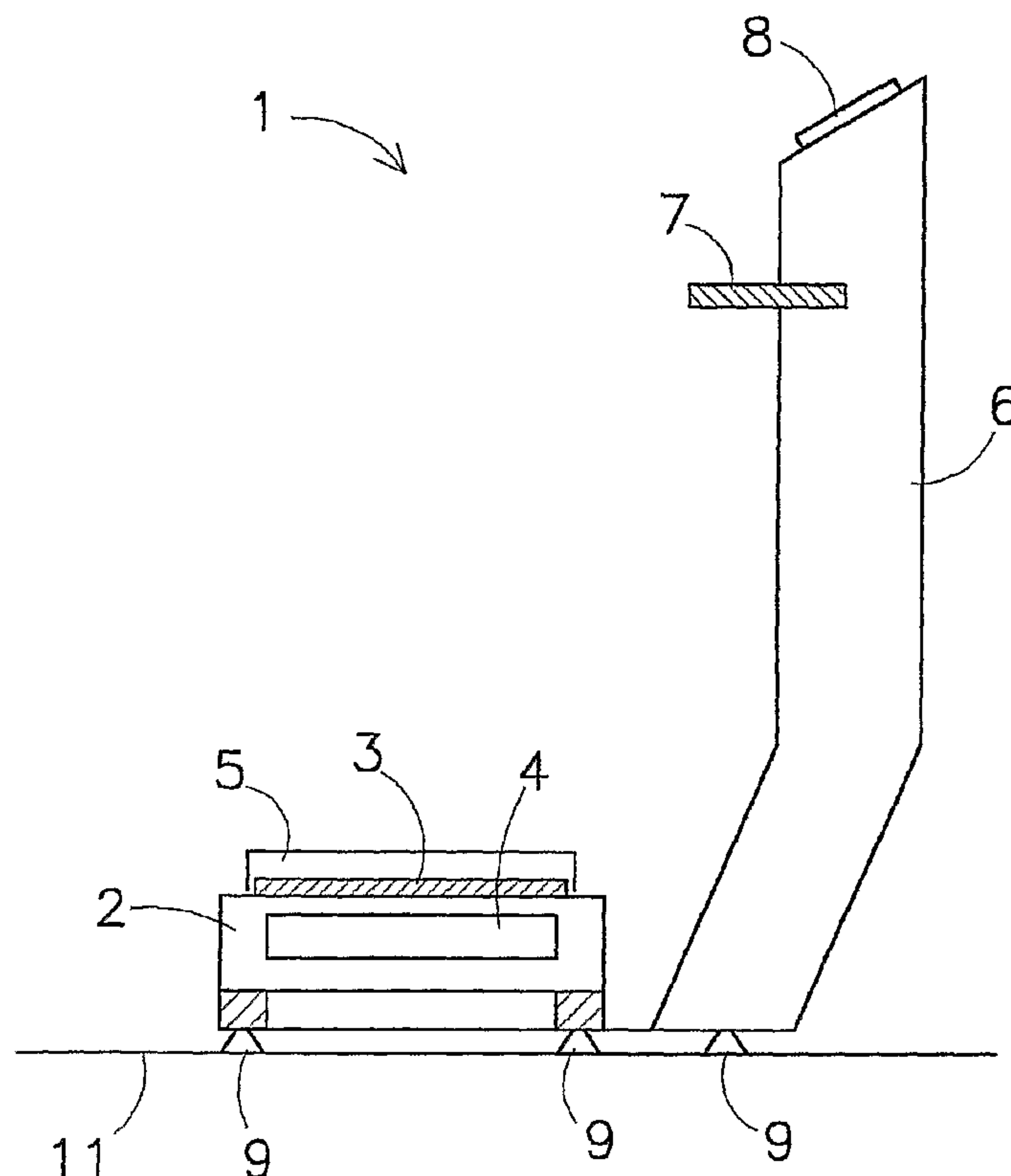




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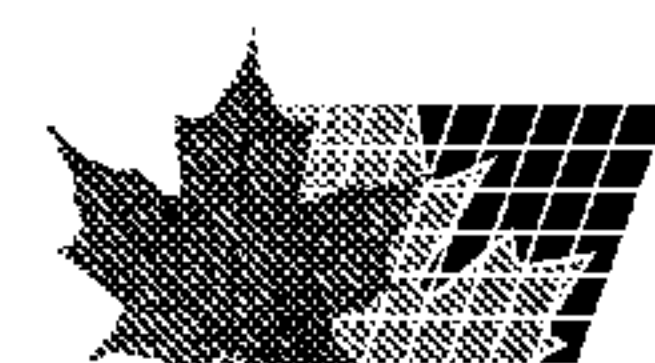
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(54) Title: **FITNESS MACHINE**



(57) **Abrégé/Abstract:**

The present invention relates to a fitness machine (1) for training the body, comprising a frame (2) with a vibrating element (3), a vibration generator (4) operatively connected to the vibrating element (3), and a vibration damper (5), it being possible to set the vibration damper (5) in such a way that said vibration damper can absorb to a selected degree vibration produced by the vibrating element (3), as a result of which a training load desired by the user can be obtained.



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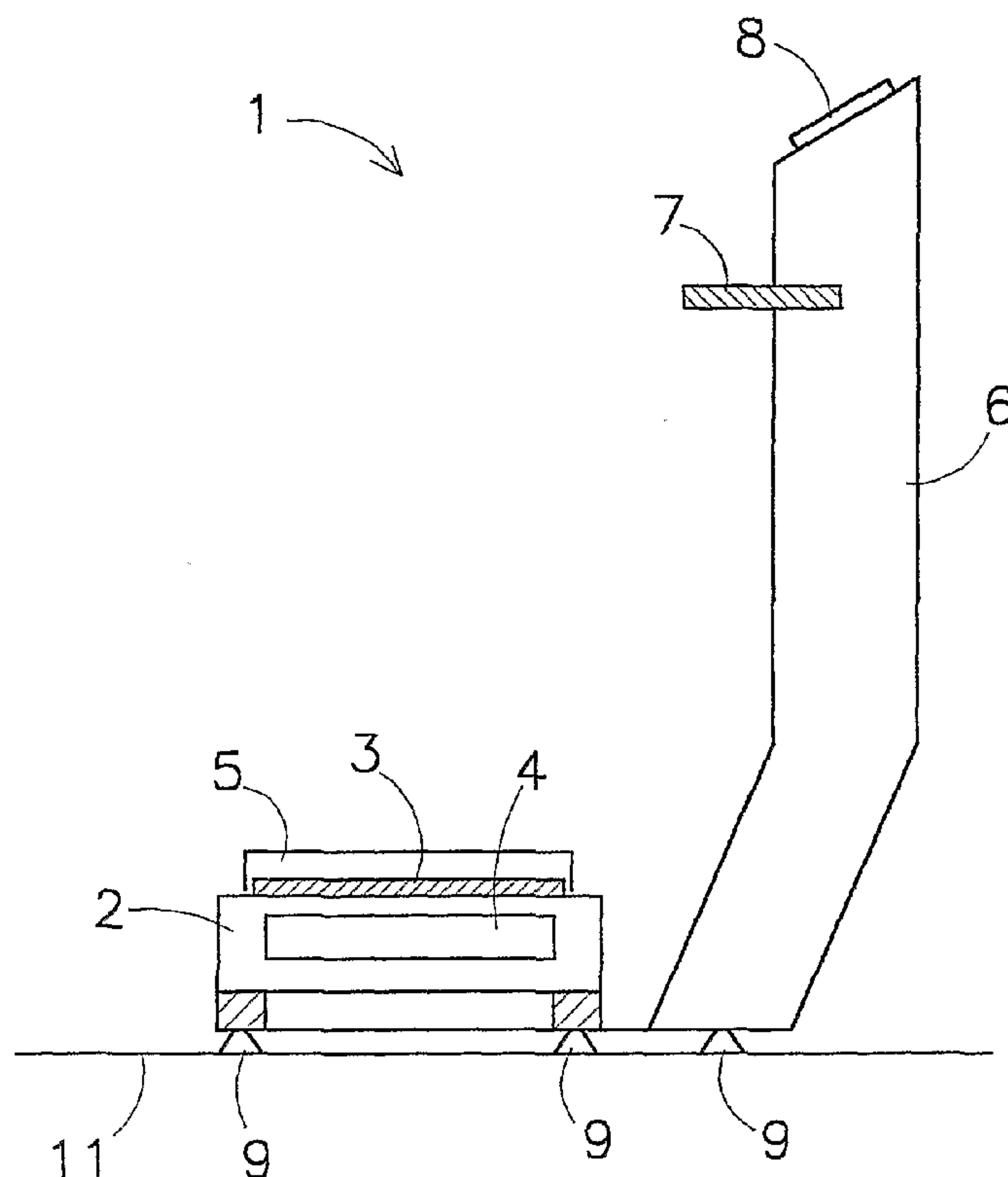
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(54) Title: FITNESS MACHINE



