No. 809,051. PATENTED JAN. 2, 1906.

L. A. GOODSON & W. A. NASON.

INVALID BED.

APPLICATION FILED MAY 22, 1905.

2 SHEETS—SHEET 1.

Fig. 1.

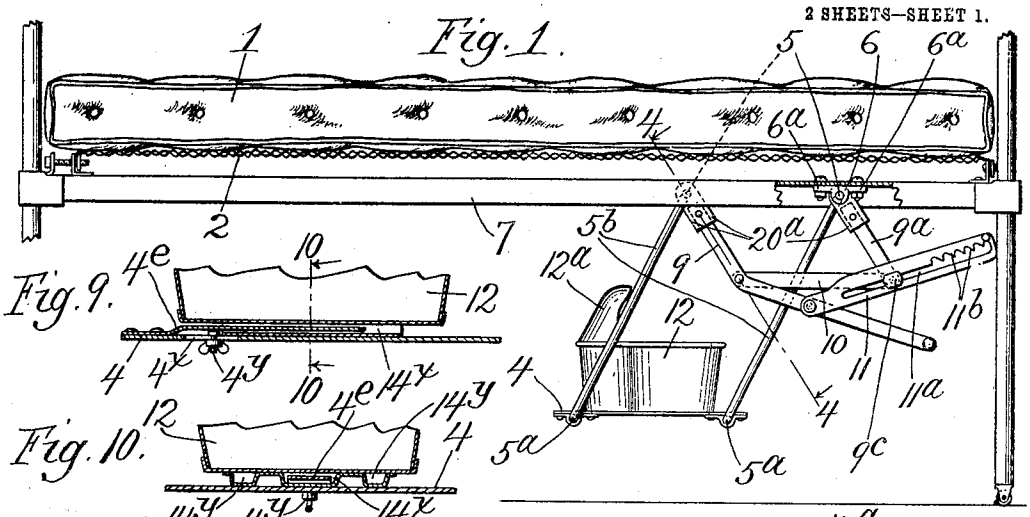


Fig. 9.

Fig. 10.

Fig. 3.

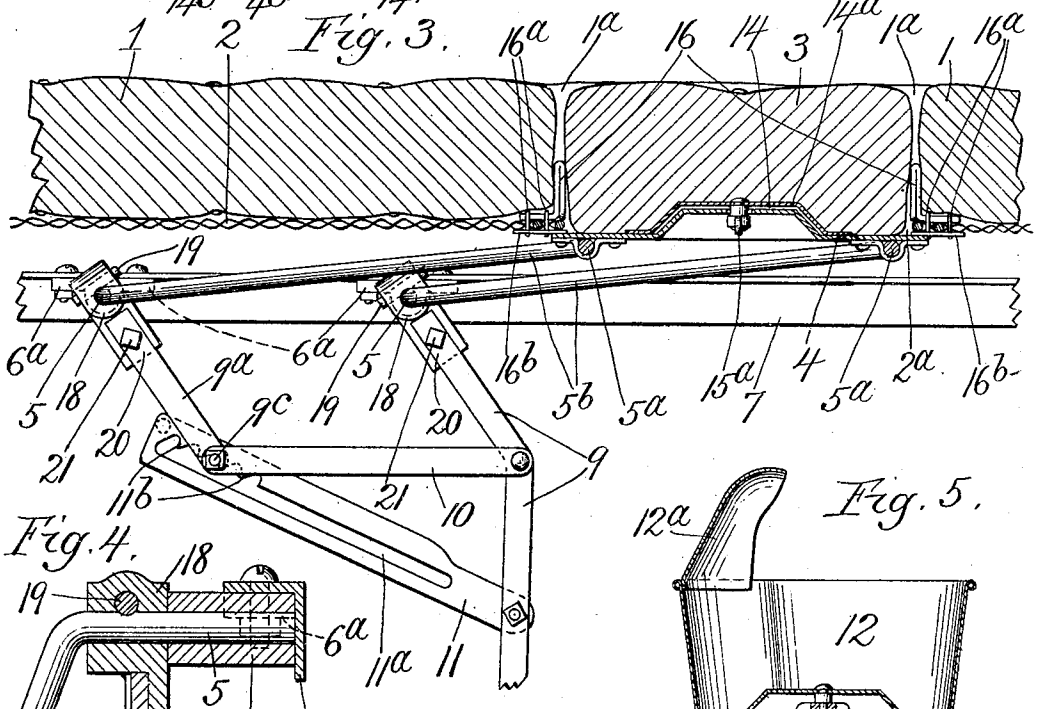
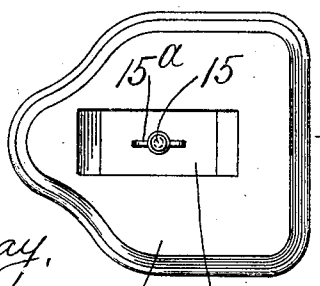


