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# DESCRIPTION

**[0001]** The present invention relates to a frame mattress of the kind defined in the preamble of claim 1.

**Background of the invention**

**[0002]** Beds and mattresses are an important part of our everyday life. Their main function is to provide each individual a good rest and sleep. It is therefore of utmost importance that they are constructed in such a way that each individuals' rest in bed is optimal throughout the total resting period. In order to achieve this, the construction of the bed must be such that a correct resting position and good pressure-relief for the whole body is achieved. The spinal column and the joints should rest in their natural positions in order that the muscles are strained as little as possible, and such that the blood circulation throughout the body becomes optimal. If the body is not provided with sufficient support during rest, new positions are often assumed to avoid stiffness and pins and needles (numbness) in the arms and legs. By repeated change of positions, the quality of sleep is reduced and the person will not be sufficiently rested. In the worst case scenario, insufficient support and poor sleeping position may give a stiff and sore neck, back ache, sore hip joints, numb arms and legs.

**[0003]** It has long been recommended by suppliers of ordinary reversible mattresses, placed on bed boards in ordinary beds, to turn the mattress at least once a year. The materials thereby obtain the time to recover on the used side, and the lifetime of the mattress is extended. Further, it is also recommended that the bed is cleaned in a god way to remove mite an especially excrements from mite which may give allergies. For good cleaning, vacuuming of the cover, bed, bed board and mattress is included, and not least washing the bed covers.

**[0004]** Frame mattresses are well known products in Scandinavia, and there are several different frame mattress models, amongst which the following may be mentioned:

DE 25 36 882 describes a standard frame mattress wherein a spring mattress is arranged on a plate over a frame and permanently combined with the plate. The frame does not contain a spring inlay and the spring mattress is not detachable or reversible, but the mattress cover is detachably attached to the frame. However, the patent does not describe a mattress which may be turned when the mattress cover is removed because the mattress springs are fastened to the base plate which is placed on top of the frame.

**[0005]** The frame mattress described in Norwegian patent no. 307641 is considered to constitute the closest prior art. This frame mattress is comprised of a frame wherein a spring inlay is fastened in a frame and covered with a material fastened to the frame, and a reversible mattress arranged for abutting the material, and wherein a cover is detachably mounted over the mattress and partly around the frame. In NO 307641, one was able to produce a frame mattress wherein the removal of the cover and the turning of the mattress, constituting the upper part of the frame mattress, was possible.

**[0006]** The present invention distinguishes itself from the frame mattress described in NO 307641 on several accounts and will be described in greater detail below.

**[0007]** The present invention solves the above mentioned problems regarding a high level of resting comfort while simultaneously achieving increased lifetime of the product, which furthermore may easily be maintained and completely cleaned.

**[0008]** More specifically, the present invention relates to a frame mattress comprising a spring inlay (3) surrounded by the frame (1), a first material (2) covering the spring inlay (3), a reversible mattress (5), arranged for abutting the first material (2), and a cover (7) enveloping the reversible mattress (5) and at least partly the frame (1), wherein the first material (2) is at least partly detachable to the frame, wherein the spring inlay (3), constituting a principally form stable unit, is reversible arranged in the frame (1).

**[0009]** The invention is further illustrated by the following attached Figures wherein:

Figure 1 depicts a schematic, vertical, longitudinal section of the frame mattress according to the present invention comprising the supporting frame (1), wherein a second material (2') is fastened onto which a spring inlay (3) is placed, covered by a first material (2). The first material (2) is fastened to the frame (1) by a fastening means (4). Onto the first material (2) a reversible mattress (5)

is placed which may comprise a spring core (3'), padding and side edges (6).

Figure 2 shows how the adapted cover (7) is mounted over the entire construction and fastened by the fastening means (4'). One part of the fastening means is stapled to the underside of the frame (1), and the facing part is sewn to the cover (7). This Figure illustrates the whole construction.

**[0010]** The supporting frame (1) is constructed of a rigid and stable material, such as wood.

**[0011]** The first and second materials (2') and (2) are of a material such as Vliseline. The second material (2') is fastened by fastening means such as for example with hook and loop fasteners (e.g. Velcro) to the bottom of the frame (1), while the first material (2) is mounted detachably to the top of the frame. The first material (2) is at least partly releasable so that it may be folded aside or possibly removed entirely. The first material (2) is preferably fastened by fastening means (4) such as by hook and loop fasteners, snap fasteners, zippers etc., preferably hook and loop fasteners, with one part fastened to the frame (1), for example by stapling or gluing, while the facing part is fastened to the first material (2), for example by a seam. Alternatively, the first material (2) or parts of the same may be fasted to the frame by for example hook and loop fasteners attached to the frame and material respectively. The second material (2') may be removed and alternatively replaced.

