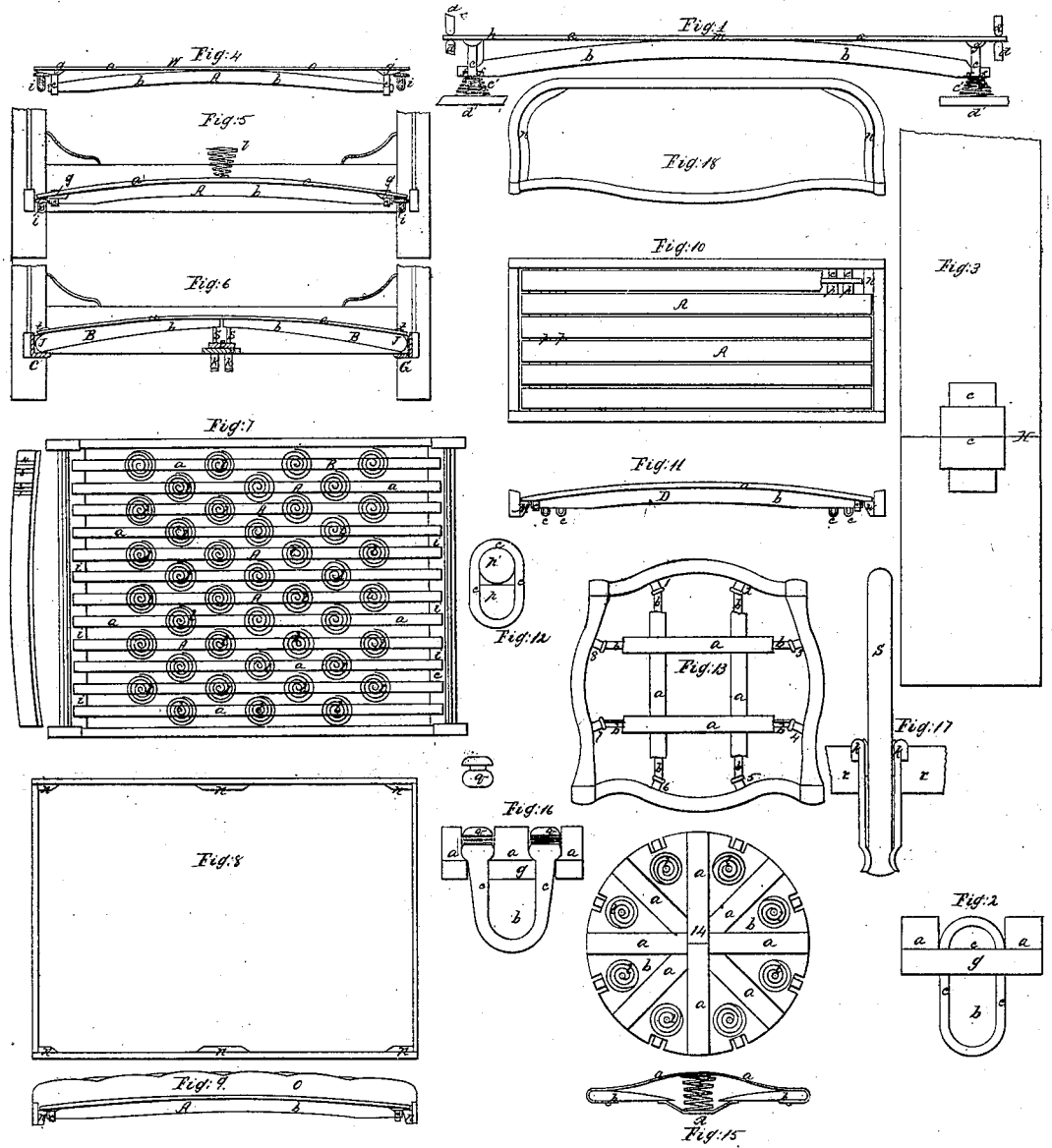
J. Perry,

Bed Bottom,

No. 50,840. Patented Nov. 7, 1865.



Witnesses
Chas. A. Perry
H. Christmann

Inventor
James Perry

UNITED STATES PATENT OFFICE.

JAMES PERRY, OF BROOKLYN, NEW YORK.

ELASTIC SUPPORT FOR BEDS, SEATS, &c.

Specification forming part of Letters Patent No. **50,840**, dated November 7, 1865; antedated November 2, 1865.

To all whom it may concern:

Be it known that I, JAMES PERRY, of Brooklyn, in the county of Kings, in the State of New York, have invented a new and useful Improvement in Elastic Supports for Beds and analogous uses; and I do hereby declare that the following is a clear and exact description thereof, reference being had to the accompanying drawings, and the letters of reference marked thereon.

