No. 629,275. Patented July 18, 1899.

E. C. SCRIBNER.

INVALID BEDSTEAD.

(Application filed Nov. 7, 1898.)

(No Model.) 4 Sheets—Sheet 1.

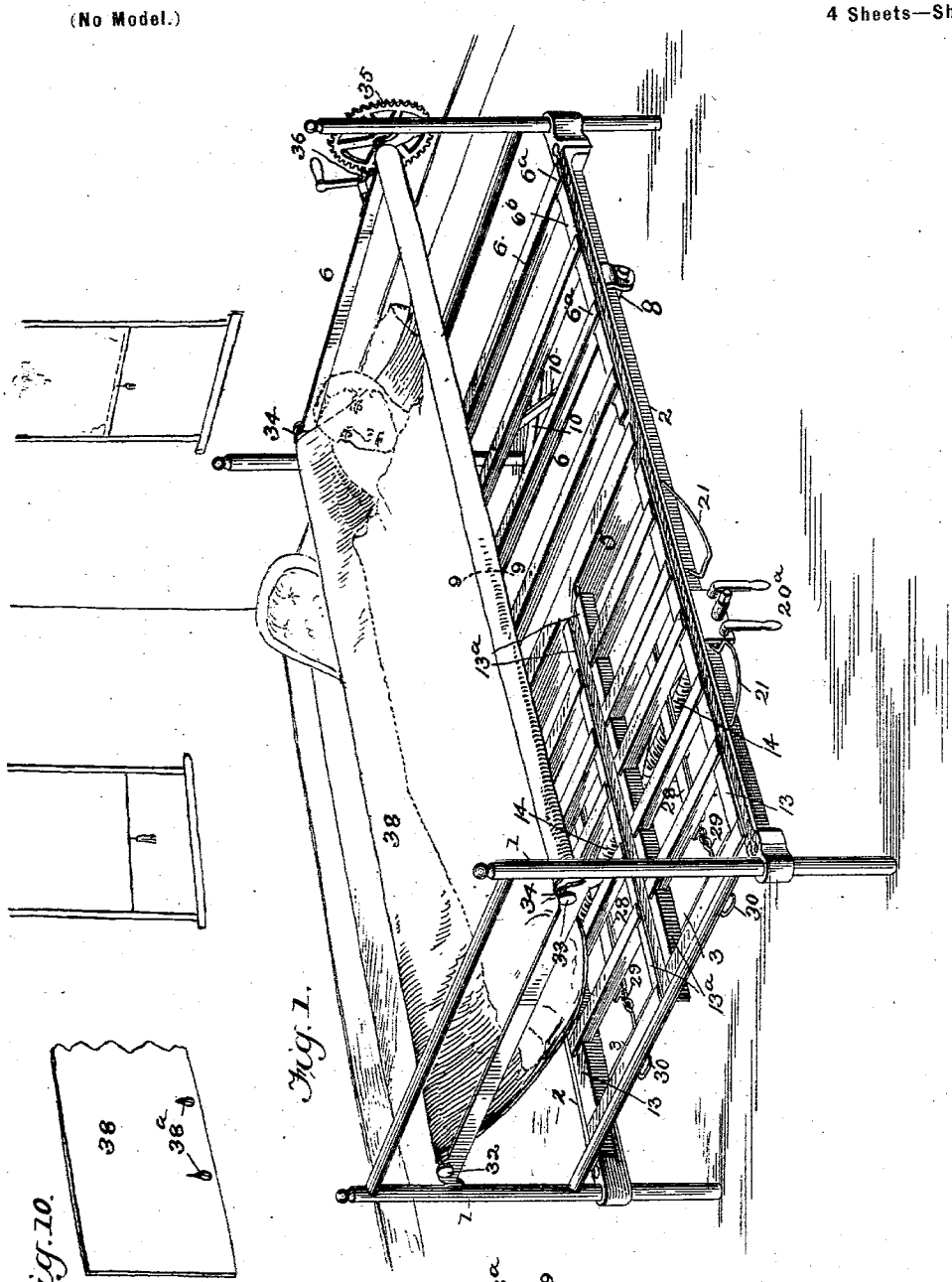


Fig. 1.

