

(No Model.)

3 Sheets—Sheet 1

W. T. MILLIGAN.
SELF LEVELING BERTH.

No. 533,013.

Patented Jan. 22, 1895.

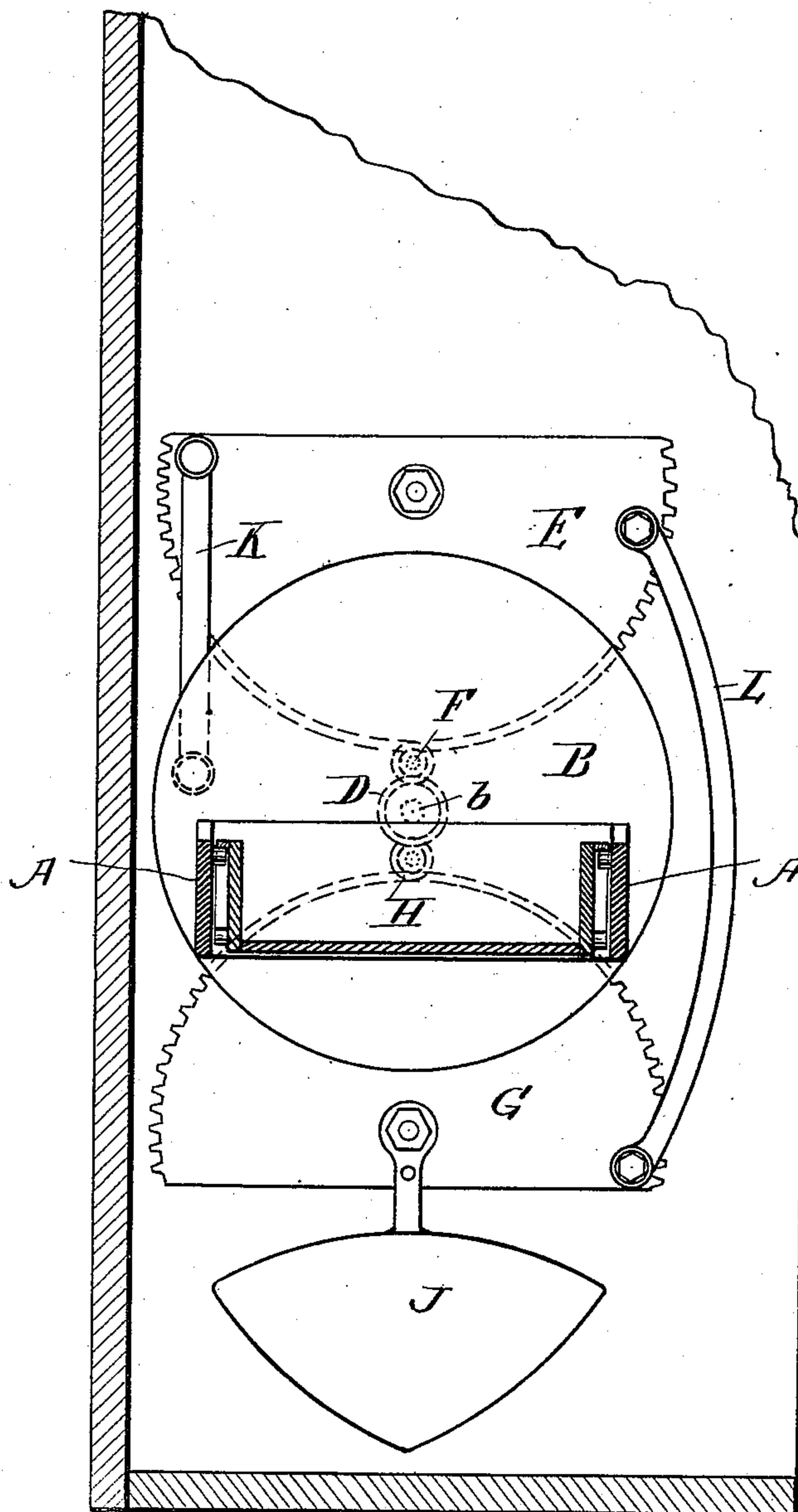


Fig 1.