Fig. 4.

Fig. 5.

Fig. 6.



Witnesses.
Edward T. Wray.
J. S. Abbott

Inventor's
Lydia A. Goodson
Wm. A. Nason
by Burton & Burton
their Atty's

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2 SHEETS—SHEET 2.

Fig. 2.

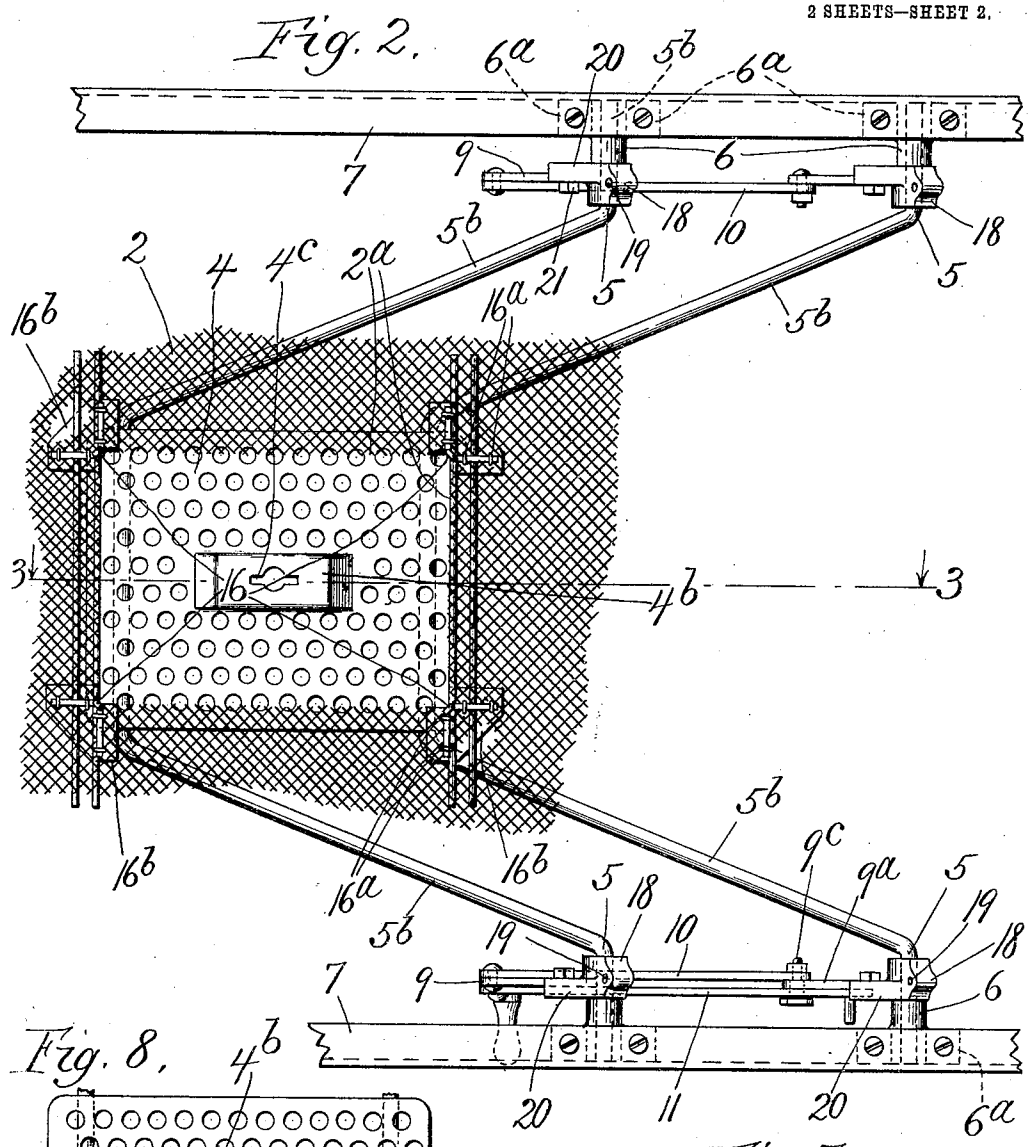


Fig. 8.

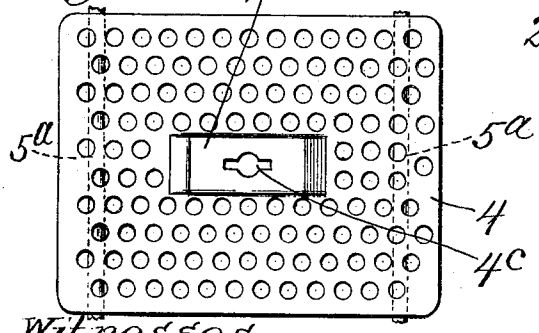
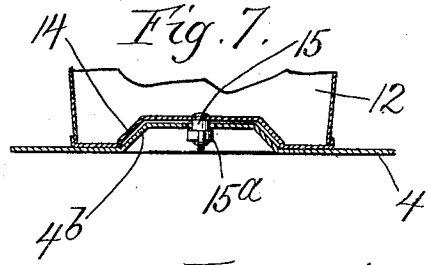


Fig. 7.



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UNITED STATES PATENT OFFICE.

LYDIA A. GOODSON, OF ELGIN, AND WILLIAM A. NASON, OF ALGONQUIN, ILLINOIS.

INVALID-BED.

No. 809,051. Specification of Letters Patent. Patented Jan. 2, 1906.

Application filed May 22, 1905. Serial No. 261,547.

To all whom it may concern:

Be it known that we, LYDIA A. GOODSON, residing at Elgin, in the county of Kane, and WILLIAM A. NASON, residing at Algonquin, in the county of McHenry, State of Illinois, citizens of the United States, have invented new and useful Improvements in Invalid-Beds, of which the following is a specification, reference being had to the accompanying drawings, forming a part thereof.

This invention relates to improvements in beds for invalids or bedridden persons, designed to facilitate attendance upon such persons.

It consists of the features of construction set out in the claims.

In the drawings, Figure 1 is a side elevation of a bed structure embodying our improvements. Fig. 2 is a detail plan view of the structure with mattress removed and frame broken away, showing the devices for operating the bed-pan and pad. Fig. 3 is a section at the line 3 3 on Fig. 2, showing the mattress and pad in position. Fig. 4 is a detail section at the line 4 4 on Fig. 1. Fig. 5 is a longitudinal vertical section of the bed-pan. Fig. 6 is a bottom plan view of the same. Fig. 7 is a detail section through the bottom portion of the bed-pan and the plate on which it is carried, showing the means of securing the parts together. Fig. 8 is a plan view of the pan-supporting plate. Fig. 9 is a longitudinal section of the pan and carrying-plate in a modified form. Fig. 10 is a transverse section of the same at the line 10 10 on Fig. 9.

