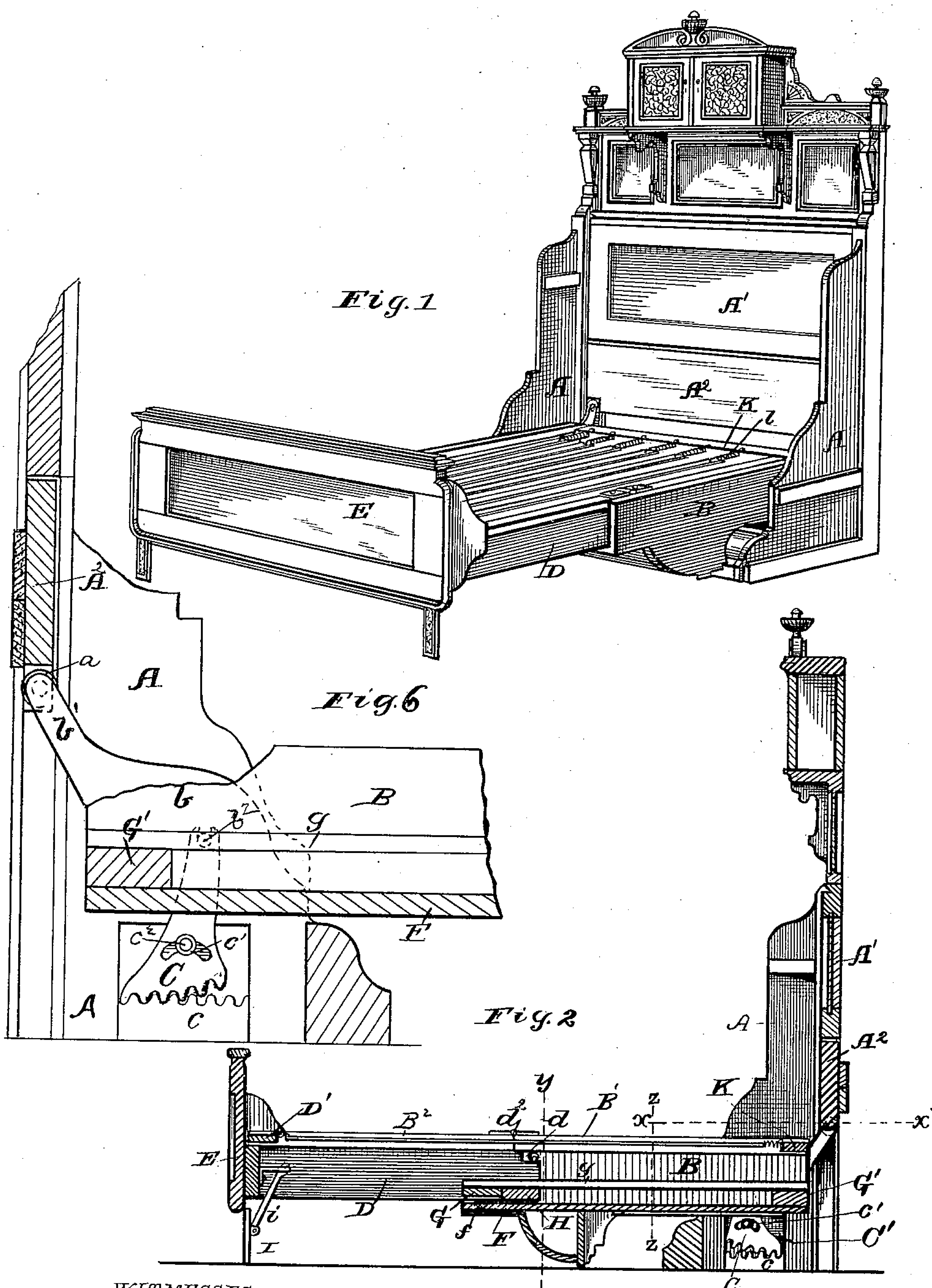
(No Model.) 2 Sheets—Sheet 1.

