

No. 704,878

Patented July 15, 1902.

A. W. HITT.  
SHIP'S BERTH.

(Application filed Aug. 12, 1901.)

(No Model.)

2 Sheets—Sheet 1.

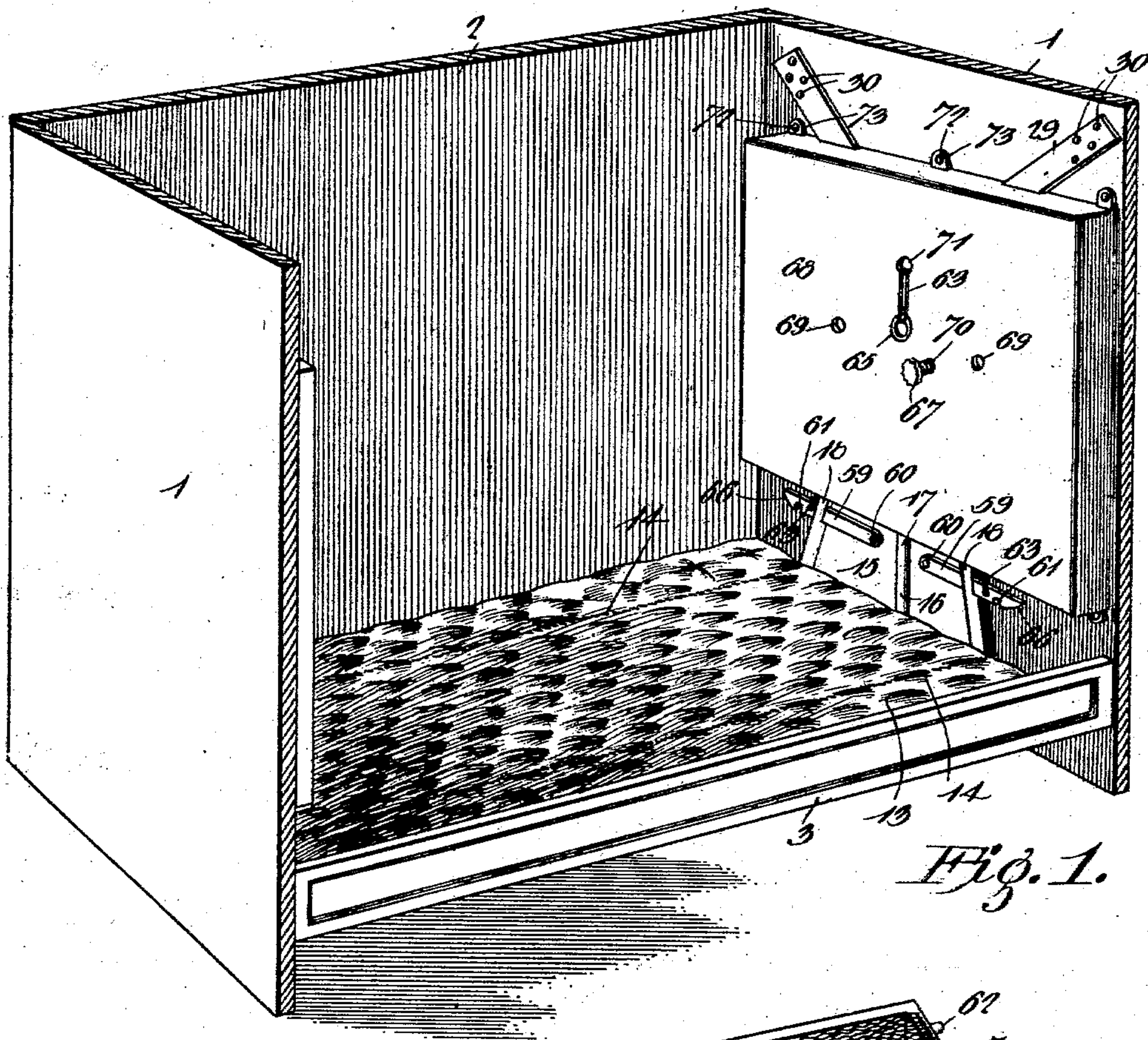


Fig. 1.

