No. 795,223. PATENTED JULY 18, 1905.

H. R. HERVEY.

BED BOTTOM.

APPLICATION FILED OCT. 11, 1904.

2 SHEETS—SHEET 1.

Fig. 1

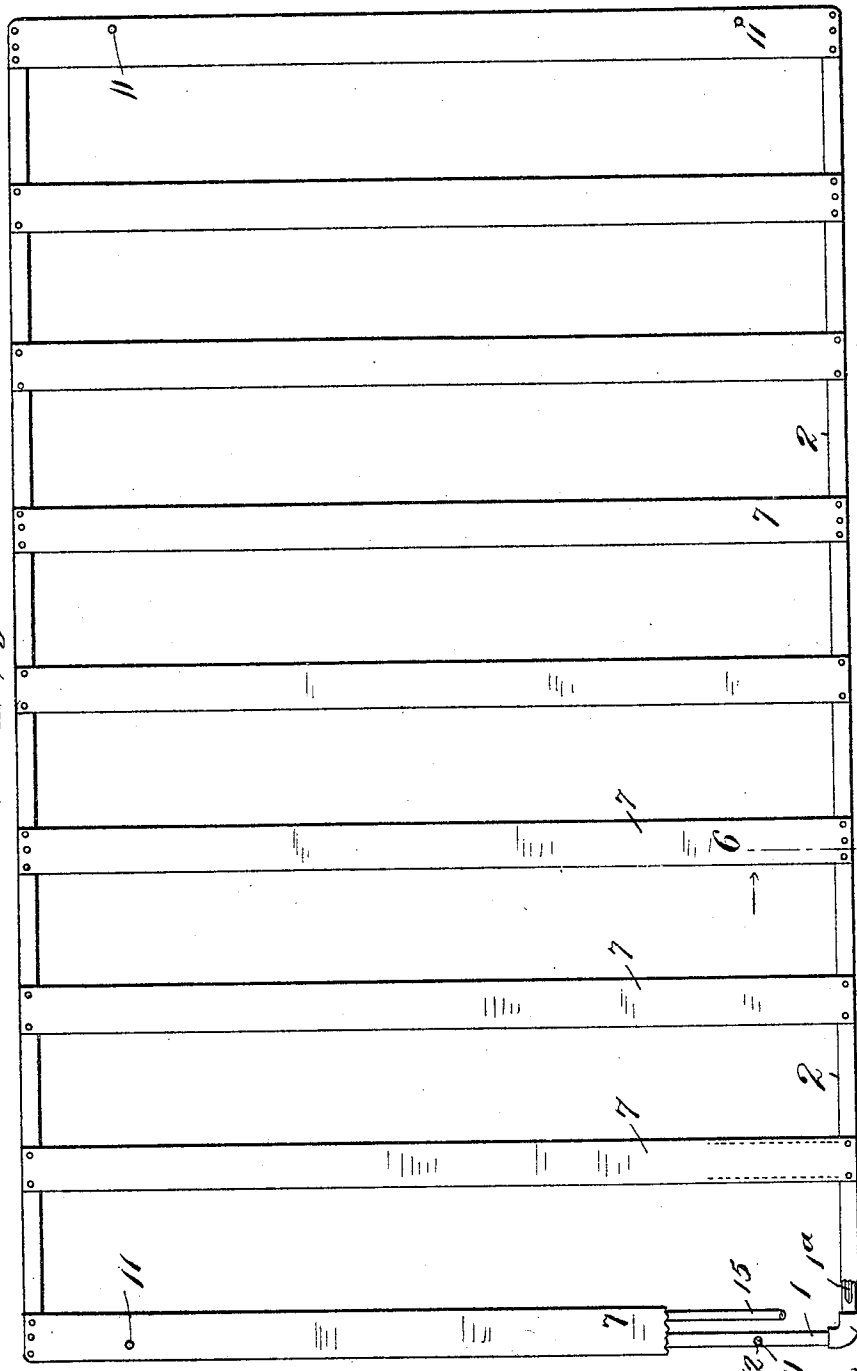
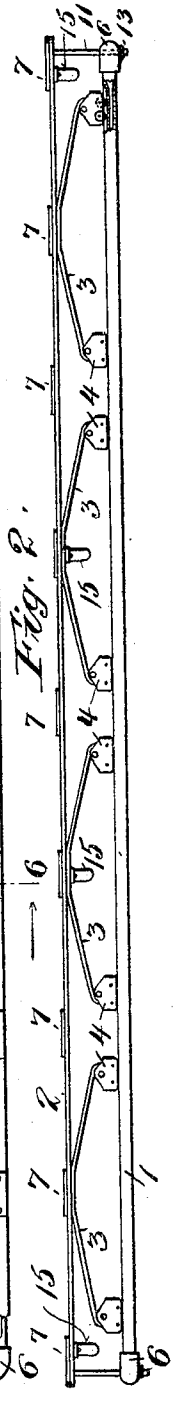


