W. M. WILLOUGHBY.

Bed-Bottom.

No. 210,980. Patented Dec. 17, 1878.

Fig 1

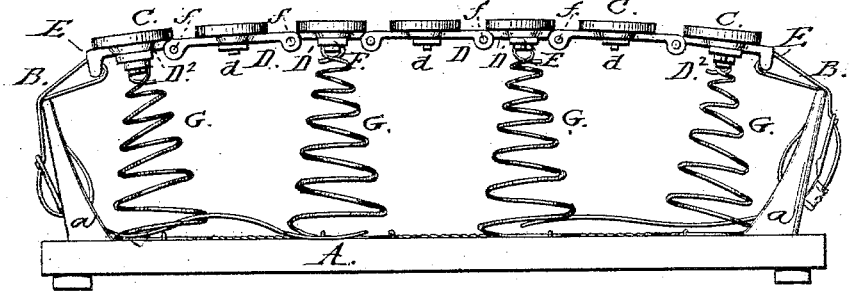


Fig 2

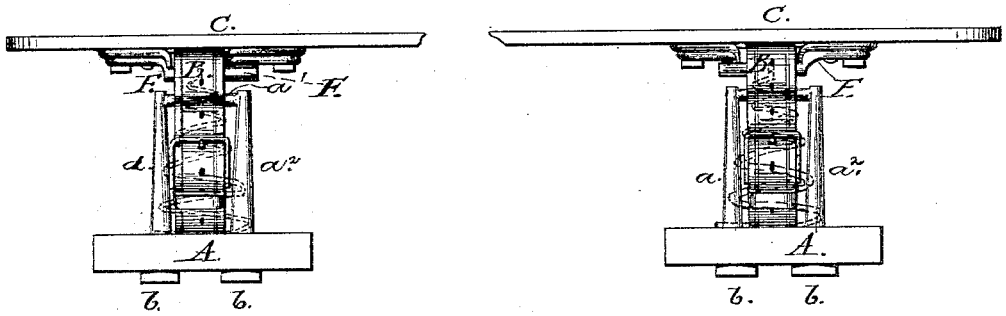
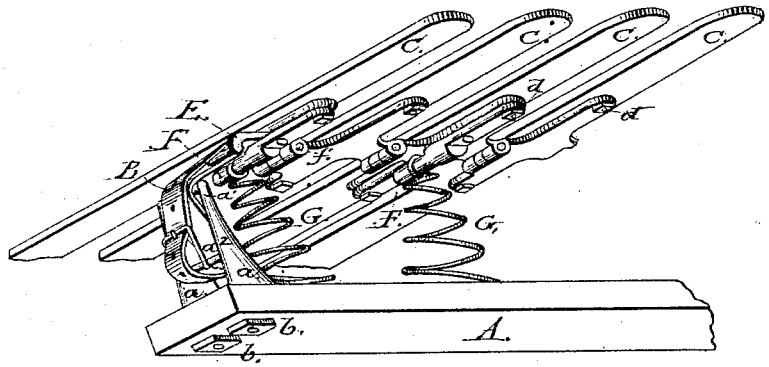


Fig 3



Attest:

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UNITED STATES PATENT OFFICE.

WILLIAM M. WILLOUGHBY, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN BED-BOTTOMS.

Specification forming part of Letters Patent No. **210,980,** dated December 17, 1878; application filed February 2, 1878.

To all whom it may concern:

Be it known that I, WILLIAM M. WILLOUGHBY, of the city of Philadelphia, and State of Pennsylvania, have invented a new and useful Improvement in the Construction of Spring-Beds, of which the following is a specification:

It consists, first, of two or more series of hinged plates, forming chains for the support of the bed-slats, some of said plates being provided with hooks, to which are attached spiral springs, which form the elastic bearings of the bed-bottom.

It consists, secondly, of certain arms, hereinafter to be described, secured to beams of the bed-bottom, which, in connection with adjustable straps attached thereto, and to the hooks of the outside plates of the chains, serve to hold the spiral springs to the required tension, and to keep the bottom steady in its movement.

Referring to the drawings, Figure 1 is a side elevation of my bed-bottom. Fig. 2 is an end elevation of the same. Fig. 3 is a perspective view, exhibiting the principal features in my device.

Similar reference-letters indicate like parts in all of the figures.

Referring to drawings, A is a beam, which rests upon the rails of a bedstead, having attached to it, by screw bolts and nuts *b*, supports *a*, which extend upward from said beam, and are connected at the top and intermediately by bars a^1 a^2. These supports are fixed on the ends of each beam, to be used in connection with straps, hereinafter to be described.

The slats C are united and held together by hinged plates D D^1 D^2, to which they are attached by screws and nuts *d*. The hinged plates D D^1 D^2 are formed to fit the one into the other, after the manner of a strap-hinge, being secured by pins *f*. The plates D^1 have secured to them hooks F, over which may be slipped the upper ends of the spiral springs G. The plates D^2, forming the ends of the chain of hinged plates, are provided with additional hooks E, over which are secured the straps B. These straps are of leather or other suitable flexible material, provided with ordinary buckles, by which they may be adjusted. They are looped to the bar a^2 of the supports *a*, and bear upon the bar a^1, to hold the slats in position and increase or decrease the tension of the springs G. The springs G, which are made of wire of varying thickness and strength, to bear a greater or less weight, are coiled in different directions alternately, so that in yielding to vertical pressure they may be caused to approach and brace each other, to give firmness and strength to the structure. Said springs are secured at their bottoms to the beams A, by staples or other known devices for the purpose. To prevent clashing together, these springs are stayed by cords, which unite them and prevent their ends from striking together.

The slats in my bed-bottom are not unlike those in general use, and extend at right angles across the several chains of hinged plates, described, and to which they are attached.

In ordinary spring-beds, the top of the spring, not being properly fastened, frequently becomes loose and tears the mattress. In my improvement the top spiral of the spring is fastened by a peculiar turn around the pin of the hinge-joint, and is kept in place by a metal block fastened by nut and bolt, thereby making it immovable, unless by removing the metal block which is beveled to hold the pin.

The great objection to the use of spring-beds in the past has been the want of uniformity in the yielding of the slats to the pressure of the weight of the body. Where webbing is employed to support the slats and each slat is nailed to the webbing, the body of the sleeper forces the slats on which it rests downward, leaving the others elevated, causing a sensation similar to resting on two rails, which is felt even through the mattress. The webbing becomes looser from stretching every day, and finally breaks, and, besides, becomes a ready breeding-place for vermin. Where the slats are supported by straight pieces running across the bed, the elasticity of the bed is lost, and it becomes stiff and rigid.

In my improvement I place upon each slat a metal joint, with projecting arms or joints, which fit into flanges on the other joint on the next slat, which are joined by a pin, making thus a connecting hinge-joint between each

slat, and thereby giving equal tension or elasticity to the whole surface on which the mattress rests.

What I claim is—

1. In a bed-bottom, the hinged plates D D^1 D^2, provided with arms extending at right angles to the lines of the chains, to which arms the slats C are attached, in combination with springs G, attached to hooks F, secured to plates D^1 D^2, as and for the purpose set forth.

2. The plates D^1, with hooks F attached, in combination with springs G and beams A, as and for the purpose set forth.

3. In combination with beam A, the arms *a* and adjustable straps B, attached to hooks formed on plates D^2, as and for the purpose set forth.

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Witnesses:

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