Fig. 10.

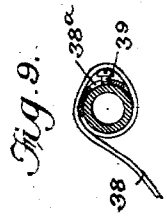


Fig. 9.

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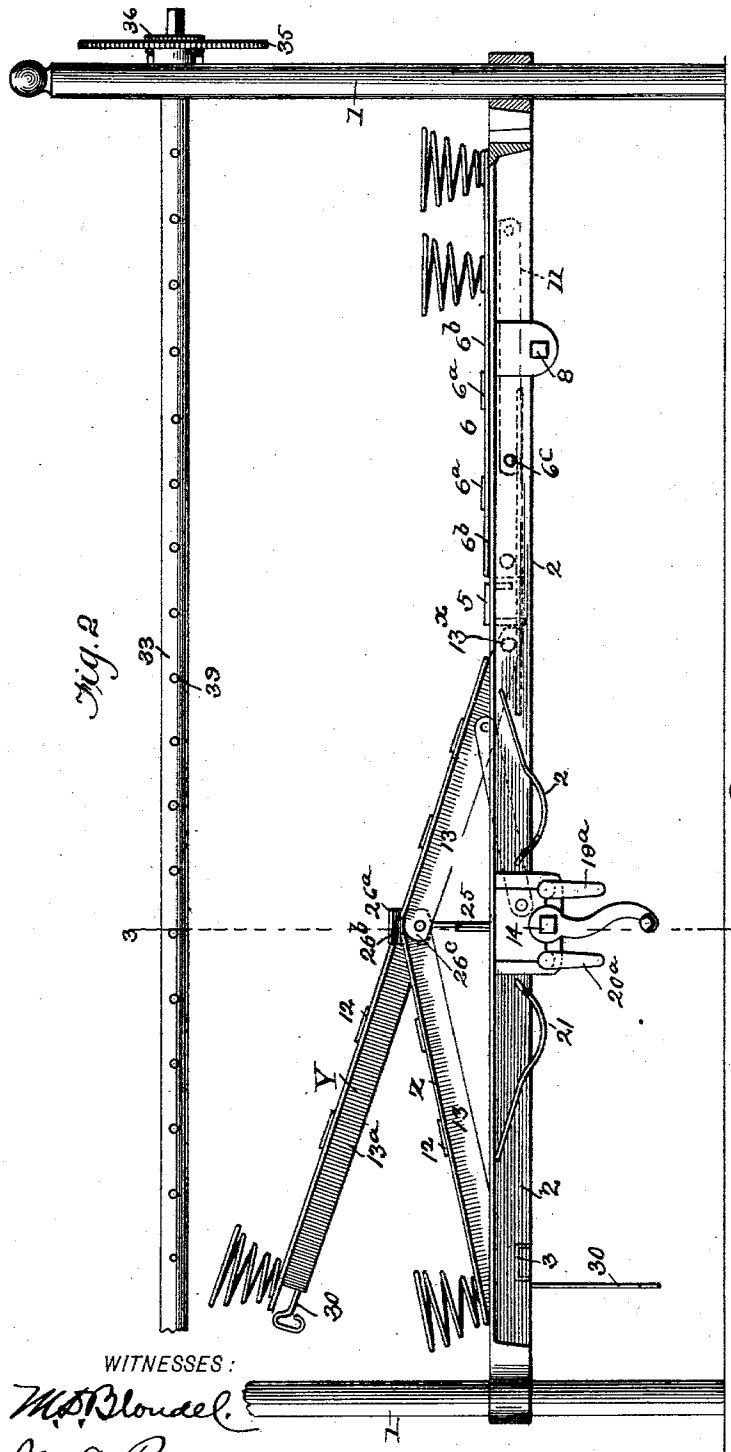
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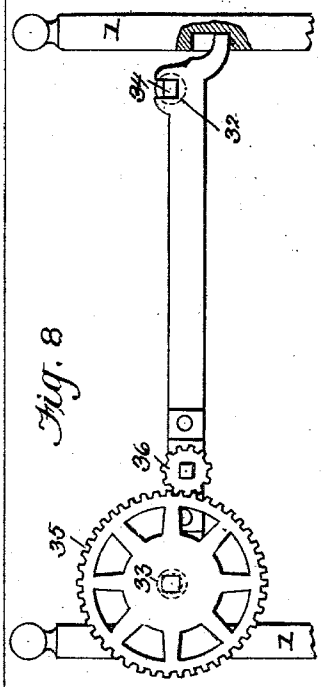
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(Application filed Nov. 7, 1898.)