In the structure shown in the drawings the mattress 1, which rests upon a suitable spring support of so-called "woven-wire" mattress 2, has an aperture 1^a registering with a corresponding aperture 2^a in the woven-wire mattress. The aperture 1^a in the mattress 1 is closed by a plug 3 of the same general character as the mattress. This plug is designed to be introduced into the aperture of the mattress 1 through the aperture 2^a of the woven-wire spring or mattress, and it is carried and supported by a perforated sheet-metal plate 4. This plate is made longitudinally rigid by any suitable means and is mounted upon the wrists 5^a at the ends of the crank-arms 5^b of the crank-shafts 5. These crank-shafts are provided with bearings 6, in which they rock, supported by the side rails 7 of the frame of the bed or woven-wire mattress 2. The journal-bearings for the crank-shafts, respectively, are at a distance apart on the side rail 7 equal to the distance between the wrists 5^a on the perforated plate 4, said plate constituting a link which connects the crank-wrists holding the crank-arms parallel in the rocking movement of the shafts. The shafts are journaled at such position that when the crank-arms are substantially horizontal the plug 3, resting on the link plate 4, is in position, entering through the apertures 2^a and 1^a, to bring the plug into position to close the aperture 1^a of the upper mattress. In order that the plug may be carried and held securely, the rock-shafts are connected by additional parallel lever-arms 9 9^a at an oblique angle to the crank-arms 5 5, and these lever-arms 9 9^a are connected by link-bars 10 10, pivoted at opposite ends to the lever-arms 9 9^a, at equal distances from the two rock-shaft-journal bearings, so that said links 10 are parallel to the side rails 7. The lever-arms 9 are extended down from the pivotal connection of the link 10, preferably, as shown, at an angle to the preceding extending of the link 10, and to one of these lever-arms 9 there is pivotally connected a ratchet link-bar 11 having a slot 11^a, through which passes the pivot-bolt 9^c, which connects the lever-arm 9^a with the link 10, and at the upper side of the slot the link-bar is provided with ratchet-teeth 11^b for engaging the pivot-bolt 9^c. It will be seen that this structure adapts the ratchet-link 11 to lock the rock-shafts and their connected lever-arms in position, upholding the plug 3 in the position shown in Fig. 3—that is, closing the aperture in the mattress—and that by releasing the ratchet-bar the plug can be lowered to any distance and locked in any position within the range of the ratchet-notches.

The bed-pan 12 is adapted to be substituted for the plug 3 on the link-plate 4 and is therefore of suitable dimensions to be passed up through the apertures 1^a and 2^a to bring its upper margin substantially level with the top of the mattress 1. At the forward or lower end it is reduced in transverse dimension by easy curves, as seen in Fig. 6, and from the interrupted or reduced forward portion a hood 12^a protrudes upwardly, overhanging the cavity of the pan, as seen clearly in Figs. 1 and 5, for obvious convenient functions. Both the plug and the bed-pan are adapted to be retained in position on the

link plate by means adapted to prevent lateral movement of the plug or pan. The preferred means for this purpose adapted to leave the pan with a flat bottom consists in forming on the plate an upward protrusion, as the upstruck boss 4^b, which enters a corresponding recess 14, formed in the bottom of the pan or plug. In the case of the pan this recess may be struck up in the bottom sheet of the pan itself, and in the case of a plug a bottom metal sheet 14^a is provided, having the recess 14 similarly struck up in it. For securely locking the plug or pan to the plate the upstruck boss 4^b of the plate has a slot 4^c, and from the bottom of the recess 14 a stud 15 is provided, projecting downward, having at its lower end a turn-button 15^a, adapted to pass through the slot 4^c and to be turned ninety degrees across the same. Another form of means for engaging the pan or plug with the plate so as to prevent lateral movement is shown in Figs. 9 and 10. This means consists of a longitudinal tongue 4^c, mounted upon the upper side of the plate 4 and offset upwardly therefrom, said tongue being adapted to enter a longitudinal pocket 14^x, formed on the bottom of the pan and on the bottom of th bottom plate 14^a of the plug. Preferably, in order to cause the pan to stand steady notwithstanding the longitudinal upraise formed on the bottom by the longitudinal pocket, two longitudinal ribs 14^y 14^y are also formed on the bottom plate of the pan or plug. In this form of the device it is desirable to provide a stop for the pan and the plug when they are thrust onto the tongue, and for this purpose the plate 4 has a stop 4^x, in which there is an adjustable clamp 4^y, against which the end of the pocket is stopped.