WITNESSES

Percy W. Kenway
Eva A. Gould

INVENTOR

William T. Milligan
by Geo. D. G. Brown
attorney

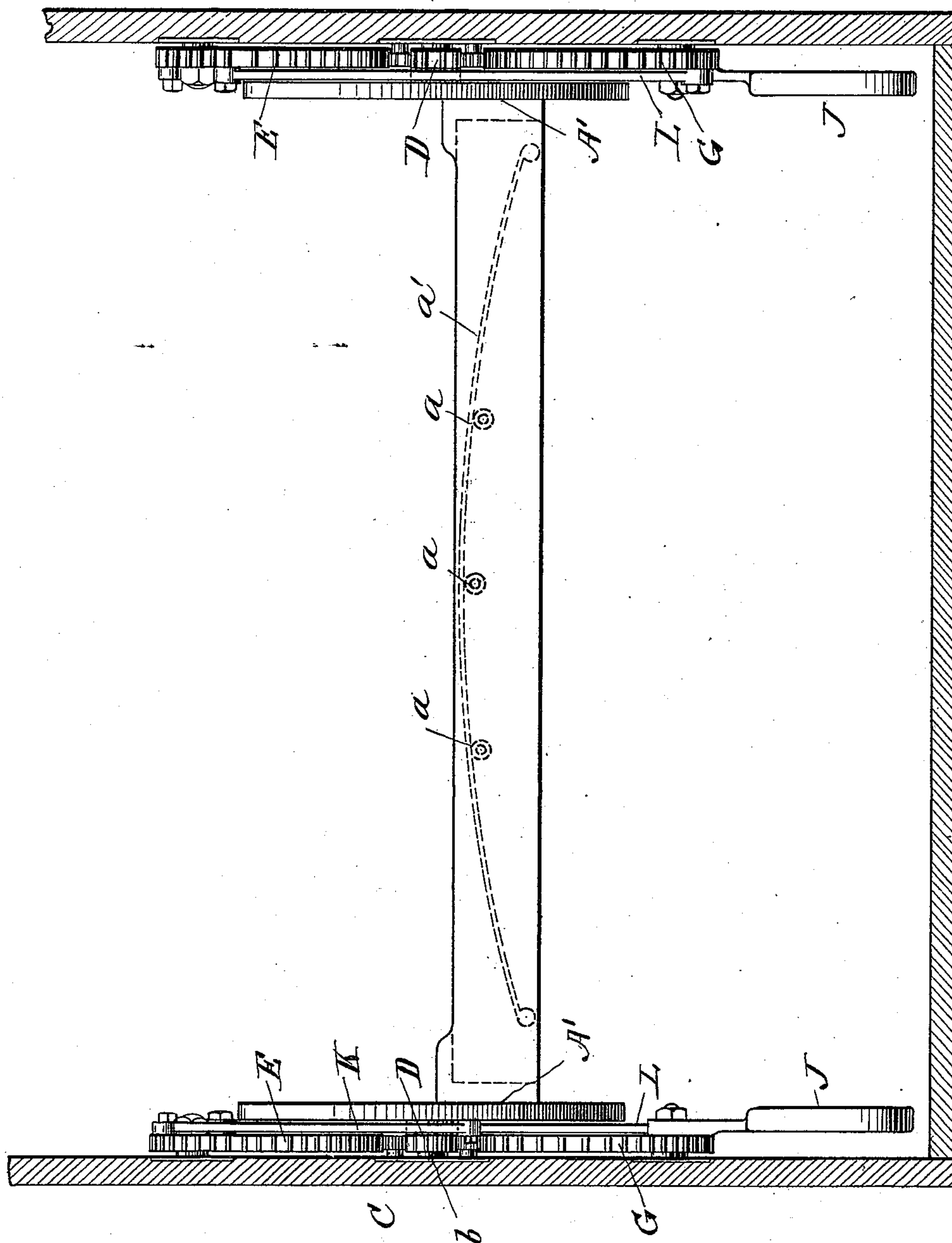
(No Model.)