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Fig. 3

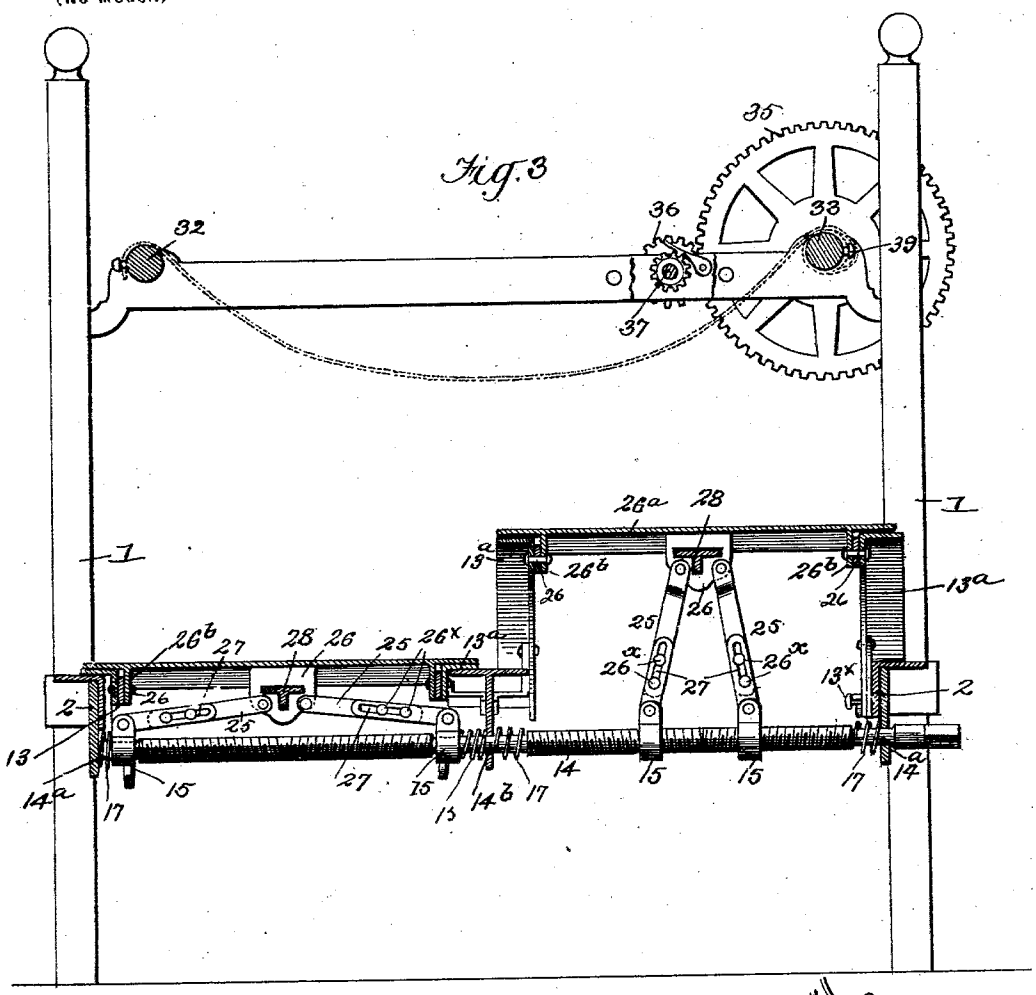


Fig. 4.

