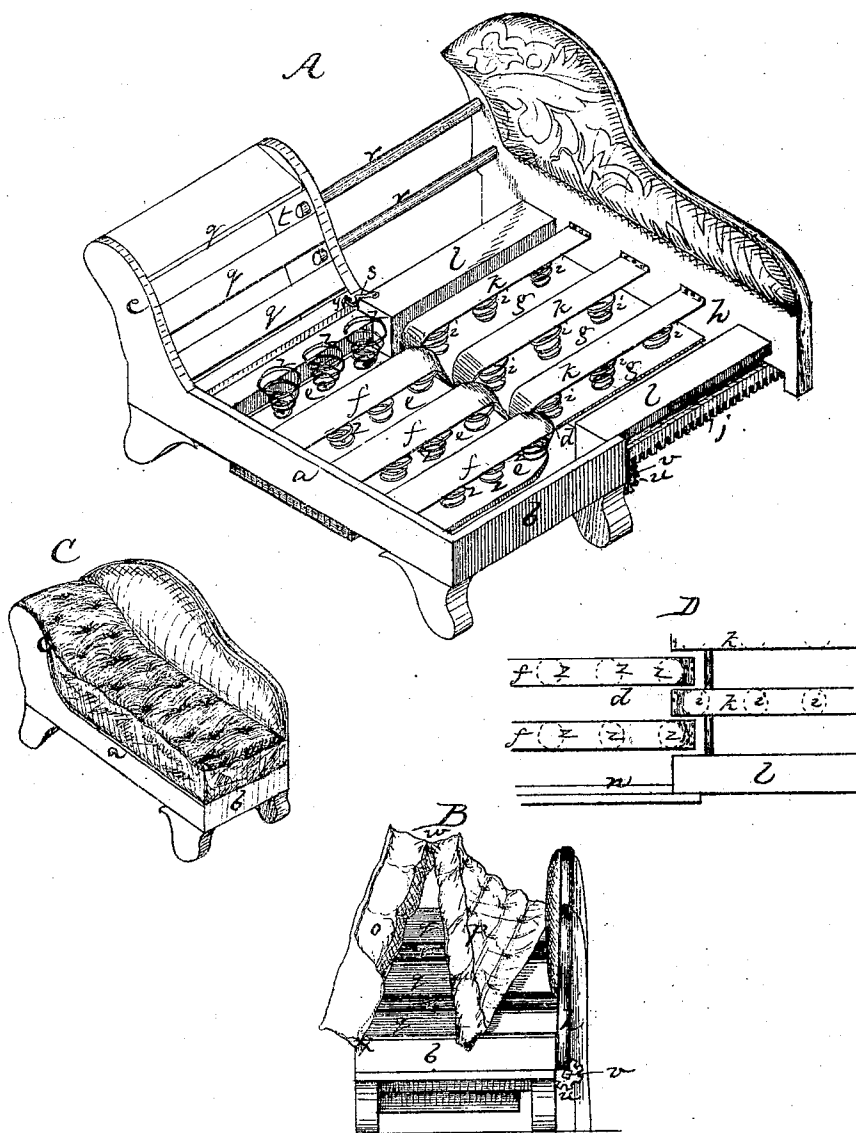


S. GRAVES.

Improvement in Sofa Beds.

No. 124,265.

Patented March 5, 1872.



Witnesses.
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UNITED STATES PATENT OFFICE.

SAMUEL GRAVES, OF NORTH WEYMOUTH, MASSACHUSETTS.

IMPROVEMENT IN SOFA-BEDS.

Specification forming part of Letters Patent No. 124,265, dated March 5, 1872.

To all whom it may concern:

Be it known that I, SAMUEL GRAVES, of North Weymouth, in the county of Norfolk and State of Massachusetts, have invented an Improved Sofa-Bed; and I do hereby declare that the following, taken in connection with the drawing which accompanies and forms part of this specification, is a description of my invention sufficient to enable those skilled in the art to practice it.

I make the sofa in two parts, the front and main part being stationary, and embracing the front rail, the end rails, and the sofa-feet; and the other part being movable and embracing the sofa or lounge back (having beneath it suitable feet) and a series of horizontal slats, (preferably spring-supporting slats) which slats slide between stationary slats (also preferably supporting springs) on the main part. The movable or sliding frame has at its opposite ends two rails, which slide into the main frame, each rail having on its bottom part a gear-rack, into the teeth of which meshes a gear-pinion on a shaft turning in stationary bearings fixed to the main frame, said shaft extending from end to end of the bottom part or frame of the sofa, and the rotation of the shaft and its two pinions, and the consequent movement of the two frames asunder to form the bed, or together to form the sofa, being effected by a key or wrench applied to one end of the shaft. It is in this construction of the sofa or sofa-lounge that the invention primarily consists.