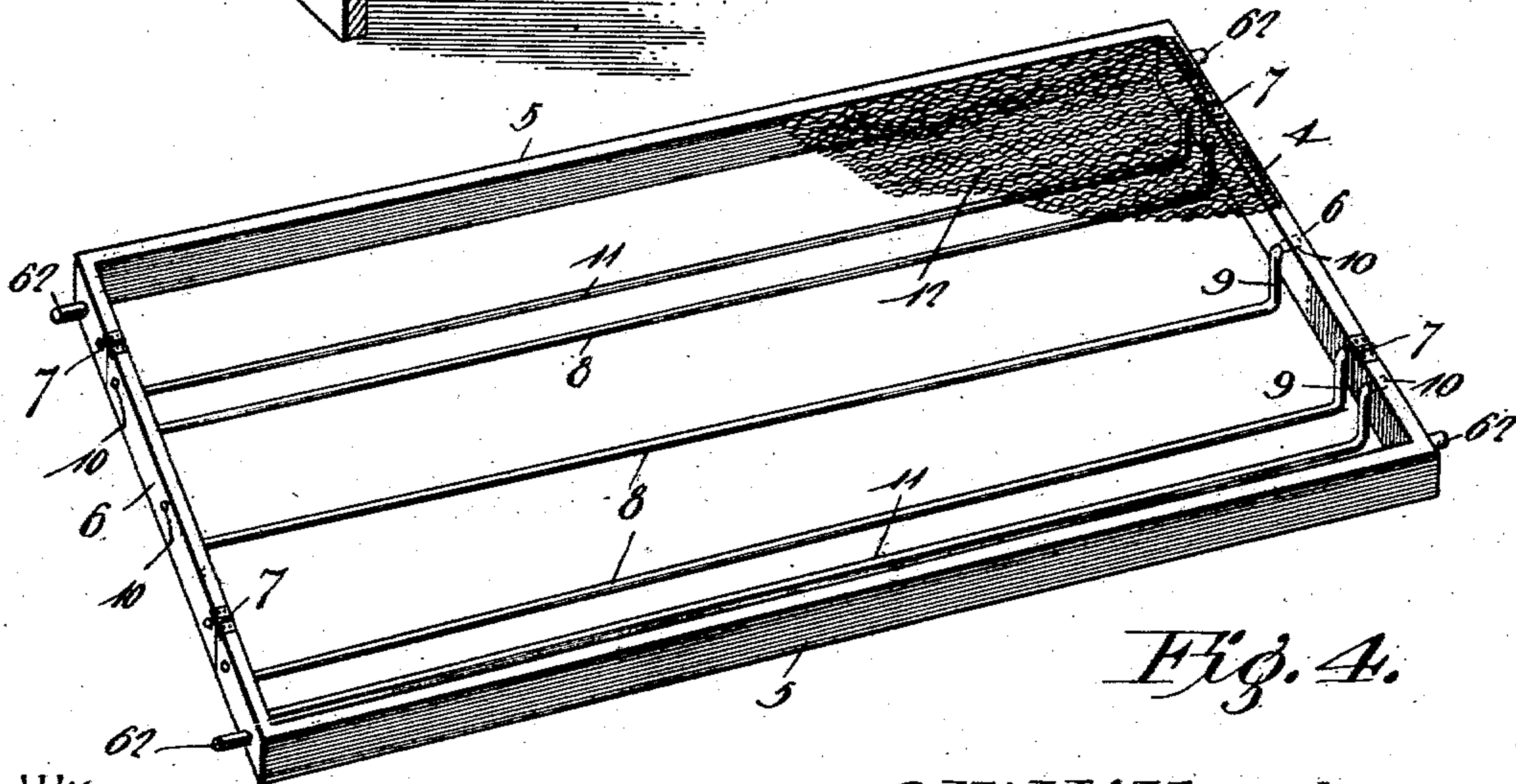


Fig. 4.

