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(54) EQUIPMENT FOR USE WHEN GIVING HEART MASSAGE

VORRICHTUNG ZUR VERWENDUNG BEI DER VERABREICHUNG EINER HERZMASSAGE

ÉQUIPEMENT DESTINÉ À ÊTRE UTILISÉ LORS DE L'EXÉCUTION D'UN MASSAGE CARDIAQUE

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DescriptionPrior art

[0001] The invention relates to heart massage equipment to be placed over the breastbone of a person with a heart failure which equipment supports the heel of the hand of a helper giving heart massage, cardiopulmonary resuscitation (CPR).

[0002] Emergency preparedness in case of heart failures comprise defibrillators being an electric defibrillation whereby it is possible to deliver electric shocks of up to 2000 V through the ventricles of the heart to start same.

[0003] Naturally, the use of this equipment implies its presence next to the patient which is rarely the case.

[0004] Moreover, the use of artificial ventilation applying the mouth-to-nose method in combination with heart massage is known.

[0005] Giving heart massage is not easy, however, since it partly requires knowledge of the placing of the pressure, namely over the lower part of the breastbone, and partly a suitable compressive force to ensure chest compression of 4-6 cm. Moreover, that the pressure rate per minute, the pressure frequency, is to be around 100-120 per minute.

[0006] In case these parameters are not kept, the desired effect, namely heart start, will not be achieved. Moreover, there is a risk of rib breakage in case of incorrect or too powerful pressure.

[0007] Equipment is known for training individuals in this type of heart start consisting of a chest region portion having auditive and visual indication of compressive force as well as pressure frequency. This equipment, however, is solely for use in connection with training of helpers and not equipment for use in case of a heart failure.

[0008] US 6,427,685 B1 describes equipment comprising a flexible disc which may take the shape of the patient's breastbone and the heel of the hand of the performing individual. Said disc, however, is not shaped thereto but is solely intended for accommodation to the shape of the breastbone and the heel of the hand, respectively, when the user exerts compressive force on the disc.

[0009] US 5.496.257 A relates to a device that assist a person in administering cardiopulmonary resuscitation. More particularly, it relates to a portable device that is placed on a patient's chest and both instruct the rescuer in how to optimally administer cardiopulmonary resuscitation and monitor the effectiveness of the cardiopulmonary resuscitation on the patient. The apparatus comprises a compression region (12) and a control panel region (15), and the flat surface (16) of the compression region (12) may be textured in a manner increasing the friction coefficient. The apparatus as such, and the compression region (12) in particular, is not shaped to fit the shape of the heel of the hand and the shape of the chest, respectively.

Object of the invention

[0010] It is the object of the invention to improve the effect of heart massage and so to ensure the highest possible effect while at the same time substantially reducing the risk of damage to the patient and the psychic strain of the helper.

[0011] This is achieved according to the invention by the use of a heart massage equipment according to claim 1.

[0012] The shape of the equipment will ensure that the equipment is placed at the correct location over the breastbone since the bottom side of the plate corresponds to the anatomy and partly that the heel of the hand of the helper is placed at the desired location, i.e. over the lower part of the breastbone, whereas the top side of the equipment is shaped as a seat of the heel of the hand.

[0013] By manufacturing the plate of a resilient material such as rubber or similar as disclosed in claim 2, it is ensured that the pressure is suitably distributed across the chest thereby avoiding damages to the ribs.

[0014] By providing the equipment with embedded pressure sensors for controlling the pressure of the heel of the hand and by means of auditive or visual indication thereof as disclosed in claim 3, the optimal effect may be ensured since it is possible to register whether the pressure is as desired and hence a compression of the breastbone of between 4 and 6 cm.

[0015] By embedding buzzers in the equipment as disclosed in claim 4, the helper may hear the pressure frequency and hence exert the pressure load rate at the correct frequency of between 100 and 120 per minute.

[0016] By providing the equipment with a strap extending across the hand of the helper as disclosed in claim 5, the securing of the hand to the equipment when in use is ensured.

[0017] By embossing the top side of the plate with an impression of hand/fingers as disclosed in claim 6, the correct positioning of same on the plate is ensured. Finally, it is advantageous as disclosed in claim 7 to round off the edges of the plate such that abrasions are avoided.