H. S. HALE.

FOLDING BED.

No. 330,693. Patented Nov. 17, 1885.



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(No Model.) 2 Sheets—Sheet 2.

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Fig. 3

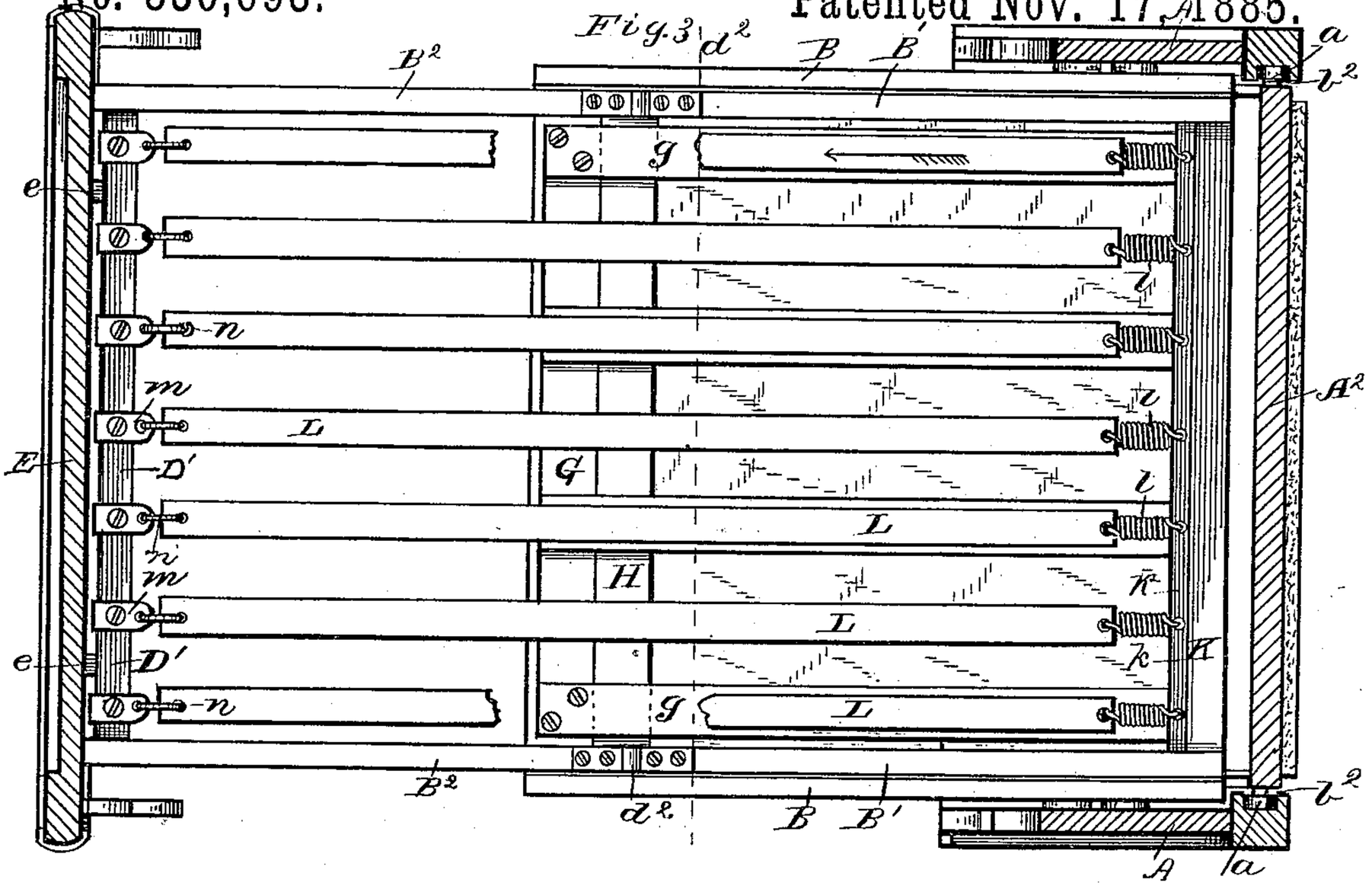


Fig. 4

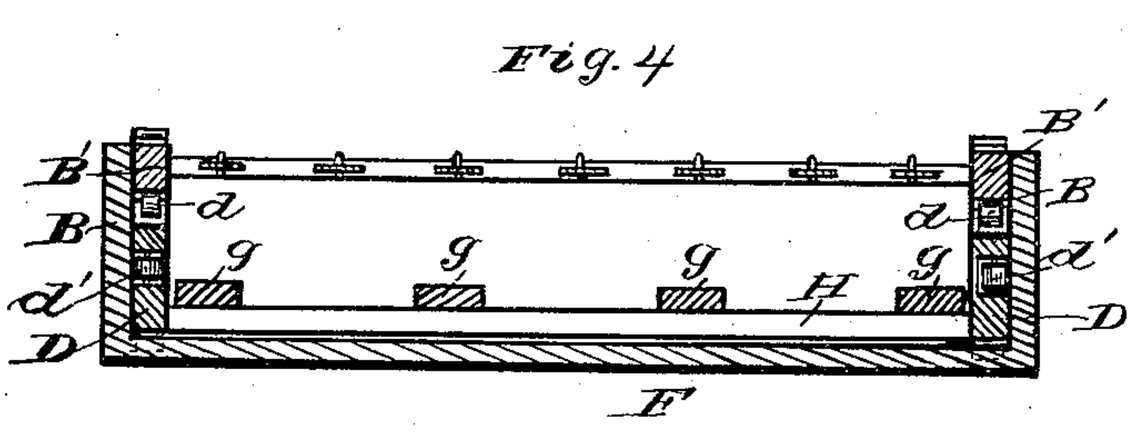
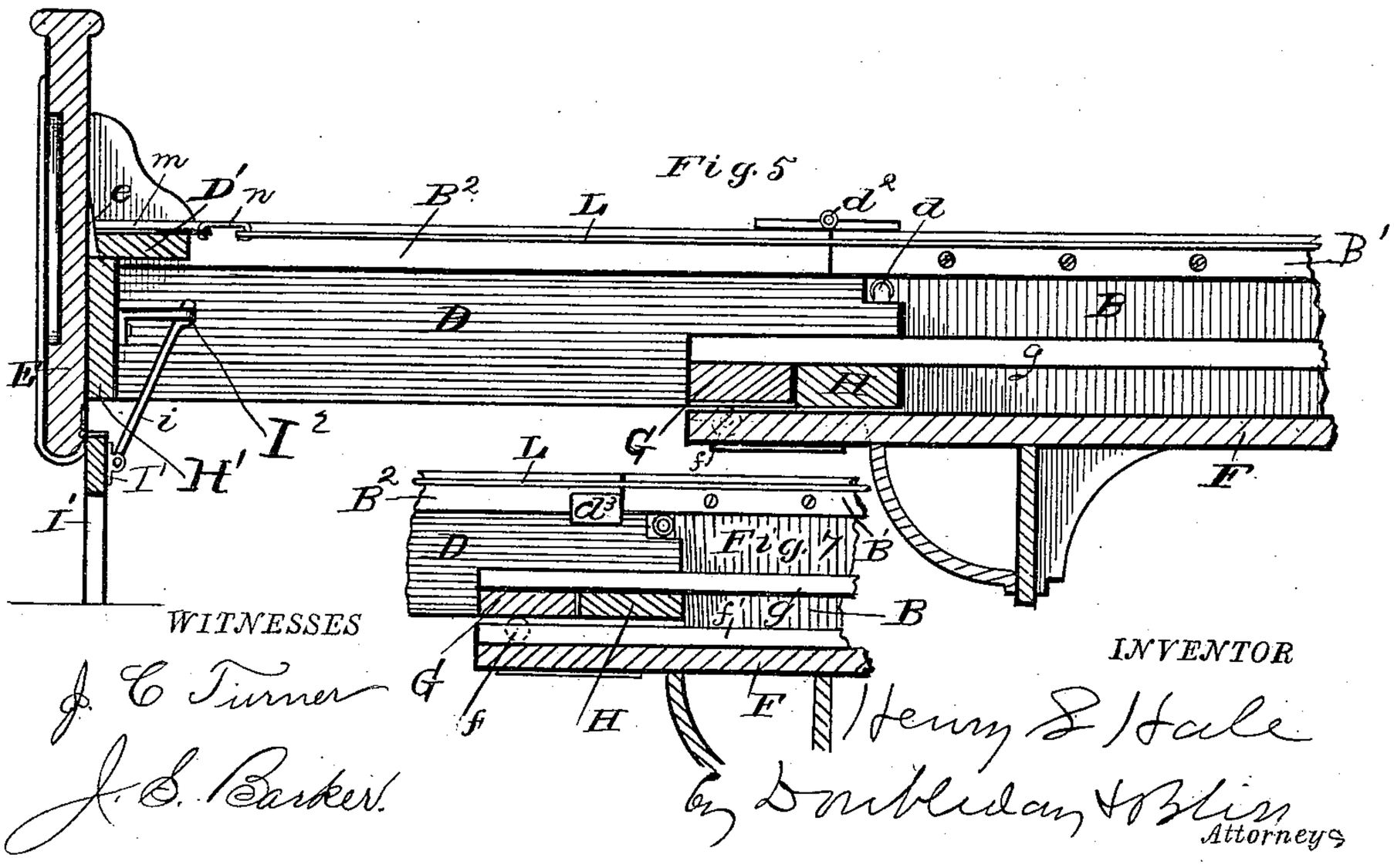