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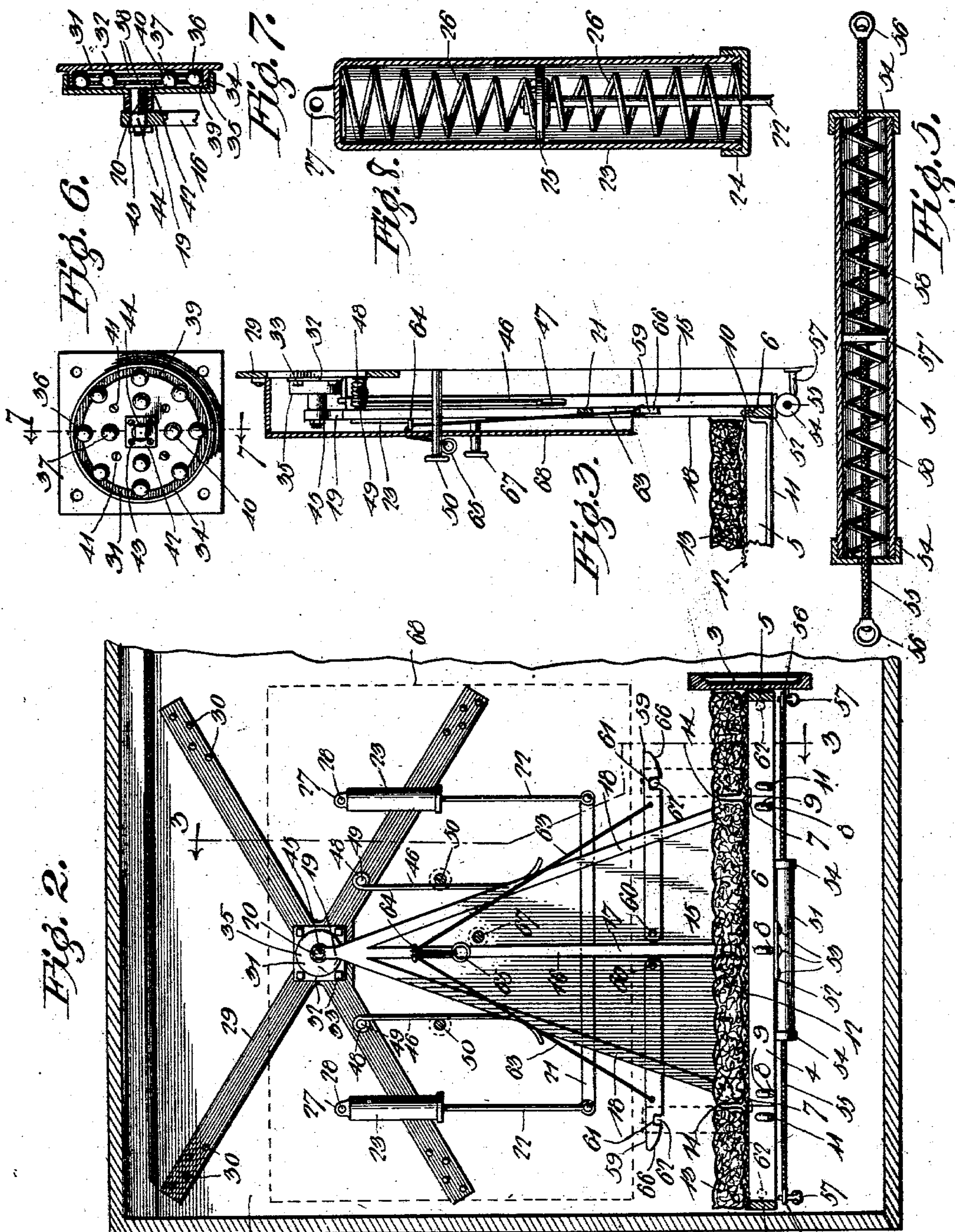
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# UNITED STATES PATENT OFFICE.

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## SHIP'S BERTH.

SPECIFICATION forming part of Letters Patent No. 704,878, dated July 15, 1902.

Application filed August 12, 1901. Serial No. 71,815. (No model.)