Drawing

[0018] An embodiment of the invention will be further described in the following with reference to the drawing, wherein

- fig. 1 is a top view of the equipment
 fig. 2 is a view towards the side part of the equipment
 fig. 3 is a perspective view of the equipment and
 fig. 4 is a sectional view of a chest showing use of the equipment by heart massage.

Description of an embodiment

[0019] An example of an equipment according to the

invention is shown on figs. 1-3.

[0020] It is shaped as a substantially square plate having a waveshape for forming a seat of partly the breastbone of a patient and partly of the heel of a helper's hand. This will appear from the drawing showing the equipment as a square plate 1 with a curved front edge 4 and a rear edge, where the front edge 4 forms a finger grip for the fingers 7 of a helper's hand 5 during use of the equipment as shown on fig. 4.

[0021] Moreover, there the rear edge 3 provides a seat for the heel of the hand 6 on the top side of the rear part of the plate. For facilitating the positioning of the hand on the plate 1 the top side of the plate may be embossed with an impression of hand/fingers as a marker.

[0022] The plate 1 is preferably manufactured of a resilient material such as rubber or similar material. Its dimensions are between 10 and 14 cm in width as well as in length.

[0023] The object of the flexible plate 1 is to ensure a suitable distribution of the pressure of the heel of the hand against the breastbone of the patient and thus to ensure that no damage is done to the ribs of the patient.

[0024] For measuring the pressure of the heel of the hand and the pressure frequency, sensors and transducers may be embedded as indicated by a broken line 2 in figs. 1-3.

[0025] These sensors are to measure the pressure and/or the movement of the breastbone and to give a signal to light-emitting diodes 9 being mounted on the top side of the plate 1.

[0026] Moreover, sounders for auditive signaling of the pressure frequency may be embedded.

[0027] The purpose of these registrations is to control the massage given just as the registrations contribute to calm down the helper by the instructive marking of the correct pressure and thus the compression of the chest as well as the correctness of the pressure frequency.

[0028] The plate 1 may be provided with a hand strap 10 extending across its top side and which ensures that the hand 5 is placed correctly on the equipment just as it helps keeping hand and equipment together when in use.

[0029] The use of the equipment in connection with heart massage will hereinafter be described.

[0030] The heart massage should normally be combined with an artificial ventilation in the form of the mouth-to-nose method. In practice this means that for every four times heart massage, one time ventilation should be given. The heart massage being a compression of the breastbone of between 4 and 6 cm, which is shown by the arrow 8 in fig. 4, must be given at a rate and a pressure frequency of between 100 and 120 compressions per minute.

[0031] To compress the breastbone the desired 5 cm, it is necessary to exert a pressure of about 40 to 45 kg. This pressure, however, will depend on the size, age and gender of the patient.

[0032] By appropriately calibrating the sensors 2,

which are embedded in the plate 1, diodes 9 mounted on the top side of the equipment may emit the signals needed by the helper to ensure the correct compressive force and frequency.

5 [0033] Regarding the giving of the heart massage itself, reference is made to fig. 4.

[0034] The equipment is placed over the breastbone of the patient, the helper's hand gripping about the plate 1 with the fingers 7 gripping about the front edge 4 of the plate. In this position, the heel of the hand 6 will be placed the correct place on the plate with the same over the breastbone so that the compression 8 of the breastbone may begin. The sensors 2 in the plate 1 signal the force and/or the movement of the breastbone of the exerted pressure and same is shown on the diodes 9 and perhaps via a not shown sounder in the plate.

10 [0035] For every four compressions a signal to stop the heart massage and to initiate artificial ventilation is given where after the heart massage may be resumed. Since the plate 1 is suitably flexible, the pressure will be suitably distributed across the breastbone whereby pressure damages may be avoided.

15 [0036] The complete control by giving the massage contributes to give the best possible result just as it has a calming effect on the helper.

20 [0037] The equipment may easily be stored in a first-aid kit and so form a natural part of its content. It is easy to use and moreover comparatively cheap to manufacture since no expensive components form part of the equipment.

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Claims

35 1. Heart massage equipment to be placed over the breastbone of a person with a heart failure to support the heel of a hand of a helper giving heart massage (CPR), **characterized in that** the equipment comprises a plate (1) having a waveshape with a curved front edge (4) formed as a finger grip (7) and a rear edge, where the top side is shaped into the shape of the heel of the hand (6) and the bottom side (11) is shaped into the shape of the chest (12).