For causing the mattress to retain its proper position on the woven-wire spring with the aperture 1^a properly registered with the aperture 2^a I provide corner-posts 16, projecting upward from the woven-wire mattress at the corners of the aperture therein, which, entering the aperture in the mattress and engaging it at the corners, prevent the mattress from slipping up or down or crosswise, as it is liable to do in the movements of the patient. These posts are conveniently made each of a single piece of wire folded upon itself at the middle point, as may be understood from Figs. 2 and 3, to form the upstanding terminal, the two ends being bent out horizontally at right angles to each other (see Fig. 2) above the woven-wire fabric and secured firmly thereto by staples 16^a, passing through the woven wire and through a base-plate 16^b, lodged under the woven wire into which the staples are riveted, clamping the woven-wire fabric between the wire terminal 16^a and said plate.

For conveniently mounting the crank-shafts 5 on the side rail 7 and for securing to these crank-shafts the lever-arms 9 and 9^a, above described, fittings are made in the form seen in Fig. 2 and shown in section in Fig. 4. The fitting 6, having lugs 6^a for bolting it to the horizontal flange of the side rail, constitutes the journal-bearing of the rock-shaft and projects inward far enough to clear the horizontal flange of the side rail. The fitting 18 is bored for the rock-shaft and keyed fast thereto by the cross-pin 19, (see Fig. 4,) and it has the lug 20 formed to seat the lever-arm 9 or 9^a, which is secured in its seat in said lug by a single bolt 21, one bolt being sufficient to render rigid because of the lateral flanges 20^a, between which the bearing is lodged in the lug.

We claim—

1. In an invalid-bed, in combination with the mattress and the support for the same having registering apertures; a plug adapted to be entered through the aperture in the support and occupy the aperture in the mattress; a plate on which such support is mounted; parallel crank rock-shafts mounted on the bed-frame having their crank-wrists connected by the plate and having parallel lever-arms and a link connecting them, the ratchet-bar, 11, connected to one of the lever-arms and a stud for engagement with the ratchet-bar.

2. In an invalid-bed, in combination with the bed-frame, a mattress and mattress-support thereon; parallel cranked rock-shafts mounted on the bed-frame; a link plate connecting their crank-wrists, said rock-shafts having parallel lever-arms and a link connecting them, one of the arms being extended past the pivot of the link; a ratchet-bar pivotally connected with said extended lever-arm, and a stud for engagement with the ratchet-bar carried by the other lever-arm.

3. In an invalid-bed, in combination with the bed-frame, two parallel crank-shafts mounted thereon having their cranks extending downwardly; a link plate connecting their crank-wrists, said rock-shafts having each a lever-arm at both ends; links connecting the two arms at each end, one of the lever-arms at one end being extended beyond the link-pivot; a ratchet-bar connected to said extended arm, and a stud for engagement of the ratchet-bar carried by the corresponding arm of the other rock-shaft.

4. In an invalid-bed, in combination with the bed-frame, two parallel crank-shafts journaled in the side bars of the frame and cranked between the bars; a link plate connecting their crank-wrists, said rock-shafts having each a rigid lever-arm other than the crank-arms and extending at a considerable angle to said crank-arms; a link connecting said lever-arms, one of the lever-arms being extended beyond the pivot of the link; a bar having pivotal connection to one of the arms and sliding connection with the other arm at different distances from the crank-shafts,

and means for releasably securing said bar at said sliding connection.

5. In an invalid-bed, in combination with the bed-frame, parallel shafts mounted in the side bars thereof and cranked downwardly between the side bars; a link plate connecting their crank-wrists; said rock-shafts having parallel lever-arms extending at an angle to their crank-arms respectively; a link connecting said lever-arms at equal distances from their respective crank-shafts, and a second link having a pivotal connection with one of the arms and a sliding connection with the other at different distances from the crank-shaft, and means for releasably engaging said second link at its said sliding connection.