*To all whom it may concern:*

Be it known that I, ADDISON W. HITT, a citizen of the United States, residing at San Francisco, in the county of San Francisco and State of California, have invented a new and useful Ship's Berth, of which the following is a specification.

This invention relates to ships' berths, and has for its object to provide a berth which by a slight change in arrangement of certain of its parts may be changed from a fair-weather berth to a rough-weather berth, the berth under the latter conditions being adapted in a simple and thoroughly-effective manner to compensate for the ship's motion, whereby the occupant will always occupy an approximately horizontal position irrespective of the angle of the pitch of the vessel.

A further object is to present a novel form of mattress and bed-bottom which when the berth is used in heavy weather will operate to prevent the occupant from rolling therefrom, as from sudden lurches of the vessel or from other causes.

A further object is to provide a simple and readily-operable means by which the berth may be adapted for use by a very heavy or a very light person, whereby the berth may be rendered perfectly comfortable to the occupant irrespective of his weight.

A further object is to provide simple and positively-operating means by which all jars, either vertical or lateral, may be absorbed, thereby presenting a thoroughly-comfortable berth under all conditions of use.

A further object is to provide means by which the berth may be readily changed from a swinging berth to a stationary one, and this by the occupant of the berth.

With these and other objects in view, as will appear as the nature of the invention is better understood, the same consists in the novel construction and combination of parts of a ship's berth, as will be hereinafter fully described, and specifically pointed out in the claims.

In the accompanying drawings, forming a part of this specification, and in which like numerals of reference indicate corresponding parts, I have illustrated a form of embodiment of my invention capable of carrying my

ideas into effect, it being understood that the elements herein exhibited may be varied or changed as to shape, proportion, and exact manner of assemblage without departing from the scope of my invention, and in these drawings—

Figure 1 is a view in perspective exhibiting a ship's berth embodying the essential features of my invention, the suspending and motion-absorbing mechanism being hid from view by a housing or shield. Fig. 2 is a view in elevation, partly in section, exhibiting the suspending and motion-absorbing mechanism. Fig. 3 is a sectional view taken on the line 3 3 of Fig. 2. Fig. 4 is a perspective detached detail view of the berth or bed bottom. Fig. 5 is a sectional detail view of a spring-buffer to be associated with the under side of the bed-bottom and to be used when the berth is occupied by a person of heavy weight. Fig. 6 is a view in front elevation, on an enlarged scale, of one of the ball-bearing supports for the berth. Fig. 7 is a sectional view through the bearing, taken on the line 7 7, Fig. 6. Fig. 8 is a sectional detail view of one of the spring-buffers for absorbing the motion of the berth.

Referring to the drawings and to Fig. 1 thereof, there is exhibited conventionally a part of ship's cabin, of which 1 designates the two side walls and 2 the end wall, the front wall being omitted. The front panel 3 of the bed is, as usual, a fixed structure, extending from side wall to side wall. The bed-bottom 4 comprises two side pieces 5, each constructed of a single piece of wood or the like, and two end pieces 6, each composed of three sections suitably held assembled on their upper edges by hinges 7. The center sections of the end pieces are connected in this instance by three rods 8, these rods having their ends bent at right angles to their length, as shown at 9, and then parallel with the length of the rod to present pintles 10, which are passed through the end pieces and are firmly associated therewith in any preferred manner, the drop in these rods being provided to permit the greatest range of movement to the mattress, thus to adapt the mattress for use by a person of heavy weight. The side pieces 5, with their short end sections, are also con-



nected by drop-rods 11, the pintles of which, however, are loosely mounted in the end pieces, so that when the side pieces are folded up, as indicated by dotted lines in Fig. 2, the drop-rods will not present an obstruction against which the occupant of the berth might roll in rough weather. The bed-bottom 12 is of woven wire and is by preference made in three parts suitably assembled with the three sections of the bed-bottom frame, thereby to admit the frame being folded to the position shown in Fig. 2, the mattress proper, 13, which may be made of any suitable material, being likewise constructed in three sections suitably assembled, as at 14, to permit of its being folded with the sides of the bed-bottom frame, and thus present soft and yielding sides to the bottom, which will operate to prevent the occupant of the berth from being thrown therefrom when the ship is heavily tossed about.

