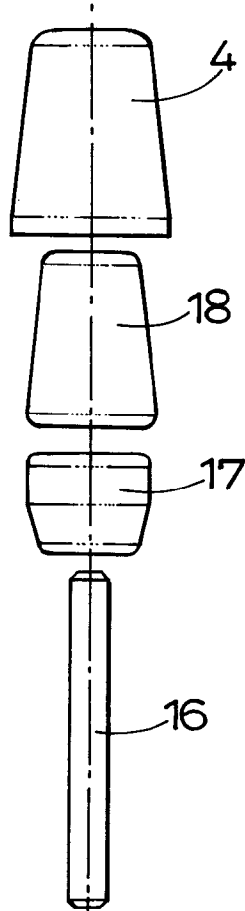


FIG. 3.

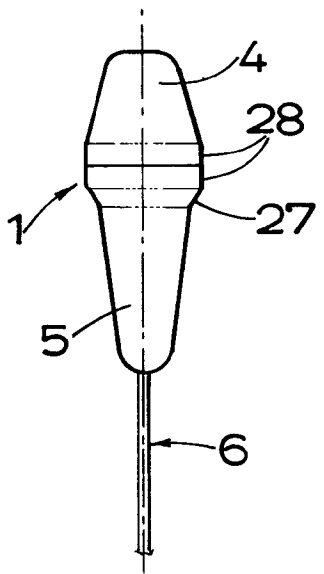


FIG. 5.

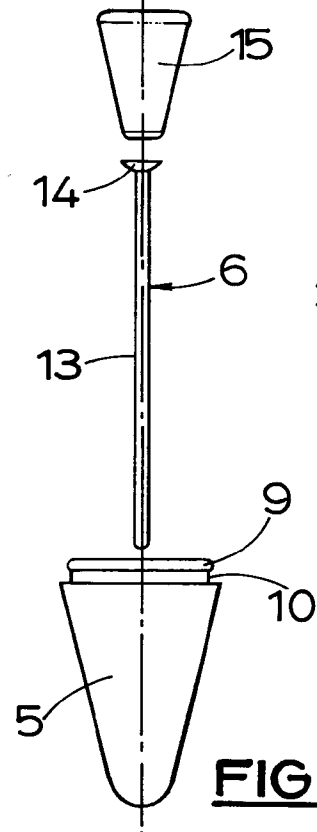


FIG. 2.

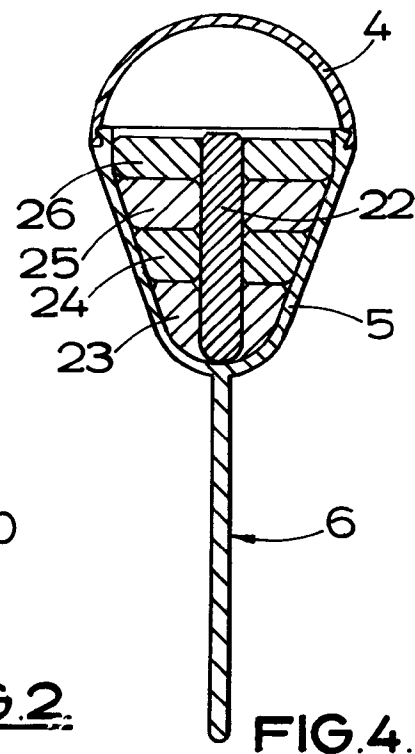


FIG. 4.