40 2. Equipment according to claim 1, **characterized in that** the plate is made of a resilient material, such as rubber, for distribution of the pressure of the heel of the hand across the chest (12).

45 3. Equipment according to claims 1 and 2, **characterized in that** the plate (1) is provided with embedded pressure sensors (2) able to register the pressure of the heel of the hand and hence the compression (8) of the breastbone (12) and transducers able to give an auditive and/or visual signal (9) in conformity with the pressure.

50 4. Equipment according to claims 1-3, **characterized**

in **that** buzzers are furthermore embedded for acoustically indicating the desired pressure frequency.

5. Equipment according to claims 1-4, **characterized in that** the on its top side the plate

(1) is provided with a strap (10) which may extend across the back of the hand of the helper during use.

6. Equipment according to claims 1-5, **characterized in that** an impression of hand/fingers is embossed in the top side of the plate (1).

7. Equipment according to claims 1-6, **characterized in that** the edges of the plate (1) are rounded.

Patentansprüche

1. Herzmassagevorrichtung, die über dem Brustbein einer Person mit einem Herzversagen zu platzieren ist, um den Handballen eines Helfers abzustützen, der eine Herzmassage (CPR) verabreicht, **dadurch gekennzeichnet, dass** die Vorrichtung eine Platte (1) umfasst, die eine Wellenform mit einer gebogenen Vorderkante (4), die als Fingergriff (7) ausgebildet ist, und einer Hinterkante aufweist, wobei die Oberseite in die Form des Handballens (6) geformt ist und die Unterseite (11) in die Form der Brust (12) geformt ist.
2. Vorrichtung nach Anspruch 1, **dadurch gekennzeichnet, dass** die Platte aus einem elastischen Material, wie etwa Gummi, zur Verteilung des Drucks des Handballens über die Brust (12) gefertigt ist.
3. Vorrichtung nach den Ansprüchen 1 und 2, **dadurch gekennzeichnet, dass** die Platte (1) mit eingebetteten Drucksensoren (2), die dazu in der Lage sind, den Druck des Handballens und damit die Kompression (8) des Brustbeins (12) zu registrieren, und mit Wandlern, die dazu in der Lage sind, ein akustisches und/oder visuelles Signal (9) in Übereinstimmung mit dem Druck zu geben, versehen ist.
4. Vorrichtung nach den Ansprüchen 1-3, **dadurch gekennzeichnet, dass** Summer des Weiteren zum akustischen Angeben der gewünschten Druckfrequenz eingebettet sind.
5. Vorrichtung nach den Ansprüchen 1-4, **dadurch gekennzeichnet, dass** die Oberseite der Platte (1) mit einem Riemen (10) versehen ist, der sich während der Verwendung über den Handrücken des Helfers erstrecken kann.

6. Vorrichtung nach den Ansprüchen 1-5, **dadurch gekennzeichnet, dass** ein Hand-/Fingerabdruck in die Oberseite der Platte (1) eingepreßt ist.

- 5 7. Vorrichtung nach den Ansprüchen 1-6, **dadurch gekennzeichnet, dass** die Kanten der Platte (1) abgerundet sind.

10 Revendications

1. Équipement de massage cardiaque à placer sur le sternum d'une personne souffrant d'insuffisance cardiaque pour soutenir le talon d'une main d'un assistant exécutant un massage cardiaque (RCP), **caractérisé en ce que** l'équipement comprend une plaque (1) ayant une forme ondulée avec un bord avant incurvé (4) formé comme une prise pour les doigts (7) et un bord arrière, où le côté supérieur est façonné sous la forme du talon de la main (6) et le côté inférieur (11) est façonné sous la forme de la poitrine (12).
2. Équipement selon la revendication 1, **caractérisé en ce que** la plaque est constituée d'un matériau élastique, tel que du caoutchouc, pour une répartition de la pression du talon de la main sur la poitrine (12).
3. Équipement selon les revendications 1 et 2, **caractérisé en ce que** la plaque (1) est munie de capteurs de pression intégrés (2) capables d'enregistrer la pression du talon de la main et ainsi la compression (8) du sternum (12) et de transducteurs capables de donner un signal auditif et/ou visuel (9) en conformité avec la pression.
4. Équipement selon les revendications 1 à 3, **caractérisé en ce que** des avertisseurs sonores sont en outre intégrés pour indiquer acoustiquement la fréquence de pression souhaitée.
5. Équipement selon les revendications 1 à 4, **caractérisé en ce que** le côté supérieur de la plaque (1) est munie d'une sangle (10) qui peut s'étendre sur le dos de la main de l'assistant lors de l'utilisation.
6. Équipement selon les revendications 1 à 5, **caractérisé en ce que** une empreinte de main/doigts est embossée dans le côté supérieur de la plaque (1).
7. Équipement selon les revendications 1 à 6, **caractérisé en ce que** les bords de la plaque (1) sont arrondis.