The suspending and motion-absorbing mechanism above the bed-bottom is the same at each end of the bed, and a description of the mechanism at one end thereof will serve for both. This mechanism comprises the headboard 15, preferably triangular in shape, with which is associated a three-part brace-rod 16, comprising a vertical arm 17 and two angularly-pitched arms 18, the three arms merging at their upper ends into a head 19, provided with a pintle or bearing 20, by which the brace-rod is suspended for vibratory movement. The three members of the brace-rod are rigidly secured to the headboard 15 and have their lower ends secured to the center sections 6 of the bed-bottom, as shown in Figs. 2 and 3, thereby leaving the side sections of the bed-bottom free to be folded up in the manner already described. Associated with the headboard and with the members of the brace-rod is a cross-bar 21, the extremities of which have connected with them two rods 22, the upper ends of the rods being housed in cylinders 23, having their lower ends closed in this instance by screw-caps 24, centrally perforated to present bearings for the rods 22, as clearly shown in Fig. 8. The upper end of each rod carries a head 25 to work within the cylinder, and between the cap 24 and the disk 25 and the disk and the top of the cylinder are interposed helical springs 26, which operate to absorb all jars incident to the vibratory motion of the bed-bottom, and thereby render the motion of the bed-bottom of resilient character. Each cylinder 23 carries at its upper end an eye 27, through which passes a bolt or bearing 28 to associate the cylinder with the side of the cabin.

Secured to the side of the cabin is an X-shaped brace or support 29, the members of which are associated with the side wall in any suitable manner, as by bolts 30. This brace is to be made of metal, preferably of iron, and may be either of cast or forged iron, as may be preferred. Bolted to the central portion of the brace 29 is the ball or roller bear-

ing 31 for the brace or suspending rod 16. The form of roller-bearing herein shown is one of many that may be employed for the purpose and is merely an exhibition of one manner of carrying this part of my invention into effect, it being understood that any other form of antifriction-bearing may be employed for the purpose and still be within the scope of my invention. This bearing consists, essentially, of a plate 32, associated with the brace by bolts 33, the plate being provided with an outwardly-extended threaded rim 34 to be engaged by a threaded cap 35, (clearly shown in section in Fig. 6,) the two plates 32 and 35, the latter comprising the front wall of the cap, constituting a housing for the balls 36 and 37, of which there is shown in this instance two concentrically-disposed series. These balls are held in operative position with relation to the rim 34 and the two plates 32 and 35 by two disks 38, these being peripherally recessed at 39 to permit the balls 36 to bear against the rim 34 and concentrically orificed at 40 to permit the balls 37 to bear against the plates 32 and 35, it being understood that the balls 36 also bear against these plates. By this simple arrangement all peripheral and lateral friction from the swinging of the berth is absorbed, and as the parts of the bearings are few in number danger of derangement or breakage in use will be reduced to a minimum. The disks 38 are held assembled by screws 41, and the outer plate is secured to the pintle 20, this being provided with a head 42 for the purpose, through which pass screws 43 to hold it against the disks. The outer end of the pintle is squared, as at 44, and this squared portion is engaged by a similarly-shaped opening in the head 19, a nut 45, screwed on the outer end of the pintle, serving to hold the head rigidly associated therewith. In the swinging of the berth the two cylinders 23, with their associated mechanism, which constitute and will hereinafter be termed "swinging buffers," vibrate through like arcs, the spring 26 below the disk of one cylinder being compressed and that above the other disk being likewise compressed, so that it will be readily appreciated that there will be no jar or impact in the action of the buffers under the movement of the bed-bottom.