3 Sheets—Sheet 2.

W. T. MILLIGAN.
SELF LEVELING BERTH.

No. 533,013.

Patented Jan. 22, 1895.



21

WITNESSES

Percy W. Kenway
Eva A. Guild

INVENTOR

Wm. G. Milligan
by Gen. D. C. Brown
his attorney

(No Model.)

3 Sheets—Sheet 3.

W. T. MILLIGAN.
SELF LEVELING BERTH.

No. 533,013.

Patented Jan. 22, 1895.

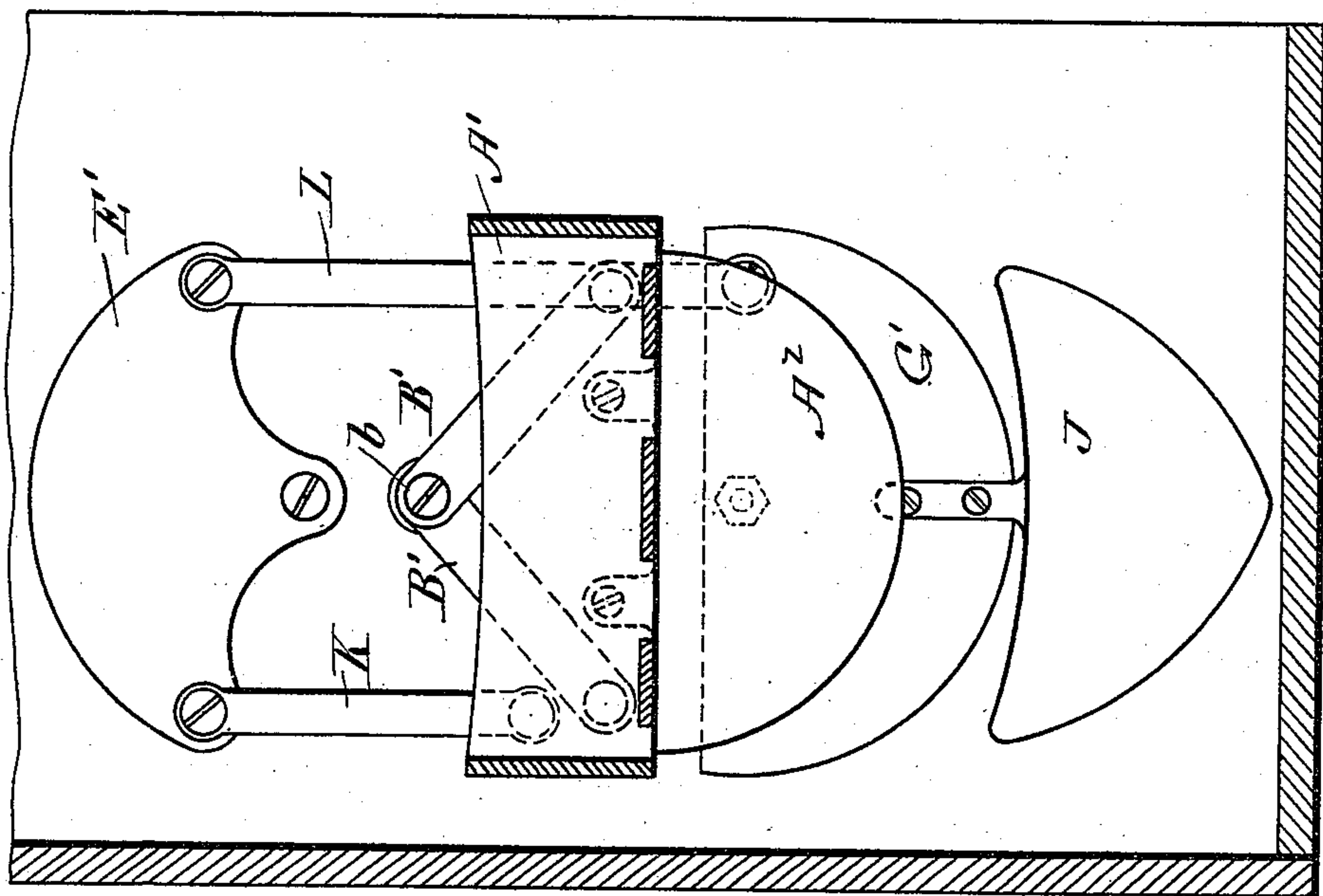


Fig. 3.

WITNESSES

Percy W. Kenway
Eva A. Guild

INVENTOR

William T. Milligan
J. C. O. G. G. G.
his atty.

UNITED STATES PATENT OFFICE.

WILLIAM T. MILLIGAN, OF BOSTON, MASSACHUSETTS, ASSIGNOR, BY MESNE ASSIGNMENTS, TO THE BRIGGS SHIPS BERTH COMPANY, OF PORTLAND, MAINE.

SELF-LEVELING BERTH.

SPECIFICATION forming part of Letters Patent No. 533,013, dated January 22, 1895.

Application filed May 29, 1894. Serial No. 512,917. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM T. MILLIGAN, of Boston, in the county of Suffolk and State of Massachusetts, have invented a new and useful Improvement in Self-Leveling Berths for Use on Board Ships, of which the following is a specification.

My invention relates more especially to means whereby the berth is prevented from swinging with each motion of the occupant, my berth however, being perfectly free to swing with every motion of the ship, and consists in such an arrangement of a heavy pendulum or governor under and in connection with a swinging berth that the leverage which the governor will exert on the berth will be greater than the leverage exerted by the berth on the governor.

I have shown in the drawings two forms of my invention. The preferred form is shown in Figure 1 which is a cross section of the berth, all the casings being removed so that the parts may be clearly seen, Fig. 2 being a side elevation. Fig. 3 is a cross section of a berth also embodying my invention in a somewhat modified form.

