No. 794,978. PATENTED JULY 18, 1905.

E. A. HALL.

INVALID'S BED.

APPLICATION FILED JULY 19, 1904.

Fig. 1.

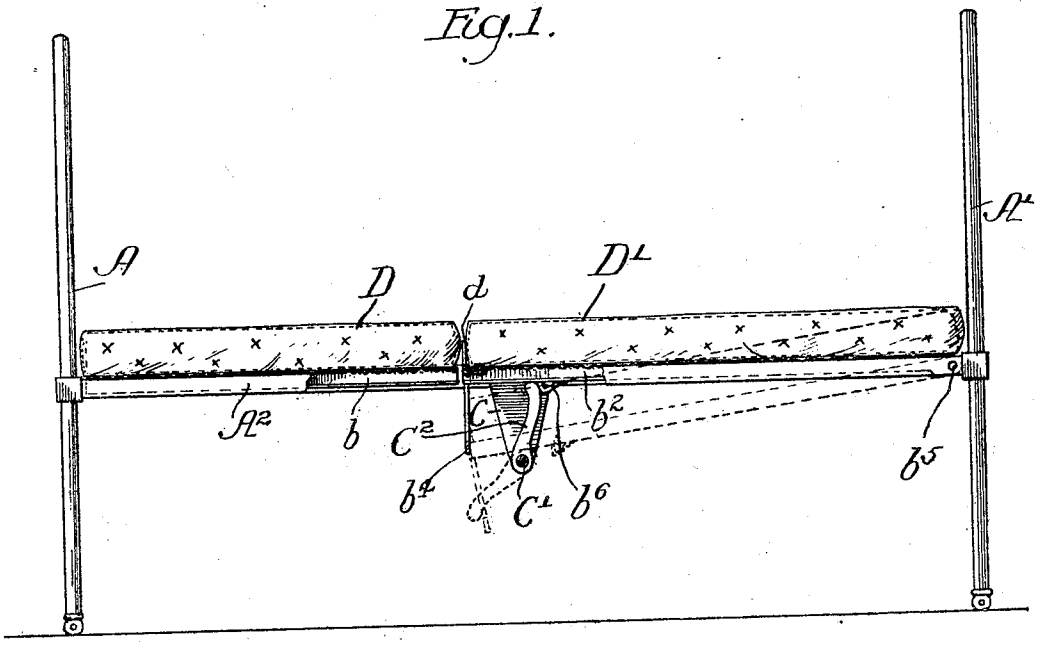



Fig. 2

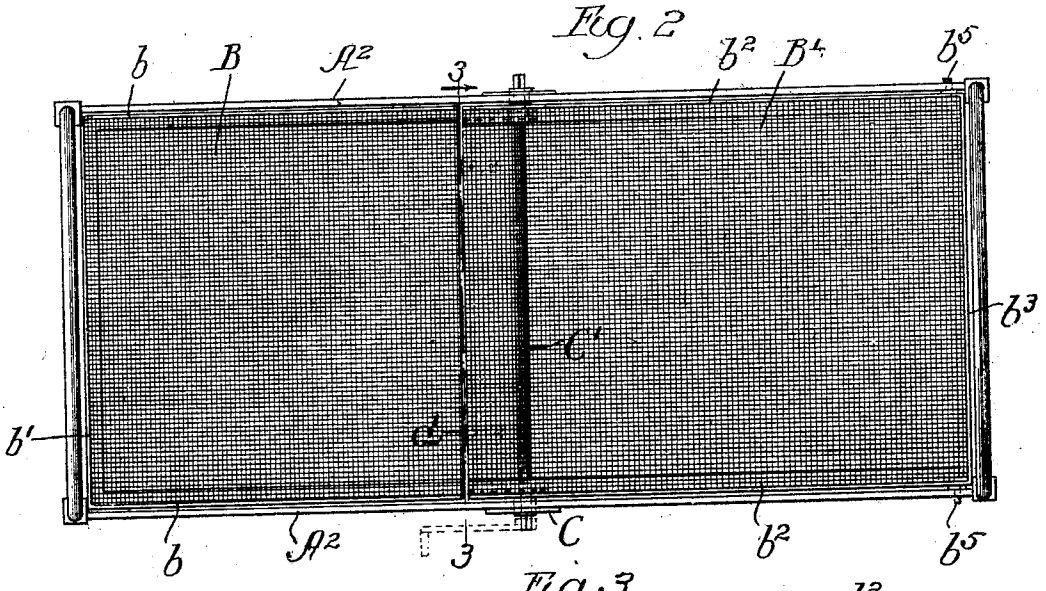
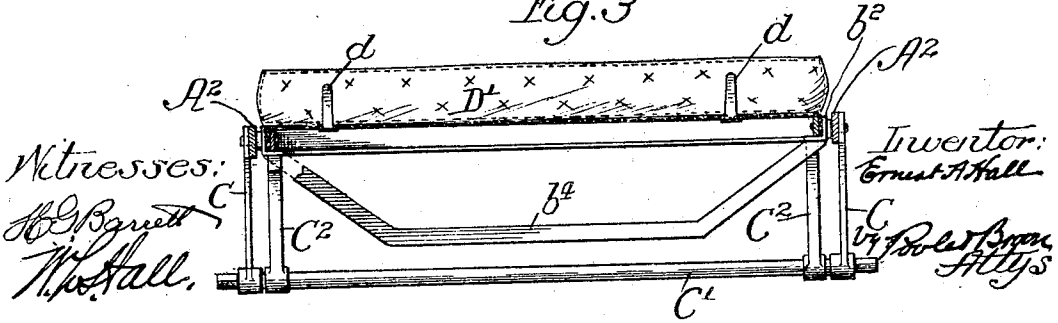



Fig. 3




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No. 794,978. Patented July 18, 1905.