The drawing represents a sofa-bed embodying my invention. A shows the sofa opened or made into a bed-bottom, the beds being removed. B is an end view of the closed-up sofa, showing the beds partially open or unfolded. C shows the sofa. D is a plan of one end of the open frames. E is a reversed plan of the gear-shaft and adjacent parts.

a denotes the front rail; *b*, the end rail; and *c*, the inclined head or arm of the sofa. At the bottom of the frame is a floor, *d*, having upon it a series of bars or slats, *e*, upon each of which may stand a set of coiled springs, *z*, which are preferably covered and kept in place by tapes *f*. When the sofa is closed up, the space between every two adjacent bars or slats is occupied by a similar but sliding bar or slat, *g*, said slats *g* extending from the back *h*, and each serving as the support or foundation for a set

of springs *i*, which may be covered by a tape, *k*. At the head and foot of the slats *g* are two slide-rails, *l*, said rails each having a groove or mortise, *m*, into which fits a tongue or tenon, *n*, on the inner side of the adjacent rail. By means of these rails and their grooves, and the tenons *n*, the rails *l* slide freely into and out from the main frame, the springs serving, when the rails are slid outward, as the foundation for the two parts, *o p*, of the bed, said parts being opened and arranged side by side. When slid in the springs serve as the support for the same parts *o p*, which parts are then folded together one on top of the other. At the head of the sofa is a series of cross-bars, *q*, for supporting the folded parts *o p* in inclined position; and to furnish a similar support for the movable part of the open bed, slide-rods or bars *r* are fastened to the sofa-back, said rods extending through the arm piece *t*, and occupying positions between the bars *q* when shut or slid in, and occupying positions to similarly support the bed when the frames are opened. To fasten the frames in position when open a hook, *s*, and eye *y* may be used, or other locking devices, which will keep the parts from further separation. On the outer side of each slide-rail *l* is a gear-rack or rack-bar, *j*, into the teeth at the bottom of which mesh the teeth of a gear or pinion, *u*, said pinion being fixed on a shaft, *v*, turning in stationary bearings at the rear side of the stationary frame, the rotation of the shaft working the two pinions, and thereby sliding the racks and the movable frame either in or out, in accordance with the direction of rotation of the shaft. The bed or mattress is composed of the two parts *o p* hinged, jointed, or connected together at one edge, as seen at *w*, the upper part being also connected to the front rail, as seen at *x*, the two parts folding together and resting upon the sofa-springs to form the bed, and being opened and laid side by side, the part *p* resting upon the springs *i* and the part *o* upon the springs *z*.

For a sofa, the springs should be numerous and near together, and the cushion thick, and the nearness of the springs and thickness of the cushion are both obtained by the assembling together of the two sets of springs, and doubling up of the bed or mattress, while the thin mattress required by the springs and the less number or extent of spring supports re-

quired for the mattress in the open bed are attained by the unfolding of the double mattress and the separation of the springs. The top and edges of the part *c* of the mattress are covered with hair-cloth, rep, or other suitable covering, (matching the back,) and when the bed is closed up to form the sofa, the projecting parts of the covering are fastened down to the frame-work, and conceal the evidences of the bed construction.

In the ordinary construction of a sofa-bed, the folding parts are not in one plane when folded, as in this construction, and, occupying different planes, one above the other, the bottom part has to be carried very low. In this construction the two parts always being in the same plane, room is left for applying a drawer beneath the bottom board, said drawer answering for reception of blankets, sheets, and other bed coverings. Instead of having the

rear part arranged to draw out, the front-board *a* may have attached to it the movable slats; but I prefer the arrangement shown.

I claim—

1. The stationary bars or slats *c* and springs *z*, and the movable sliding slats *g*, springs *i*, sliding rails *l*, and back *h*, all constructed and relatively arranged and operating substantially as shown and described.

2. In combination with the slide rails or bars the gear-racks *j* fixed thereto, and the gear-pinion *u* on the shaft *v*, rotation of the shaft actuating the racks to close or open the frames, substantially as shown and described.

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Witnesses:

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