(57) **Abstract:** The present invention relates to a fitness machine (1) for training the body, comprising a frame (2) with a vibrating element (3), a vibration generator (4) operatively connected to the vibrating element (3), and a vibration damper (5), it being possible to set the vibration damper (5) in such a way that said vibration damper can absorb to a selected degree vibration produced by the vibrating element (3), as a result of which a training load desired by the user can be obtained.

WO 2005/000188 A1

WO 2005/000188 A1



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Short title: Fitness machine

The present invention relates to a fitness machine for training the body, comprising a frame with a vibrating element and a vibration generator operatively connected to the vibrating element.

5 Such a fitness machine has been known since back in the nineteen sixties and is often used by such people as top sports players and persons recovering from an injury.

The known fitness machine of the type mentioned in the preamble is put on the market, inter alia, under the name of Power Plate®.

10 This known fitness machine is in the form of a vibrating plate placed on a frame positioned low down, close to the ground, in the case of which a user can go and stand on the vibrating plate, or can assume other positions, during the training. The vibrating plate in this case generates vibrations, which are transmitted as energy to the
15 user's body. The mechanical stimulus generated as a result produces a so-called stretch reflex, which occurs a certain number of times per second depending on the set frequency of the vibrating plate. The result of this is that the muscles are continuously tensed very hard. It has been found that the use of such a vibrating plate produces a
20 very great effect when used for a short training period, and there is less strain on the locomotor system than is the case with conventional training methods. Beneficial effects of vibrating stimulation of the body are described in, inter alia, the Journal of Sports Sciences, 1999, 17, pp. 177-182.

25 A problem in the case of the abovementioned known fitness machine is that the training load cannot be varied to the desired degree, at least not by adapting the movement stroke, i.e. the distance covered in the course of a vibration.

It is an object of the present invention to provide a solution
30 to the abovementioned problem and other problems. A further object of the present invention is to provide a cheap and simple solution to the abovementioned problem and other problems.

To that end, the present invention provides a fitness machine for training the body, comprising a frame with a vibrating element, a
35 vibration generator operatively connected to the vibrating element,

and a vibration damper, it being possible to set the vibration damper in such a way that said vibration damper can absorb to a selected degree vibrations produced by the vibrating element, as a result of which a training load desired by the user can be obtained.

5 The fitness machine according to the invention makes it possible in a very simple and elegant manner to adjust the training load to the requirements of a user. This is particularly advantageous if the fitness machine is being used in, for example, a sports college, where different people with different training loads are
10 using one and the same fitness machine.

 The frame of a fitness machine according to the invention can be designed in many ways. The frame generally serves to accommodate and support the vibrating element and the vibration generator operatively connected to it.

15 The vibration generator of the fitness machine according to the invention can be designed in many ways, so long as the envisaged effect can be produced. The vibration generator generally comprises a vibration-absorbing material, such as, for example, natural or synthetic rubber, or another suitable plastic.

20 The person skilled in the art will quickly understand what is meant by 'training load', namely the difficulty of the exercise being performed on the fitness machine according to the invention.

