

(Model.)

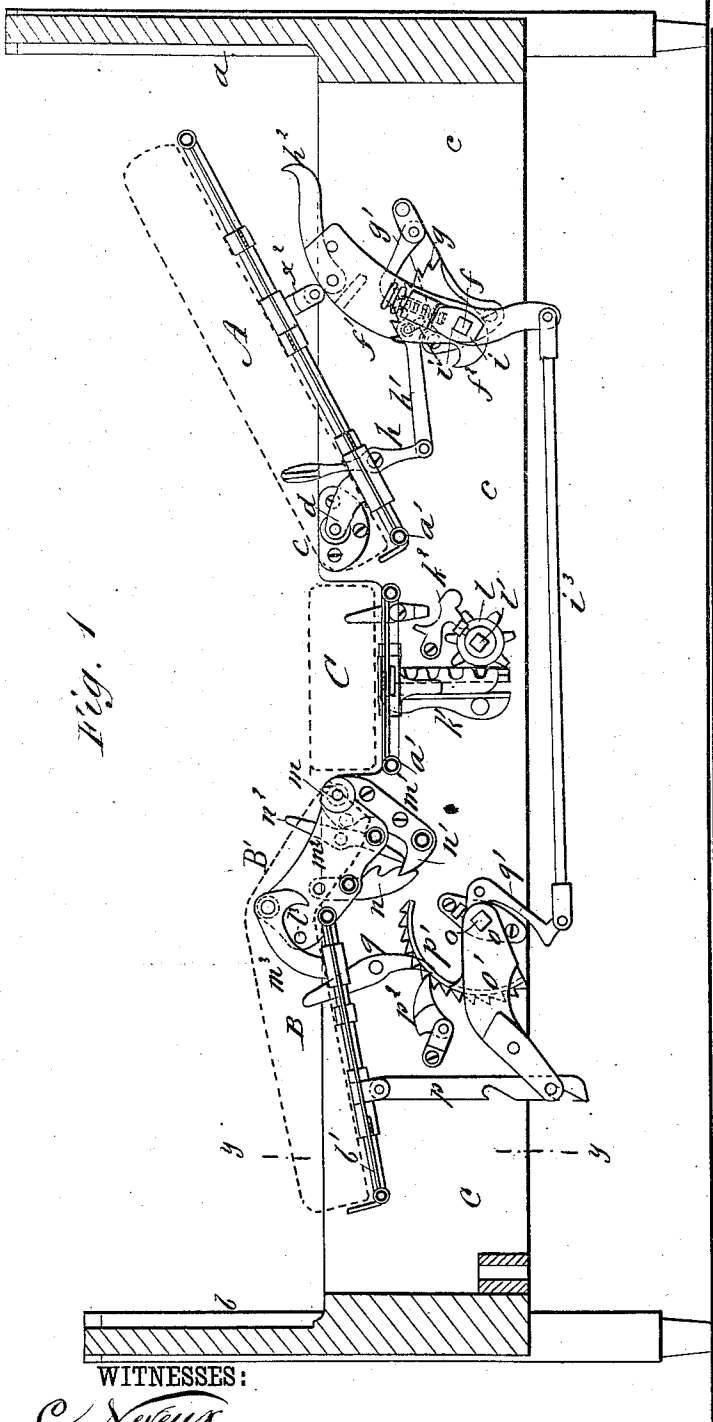
A. J. GOODWIN.
INVALID BEDSTEAD.

2 Sheets—Sheet 1.

No. 247,496.

Patented Sept. 27, 1881.