**[0012]** The reversible spring inlay (3) is constituted of low pocket-springs, i.e. individual springs sewn into textile bags. This system provides unique comfort as each individual spring reacts to body pressure independently of the adjacent springs. All the individual springs in the spring inlay (3) may either be equally stressed or may preferably be divided into zones of different stress levels, such that zone partitioning is achieved, wherein different parts of the spring inlay (3) have different stress-levels, achieving different bed firmness. The zones are for example adapted so that the protruding parts of the body such as the shoulders and hips, rest against softer springs than other parts of the body. In this way, less pressure is put on the shoulders and hips, and the body is provided with an even pressure load and good support at the same time. The spring inlay (3) constitutes a principally form-stable unit which may be removed from the frame and turned in one or more parts. The spring inlay (3) may for example consist of separate units for each comfort zone, such that a broken or worn zone may be replaced or changed separately. This also enables the bed to be adapted to the user individually by altering the length and firmness of the zones, for example. The pocket springs are in bags adhered to each other by being glued together at each point of contact, for example by melting glue. The spring inlay(s) (3) may be of pocket springs or other types of springs known in the art.

**[0013]** The reversible mattress (5) is an ordinary mattress as such, comprising a spring core (3'), padding (6), side edges enveloped in a mattress cover. The spring core (3') may consist of traditionally employed spring types such as Bonell-springs, LFK-springs and Pocket-springs such as the spring core (3) above, independently chosen in relation to the same. In the padding and side edges (6), all known types of padding material may be used, such as fibres, foamed plastic and foamed rubber. The reversible mattress (5) may of course also contain a zone division consisting of springs with different stiffness, possibly in separate units as described over.

**[0014]** The cover (7) is form adapted and mounted detachably over the entire construction so that it encompasses both the reversible mattress (5) and at least partly the frame (1), and is attached by fastening means (4'), preferably by hook and loop fasteners to the frame (1). Preferably, one part of the hook and loop fastener is stapled to the underside of the frame, whereas the counterpart is sewn onto the cover.

**[0015]** The frame mattress according to the present invention will ensure that the bed may be cleaned thoroughly in a far better way than earlier, since the first material (2) may also be removed from the supporting frame (1), and in that all the main components of the bed are replaceable. It is novel in relation to the prior art technique, that the first material (2), may at least partly be disconnected from the frame (1). Preferably, the first material (2) is removed completely from the frame (1). When the material (2) is removed from the supporting frame (1), the spring inlay (3) may be removed and turned or replaced as mentioned. The lifetime of the spring inlay (3) and thus also the lifetime of the bed, may be approximately doubled when the springs are allowed to recover on the side not facing up, and at the same time the inner part and the base of the frame may be cleaned when the spring inlay is removed. Any change in the needs/desires of the user with regard to the firmness of mattress/bed caused by, for example altered body weight, may be addressed by individual or complete replacement of the spring cores.

**[0016]** The frame mattress as described above according to the present invention, will possess a double-spring effect. The purpose of the bottom spring so as to increase the spring depth of the frame mattress, thereby ensuring that the heavier parts of the body enter sufficiently into the mattress, and in this manner reduce the counter pressure from the bed against the body. The result is increased resting comfort and that blood circulation is not hindered when resting. It should be pointed out that it is novel

to use a spring inlay with zone division in the frame. It has long been known that ordinary reversible mattresses, which are placed on bed rests in ordinary beds, may have a zone division of firm or soft spring zones, but this type of zone division has not been contemplated or used as spring inlay, neither detached nor fastened to the frame of a frame mattress. Prior frame mattresses were made in a manner wherein the spring inlay in the supporting frame was fastened to the bottom of the frame.

**[0017]** Briefly summarised, the present invention differs from the prior art technique in that:

- the first material (2) may be removed from the frame (1),
- the spring inlay (3) in the frame (1) lies unattached and may be removed and turned,
- the spring inlay (3) in the frame (1) may be zone divided with alternating stiff and soft springs,
- the zones may be separate units.

**[0018]** The present frame mattress has the improved properties in relation to:

1. 1) **hygiene** as the cover (7) and the first and second materials (2 and 2') in the frame (1) all may be removed and washed. This also makes it possible to gain access, so that the reversible mattress (5) resting on the frame (1) may be vacuumed as well as the spring inlay (3), and possibly be removed so that the bottom of the frame (1) may also be cleaned. Thorough cleaning is especially important in view of contagious diseases and allergies;
2. 2) **resting comfort** is increased as the spring inlay (3) may have zone divisions of softer and firmer springs;
3. 3) **the lifetime** of the product is increased considerably, maybe to the double, because both the reversible mattress (5) resting on the frame (1) and the spring inlay (3) may be turned, such that the sides that have been used may retract when they no longer face up towards the individual. Alternatively the reversible mattress (5) and/or spring inlay (3) may be replaced separately; and
4. 4) **flexibility** in the choice of reversible mattress (5) and spring inlay (1) for the consumer who may thereby obtain a custom adapted frame mattress.