Fig. 5



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UNITED STATES PATENT OFFICE.

HENRY S. HALE, OF PHILADELPHIA, PENNSYLVANIA.

FOLDING BED.

SPECIFICATION forming part of Letters Patent No. 330,693, dated November 17, 1885.

Application filed May 20, 1885. Serial No. 166,138. (No model.)

To all whom it may concern:

Be it known that I, HENRY S. HALE, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Folding Beds, of which the following is a specification, reference being had to the accompanying drawings.

Figure 1 is a pespective view of my improved bed, the swinging telescopic section being let down and drawn out in readiness for the mattress. Fig. 2 is a central vertical longitudinal section of Fig. 1. Fig. 3 is a plan view, enlarged, partly in section, on the line *x x*, Fig. 2. Fig. 4 is a vertical transverse section, enlarged, on the line *y y*, Fig. 2. Fig. 5 is a partial view, enlarged, of Fig. 2, the part to the right of the dotted line *z z* having been omitted. Fig. 6 is an enlarged view, detached, showing the method of pivoting the swinging section upon the stationary section. Fig. 7 is a detached view showing modifications.

This invention relates to that class of folding beds which are known in the market as "telescope" or "telescopic," from the fact that the side rails of the folding or swinging section are each made in two sections, of which the one at head of the bedstead is pivoted to the upright or stationary portion of the bed, while the section to which the foot-board is rigidly attached has a sliding movement relative to the pivoted section.

Referring the drawings, A A are the end pieces of the permanently upright portion, and A′ the stationary part of the head-board which connects these end pieces, and which may be of any usual or preferred construction.

B B are pivoted sections of the side rails of the swinging or folding portion of the bed. By preference I attach a cast-metal plate, *b b*, to the inner lower end of each of these sections B. (See particularly Fig. 6.)

A^2 is the sliding section of the head-board, fitted at its ends into vertical grooves in the end pieces, A, and connected at its ends by pivots to the upward projecting extensions *b′ b′* of the cast-metal plate, at which points there are anti-friction rollers *a*, traversing grooves in the end pieces.