The form of suspending and motion-absorbing mechanism thus far described is adaptable for use and will be found thoroughly effective where the occupant of the berth is of comparatively light weight; but should the occupant be of great weight the mechanism might not prove thoroughly effective under all conditions, and to obviate this defect I may combine with the mechanism described at each end of the berth two additional motion-controlling or jar-absorbing springs, which by coacting with the swinging buffers will obviate the objection above noted. These springs 46 have their upper ends secured to two of the members of the brace 29 and their



lower ends curved outward and resting in recesses or grooves 47, formed in the edges of the brace members 18, the curvature of the portion of the springs engaging the grooves 5 47 serving to prevent such frictional resistance between the parts as would tend to negative the object sought. As herein shown, the springs 46 are formed at their upper ends into helices 48, that are mounted upon support 49, 10 carried by the two members of the brace 29, above referred to, the terminals of the helices being connected with the supports in such manner as positively to be held from turning thereon, and by this simple arrangement the requisite yield will be imparted to springs 46, 15 together with the required resistance to too ready yielding, as will be apparent. Should the berth be occupied by a person of excessive weight and it should be desired to increase 20 the resisting power of the springs 46 against flexure, two stops or pins 50 may be employed, these to be screwed into the side walls of the cabin and to serve as brakes to limit the outward movement of the springs 46, and also, as 25 will be readily understood by reference to Fig. 2, to increase their resistance against bending. As here shown, but two openings are provided for the stops 50; but it will be apparent that a series of these openings may be 30 provided for each spring, thereby to admit of any desired adjustment in use. Should it not be desired to employ the supplemental springs 46, these may readily be detached or may be rendered inoperative by removing the stop- 35 pins, flexing the springs outward, and inserting the pins in the openings, thus keeping the springs out of contact with the members of the brace 16.

In addition to the swinging buffers 23 and 40 the springs 46 I provide at the head and foot of the bed on the under side thereof and secured to the center sections of the bed-bottom frame a spring-buffer 51, the same comprising a cylinder having ears 52, through which 45 pass bolts 53, that enter the center sections of the frame, as shown in Fig. 2. Each end of the cylinder is closed in this instance by a threaded cap 54, centrally orificed to permit passage therethrough of a heavy rubber 50 rod 55, the same being covered with fabric to shield it from damage, each end of the rod being provided with an eye 56 to engage a pin or projection 57, extending outward from the side walls of the cabin below the bed-bottom, 55 as shown in Fig. 2. The rod carries intermediate of its ends a head or disk 57', rigidly associated with the rod, and interposed between the disk and the two caps 54 are helical springs 58, that operate to absorb the motion of the 60 berth, as will be readily understood. Where the berth is occupied by a person of ordinary weight, the swinging buffers 23 and fixed buffer 51 will be employed; but should the berth be occupied by a person of very light 65 weight the employment of the buffers 51 will be dispensed with, to effect which it will only be necessary to disengage the eyes 56 from

pins or projections 57, as will be readily understood.

As a means for holding the sides of the bed- 70 bottom frame turned to the position shown by dotted lines in Fig. 2 I combine with each headboard two gravity-catches 59, the inner ends of which are pivoted in horizontal alignment at 60 to the headboard, and the outer 75 ends of which are provided with notches 61 to engage pins or projections 62, carried by the ends of the folding sections of the bed-bottom frame, these pins being clearly shown in Fig. 4. Connected with each gravity-catch 80 59 is a cord or chain 63, the free ends of which are passed through a keeper 64 on the center member 17 of the brace 16 and connect with a ring or handle 65, by which arrangement both cords may be drawn upon 85 at the same time, thus to lift the catches 59 out of engagement with the pins 62 to permit the sides of the bed-bottom to drop to a horizontal position, as shown in full lines in Fig. 2. In order to effect automatic engage- 90 ment of the pins 62 with the notches 61 of the catches, the outer ends of the catches are rounded upward, as shown at 66, so that by this arrangement one person may readily effect the changing of the bed-bottom from the 95 position shown in full lines in Fig. 2 to that shown in dotted lines therein.

When the bed-bottom has its sides folded up, as shown in Fig. 2, and the occupant desires to prevent the berth from swinging 100 without dropping the sides, this may be effected by the employment of a lock or brake 67, which passes through the headboard and bears against or engages with an opening in the side wall of the cabin, and by this simple 105 arrangement disturbing the occupant of the berth for the purpose stated will be obviated.