# REFERENCES CITED IN THE DESCRIPTION

This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.

**Patent documents cited in the description**


- DE2536882 [0004]
- NO307641 [0005] [0005] [0006]

## Patentkrav

**1.** Rammemadras omfattende et fjederindlæg (3), der er omgivet af rammen (9), et første materiale (2), der dækker fjederindlægget (3), en vendbar madras (5), der er indrettet til at ligge an mod det første materiale (2), og et dække (7), der indeslutter den vendbare madras (5) og i det mindste delvist rammen (1),
**kendetegnet ved, at** det første materiale (2) er i det mindste delvist aftageligt fra rammen (1), hvor fjederindlægget (3), der udgør en i princippet formstabil enhed, er vendbart anbragt i rammen (1).

**2.** Rammemadras ifølge krav 1, **kendetegnet ved, at** fjederindlægget (3) har en zoneopdeling af fjedrene i bløde og faste zoner.

**3.** Rammemadras ifølge krav 2, **kendetegnet ved, at** fjederindlægget (3) har en zoneopdeling bestående af separate fjederelementer.

**4.** Rammemadras ifølge et af kravene 1-3, **kendetegnet ved, at** fjederindlægget (3) består af pocket-fjedre.

**5.** Rammemadras ifølge et af de foregående krav, **kendetegnet ved, at** det første materiale (2) er fastgjort aftageligt til rammen (1) med fastgørelsesmidler (4), med en del fastgjort til rammen (1), for eksempel ved hæftning, og overfladedelen fastgjort til det første materiale (2), for eksempel ved hjælp af en søm.

**6.** Rammemadras ifølge krav 5, **kendetegnet ved, at** fastgørelsesmidlerne (4) er et velcrofastgørelsesmiddel, et trykknapfastgørelsesmiddel eller en lynlås, fortrinsvis et velcrofastgørelsesmiddel.

**7.** Rammemadras ifølge et af de foregående krav, **kendetegnet ved, at** et andet materiale (2') er fastgjort permanent eller aftageligt mellem bunden af rammen (9) og fjederindlægget (3).

# DRAWINGS

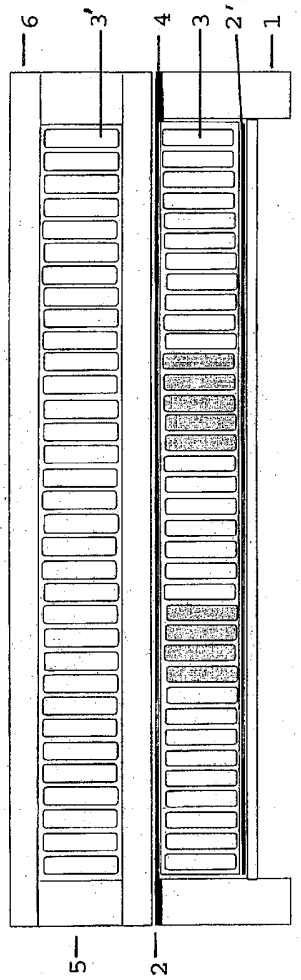



Fig. 1

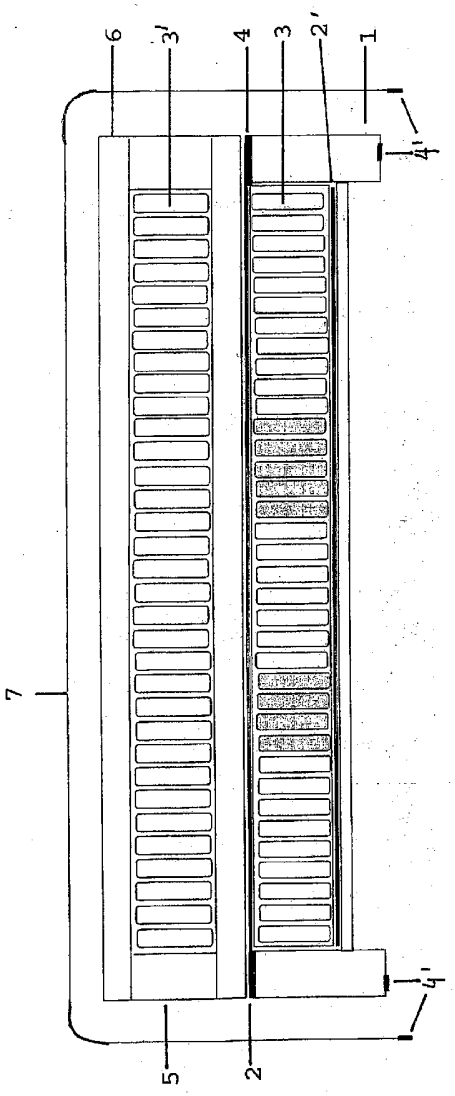



Fig. 2