Dec. 27, 1932. H. E. BANG 1,891,903

REFRIGERATED BED AND COUCH

Filed May 25, 1931

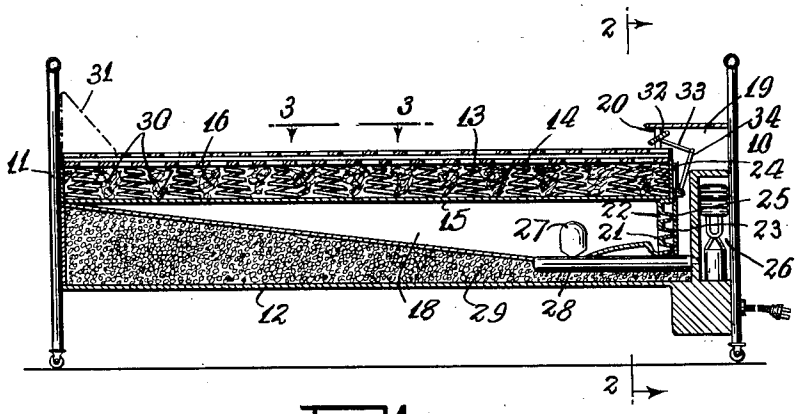


FIG 1

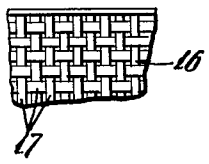


FIG 3

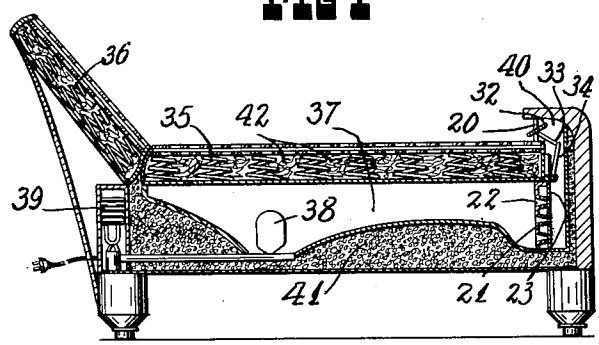


FIG 4

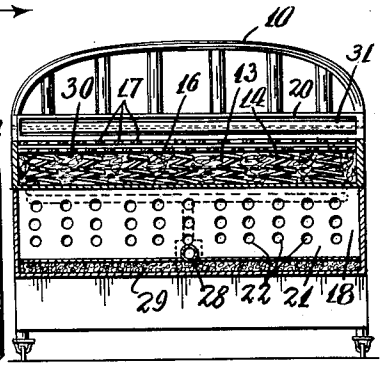


FIG 2

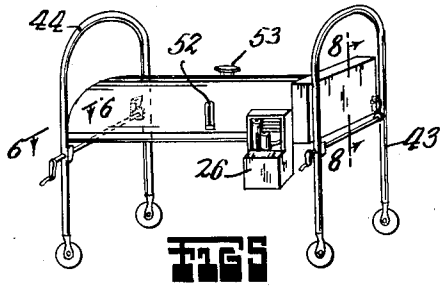


FIG 5

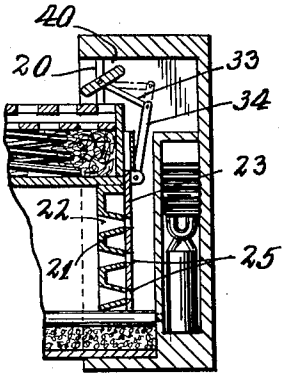


FIG 8

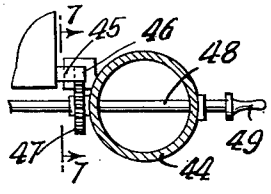


FIG 6

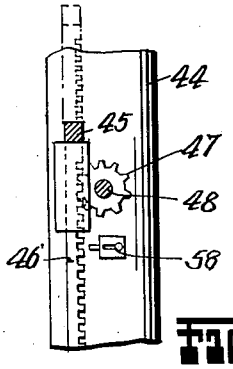


FIG 7

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UNITED STATES PATENT OFFICE

HAROLD E. BANG, OF NEW YORK, N. Y.

REFRIGERATED BED AND COUCH

Application filed May 25, 1931. Serial No. 539,792.

This invention relates to new and useful improvements in a refrigerated bed and couch.

The invention has for an object the construction of a refrigerated bed and couch which is characterized by a frame having a head and foot portions upon which a spring structure is supported, and a refrigerator chamber beneath the spring structure connected with a chamber portion which extends upwards at the foot portion of the frame and terminates above the spring structure so as to be capable of lowering the temperature at the top of the bed.

A still further object of this invention is the construction of the spring structure in a manner so that a plurality of helical springs support woven straps. In this manner, the heat may pass through the springs and through the woven material from the top of the bed.

As another object of this invention, it is proposed to provide a gate within the refrigerator chamber for dividing off the portion which extends upwards at the foot of the frame.

Furthermore, it is proposed, as another object of this invention, to support a refrigerator system upon the frame for cooling the refrigerator chamber.