6. In an invalid-bed, in combination with the bed-frame, parallel rock-shafts journaled on the side bars and cranked downwardly between said bars; a link plate connecting the crank-wrists, said shafts having parallel lever-arms extending at an angle to the crank-arms respectively; a link connecting said parallel arms at equal distances from their respective rock-shafts; a second link connecting one of the lever-arms with the first link, one of said connections being a sliding connection, and means for releasably engaging it at said sliding connection.

7. In an invalid-bed, in combination with the bed-frame, two parallel rock-shafts mounted on the side bars thereof; a link plate connecting the crank-wrists, each rock-shaft having a lever-arm extending at an angle to the crank-arm; a link connecting the two lever-arms at equal distances from the crank-shafts, one of the lever-arms being extended below the link connection, and a second link pivoted to said extended lever-arm and notched for engagement with the pivot of the link to the other arm.

8. In an invalid-bed, in combination with the bed-frame, two parallel rock-shafts mounted on the side bars thereof; a link plate connecting the crank-wrists, each rock-shaft having a lever-arm extending at an angle to the crank-arm; a link connecting the two lever-arms at equal distances from the crank-shafts, one of the lever-arms being extended below the link connection, and a second link pivoted to said extended lever-arm below the pivot of the first link and slotted and notched for engagement with the pivot of said first link to the other lever-arm.

9. In an invalid-bed in combination with a mattress-plug or bed-pan and apparatus for raising and lowering the same, comprising a plate for supporting the plug or bed-pan having an upwardly-struck boss forming a cavity in the lower side of the plate, the bottom of the plug or bed-pan having a recess to receive such protruding element.

10. In an invalid-bed, a bed-pan and an apparatus for raising and lowering the same comprising a plate for supporting the bed-pan which has an upwardly-struck and downwardly-open boss, in combination with a bed-pan having a corresponding recess struck upwardly from the bottom adapted to receive the boss, and means protruding into the cavity of the downwardly-open boss for securing the plate and pan together at the said corresponding boss and recess.

11. An invalid-bed having an apparatus for raising and lowering a mattress-plug or bed-pan, said apparatus comprising a plate for supporting the plug or bed-pan, in combination with such plug or pan adapted to be lodged on the plate, the plate having a boss struck from it protruding upwardly, the bottom of the pan or plug having a corresponding recess struck upwardly from the bottom adapted to receive the boss of the plate.

12. An invalid-bed having an apparatus for raising and lowering a mattress-plug or bed-pan, said apparatus comprising a plate for supporting the plug or bed-pan, in combination with such plug or bed-pan adapted to be lodged on the plate, the plate having a boss struck from it, protruding upwardly, and downwardly hollow, the bottom of the plug or bed-pan having a corresponding recess struck upwardly to receive the boss, the boss having an oblong slot, and a turn-button projecting from the bottom of the recess through such slot adapted to be turned across the same.

13. In an invalid-bed, in combination with a woven-wire-mattress support, a mattress mounted thereupon, the support and the mattress having registering apertures for a plug or bed-pan; corner posts or guides at the corners of the aperture in the mattress-support in position to enter the corners of the aperture in the mattress, said posts being bound rigidly to the woven-wire-mattress support.

14. In an invalid-bed, in combination with a woven-wire-mattress support, a mattress thereon, said support and mattress having registering apertures for a plug or bed-pan; corner posts or guides at the corners of the aperture in the mattress-support for engaging the corners of the aperture in the mattress, said corner-posts being made of a rod or wire folded upon itself and having the two branches bent at right angles to the folded portion and at an angle to each other; and a corner-plate lodged on one surface of the woven-wire mattress and secured thereto and to the terminal feet of the bent-wire post.

In testimony whereof we have hereunto set our hands, at Chicago, Illinois, this 15th day of May, A. D. 1905.

LYDIA A. GOODSON.
WM. A. NASON.

In presence of—
CHAS. S. BURTON,
J. S. ABBOTT.