In order to shield the suspending and motion-absorbing mechanism from view and 110 also to prevent any injury to the occupant of the berth which might occur by contact therewith, this mechanism is housed in a casing 68, (shown in Fig. 1,) the casing being provided with openings 69, through which the stops 50 115 will project, with an opening 70, through which the lock or brake 67 will project, and an opening 71, through which the operating cords or ropes 63 will extend. The casing is shown in this instance as connected with the 120 side walls of the cabin by bolts or screws 72, passing through ears 73; but the casing may be otherwise held positioned over the operating mechanism and still be within the scope of my invention. To give a neat and finished 125 appearance to the berth, the shield and other exposed parts of the mechanism may be covered by a fabric curtain, and as this will be readily understood detailed illustration is deemed unnecessary. 130

By reason of the manner in which the mechanism herein described is disposed within the cabin it will not present an unsightly appearance, as in effect by reason of the covering of



the operating mechanism in the manner described when the bed-bottom occupies a horizontal position, as shown in Fig. 2, the cabin would appear as an ordinary ship's cabin.

5 From the foregoing description it will be appreciated that every contingency that might arise to render the berth thoroughly comfortable to an occupant is provided for. Further, by reason of the simplicity of the  
10 parts employed and the manner in which they are disposed and cooperate the highest efficiency and durability in use will be effected with a minimum of danger of derangement or breakage in use.

15 As before pointed out, the invention is not to be limited to the precise arrangement, manner of cooperation, and proportion of parts of the elements constituting the device of the present invention, as it will be obvious that in  
20 carrying the invention into practice under various conditions many changes may be adopted and still be within the scope of my invention.

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

1. The combination with a swinging berth, of pivoted buffers operatively connected with the berth-supports, and motion-controlling  
30 springs disposed for flexure in planes parallel with those of the buffers.

2. The combination with a swinging berth, of pivoted buffers operatively connected with the berth-supports, motion-controlling springs  
35 cooperating with the buffers, and means for increasing or diminishing the resistance to flexure of said springs.

3. The combination with a three-part bed-bottom frame, of braces secured to the center  
40 section thereof and having their upper ends supported for swinging movement, fixed extensions projecting beyond the braces, and swinging buffers pivotally connected with said extensions.

45 4. The combination with a three-part bed-bottom frame, of braces secured to the center section thereof and having their upper ends supported for swinging movement, fixed extensions projecting beyond the braces, swing-

ing buffers pivotally connected with the said  
50 extensions, and motion-controlling springs cooperating with the braces.

5. The combination with a bed-bottom frame, of braces secured thereto and having  
55 their upper ends supported for swinging movement, fixed extensions projecting beyond the braces, swinging buffers pivotally connected with said extensions, motion-controlling springs cooperating with the braces, and  
60 means for increasing or diminishing the resistance to flexure of the said springs.

6. In a ship's berth, a bed-bottom comprising a frame composed of a fixed center section and hinged side sections, drop-rods rigidly  
65 associated with the center sections and pivotally associated with the side sections, a wire mattress suitably associated with the said sections, a three-part mattress supported  
70 upon the frame, head and foot boards associated with the center section of the frame and hung for swinging movement, gravity-catches carried by the head and foot boards and having means associated therewith for  
75 operating the same, and projections of the side pieces of the frame to engage with the gravity-catches to hold the side pieces turned at right angles to their normal positions.

7. In a ship's berth, a bed-bottom comprising a frame composed of a fixed center section and hinged side sections, drop-rods rigidly  
80 associated with the center section and pivotally associated with the side sections, a wire mattress suitably associated with the three sections, and a three-part mattress supported  
85 upon the wire mattress.

8. In a ship's berth, a bed-bottom frame supported for swinging movement and having  
foldable sides, in combination with means carried by the frame-support for engaging  
90 the sides to hold them turned at right angles to their normal positions.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two subscribing witnesses.

ADDISON W. HITT.

Witnesses:

D. E. NEWELL,  
IRVING H. SANBORN.