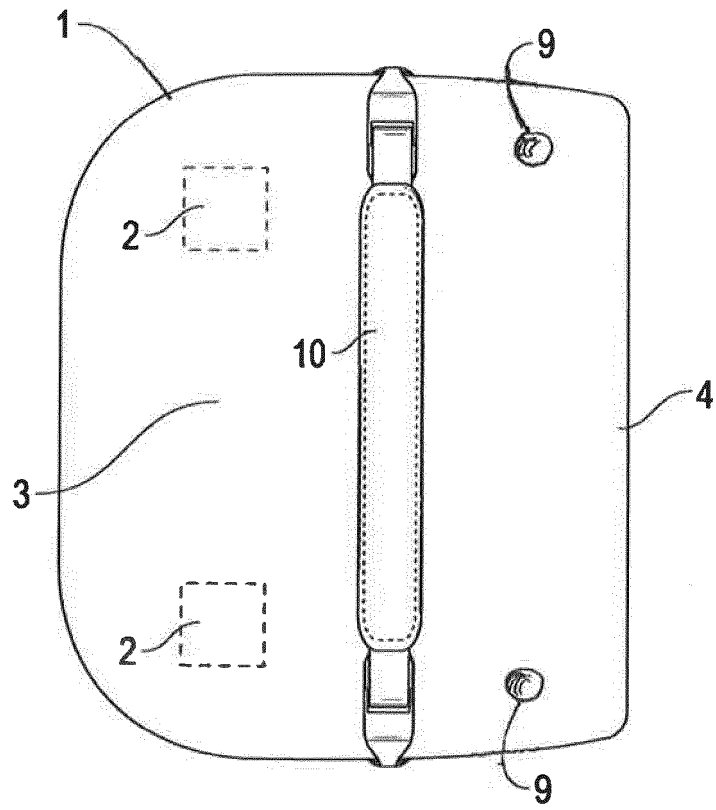


FIG. 1

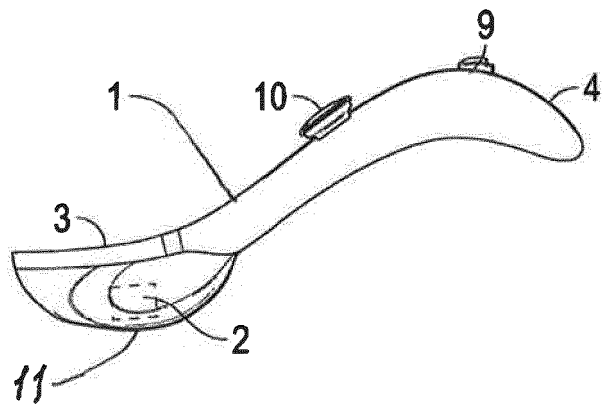


FIG. 2

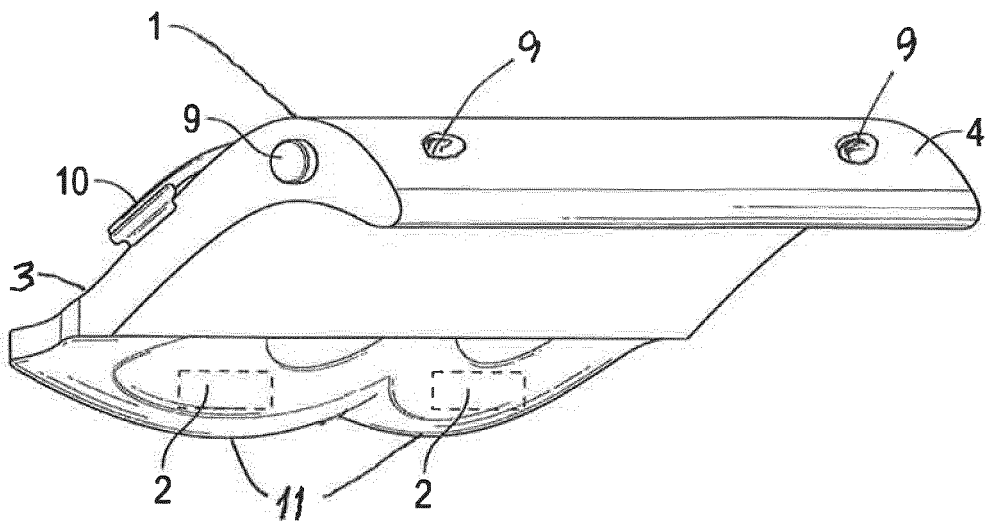