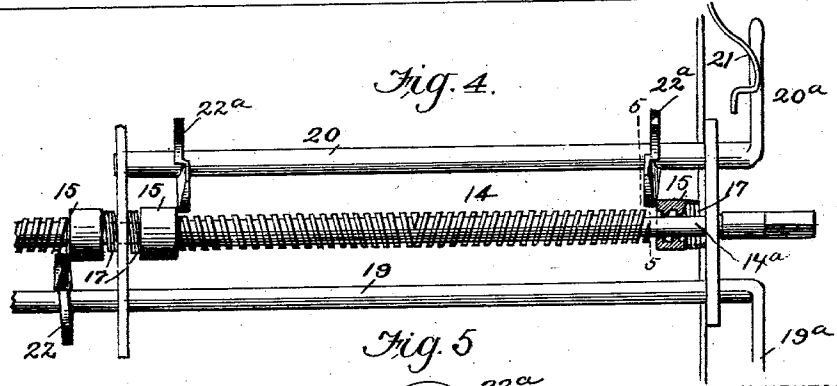
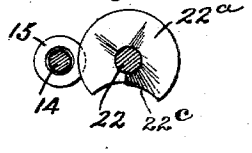


Fig. 5



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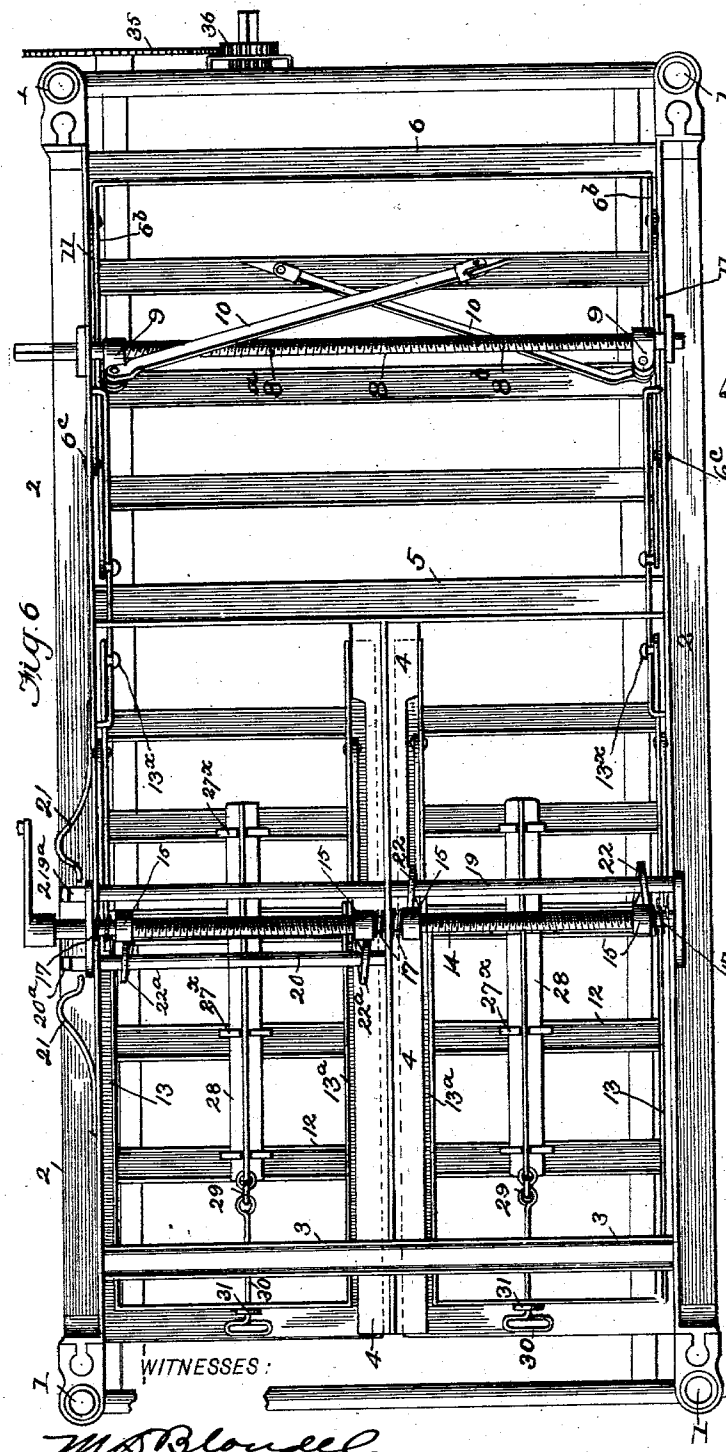