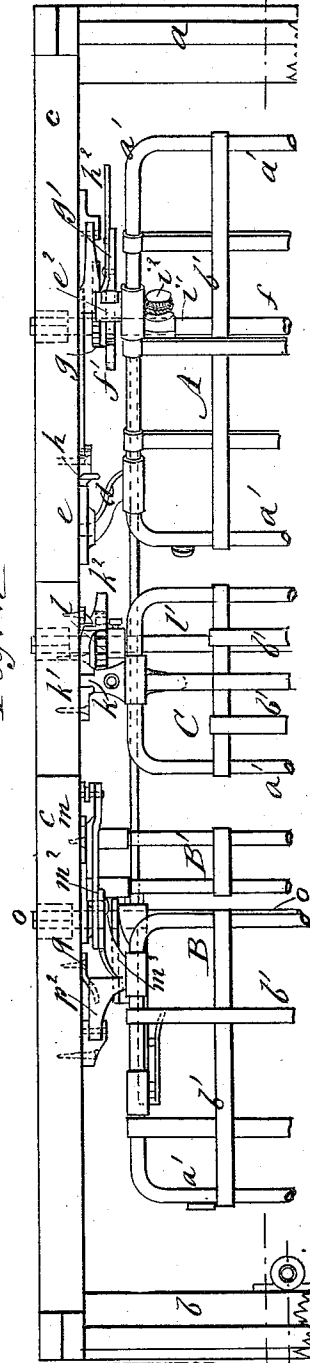
Fig. 1



WITNESSES:

C. Neveu
C. Seagwick

Fig. 2



INVENTOR:

A. J. Goodwin
BY *Mum Ho*
ATTORNEYS.

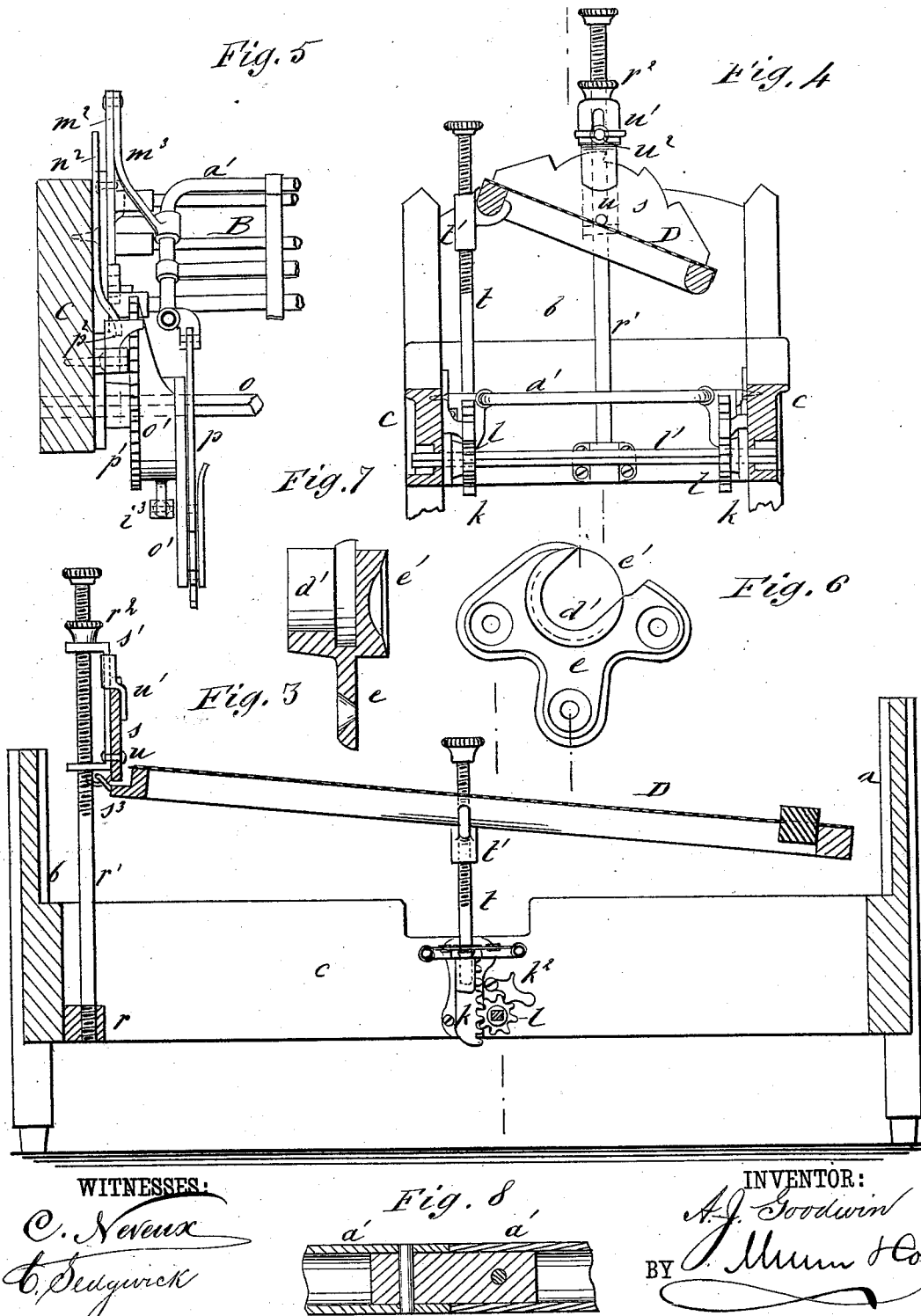
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UNITED STATES PATENT OFFICE.