The berth itself consists of two side portions marked A and a head and foot portion marked A'. Upon the side portions are mounted a set of friction rolls a , over which runs a cord or strap a' connected at each end with the extremities of the mattress holder, which hangs from these straps. By this means the mattress is allowed a slight motion to compensate for the pitching of the ship. The mattress holder also carries a weight A^2 to keep the parts on their bearings. These rolls a are preferably placed on a radius representing the length of the mattress in order that the motion may be as steady and easy as possible.

The parts which compensate for the rolling of the ship, as shown in the construction in Fig. 1, are as follows:—The head and foot of the berth are each carried by a support B mounted on a stud b suitably attached to the upright C (generally a portion of the state room wall or bulkhead). Upon this same stud and permanently connected to the berth is a gear D. A yoke E in the form of a segment is also pivotally mounted upon the support C above the berth. In this form of my inven-

tion it is provided with gear teeth and is so located that a pinion F will lie between it and the upper periphery of the gear D. It will be seen that every motion of the berth will cause a corresponding movement of the yoke E through the gear D and pinion F. A second yoke or segment G is pivoted below the berth to the support C. It also is provided with gear teeth as shown, and is so placed with relation to the gear D that a pinion H lies between it and the gear D. This yoke G carries the heavily weighted governor J, which hangs considerably below its axis as shown.

The yoke E and the berth support B are connected by means of a rod K and the yoke E is connected to the yoke G by means of the connecting rod L. It will be noticed that the points of connection of the rod K with the berth support B and yoke E are at the same relative distances from the axes of these two parts, so that these two parts will move in unison, and in the same way the points of connection of the rod L with the yoke E and yoke G are at the same relative distances from the axes of these two yokes. Thus it will be seen that these parts will all have the same relative motion to each other about their various axes.