Fig. 6

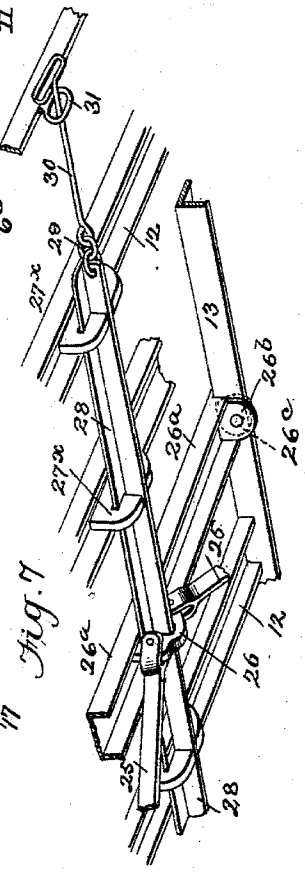


Fig. 7

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UNITED STATES PATENT OFFICE.

ELMER C. SCRIBNER, OF NEVERSINK, NEW YORK.

INVALID-BEDSTEAD.

SPECIFICATION forming part of Letters Patent No. 629,275, dated July 18, 1899.

Application filed November 7, 1898. Serial No. 695,703. (No model.)

To all whom it may concern:

Be it known that I, ELMER C. SCRIBNER, residing at Neversink, in the county of Sullivan, State of New York, have invented a new and Improved Invalid-Bedstead, of which the following is a specification.

This invention relates to that class of invalid-bedsteads having sectional bottom portions capable of being adjusted to lift the body or head or the lower extremities of the patient and in which provision is also made for raising the patient from and extending him above the bed-bottom.

Primarily my invention has for its purpose to provide a bedstead of the character stated of a stable and economical construction in which all of the parts are conveniently arranged and easily manipulated.

This invention also comprehends a novel construction of sectional bottom members having the foot portion formed of two longitudinal frames capable of being raised in unison or independently and a single crank-operated mechanism, including shifting clutch devices adapted to be quickly shifted into or out of an operative position, whereby either one of the said foot-frames or both of the said frames can be elevated, as conditions may make desirable.

Another feature of this invention lies in making the longitudinally-tiltable foot-frames each of two hinged sections, whereby when elevated they may assume an angle shape to accommodate the bending of the knee of the patient, in connection with simple and easily-operated locking means for securing the two sections to form a rigid frame.