The object of my invention is the production of flexible sphero-form seats, beds, and supports for persons in sitting and incumbent positions, and to proportion the degree of flexibility and rigidity of the parts, so that they shall be maintained in their proper positions under all the circumstances attending their use, to give ease and comfort to the persons occupying the same, and to give rotund and elegant position to the cushions, pads, mattresses, and bedding, of seats, bedsteads, &c., when they are unoccupied.

Ordinary slats that are thin enough to be easily flexible soon acquire an inverted curvature by use, and such inversion is disagreeable; and, furthermore, cushions, mattresses, and bedding lying on or connected to such supports lack the elegance that reverted and elevated curvature of surface imparts to them.

I obtain the requisite degree of strength and rigidity in the sphero-form supports by arching and disposing some of the parts edgewise with respect to the weights and strains they are to sustain, and combining therewith springs and strips in such manner as to leave each spring and compound slat to move proportionally to the stress upon it, and the whole sphero-form support to vibrate within certain limits. I prepare a number of springs and arched ribs. These ribs are each shaped and connected in such manner as to produce a flexible beam or elastic compound slat, and a number of these are mounted by the aid of the springs in the frame of a chair, sofa, car, or carriage seat, bedstead, or cradle to form the flexible sphero-form supports. Two or more of these flexible beams or compound slats may be used in some instances on which to support the others near their ends; and in other cases each sphero-form support may be suspended directly from pins or other supports by flexible links made of rubber or other suitable material.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation by the aid of the drawings.

The same letters refer to corresponding parts in all the drawings.

Figure 1 represents the parts composing the elastic compound slats of which my flexible sphero-form supports are in part composed, and the description of these and of the effect of the weight W acting thereon illustrates the principle of operation and its application to the purposes herein set forth.

I shall now describe the parts and construction of Fig. 1, and next describe the parts and construction of the other drawings, and the application of the mode of operation thereto.

Figs. 2 and 3 represent a portion on a larger scale. Fig. 2 is a section of the strip *a* at the line H H, Fig. 3. Fig. 3 is a plan view.

Referring to the marks of reference, *a* is a strip or slat. *b* is a rib. *c c* are rubber springs. *d d d' d'* are transverse supports, and W is a weight. The strip *a* is a half-inch thick, two and one-fourth inches wide, and six feet long. The rib *b* is three-fourths of an inch thick and curved to a circular, elliptic, or other curve of more or less convexity, and deep enough to give ample strength to support the strain to which it may be subjected when in use. Its length is nearly equal to the distance between the supports *d d*, and its lower edge at the ends are semicircular, as shown in Fig. 2. The rubber springs *c* may be made similar to rings cut from rubber pipe, and they are to be passed under the semicircular ends of the ribs *b b*, Fig. 2, and up into the strip *a* and over the semicircular stay *e e*, Figs. 2 and 3. The springs *c' c'* may be made of metal, of the conic spiral form, and combined with the springs *c c* in the manner indicated, so as to transfer a part of the weight from the slat *a* to the transverse beams *d'*, the spring *c'* being allowed to act between the supports *d' d'* and the projections *f f* on the ends of the rib *b*. The supports *d'* will act as a positive stop to prevent the rib *b* from descending so low as to destroy the spring *c* under any circumstances. Thin

and narrow slats *a* may be strengthened by gluing the piece *g* on the under side at the points where the springs *c* enter them. The springs *c* and *c'*, or one of each pair, act at each extremity of each rib *b*. When the weight W is removed the flexible beam or compound slat becomes arched, rising in the center until the strip *a* conforms to the curve of the upper edge of the rib *b*, to be again straightened when the weight W is again applied. It is obvious that a less weight laid on the compound slat at the same point will produce a less depression of it, or the same weight laid on several similar slats will have a like effect; also that the flexibility of the strip *a* itself increases with the weight, as its points of support recede, until it touches the curve of the rib *b* at only a single point, as at *m*, Fig. 1.

Fig. 4: A represents another modification of my invention. It is an elastic compound slat like that above shown, except that the springs *c'* are omitted and the ends of the ribs *b* rest on transverse slats of like compound construction, the ends of which are seen at *i*.

Fig. 5 represents a bedstead having its front side removed, showing a compound slat of the construction of Fig. 4 resting on like compound slats *i i*, applied thereto. It may be entirely covered with conical springs, one of which is indicated at *l*.

Fig. 6 represents another form of my invention. It is a bedstead having its front side removed, showing a compound slat, B, divided in the middle. The half-ribs *b b* are centered by the pins J J at the large end of each, while the contractile springs *k k*, fixed on the cross-piece *n*, under the middle of the strip *a*, force up the rods S S against the under edge of the ribs *b b* at their inner ends and deflect them upward until the strip *a* conforms to the curved edges of the said ribs *b b*. They may be kept in place endwise by screws passing through cross-pieces *t t* into elongated holes in the slats and ribs under them.