Fig. 2.



Witnesses
C. W. Benjamin
M. Hollingshead

Inventor
Harry R. Hervey.
By his Attorney T. F. Bourne

ANDREW B. GRAHAM CO., PHOTO-LITHOGRAPHERS, WASHINGTON, D. C.

No. 795,223. PATENTED JULY 18, 1905.

H. R. HERVEY.

BED BOTTOM.

APPLICATION FILED OCT. 11, 1904.

2 SHEETS—SHEET 2.

Fig. 8.

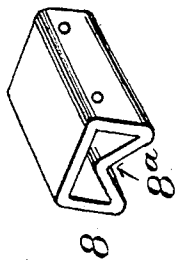


Fig. 7.

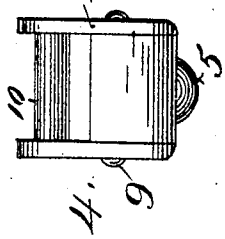


Fig. 6.

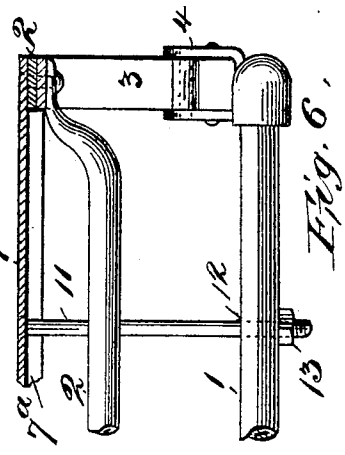


Fig. 4.

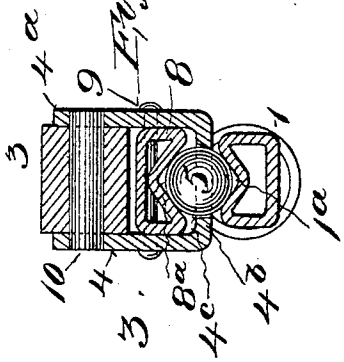


Fig. 3.

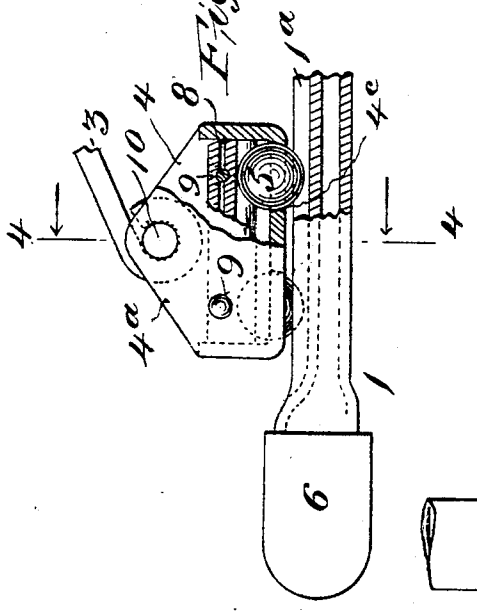


Fig. 9.