ASAHEL J. GOODWIN, OF BROOKLINE, MASSACHUSETTS.

INVALID-BEDSTEAD.

SPECIFICATION forming part of Letters Patent No. 247,496, dated September 27, 1881.

Application filed December 18, 1880. (Model.)

To all whom it may concern:

Be it known that I, ASAHEL J. GOODWIN, of Brookline, in the county of Norfolk and State of Massachusetts, have invented a new and useful Improvement in Invalid-Bedsteads, of which the following is a specification.

My improvements relate to the class of invalid-bedsteads having sectional bottoms fitted for adjustment to vary the angle of the sections to suit the comfort of the patient and the necessities of the case.

The object of my invention is to permit a larger range and variety of adjustment than has heretofore been possible, and also to obtain durable construction, combined with convenience of manipulation. I use a bottom consisting of three separate sections—viz., a central section, fitted for vertical adjustment, and end sections fitted for being swung to vary their inclination. One end section is made in two portions, hinged together and fitted for adjustment to suit special cases. In connection with the bedstead I use a stretcher.

My invention consists in certain novel features of construction and arrangement of the mechanism for obtaining variety of adjustment and convenience of manipulation, as hereinafter set forth and claimed.

In the accompanying drawings, Figure 1 is a vertical longitudinal section of an invalid-bedstead of my improved construction. Fig. 2 is a partial plan view of the same. Fig. 3 is a longitudinal section of the bedstead with the stretcher applied. Fig. 4 is a cross-section, showing the stretcher as tilted. Fig. 5 is a detail section on line *yy* of Fig. 1. Figs. 6 and 7 are respectively a side view and section of the pivot-socket. Fig. 8 shows the construction of the joints of the bottom.

Similar letters of reference indicate corresponding parts.

a is the head-board, *b* the foot-board, and *c* the side rails, of the bedstead. The bottom is made in three separate sections or portions, *A* being the section at the head, *B* the foot-section, and *C* a smaller section placed at the mid-length of the bed, between the sections *A* and *B*. The frames of these sections are formed of tubing *a'*, joined by being plugged, with steel pins inserted in the plugs to form a smooth joint, (see Fig. 8,) and to the frames

the springs *b'* are attached. The section *A* is hung at its inner end by arms *d*, attached to the section, that are formed with pins or lugs entering socket-plates *e*, attached to the rails *c*. These socket-plates *e* and all others used at the pivots in the bedstead are of peculiar construction, to facilitate manufacture and allow removal of the sections readily. The construction is shown clearly in Figs. 6 and 7. The plate *e* is formed with a circular lug or projection, *e'*, at the back, and with a flange, *d'*, at the front, around a slot formed in the plate in front of the hub. The flange *d'* serves as a bearing for the pivot of the section, the slot receives a circular head on the end of the pivot, and the projection *e* enters a hole bored in the rail, so as to sustain the weight and relieve the screws by which the plate is attached to the rail. The slot allows the pivot to come out when the section of the bottom is lifted bodily.