 If desired, the frame of the fitness machine according to the invention, in addition to having the abovementioned vibration damper,
25 can be provided on the underside with vibration-absorbing means, in order to prevent damage to the floor during use of the fitness machine according to the invention. The person skilled in the art will quickly understand that these vibration-absorbing means are not the same as the vibration damper, since they serve another purpose.

30 According to a preferred embodiment of the fitness machine according to the invention, the vibration damper is at least partially removable.

 This means that part of the vibration-absorbing capacity of the vibration damper can be taken away, as a result of which a different
35 training load can be obtained.

 When the machine is in use the vibration damper is preferably placed between the vibrating element and the user, thus providing an efficient absorption of vibrations.

According to a very advantageous embodiment of the fitness machine according to the invention, the vibration damper comprises one or more plates made of a vibration-absorbing material.

The desired training load can be obtained in a simple manner by removing or adding the desired number of plates. It is preferably possible here for the plates to be attachable to each other, for example by means of Velcro, a snap fastener etc. This prevents one or more of the plates from becoming detached from the fitness machine during use, which is, of course, undesirable.

According to a very elegant embodiment of the fitness machine according to the invention, the vibration damper comprises plates with a differing vibration absorption capacity. The vibration damper preferably comprises three plates, the thickness of which determines the degree of vibration absorption, and in the case of which the thickness ratio of the three plates is approx. 1 : 0.5 : 0.25.

This means that the training load can be selected in a simple manner with great precision, which minimizes the risk of injuries.

The person skilled in the art will understand that the training load of the fitness machine according to the invention is in principle adjustable over a wide range. Very good training results are, however, obtainable if the training load is adjustable between 1 and 6 G, more preferably between 1.6 and 3.2 G, as measured with an accelerator of the type that is used, inter alia, at the Catholic University in Leuven, Belgium, for measuring training loads.

The vibrating element also preferably comprises a plate which extends substantially horizontally.

This enables the user to assume a comfortable position during the training on the fitness machine according to the invention. The plate of the vibrating element can have any desired cross section, such as round, square, rectangular etc.

It has also been found advantageous if the frequency of the vibration generator is adjustable in such a way that the vibrating element can vibrate at a vibration frequency between 20 and 80 Hz, preferably between 25 and 60 Hz. It has been found that the best training results are obtained if the vibration generator is set in such a way that the vibrating element can vibrate at a vibration frequency between 30 and 45 Hz.

It is further preferable in the case of the fitness machine according to the invention for the frame to comprise a support which

the user can grip. The support preferably comprises a display on which training data can be shown.

The present invention also relates to a vibration damper, which is obviously intended for a fitness machine according to the invention.

A major advantage of the vibration damper according to the invention is that, if desired, said vibration damper can also be used with existing fitness machines, in which case little or no alteration has to be made to the existing fitness machine.

The vibration damper preferably comprises at least two plates made of a vibration-absorbing material such as rubber, in particular plates with differing vibration absorption capacity. More preferably, the vibration damper comprises three plates, the thickness of which determines the degree of vibration absorption, and in the case of which the thickness ratio of the three plates is approx. 1 : 0.5 : 0.25.

The invention will be explained in greater detail below with reference to a non-limiting drawing, in which:

Figure 1 shows a diagrammatic cross-sectional view of a fitness machine according to the present invention; and

Figure 2 shows an enlarged cross-sectional view of the vibration damper of the fitness machine according to Fig. 1.

The same reference numerals refer to identical parts.

Fig. 1 shows in perspective a fitness machine for training the body by means of vibrations, which fitness machine in general is indicated by reference numeral 1. The fitness machine 1 comprises a frame 2 with a vibrating element 3 and a vibration generator 4 operatively connected to the vibrating element 3. In the embodiment shown the vibrating element 3 is designed in the form of a plate extending substantially horizontally.

The fitness machine 1 further comprises a vibration damper 5, which can be set in such a way that said vibration damper can absorb vibrations produced by the vibrating element 3 to a selected degree of absorption, as a result of which a training load desired by the user can be obtained. To this end, the vibration damper 5 is designed in the form of three loose vibration-absorbing plates 5a, 5b and 5c (see in particular Fig. 2), the thickness of which determines the degree of vibration absorption. The plates 5a, 5b and 5c are made of, for example, rubber.