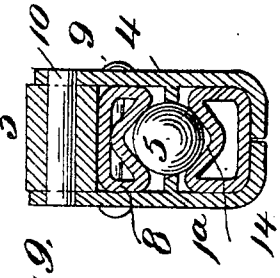
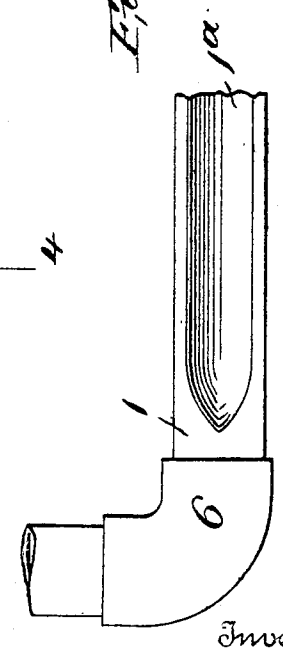


Fig. 5.



Witnesses.
C. W. Benjamin
M. Hollingshead

Inventor
Harry R. Hervey.
By his Attorney
T. F. Bourne

ANDREW B. GRAHAM CO., PHOTO-LITHOGRAPHERS, WASHINGTON, D. C.

No. 795,223. Patented July 18, 1905.

UNITED STATES PATENT OFFICE.

HARRY R. HERVEY, OF NEW YORK, N. Y., ASSIGNOR OF ONE-HALF TO NATHAN P. RATHBUN, OF BROOKLYN, NEW YORK.

BED-BOTTOM.

SPECIFICATION forming part of Letters Patent No. 795,223, dated July 18, 1905.

Application filed October 11, 1904. Serial No. 227,984.

To all whom it may concern:

Be it known that I, HARRY R. HERVEY, a citizen of the United States, residing in New York city, borough of Brooklyn, New York, have invented certain new and useful Improvements in Bed-Bottoms, of which the following is a specification.

My invention has for its object to provide a bed-bottom in which the mattress may be easily supported throughout its extent, so as to prevent sagging, and wherein the mattress will be resiliently supported and so that the parts will have freedom of movement under the weight of a person, whereby a comfortable and useful bed-bottom is produced.

The invention comprises the novel details of improvement and the combinations of parts that will be more fully hereinafter set forth and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming part hereof, wherein—

Figure 1 is a plan view, partly broken, of a bed-bottom embodying my invention. Fig. 2 is a side view thereof. Fig. 3 is an enlarged detail side view, partly in section, of one corner of the lower frame and the movable ball-carrier. Fig. 4 is a cross-section on the line 4 4 in Fig. 3. Fig. 5 is a detail plan view of one corner of the lower frame of the bed-bottom. Fig. 6 is an enlarged detail section substantially on the line 6 6 in Fig. 1 looking in the direction of the arrows. Fig 7. is an end view of the ball-guide. Fig. 8 is a detail perspective view of the ball-guide, bearing, or cup in the ball-carrier; and Fig. 9 is a detail sectional view showing means to keep the carriers 10 from rising from the guiding-bars.

Similar numerals of reference indicate corresponding parts in the several views.

The bed-bottom illustrated is provided with a rigid lower frame 1 to rest within a bed-frame and with an upper frame 2 to support a mattress, between which frames are interposed semi-elliptic springs 3, which extend along the longitudinal sides of the frames. To the ends of the springs 3 are pivotally attached ball-carriers 4, provided with anti-friction-balls 5 to travel upon the side bars of frame 1. The side bars of frame 1 on their upper edges are provided with grooves 1^a to serve as guiding-ways for the balls 5. In the form shown I make the bars of the lower frame 1 of suitable tubes, which may be connected by elbows 6 to form a rigid structure, and the grooves or ways 1^a are formed by depressing the upper walls of the side bars. (See Fig. 4.) The upper frame 2 I have shown consists of side and end bars connected together by cross-slats 7, which may be riveted to the bars 2. The cross-strips 7 may be made of relatively thin metal and strengthened by braces 7^a, which may be made by bending one or more edges of the strips 7 at right angles in channel or L form or by attaching a strengthening-strip beneath the cross-strips 7 in well-known manner. I have shown certain of the springs 3 as secured to the side bars 2 beneath the ends of certain cross-bars 7, whereby the bars 2 and 7 and the springs may be riveted together in a firm structure. The ball-carriers 4 have sides or lugs 4^a and a bottom 4^b, forming a space to receive the balls 5, which are located in and project through openings 4^c in the bottom 4^b, and at 8 is a bearing or cup for the balls secured within the carrier 4, as by rivets 9, and resting upon the balls. As shown in the drawings, the bearing 8 is composed of a tube having one wall bent at 8^a in manner corresponding to the way 1^a of tube 1 and is inverted over tube 1, so that the balls ride in the space between the grooves 1^a and 8^a. (See Fig. 4.) The ends of the springs are shown provided with an eye or coil located between the sides or lugs 4^a of the ball-carrier and receiving a bolt or pivot 10, whereby the springs are pivotally connected with the corresponding ball-carriers 4. To keep the upper and lower frames 1 2 in proper relation and permit the frame 2 to rise and fall, I secure to the end bars of frame 2 depending rods 11, which pass freely through holes 12 in the lower bars of frame 1, nuts or stops 13 on the rods 11 serving to limit the upward movement of frame 2, and said rods 11 limit lateral play of frame 2 over frame 1.