Beneath the section *A* is a shaft, *f*, having bearings in side rails *c*, and carrying cams *f'*, upon which the section rests by lugs *e'*, provided with friction-rollers, so that by turning shaft *f* with a key applied to its squared end projecting through one rail, *c*, the section is raised and lowered. The cams *f'* have lugs *f''*, on which the rollers on lugs *e'* rest when the bed-bottom is horizontal. One cam is formed at its side with a ratchet, *g*, engaged by a pawl, *g'*, hung on the rail, by which the section is sustained as raised, and for convenience a hand-lever, *h*, is hung on the rail and carries a rod, *h'*, engaging with pawl *g'*, whereby the pawl can be disengaged when the section is to be lowered. The cams are made long, to give the required extent of movement, and as it is desirable to have these parts contained within the width of rail *c* when the bedstead is packed for transportation, I make the outer end portions, *h''*, of the cams separate and attached by a pivot, so that such ends can be raised above the bottom of the rail when the cams are down. The object of the swinging end *h''* of the cam *f'* is to allow it to be folded for transportation. These pivoted ends rest, in use, on suitable pins or lugs on the main portion.

The shaft *f* carries a fixed hub or collar, *i*, and there is also hung loosely on the shaft an arm, *i'*, fitted with a screw, *i''*, engaging with

hub i . From arm i' a rod, i^2 , extends to the operating-lever of the lower section, B, so that the sections shall move together, as hereinafter specified, and the screw-connection i^2 permits disconnection from i' when independent movement is desired.

The middle section, C, is sustained by rack-bars k at its ends, which fit into slideways formed in plates k' , attached to siderails, c , and which racks engage with pinions l carried by a cross-shaft, l' , carried by the rails and fitted for being turned by a key. A pawl, k^2 , engages the pinion for retaining the parts in position. To remove the section C from the bedstead the set-screws of pinions l will be loosened and the pinions slipped on the shaft out of engagement with the racks, which will leave the section free to be raised.

In Letters Patent heretofore granted to me a middle section is shown as fitted for movement vertically by a toggle. The rack and pinion, with the pawl, constitute improved devices for the purpose.

The lower section, B, is made in two parts. The smaller portion, B', is hung on rails c by pivots, and carries the larger portion, B, so as to permit independent movement when required. m are the pivots, sustained in socket-plates m' . These pivots are fixed on the end of arms or plates m^2 of the section B', to which arms m^3 of the section B are pivoted. There are projections l^3 on plates m^2 , with which the arms m^3 engage, when the two sections are in line, to prevent the portion B rising above such position. On one plate m^2 is pivoted a toothed arm, n , extending downward for engagement with a projection, n' , from socket-plate m' , whereby the section B is sustained as raised, and a hand-lever, n^2 , hung on the rail resting against arm n , is for use in disengaging said arm to permit descent of the section. This portion of the bed-bottom is thus double-jointed. The pivots m and pivots of arms m^3 , forming the two joints, are positioned to correspond with the knee and hip joints, thus allowing elevation of the patient's knees, while the lower limbs can remain horizontal. The operating-shaft o of the lower section is hung on rails c and arranged for being moved by a key applied at one end. On this shaft are fixed arms o' , having pins or projections at their outer ends, which are engaged by ratched links p , hung on section B. One arm o' carries a notched segment, p' , engaged by a pawl, p^2 , hung on the rail, whereby the section is retained as raised, and a hand-lever, q , is provided for raising the pawl to permit lowering of the section.

On the inner end of one arm o' is pivoted a short arm, q' , to which the rod i^3 from the operating-shaft of section A is connected. The two arms o' q' thus form a jointed lever, by which the sections B B' are moved simultaneously with section A, and at the same time allowing a certain amount of independent movement. The object of this is to save the ne-

cessity of disconnecting the rod i^3 in every case when separate movement is required.