C is a supporting-link, preferably of metal, and forked at its upper end to receive a pivot, b^2, projecting from the metal plate *b b′*, there being a similar link and pivot at each side of the bed. The lower end of each link is notched or toothed, and is by preference curved, and engages with a plate, *c*, notched upon its upper surface.

C′ is a metal plate attached to the inner surface of the end piece, or set in the recess in the end piece.

c′ is a curved slot in the lower end of the link C, and c^2 is a bolt or set-screw passing through the slot and into the metal plate C′, to prevent undue lateral motion of the link. Of course these devices are in duplicate at each side of the bed.

D D are the sliding sections of the side rails, connected with each other by the rigid foot-board E.

B′ B′ are guard-rails, firmly attached to the inner faces of the pivoted side-rail sections, B B, and by preference each sliding section D carries at its upper inner corner an anti-friction roller, *d*, which traverses the under surface of the guard-rail B′.

F is an ornamental panel, constituting a portion or the front of the bed when the same is folded; and *f f* are anti-friction rollers, mounted upon the upper and inner surface of this panel, to engage with the lower outer edges of the sliding rail-sections D D. Each of these sliding sections carries at its inner end an anti-friction roller, *d′*, (see Fig. 4,) mounted in a recess, with its periphery projecting slightly beyond the outer face of the side rail, so as to traverse the inner face of the pivoted section B, there being of course one of these anti-friction rollers upon each side of the bed.

B^2 B^2 are bars, each hinged at its upper inner end to one of the guard-rails B′.

D′ is a cross-rail carried by the swinging ends of the bars B^2 B^2, for a purpose which will soon be explained.

G is a cleat or rib attached to the upper inner face of the panel F, near its outer upper end, and G′ is a similar one attached to its inner face, near its pivoted lower end.

g g are a series of slats secured to the faces of the cleats G G′.

H is an end bar attached to the sliding sections D D, near their lower inner ends, and arranged to slide between the slates *g g* and the panel F.

Thus the bar H and the cleat G serve as stops to limit the outward movement of the sliding sections D D of side rails, as will be readily understood without further explanation. The end bar, H, also assists in properly spacing and bracing the inner ends of the sliding sections D D.

I I are legs hinged to the foot-board and connected by a horizontal strip, I′.

i is a brace connected at one end to the horizontal strip I′, and at its opposite end to a bracket, I^2, which projects from the foot-board or from the cross-bar H′. The connection between the brace *i* and the bracket I^2 is of a frictional or yielding character, so that while it (the brace) will serve to keep the legs in vertical position under ordinary circumstances when the bed is in use, yet it will yield when any unusual pressure is applied to the lower ends of the legs, so that they, together with the horizontal strip I′, can be readily folded down against the panel F, and thus form an ornamental molding or bracket, which will add to the finished appearance of the bed when folded up.

When desired, a cleat or guard-rail, *f′*, may be applied to the inner face of each of the pivoted rail-sections B, as in Fig. 7, to serve as guides for the lower edges of the sliding sections D, in which case the anti-friction rollers *f f* should be mounted upon the ends of these guard-rails.

In my prior patent, No. 262,181, I have shown a somewhat similar arrangement of swinging non-sliding sections and the sliding sections with anti-friction rollers mounted upon horizontal pivots projecting from the outer faces of the sliding rails; but those rollers occupy such a relation to the adjacent parts that their usefulness would be practically destroyed by placing them in recesses such as are occupied by the rollers *d′ d′* shown in this case. So, also, in my same prior patent I have shown an arrangement of slats and bars which limit the sliding movement of one of the sections relative to the other; but in that patent the slats (marked O O) are connected with the under sides of bars M to serve as spring-supports, and therefore the bars M must of necessity be arranged at a distance above the plane of the bar K, equal to the thickness of the bars or slats O O. The result is that in case of looseness of parts there is liability of the sliding movement being interfered with by the bar K coming in contact with one of the bars O. This difficulty is obviated in my bed, described herein, because the peculiar character of mattress-supports enables me to arrange the bars or slats *g g* close to the panel F, the bar H being of sufficient thickness to fit closely between the panel and the bars *g g*, and thus made to assist in keeping the sliding section and the swinging section in line of each other; again, the bars *g g* may serve to partially support the weight of the foot-board and the upper outer ends of the bars D D, it being understood that as the sliding section is being drawn out preparatory to unfolding the mattress its weight is supported by the counter-balancing head-board and weights, and that the outer upper edge of the panel or of the anti-friction rollers *f f* serve as a fulcrum.