FIG. 3

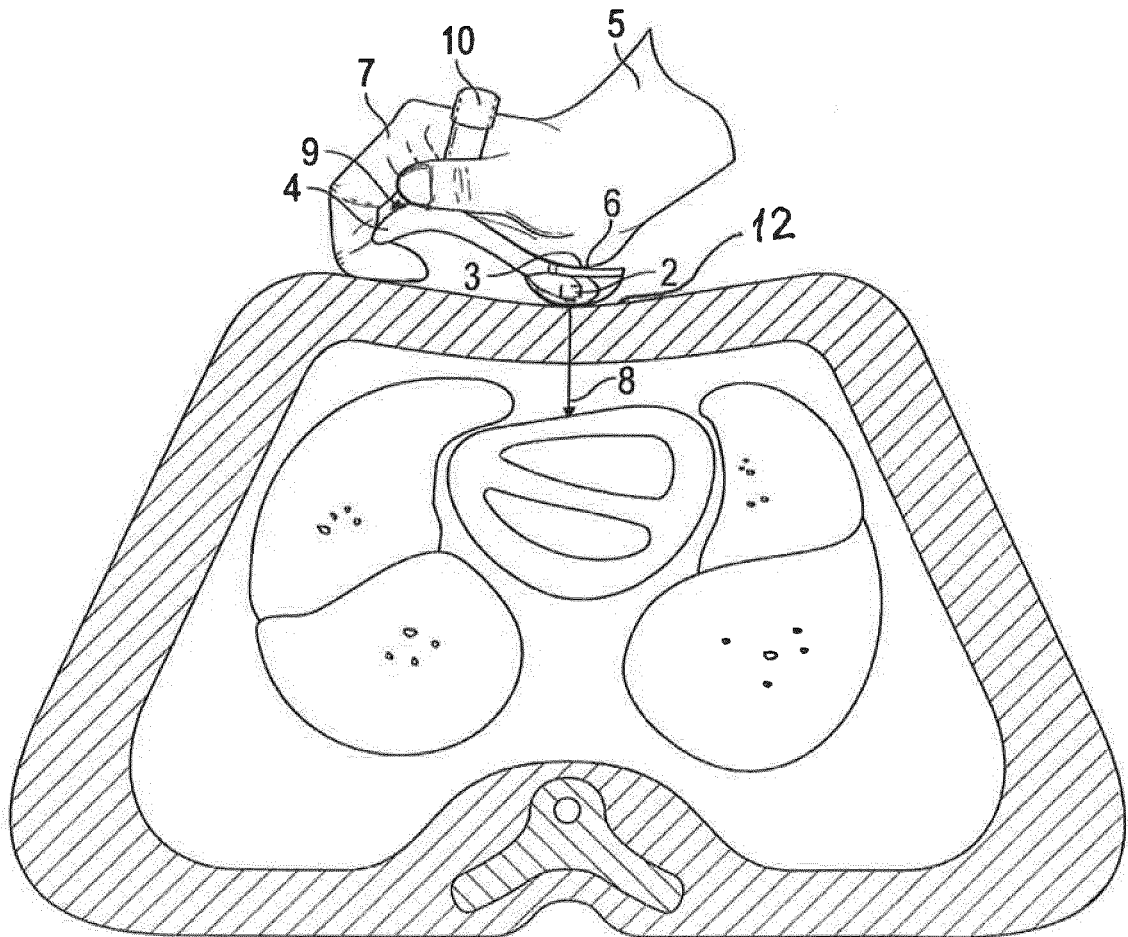


FIG. 4

REFERENCES CITED IN THE DESCRIPTION

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