Nearly every possible position of the body is attainable with this construction.

The operation, in connection with the double joint of the lower section, is as follows: The section A is lowered by turning shaft f , and as soon as it sinks below the horizontal position the arm q' comes in contact with arm o' , and the two sections B B' are swung upward on the pivots m until the desired inclination is given to the section B'. The ratchet-arm n retains the section B', and the pawl p^2 being released from the segment p' , the section B can be lowered as far as required. This position may also be obtained by operation of shaft o , and the upper section, A, afterward raised without affecting the position of the lower section.

The stretcher D (shown in Figs. 3 and 4) is for use in cases where no flexure of the hip-joint can be had. Upon the foot-board of the bedstead is fixed a screw-socket, r , receiving a screw-post, r' , on which a cross-bar, s , is held by a plate, s' , having eyes, through which post r' passes, so that the plate s' and bar s can slide freely on the post, the upward movement being limited by a nut, r^2 . The lower side of bar s is fitted with hooks s^3 , engaging with eyes on the foot of stretcher D. The rack-bars k of the middle-section C are apertured to receive screw-posts t , on which are nuts t' , that have side lugs projecting beneath the side bars of the stretcher, whereby the stretcher is sustained at the desired height. The stretcher is weighted at its end next the head of the bed, to cause that end to remain lowest, and the stretcher inclined more or less, according to adjustment of nut r^2 . By raising the middle section the stretcher can be raised as far as required.

To permit side inclination of the stretcher, the cross-bar s is hung on plate s' by a pivot at u , so as to swing, and a slide, u' , on bar s' , held by a set-screw, u^2 , retains the bar s horizontally by engagement with a notch in the bar, except when raised as shown in Fig. 4, when the bar is free to swing. The nut t' of post t at the side of the stretcher that is to be lowered will first be turned aside, or else the post removed and the middle section C then raised, thereby elevating one side of the stretcher.

The construction described gives great facility and convenience in the manipulation of invalid-bedsteads. The work can be done by the operator at the side of the bed, with but little change of position and without the necessity of leaving the patient. Every necessary position is provided for, and with but few exceptions they may be obtained without disconnection of the parts. The necessity of using a stretcher is almost entirely avoided. With the improved bottom there is but a single circumstance which would make it advisable to use the stretcher—that is in case of injury or

disease of the hip. But the stretcher is useful of itself, and with other bedsteads would be especially useful.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. In invalid-bedsteads having a bottom formed by pivoted sections, the slotted socket-plates *e*, formed with hub *e'* and flange *d'*, substantially as and for the purposes set forth.
2. The combination, in an invalid-bedstead with a hinged section having lugs *e''*, of a cam, *f'*, having the projection *h''*, as and for the purpose specified.
3. The operating-cam *f* of the section A, provided with the swinging end *h''*, substantially as and for the purposes set forth.
4. In invalid-bedsteads, the socket-plate *m'*, provided with projection *n'*, ratchet-arm *n*, shaft *o*, arms *o'*, ratchet-segment *p'*, and links *p*, combined together and with the double-jointed section B B' of the bottom, substantially as shown and described, for operation as set forth.

5. In invalid-bedsteads, the pivoted arm *q'* and operating-rod *i''*, combined with the operating-shaft *o* and arms *o'* of the hinged section B, substantially as and for the purposes set forth.

6. In invalid-bedsteads, the screw-post *r'*, provided with nut *r''*, cross-bar *s*, having hooks *s''*, eye-plate *s'*, screw-posts *t*, having nuts *t'*, and stretcher D, combined with the bed-frame, substantially as shown and described.

7. The eye-plate *s'*, slide *u'*, pivoted cross-bar *s*, and sustaining-posts *r'* *t*, combined with the bed-frame stretcher and vertically-adjustable section C of the bottom, substantially as and for the purposes set forth.

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Witnesses:

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C. SEDGWICK.