K is a cross-bar mounted at the inner upper ends of the pivoted rail-sections B B, and *k* is a metal strap screwed or otherwise fastened to the upper surface of this cross-bar.

L L are a series of steel straps, each secured at one end to the metal strap *k* by means of a spiral spring, *l*. The opposite ends of these metal straps L L are connected with the cross-bar D′ by a series of metal clasps, *m m*, each of which is independently fastened to the said cross-bar, and is connected with its respective strap L by means of a hook or link, *n*, or equivalent.

By an examination of the drawings, particularly Fig. 2, it will be understood that when the parts are in working position to receive a mattress, the springs *l l* are under tension, and by reason of the bars D′ K being below a horizontal plane of the hinges d^2 d^2 the tension of the spring serves to keep the free outer ends of the bars B^2 and the cross-bar D′ down upon the outer ends of the sliding sections D D; but when it is desired to fold the bed it can be done by swinging the bar D′ and the attached ends of the bars B^2 B^2 about their hinges d^2 d^2, the elasticity of the spiral springs permitting such movement without unduly straining any of the parts.

I do not wish to be limited to the use of the flat metal strips or bands as a mattress-support, because I might substitute therefor a woven-wire fabric or any other well-known wire or other constructions which are used for that purpose. It will be understood that the inner lower ends of the rails B^2 B^2 might be supported in sockets d^3, Fig. 7, permanently fastened to the sliding section under such an arrangement that the cross-bar D′, to which the mattress-support is attached, can be carried down so low from the line of draft from this cross-rail to the cross-bar K that it shall pass below the points at which the bars B^2 are supported against end thrust, and that the tension of the springs *l l* will hold cross-bar D′ from rising; nor do I wish to be limited to making the hinged or vibrating points of these bars and of the cross-rail D′ at the exact point indicated in the drawings, because such point might be moved nearer to or farther from the cross bar D′ without materially affecting the operation of the invention.

It will also be seen that the cross-rail D′ may be made to engage with the foot-board or with cleats or ribs *e e*, (see Fig. 5,) and thus insure that the end bar, H, shall be held in close contact with the cleat G, so as to firmly brace the parts of the folding portion of the bed and support them against any racking or twisting strain, which might otherwise tend to spread apart the upper outer ends of the pivoted side rails, B B.

Of course many features of operation of the invention would be substantially the same, even though the telescopic section were not pivoted, but always remained in a horizontal position, as is the case with some beds, the sections of which slide together in order to economize floor room.

I am aware that it is old in telescopic beds, both of the class which fold and those which do not, to bend or fold one part of the mattress and its support relatively to the other part in order to allow the telescopic movement of the two parts of the side rails of the bed, and I do not claim such arrangement, broadly, as my invention; but I believe I am the first to have arranged in a telescopic bed a mattress-support having at one end a cross-rail, and having also side bars divided and adapted to fold along a line between its two ends, the line along which the mattress-support folds being above its ends, whereby when the support is extended to receive the mattress its ends are held down without any tendency to be drawn upward toward each other by tension upon the mattress-support caused by the weight of the mattress and bedding; and I also believe that I am the first to have combined with a telescopic bed a support for the mattress which is both flexible and elastic, and is mounted, as shown, in a substantially rectangular frame, said mattress-support being attached to its rectangular frame only at its ends. By this construction I am enabled to support the mattress much closer to the panel F than can be done where springs are arranged under the mattress-support between its ends, as shown in my Patent No. 262,181 of August 1, 1882.