In order to permit a precise adjustment of the training load (by a suitable selection of the plates 5a, 5b, 5c or a combination of said plates), the thickness ratio of the plates 5a, 5b and 5c is approx. 1 : 0.5 : 0.25. The person skilled in the art will understand that the plates 5a, 5b and 5c can also have a different thickness. Moreover, the vibration damper 5 can also comprise one plate or two or four or more plates, instead of three.

As can be seen clearly in Fig. 2, the plates 5a, 5b, 5c are attached to each other by means of Velcro 10.

The frame 2 of the fitness machine 1 further comprises a support 6, which is also provided with a handgrip 7, which the user can grip during the training. The support 6 is further provided with a display 8 on which training data, such as training duration, calories used etc., can be read.

In order to protect the floor 11 from damage, the fitness machine 1 is provided with rubber feet 9 on its underside. The person skilled in the art will quickly understand that these vibration-absorbing means 9 are not the same as the vibration damper 5, since they serve a different purpose.

When using the fitness machine 1 the user will go and stand on the vibrating element 3 and grip the handgrip 7 on the support. In this case the vibrations generated in the vibrating element 3 by the vibration generator 4 are absorbed by the muscular system of the user's body, which results in the desired stretch reflexes in the body. As stated above, in practice according to the invention the user generally trains at a vibration frequency of the vibrating element 3 lying between 30 and 45 Hz. In this case through a suitable selection of the plates 5a, 5b and 5c the training load is generally set at a value between 1 and 6 G, preferably at a value between 1.6 and 3.2 G. An untrained user will place all of the plates 5a, 5b and 5c on the vibrating plate 3 here, while a user with a good level of fitness will use only the thinnest plate 5c.

The person skilled in the art will quickly understand that the invention can be varied in many ways without departing from the scope of the invention.

Claims

1. Fitness machine (1) for training the body, comprising a frame (2) with a vibrating element (3), a vibration generator (4) operatively connected to the vibrating element (3), and a vibration damper (5), it being possible to set the vibration damper (5) in such a way that said vibration damper can absorb to a selected degree vibrations produced by the vibrating element (3), as a result of which a training load desired by the user can be obtained.
2. Fitness machine according to Claim 1, wherein the vibration damper (5) is at least partially removable.
3. Fitness machine according to Claim 1 or 2, wherein the vibration damper (5) is placed between the vibrating element (3) and the user when the machine is in use.
4. Fitness machine according to one or more of the preceding claims, wherein the vibration damper (5) comprises one or more plates (5a, 5b, 5c) made of a vibration-absorbing material.
5. Fitness machine according to Claim 4, wherein the plates (5a, 5b, 5c) can be attached to each other.
6. Fitness machine according to Claim 4 or 5, wherein the vibration damper (5) comprises plates (5a, 5b, 5c) with a differing vibration absorption capacity.
7. Fitness machine according to Claim 6, wherein the vibration damper (5) comprises three plates (5a, 5b, 5c), the thickness of which determines the degree of vibration absorption, and wherein the thickness ratio of the three plates (5a, 5b, 5c) is approx. 1 : 0.5 : 0.25.
8. Fitness machine according to one or more of the preceding claims, wherein the training load is adjustable, preferably between 1 and 6 G, more preferably between 1.6 and 3.2 G.
9. Fitness machine according to one or more of the preceding claims, wherein the vibrating element (3) comprises a plate which extends substantially horizontally.
10. Fitness machine according to one or more of the preceding claims, wherein the frequency of the vibration generator (4) is adjustable in such a way that the vibrating element (3) can vibrate at a vibration frequency between 20 and 80 Hz, preferably between 25 and 60 Hz, more preferably between 30 and 45 Hz.

11. Fitness machine according to one or more of the preceding claims, wherein the frame (2) comprises a support (6) which the user can grip.

12. Fitness machine according to Claim 11, wherein the support (6) comprises a display (8) on which training data can be shown.