In its subordinate features this invention consists in certain details and novel combination of parts hereinafter first described in detail and then specifically pointed out in the appended claims, reference being had to the accompanying drawings, in which—

Figure 1 is a perspective view of my improved bedstead, the head and foot sections being held flat and the supporting-hammock in place. Fig. 2 is a side elevation of the same, partly in section, the hammock being omitted, one of the foot-sections being shown elevated as a rigid body, the other being shown in a knee-elevating position. Fig. 3 is a transverse section taken practically on the line 3 3 of Fig. 2, one of the foot-sections being shown elevated and the other lowered, the clutch members for the lower section being shown out of gear. Fig. 4 is a detail plan view of the drive-gear for operating the foot-sections. Fig. 5 is a detail cross-section of the same on the line 5 5 of Fig. 4. Fig. 6 is an inverted plan view of the complete bed. Fig. 7 is an inverted detail perspective of a portion of one of the foot-sections, particularly showing the lock device for holding the two parts forming the said foot-section locked from pivotal movement. Fig. 8 is a detail view of the hammock-elevating device. Fig. 9 is a detail cross-section on the line 9 9 of Fig. 1, and Fig. 10 is a detail view of a portion of the hammock.

In the drawings, 1 1 indicate the corner-posts, and 2 the side bars, which are detachably connected with the posts in the ordinary manner, said bars being of the conventional angle shape, their foot portions in the present form being connected by a ⌐¬-shaped cross-bar 3, which forms a supporting member for the outer end of the sectional outwardly-extending T-shaped rest-bar 4, the inner end of which is integrally formed with the central cross-bar 5, which bar, as also the end supporting member 3, may be integrally or detachably joined with the side bars 2.

The body or rest portion of the bed consists of a head-frame 6 and a foot-frame formed of two longitudinal sections, the special construction of which, together with the operating-gearing for adjusting said section, forming the most essential feature of this invention.

The head-frame 6 consists of a series of cross-bars (slats) shaped in cross-section, the ends thereof terminating in flat portions 6^a, which are welded or otherwise made secure to the L-shaped connecting-bars 6^b, adapted to lap and rest on the side bars 2 when the frame 6 is down to its lowermost position.

The inner ends of the bars 6^b have pivotal connections 6^c (see Figs. 2 and 6) with the side bars 2, which forms the fulcrum-point for the frame 6 when elevated.

Any suitable means may be employed for raising the head-piece, as the special construction of the same forms no part of this invention; but I prefer to employ a single transversely-journaled crank-operated shaft 8, having right and left threads 8^a 8^b at the

opposite ends, with which engage the internally-threaded reciprocally-movable follower-blocks 9, to each of which is pivotally joined one of the pair of cross-link bars 10, which are also pivotally joined to the under side of one of the cross-slats of the head-frame, as clearly shown in Fig. 6, and to properly support the said head-frame link-braces 11 are provided, pivotally connected to one end of the side bars 2 and at the other end to the side members of the said frame.

By constructing the head-frame and providing elevating means therefor, as stated, it is obvious that by a proper manipulation of the double-screw shaft the said frame can be raised or lowered as desired and held to any point of its adjustment.

The foot portion of the bed-body consists of a pair of longitudinal frames extending from the cross-bar 5 to the foot end, and which frames comprise a series of transverse shaped bars (slats) 12, joined at their ends to L-shaped connecting-bars 13 13^a, the outer ones, 13, of which are held to lap the side bars 2, while the inner ones, 13^a, are adapted to rest on the sectional T-shaped longitudinal brace-bar. The inner ends of the bars 13 have a pivotal connection $13^\times$ with the side bars 2, and the inner bars 13^a have a similar connection with the T-shaped brace-bar, so that the frames can be elevated at their outer end, as clearly shown in Fig. 2.