It will be seen that the governor is hung well below its axis. In fact the farther the better within the limits of the dimensions of the state room, as the farther its center of gravity is below its axis the longer its arm of the bell crank lever will be and consequently the greater will be its control over the movements of the berth. The purpose of this construction is to cause the governor to roll the berth by means of the connecting rods L and K and the various gears so as to keep it in horizontal position, whatever be the position of the occupant, and at the same time preventing it from being moved by the occupant because of his inability to get sufficient leverage to overcome the tendency of the governor J to remain in vertical position.

Another mode of embodying this invention is shown in Fig. 3, in which the head and foot of the berth A' are supported by straps B' from a stud b' , the governor J acting upon it to control it through a yoke G', the rod L, yoke E' and connecting rod K. It will be seen that

this berth embodies the same peculiarities, so far as the control of the governor over the berth itself is concerned, that are embodied in the berth shown in Fig. 1. In this drawing
 5 the dimensions of the governor differ somewhat from the dimensions of the governor in Fig. 1 so that it would undoubtedly be more effective. These parts are so arranged that they take up but little room and yet the gov-
 10 ernor will be effective to fully control the motions of the berth. It will also be apparent to any one skilled in the art that this invention may be embodied in other ways than that shown.

15 The drawings show in full the mechanism at but one end of the berth in elevation. I prefer however, to use the same mechanism at the other end of the berth, arranging it in exactly the same way at both ends, the connecting rods K being in both cases on the left
 20 of the various axes looking from the center of the berth toward each end and the connecting rods L being on the right of said axes, or vice versa. Thus when the ship rolls the
 25 berth will always be controlled by the combined action of the two governors. This construction is indicated in Fig. 2 of the drawings.

I am aware that weights have before now
 30 been used to control the movements of berths, but these prior constructions have either been such that they took up too much room so that they could not be practically used on board ship where waste room cannot be al-
 35 lowed, or the weight has been connected to the berth in such a manner that if the weight were removed the berth would upset, owing to the fact that its axis was below its center of gravity when the berth was occupied. My
 40 berth is free from these various objections and moreover it is so hung that it will swing without unnecessary friction and so will be fully controlled by its governor. The seg-
 45 ment G and pinion H may be used without the segment E and its pinion and connecting rods, if desired.

What I claim as my invention is—

1. In a self leveling berth mechanism, the swinging berth pivoted to a fixed pivot well

above its center of gravity, a governor piv- 50
 oted below it upon an independent axis and forming the vertical arm of a bell crank lever and a yoke mounted above said berth, one
 end of said yoke being connected with one 55
 edge of said berth, the other end being connected with the horizontal arm of said gov-
 ernor lever, all as set forth.

2. In a self leveling berth mechanism, a hanging berth, a governor swinging below it upon an independent axis and forming the 60
 vertical arm of a bell crank lever, and mechanism connecting the horizontal arm of said bell crank lever and said hanging berth, said
 mechanism consisting of a yoke pivoted above 65
 said berth and forming a lever having arms of substantially equal length and two connecting rods one extending from the extrem-
 ity of one arm of said yoke to said berth and 70
 being pivotally connected therewith, the other extending from the extremity of the
 other arm of said yoke to the horizontal arm of said bell crank, as and for the purposes set forth.

3. The self leveling berth above described carrying a gear D, the axes of said berth and 75
 of said gear being coincident, in combination with a geared yoke or segment E located above it, the pinion F located to engage there-
 with and with said segment E and a weighted geared yoke or segment G located below it 80
 and the pinion H located to engage with said segment and with the pinion D, and connecting rods connecting said segments G and E
 and the berth, as set forth.

4. In a self-leveling berth mechanism in 85
 combination with a hanging berth carrying a gear D, the axis of said berth and said gear being coincident, and a weighted geared segment G located below it and the pinion H, located to
 engage with said segment and with the pin- 90
 ion D, as set forth.

In witness whereof I have hereunto set my hand this 21st day of May, 1894.

WILLIAM T. MILLIGAN.

Witnesses:

GEORGE O. G. COALE,
 EVA A. GUILD.