Fig. 7 is a plan view of the constructions represented in Figs. 5 and 6. It shows the longitudinal slats A or B resting on transverse supports *i i* at the ends, and a number of the conical springs *l l l l*. The slats A or B may be attached to the transverse pieces *i i* by pins, or they may lie in recesses in *i i*, or they may be retained by a rack. C, on the supplementary figure by the side of Fig. 7, represents the construction of a simple transverse support, with attachments 1 2 3 4, leaving recesses between them for centering the ends of the ribs *b b*. This rigid and curved transverse support may be substituted for the flexible transverse beam or support *i*, (shown in Figs. 5 and 6,) and may be used either with or without the said attachments 1 2, &c.

Fig. 8 represents the plan of a frame with the abutments *n n n n* at the ends and middle for sustaining the transverses *i i* on which to rest the longitudinal compound slats A or B, Figs. 5 and 6.

Fig. 9 represents a side view of a frame analogous to that in Fig. 8, with the end supports *n n* extended quite across, so as to support all the slats A directly. The mattress O rests on or is secured to the compound slats A or B, Figs. 5, 6, the whole forming a combination consisting of the ordinary hair or hair-and-spring mattress combined with a number of the elastic compound slats resting on transverse supports or the abutments *n n n n*.

Fig. 10 represents a car or carriage seat unframed. It has longitudinal slats of the construction shown in Fig. 4, one of which is broken to show the work below. The slats rest on abutments *n n*. The transverse bars *p p p p* are connected to the frame by the flexible rubber links *c c c c*, suspended from pins (not represented) driven in the frame directly over the ends of the bars *p*, (the plan shown in Fig. 12, in which *p* represents the bar.)

Fig. 11 represents one of the longitudinal compound slats combined with the bars *p p p p* and links *c c c c*, to give additional security to the former where this is deemed requisite.

Fig. 12 is a cross-section, on a longer scale, of the end of one of the compound slats and supports shown in Figs. 10 and 11. The rubber spring is indicated by *c*, while *p* represents the bar and *q'* the pin above it.

Fig. 13 represents the frame of a chair and the plan of two sets of the elastic compound slats *a a a a*, crossing each other at right angles. They are supported by the pins 1, 2, 3, 4, 5, 6, 7 and 8, the ends of the ribs *b b b b* being connected under the pins by the flexible links *c c c*, Fig. 12. The strips *a a*, for small seats, may be made of hoop-iron, and they may rest by their ends on the frame over the pins 1, 2, 3, &c.

Fig. 14 is a plan, and 15 a section, of a seat which may rest upon the compound cross-slats in the frame represented by Fig. 13, constructed of the elastic strips of hoop-iron *a a a a* and conic springs *l l l l* and curved disk *b*, and the double conic spring *c'* and support *d'*.

Fig. 16 represents a rubber spring, *c*, made by cementing or lashing two buttons, *q q*, one in each end of a piece of elastic pipe. It also, in common with Fig. 2, represents the mode of securing the said spring to the slot *a*, and the use of the tie *g* before referred to, to strengthen the former where it is weakened by the enlarged parts made by the buttons *q q*, which rest on seats in the slat above the tie *g*.

Fig. 17 represents the mode of constructing the spring *k*, (see Fig. 6,) and also a mode of securing it to the transverse piece *r* and rod S. The spring *k* is formed of a piece of elastic pipe, having one end enlarged, by turning over and cementing a portion of itself on the external surface of the other part, and by lashing the rod S inside at the other end. The enlarged end is secured to the transverse *r*, by expanding the thimble *u* inside of the enlarged part of the spring *k*, through which the

rod S plays as the ribs *b b* (see Fig. 6) rise and fall.

Fig. 18 represents the frame of a sofa or lounge having the abutments *n n* extended across each end, on which to rest the elastic compound slats of the construction herein described, or to support a frame containing the flexible sphero-form support and cushion.

I do not limit myself to the precise arrangements as herein described.

What I claim, and desire to secure by Letters Patent of the United States, is as follows:

1. The strips *a*, arched ribs *b*, and elastic supports *c*, arranged as represented, whether the spring *c* be supported by a pin, *d*, or attached to the adjacent part of strip *a*, as and for the purpose specified.

2. Supporting the compound slats *a b c* on corresponding compound transverse supports *i*, so as to obtain an elastic action in both directions, substantially in the manner and for the purpose herein set forth.

3. The elastic additional supports or stops *c' d'*, arranged substantially as specified relatively to the compound slats *a b c*, for the purpose herein set forth.

4. The knobbed or swelled springs *c q*, arranged to operate in combination with the strips *a* and arched ribs *b*, or their equivalents, in the manner and for the purposes substantially as specified.

JAMES PERRY.

Witnesses:
CHAS. A. PERRY,
H. CHRISTENSEN.