A still further object of this invention is the arrangement of insulation material beneath the refrigerator chamber and between the helical springs of the spring structure so as to properly insulate and guide the heat from the top of the bed.

As another object, it is proposed to provide a means for simultaneously closing the gate previously mentioned, and a shutter disposed beneath the end of the portion of the refrigerated chamber which terminates at the top of the spring structure.

As another object, it is proposed to construct the parts in such a manner that they may be efficiently applied to a hospital bed.

As a still further object, it is proposed to construct a refrigerated bed and couch of the class mentioned which is of simple, durable construction, desirable in use and efficient in action, and which can be manufactured and sold at a reasonable cost.

For further comprehension of the invention, and of the objects and advantages thereof, reference will be had to the following description and accompanying drawing, and to the appended claims in which the various novel features of the invention are more particularly set forth.

In the accompanying drawing, forming a material part of this disclosure:—

Fig. 1 is a longitudinal central sectional view of a refrigerated bed constructed according to this invention.

Fig. 2 is a transverse vertical sectional view taken on the line 2—2 of Fig. 1.

Fig. 3 is a fragmentary elevational view looking in the direction of the line 3—3 of Fig. 1.

Fig. 4 is a longitudinal central sectional view of a refrigerated couch constructed according to this invention.

Fig. 5 is a perspective view of a hospital bed constructed according to this invention.

Fig. 6 is a fragmentary enlarged sectional view taken on the line 6—6 of Fig. 5.

Fig. 7 is a fragmentary enlarged sectional view taken on the line 7—7 of Fig. 6.

Fig. 8 is a fragmentary sectional view taken on the line 8—8 of Fig. 5.

The refrigerated bed, according to this invention, comprises a bed frame consisting of a foot element 10 and a head element 11 having a connecting portion 12. A spring structure 13 is disposed between the head and foot portions. This spring structure comprises a plurality of conical springs 14 spaced from each other and supported between bottom longitudinal straps 15 and a double top woven element 16. The woven element is formed by a plurality of metallic strips 17 woven together so that the strips are disposed at right angles to each other. A refrigerated chamber 18 is arranged beneath the spring structure and has a portion 19 which extends upwards along the foot frame 10 and terminates at the top at a point 20 above the spring structure.

A gate divides off the chamber 18 from the portion 19. This gate comprises a sta-

tionary transverse plate 21 formed with a plurality of tubular openings 22. A slidable plate 23 is mounted within edge grooves 24 and normally is capable of assuming a position in which the openings 22 are closed. The plate 23 is formed with a plurality of openings 25 capable of aligning with the openings 22 in one position of the plate.

A refrigerator system is arranged for cooling the chamber 18. The details of the refrigerator system will not be gone into since they form no part of this invention. It is best that the refrigerator system be of the type which is noiseless in its operation. The main portion of the system is housed within a compartment 26 and the cooling portion 27 of the system is located within the chamber 18. The compartment 26 is formed within the chamber 19 and has a tubular member 28 extending beneath the compartment 18 to the point where the cooling member 27 projects. The latter member is located within the chamber.

Insulation material 29, preferably cork filling, is placed within a compartment beneath the refrigerated chamber 18 for the purpose of preventing radiation from the atmosphere through the bottom into the chamber 18. It is best that the chamber 18 be reduced in size at the head portion of the bed and be larger at the foot portion since an ideal condition is one where the head of the person is not cooled as much as the legs. In addition, refrigeration material, preferably cork filling, indicated by reference numeral 30, is placed in between the helical, conical springs 14 for the purpose of limiting traveling of the heated air through the springs themselves into the chamber 18. It is calculated that the heated air is absorbed in greater quantities from the person along points on the spring structure under which there is a greater quantity of cooled air. In this manner its effect will be greater. The dot and dash lines 31 indicate a pillow for the bed. A means is provided for simultaneously closing the opening 20 and the openings 22 of the portion 21. This means is in the form of a shutter 32 pivotally mounted across the opening 20 and having a radial arm 33 connected with a link 34 which connects with the slide 23. The parts are so arranged that when the shutter 32 is in an open position as shown in full lines in Fig. 1 the openings 25 will align with the openings 22.

In Fig. 4, a modification of the invention has been disclosed in which the principle has been applied to a couch. The couch is shown comprising a horizontal spring portion 35 and a head portion 36. The cooling system is arranged upon the horizontal portion only. It should be noted that a chamber 37 is arranged beneath the horizontal portion and is provided with the cooling element 38 of the refrigerating system 39. The refrigerating system is located beneath the head 36 of the couch. The refrigerating compartment 38 at the foot of the couch connects with a vertical portion 40 which terminates at the top in an opening 20 for discharging over the top of the couch. A partition 21 serves to divide off the foot portion of the refrigerating chamber from the main portion. A shutter 32 is mounted within the opening 20 and is provided with a radial arm 33 which connects with a link 34 connected in turn with the slide 23. Insulation material 41 is located beneath the compartment 37 and other insulation material 42 between the springs of the spring structure 35. In other respects, the arrangement is similar to the preferred form and corresponding parts may be recognized by similar reference numerals.