The elasticity of the mattress-support insures that after the end rail, D′, has been carried below the line of draft of the mattress-support, it (the end bar) shall be securely held in such position.

I am aware of German Patent No. 25,131 and United States Patent 101,489, and do not claim anything shown therein; but in neither of these patents is there shown flexible or elastic mattress-support connected at its ends to a supporting-frame in such manner that the ends of the mattress-support are held from being drawn toward each other by any superimposed weight.

What I claim is—

1. In a bed the side rails of which are formed in sections, of which one has a sliding movement relatively to the other, the combination therewith of a flexible and elastic mattress-support attached at its ends to a substantially rectangular frame, the side bars of which are divided between their ends and are adapted to fold upon said dividing-line, substantially as set forth.

2. In a bed the side rails of which are formed in two sections, of which one has a sliding movement relatively to the other, the combination therewith of a mattress-support having at one end a cross-bar, the bars B^2 B^2 connected with the cross-rail and supported at their opposite ends upon the swinging section above the line of draft of the mattress-support, substantially as set forth.

3. In a bed the side rails of which are formed in sections, of which one has a sliding movement relatively to the other, the combination therewith of a mattress-support having side bars which are divided between their ends and are adapted to fold upon said dividing-line, and a cross-bar at one end connecting the said side bars, it being situated below the line around which the parts of the mattress-support fold, whereby the ends thereof are held down when the bed is in use, substantially as set forth.

4. In a bed the side rails of which are formed in sections, of which one has a sliding movement relatively to the other, the combination therewith of a flexible and elastic mattress-support having side bars which are divided between their ends and are adapted to fold relatively to the side rails upon said dividing-line, and a cross-rail at one end connecting the side bars, it being situated, when in position to receive the mattress, below the line around which the parts of the mattress-support fold, whereby the elasticity of the mattress-support assists in holding down its ends when the bed is in use, substantially as set forth.

5. In a bed the side rails of which are formed in sections, of which one has a sliding movement relatively to the other, the combination therewith of a mattress-support having side bars which are divided between their ends and are hinged together, they being adapted to fold about said hinge, and a cross-rail at one end connecting said side bars, it being situated below the hinging-line of said side bars, whereby it is held down when the bed is in use, substantially as set forth.

6. In a bed the side rails of which are formed in sections, one of which has a sliding movement relatively to the other, the combination therewith of a mattress-support having side bars, B' B^2 B' B^2, the parts B^2 B^2 being adapted to fold relatively to the side rails, and being connected by a cross-rail, said bars B' B' being connected rigidly with the non-sliding parts of the side rails, and the parts B^2 B^2, when the bed is extended, being situated between said parts B' B' and the end of the sliding section of the side rails, whereby said bars B' B^2 prevent movement of the parts of the side rails toward each other, substantially as set forth.

7. In a bed the side rails of which are formed in sections, of which one has a sliding movement relatively to the other, the combination therewith of a mattress-support having the side bars adapted to fold, and an end bar, D′, connecting the opposite side bars, the cleat G, and the bar H, which two latter form a stop to limit the outward movement of the sliding sections of the bed, substantially as set forth.

8. In a bed the side rails of which are

formed in sections, of which one has a sliding movement relatively to the other, the combination therewith of a cleat, G, connecting the outer ends of the non-sliding section of the side rails, the bar H, connecting the inner ends of the sliding section of the side rails, a foot-board rigidly connecting the other ends of the sliding section, a mattress-support having side bars B′ B′, carried by the non-sliding section of the bed, the side bars B^2 B^2, carried by the sliding section of the bed, and the end bar, D′, connecting the ends of bars B^2 B^2, said parts being arranged substantially as set forth, whereby when the bed is extended the bar D′ bears against the foot-board and the inner ends of the bars B^2 B^2 bear against the outer ends of the bars B′ B′, and thus insure that bar H shall be held in close contact with cleat G to brace the bed and relieve it of twisting strain, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

HENRY S. HALE.

Witnesses:

JAS. S. BREEN,

THESBERT MILLER.