In Fig. 9 I have shown the carriers 4 as

provided with yokes or stops 14, which extend downwardly and under the side bars of frame 1 and keep the carriers 4 from rising from said side bars. Bumpers or stops 15 (see Fig. 2) may be provided on the frame 2 for contact with the side bars 1 (or on the side bars 1 to resist the bars 2) to limit the downward movement of frame 2 to prevent undue strains on the springs 3.

Any suitable number of springs 3, with their carriers 4 at the ends, may be connected with the top frame 2 on the sides and also at the ends of the bed-bottom, if desired, and said springs may be of relatively light tension and yet sufficiently stiff to resiliently support a mattress and one or more persons lying thereon. Under the weight of the person on the mattress the springs will bend, and by reason of the antifriction ball-bearing connections between the ends of the springs and the bars of the lower frame the springs can move freely at their ends upon said bars. As the frame 2 may be made very rigid and yet be resiliently supported upon spring 3, the mattress will be kept from sagging while having free vertical movement, producing thereby a very comfortable and resilient mattress.

While my improvements are shown in connection with a bed-bottom, it will be understood that they may be used in other relations—as, for instance, the springs, with their ball-carriers and the frames, may be incorporated in a vehicle, the seats being carried by frame 2—and in such case it will be desirable to provide stops or yokes 14 to keep the ball-carriers 4 from rising from the side bars as the vehicle runs along the ground.

Having now described my invention, what I claim is—

1. The combination of lower and upper frames, with semi-elliptic springs interposed between said frames and secured to one of the frames, said springs at their ends having ball-carriers provided with balls resting upon side bars of the opposed frame, said bars having ways receiving said balls, substantially as described.

2. The combination of lower and upper frames, with semi-elliptic springs interposed between said frames and secured to one of the frames, said springs at their ends having ball-carriers provided with balls resting upon side bars of the opposed frame, said side bars having depressed ways receiving said balls, and means interposed between said frames to permit vertical movement of one frame with respect to the other and to prevent lateral displacement of the movable frame with respect to the other frame, substantially as described.

3. The combination of lower and upper frames, with semi-elliptic springs secured to one of said frames, ball-carriers pivotally connected with said springs and provided with inverted depressed guides, balls entering said guides and bearing on side bars of the lower frame, said side bars having depressed ways receiving said balls, substantially as described.

4. The combination of lower and upper frames, the lower frame having tubular side bars the upper surfaces of which are bent inwardly forming depressed ways, semi-elliptic springs secured to the upper frame and extending over the side bars of the lower frame, ball-carriers pivotally connected with said bearings and provided with guides facing the ways of the lower frame, balls interposed between said guides and ways, and means for keeping the balls in position in the carriers, substantially as described.

5. The combination of lower and upper frames, with semi-elliptic springs secured to the upper frame, ball-carriers connected with said springs, said carriers having side members between which the ends of the springs are pivotally attached, said carriers also having bottoms provided with openings and having guides above said openings, and balls located in said openings resting upon the side bars of the lower frame, the guides resting upon said balls, substantially as described.

HARRY R. HERVEY.

Witnesses:
T. F. BOURNE,
M. HOLLINGSHEAD.