In Figs. 5 to 8 inclusive, another modification of the invention has been disclosed in which it is applied to a hospital bed. This hospital bed comprises a foot frame 43 spaced from a head frame 44. The spring structure of the bed has lugs 45 slidably engaging end standards 45′. The lugs 45 carry racks 46 meshing with pinions 47 upon adjusting shafts 48. The shafts extend through the frame and terminate in handles 49 for manual turning. A latch 58 is arranged upon the frame for engaging against the teeth of the racks to latch the bed in various adjusted positions. The details of the spring structure are shown in Fig. 8 wherein corresponding reference numerals to those shown in Fig. 4 represent similar parts. The only difference in the spring structure of the hospital bed is that the main portion has a curved top, but at the foot end, it is of rectangular shape as clearly shown in Fig. 5 so that the shutter 32 may be straight and consequently operated. In additon, the hospital bed spring structure is shown provided with a thermometer 52. A vent connection 53 connects with the refrigerated chamber.

The operation of the device consists in setting the refrigerator system into operation to cause the cooling of the bed. When it is so desired, the shutter 20 may be moved to an open position so that the top of the bed at the foot portion may be cooled. As the shutter 32 is moved to its open position, the apertures 20 will be opened by reason of the plate 23 assuming a position to align its openings with the tubular members 22. When the shutter is closed, the chamber 18 will be cut off from the chamber 19. The purpose of this is that all of the cooled air will then be confined in the chamber 18 and thus be prevented from rapidly absorbing heat from the foot portion of the bed.

While I have shown and described the preferred embodiment of my invention, it is to be understood that I do not limit myself to the precise construction herein disclosed and the right is reserved to all changes and

modifications coming within the scope of the invention as defined in the appended claims.

Having thus described my invention, what I claim as new, and desire to secure by United States Letters Patent is:—

1. A refrigerated sleeping contrivance, comprising a frame having a head and foot portion, a spring structure supported between the head and foot portion, a refrigerator chamber located beneath the spring structure and having a portion extending upwards at the foot portion of the bed terminating in an opening directly above the spring structure, means for controlling the size of said opening and a refrigerating system supported on the frame and adapted to cool the refrigerator chamber.

2. A refrigerated sleeping contrivance, comprising a frame having a head and foot portion, a spring structure supported between the head and foot portions, a refrigerator chamber located beneath the spring structure and having a portion extending upwards at the foot portion of the bed terminating in an opening directly above the spring structure, and a refrigerating system supported on the frame and adapted to cool the refrigerator chamber, said refrigerated chamber being reduced at the head portion and of large size at the foot portion of the bed.

3. A refrigerated sleeping contrivance, comprising a frame having a head and foot portion, a spring structure supported between the head and foot portions, a refrigerator chamber located beneath the spring structure and having a portion extending upwards at the foot portion of the bed terminating in an opening directly above the spring structure, a refrigerating system supported on the frame and adapted to cool the refrigerator chamber, a gate dividing off the main portion of the refrigerated chamber from the foot portion, a shutter mounted within the opening of the foot portion at its termination directly above the spring structure, and means for simultaneously closing the gate and the shutter.

4. A refrigerated sleeping contrivance, comprising a frame having a head and foot portion, a spring structure supported between the head and foot portions, a refrigerator chamber located beneath the spring structure and having a portion extending upwards at the foot portion of the bed terminating in an opening directly above the spring structure, a refrigerating system supported on the frame and adapted to cool the refrigerator chamber, a gate dividing off the main portion of the refrigerated chamber from the foot portion, a shutter mounted within the opening of the foot portion at its termination directly above the spring structure, and means for simultaneously closing the gate and the shutter, comprising a radial arm on the pivot point of the shutter, a link connected with the radial arm and with said gate.

5. A refrigerated sleeping contrivance, comprising a frame having a head and foot portion, a spring structure supported between the head and foot portion, a refrigerator system located beneath the spring structure and having a portion extending upwards at the foot portion of the bed terminating in an opening directly above the spring structure, a refrigerating system supported on the frame and adapted to cool the refrigerator chamber, a partition having apertures and dividing off the main portion of the refrigerated chamber from the foot portion, and means for simultaneously closing the apertures in the partition and the opening at the termination of the foot portion.

6. A refrigerated sleeping contrivance, comprising a frame having a head and foot portion, a spring structure supported between the head and foot portion, a refrigerator system located beneath the spring structure and having a portion extending upwards at the foot portion of the bed terminating in an opening directly above the spring structure, a refrigerating system supported on the frame and adapted to cool the refrigerator chamber, a partition having apertures and dividing off the main portion of the refrigerated chamber from the foot portion, and means for simultaneously closing the apertures in the partition and the opening at the termination of the foot portion, a slide slidably arranged over the partition for closing the apertures of the partition, a shutter pivotally mounted in the opening at the termination of the foot portion and for closing the said opening, and means for simultaneously operating the shutter and the slide.

In testimony whereof I have affixed my signature.

HAROLD E. BANG.