The means for elevating the foot-frames in its general nature is similar to that employed for raising the head-frame—that is, a single crank-operated shaft having right and left threads and threaded follower-blocks being employed. In addition to such devices mechanism is combined therewith in the nature of shifting clutch devices for setting the threaded follower-blocks either in position to elevate one foot-frame while the other frame is at rest or to elevate both frames at the same time. For this purpose the screw-shaft 14 has its extreme outer ends formed with non-threaded portions 14^a and centrally with a similar non-threaded portion 14^b, the purpose of such non-threaded portions being to provide seats or rest-bearings for the follower-blocks 15 15 when shifted to an inoperative position. The blocks 15 are normally held to engage the threaded portion of the shaft 14, when it is to an operative position, by the coil-springs 17 17, and to provide for conveniently and quickly shifting the said blocks 15 15 to an inoperative position a pair of shafts 19 20, traveling parallel with and adjacent the screw-shaft 14, (one at each side,) are provided, one of which extends the full length of the shaft 14, while the other extends but half the length thereof, its inner end being journaled on the inner web of the T-piece. The shafts 19 20 are held to rock in their bearings and have their outer ends provided adjacent the crank end of the rod 14 and are provided with angle members 19^a 20^a, adapted to be moved into engagement with detents 21 when they are rocked to move the screw or journal blocks to their inoperative position.

Each shaft 19 20 carries a pair of cam-disks 22 22^a, the shaft at one side having its cams engaging with the follower-blocks of one end frame and the cams of the other shaft engaging the other set of follower-blocks, each set of cam-disks being located on its shaft in such manner as to engage with the follower-blocks only when said blocks reach the extremity of the threaded portions of the shaft 14, which occurs when the foot-frames are at their horizontal or lowermost position, and each cam-disk also has a cut-out portion 22^c, which portion, when the shafts 19 20 are adjusted to the position indicated in Fig. 1, faces the shaft 14 and permits an uninterrupted reciprocal movement of the follower-blocks. When the cam-disks are set in the position just mentioned, both foot-frames are moved vertically together when the shaft 14 is turned in a proper direction.

By rocking the shaft 20 to the position shown in Fig. 4 the cam-disks will be caused to engage the blocks in the frame at one side, disengage, and hold them from engaging the screw-shaft 14, thereby leaving the said shaft free to elevate the frame on the other side, it being understood that by similarly adjusting the other shaft 19 the frame on the other side will be held from rising.

To set the follower-blocks to an operative porition, it is only necessary to turn the shafts 19 20 to disengage the cam-disks. The coil-springs will then move the follower-blocks to engage the threaded ends of the shaft 14, which pair of follower-blocks for the foot-frames has pivotal connection with the link-braces 25, the outer ends of which are pivotally joined to ears 26, held pendent from one of the cross bars or slats.

It will be noticed by reference to Fig. 3 that each link member 25 consists of longitudinally-extensible sections joined to form a rigid member by reason of one section having a pair of studs $26^\times$, having a slotway 27 in the other section.

The object in making the link members extensible is to allow the additional longitudinal movement necessary to shove the follower-blocks to their inoperative point after the frames have been lowered to their horizontal position, which foot-frame consists of two abutting sections, the adjusting ends of the side bars thereof having a hinged joint connection 26^c, as best shown in Figs. 2 and 7, by reference to which it will be seen the cross-bar 26^a, forming the outer end of the inner section, has integral pendent ears 26^b, which form one part of the rule hinged joint.

One or more of the cross-bars at each side of the hinged point of the two frame-sections has pendent integral lock-brackets $27^\times$, in which is held to slide a T-shaped longitudinally-movable lock-bar 28, to the front end of which is connected, by means of the link-

joint 29, the pull-rod 30, having a suitable handle and guided in the keeper 31 on the outermost one of the cross-bars.

When the bar 28 is shifted to the position shown in Fig. 6, the two sections of the foot-frame will be locked together and be held to move as one frame, as shown at Y in Fig. 2; but when such bar is drawn out sufficiently to become disengaged from the pendent brackets on the inner section said frame-sections will be free to fold to the position shown at Z in Fig. 2 when said frame is raised by the screw-shaft. Thus the foot-frames can be raised to support and elevate the limb in a straight or extended position or bend the limb and lift the knee above the thigh-point, as conditions may make necessary or desirable.