13. Vibration damper (5) intended for a fitness machine (1) according to one or more preceding Claims 1 - 12.

14. Vibration damper according to Claim 13, wherein the vibration damper (5) comprises at least two plates (5a, 5b, 5c) made of a vibration-absorbing material, in particular plates with a differing vibration absorption capacity.

15. Vibration damper according to Claim 14, wherein the vibration damper (5) comprises three plates (5a, 5b, 5c), the thickness of which determines the degree of vibration absorption, and wherein the thickness ratio of the three plates (5a, 5b, 5c) is approx. 1 : 0.5 : 0.25.

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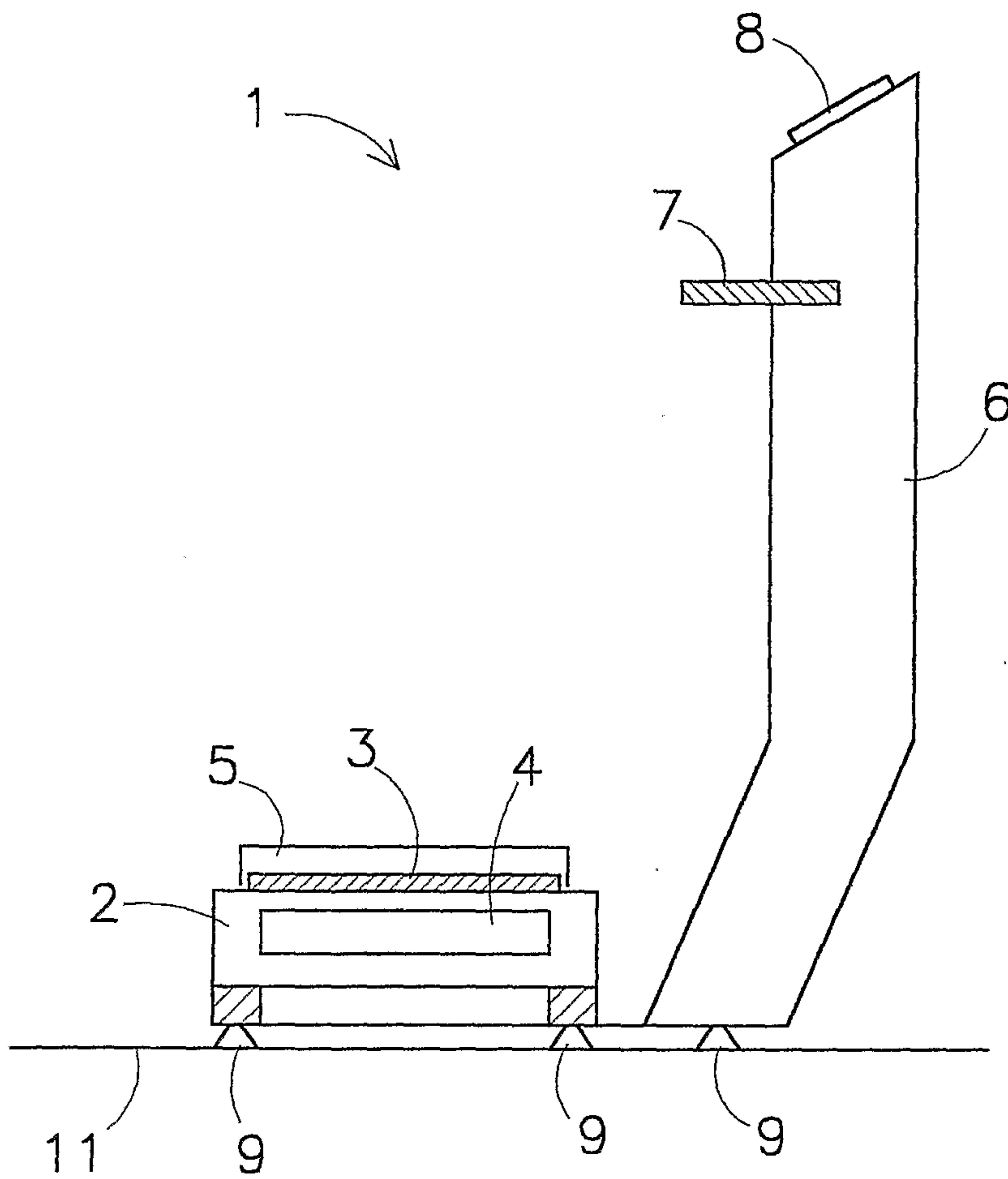