It will be understood that in practice the bed-springs on which the bedclothing is supported are secured to the head and foot frames, as indicated in Fig. 2.

32 33 indicate a pair of longitudinal bars journaled in end bearings 34 34, secured to or formed integral with corner-posts, one of such bars having non-circular journals, whereby to prevent the bar 32 from turning, while the other bar 33 has round journals, it also having at one end a winding gear-wheel 35, which meshes with a winding-pinion 36 on the crank-shaft 37, provided with a pawl-and-ratchet device. (See Fig. 3.)

38 indicates the hammock or sling of canvas or other suitable material, the ends of which have slits 38^a, engaged with the headed pins or buttons 39 on the bars 32 33, it being manifest that as the sling on one side is being wound it will fold closely over the heads of the buttons, holding the corresponding end of the sling from becoming disengaged with the buttons on the other side of the sling taut on its buttons.

By providing the hammock or sling, as described, the patient can be easily and quickly elevated when it is desired to adjust the head or foot members without exerting any painful pressure on him.

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

1. In an invalid-bedstead; a bottom having a plurality of longitudinally-arranged tiltable frames; a single crank-operated mechanism for raising and lowering said frames, said mechanism including shifting clutch devices, whereby it can be set to tilt all of the frames in unison or each frame independent of the other, for the purposes specified.

2. In an invalid-bedstead, a bottom comprising a tiltable frame formed of two sections hinged together at their meeting ends, a sliding lock-bar arranged in guides on the under side of said sections, and means connected with the latter, at their hinge, as shown and described, whereby the sections may be elevated at their meeting ends or center only, and thus held at an angle to each other, or may be locked together in alinement and elevated as one rigid frame, as specified.

3. The combination of the supporting-frame, said frame including a central supporting-bar extended to the foot end of the frame; of a bottom formed of two longitudinal frames arranged parallel and adjacent, and having a pivotal support at their inner end on the side bars, and the central bar, and also having pivotal link-braces connected with such side and central bars; a crank-operated elevating screw-shank having right and left threads; follower-blocks reciprocally movable on such shaft, and link-arms connected to the follower-blocks and the tiltable frame, as set forth.

4. In combination with the main frame and the foot-frame supported on the said main frame and having a pivotal bearing thereon at one end; of the single crank-operated shaft having a duplex set of right and left threads; a pair of follower-blocks for each set of right and left shaft-threads; means for automatically moving said blocks to their thread-engaging positions; extensible link-arms connecting the blocks and the tiltable frames, and means for shifting and holding the follower-blocks out of engagement with the screw-shaft sections, for the purposes specified.

5. In a bedstead as described; the combination with the main supporting-frame; the foot-end frames tiltably mounted on the main frame; the single crank-operated screw-shafts; the follower-blocks; means for moving such blocks into their thread-engaging position, and lifting-link connections joining the blocks and the tilting frames; of mechanism for shifting and holding the follower-blocks out of engagement with the screw portions of the shifting shaft, said mechanism comprising a pair of rocking shafts, each having cam-disks adapted to be moved into engagement with the follower-blocks and shove them endwise of the shaft, said rock-shafts having detents for holding them to an operative position, all being arranged substantially as shown and for the purposes described.

6. A new and improved bedstead; comprising a main frame; a hammock or sling supported on the upper end thereof; means for elevating and lowering the same; a bottom consisting of a tiltable head portion and a foot portion comprising a pair of longitudinally-arranged tiltable frames, each frame being formed of two sections, having a rule-joint connection, and having a slidable locking-bar for interlocking the two sections, and means substantially as described, whereby the crank-operating mechanism may raise both foot-frames in unison or each frame independently, substantially as specified.

ELMER C. SCRIBNER.

Witnesses:
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J. CLAYTON SCRIBNER.