Fig 1

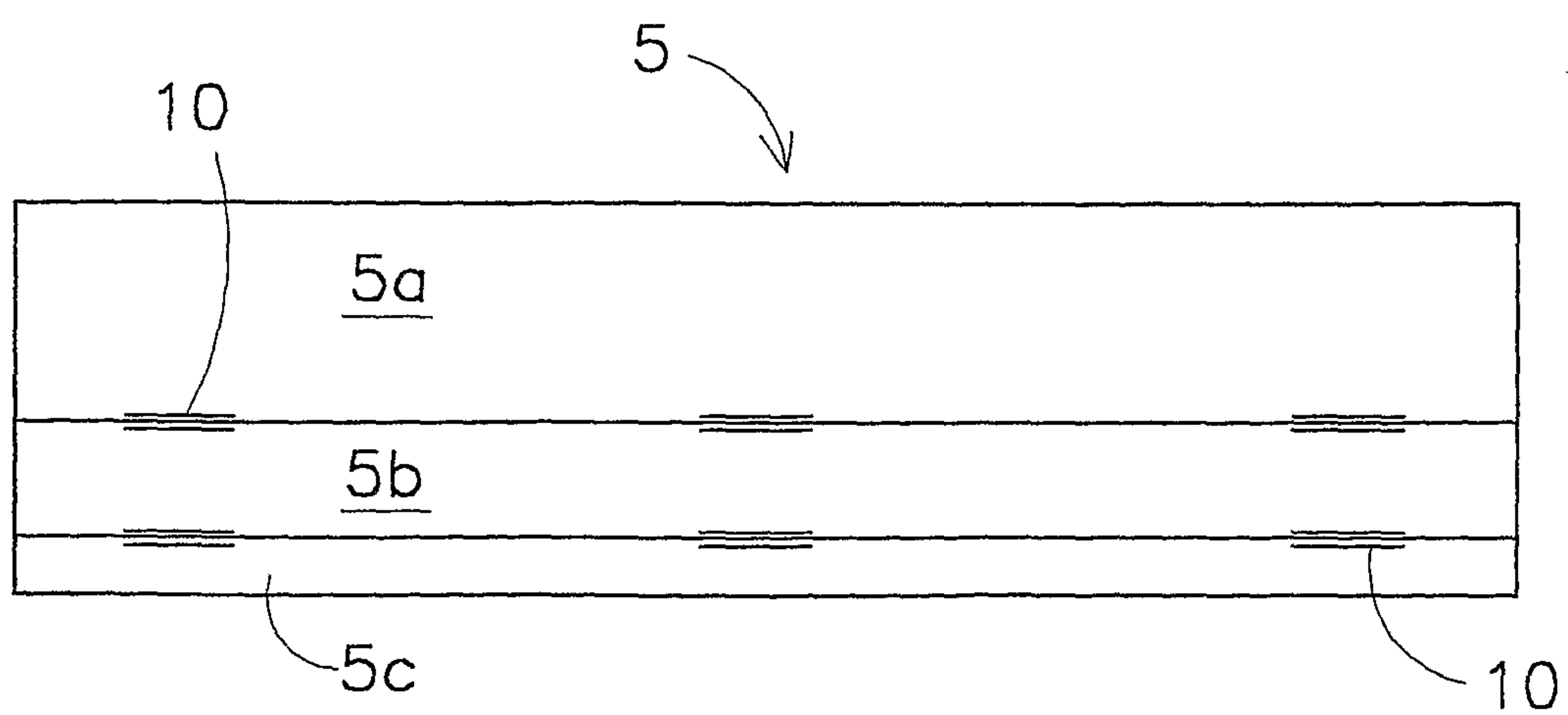


Fig 2