# UNITED STATES PATENT OFFICE.

ERNEST A. HALL, OF VANCOUVER, CANADA.

## INVALID'S BED.

SPECIFICATION forming part of Letters Patent No. 794,978, dated July 18, 1905.

Application filed July 19, 1904. Serial No. 217,207.

*To all whom it may concern:*

Be it known that I, ERNEST A. HALL, a citizen of the Dominion of Canada, and a resident of Vancouver, in the Province of British Columbia and Dominion of Canada, have invented certain new and useful Improvements in Invalids' Beds; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to improvements in beds for invalids; and the invention consists in the matters hereinafter set forth, and more particularly pointed out in the appended claims.

Among the objects of the invention is to facilitate the placing of a bed-pan or the like in the bed with a minimum disturbance to the patient, and a further object of the invention is to provide means whereby the bed may be lowered or depressed between its ends for such purpose and for holding or locking the depressible portion of the bed in its normal or uppermost position.

In the drawings, Figure 1 is a side elevation of an invalid's bed made in accordance with my invention, parts thereof being broken away. Fig. 2 is a top plan view of the bed with the mattress removed. Fig. 3 is a cross-section taken upon line 3 3 of Fig. 2.

As shown in the drawings, A A′ designate the foot members of the bed, and $A^2$ $A^2$ the side rails thereof. Said bed is provided with a mattress-supporting frame made in two parts, to wit: a stationary part B at the head end of the bed and a depressible part B′ between said stationary part of the mattress-supporting frame and the foot of the bed. The stationary part of the mattress-supporting frame comprises, as herein shown, a woven-wire fabric which is stretched on a frame that is fixed stationary to the bed in any suitable manner, said frame comprising side members *b b* and end member *b′*. If desired, the said stationary section B may be stretched between and attached directly to the side and end members of the bed-frame proper. The depressible section B′ of the mattress-supporting frame comprises also a woven-wire fabric which is stretched in a frame comprising side members $b^3$ $b^3$ and end members $b^4$ $b^4$. The side depressible section of the mattress-supporting frame is herein shown as hinged at its foot end to the side members of the bed-frame proper near the foot of the bed through the medium of trunnions $b^5$ $b^5$, extending laterally from the supporting-frame into engagement with suitable bearing-apertures in the side rails $A^2$ of the bed-frame proper. The said swinging section of the mattress-supporting frame is made of greater length than the stationary section, whereby the joint between said sections is located nearer the head than the foot of the bed. Such joint should be located on a transverse line adjacent to the smaller part of the back of the patient. The said swinging or hinged section of the mattress-supporting frame is adapted to be held normally at the level of the stationary part of the frame, thereby providing a uniform level surface for the mattress from end to end of the bed. Means are provided for holding the swinging section in its upper position which are constructed to permit the inner part of said swinging section to be lowered below the level of the stationary section. The mattress is made of two parts or sections D D′, corresponding in length to the sections of the supporting-frame. The longer section, D′, swings downwardly with the swinging section of the supporting-frame, and said supporting-frame is provided with stop arms or lugs *d d* at its inner or swinging end to prevent the mattress from slipping off the swinging section when it is dropped downwardly at its inner end. Said raising and lowering means may be made of any suitable construction and as herein shown are made as follows:

C C designate two hangers or brackets located one at each side of the bed and depending from and attached to the side rails $A^2$. C′ designates a rock-shaft which is rotatively mounted in the lower ends of said hangers and extends transversely beneath the bed. The ends of said shaft are squared to receive a crank *c*, (indicated in dotted lines in Fig. 2,)

by which the shaft is turned or rocked in its bearings. Rigidly affixed to said rock-shaft are two cam-arms $C^2$ $C^2$, which are located in the planes of the side members $b^2$ of the swinging section of the mattress-supporting frame. The upper ends of said arms engage the side members of said swinging section when swung upwardly and hold the free end of said section in its uppermost position. When said arms $C^2$ are swung downwardly, the swinging section of the mattress-supporting frame drops downwardly, as indicated in dotted lines in said Fig. 1. A suitable stop is provided which limits the upward movement of the arms $B^2$ when they have been raised sufficiently to bring the swinging section B′ to the level of the stationary section B of the mattress-supporting frame. As herein shown, said stop comprises two projections $b^6$, extending downwardly from the side members of the swinging section, and are engaged by the upper ends of the arms $C^2$ when said arms are in their uppermost positions. The arms $C^2$ swing slightly past the plane of the axis of the shaft C′ when in their uppermost positions against the stops $b^6$, thereby avoiding tendency of the arms accidentally falling downwardly and allowing the swinging section of the mattress-supporting frame to drop. Said arms $C^2$ and the locking devices therefor may be arranged to adjustably hold the swinging section of the mattress-supporting frame at different degrees of inclination.

When the swinging section of the mattress-supporting frame is lowered to the position shown in dotted lines in Fig. 1, the bed-pan may be readily placed beneath the patient, inasmuch as the central part of the bed is depressed. The mattress may be swung downwardly sufficiently to permit the bed-pan to be passed upwardly from beneath the bed between the sections of the mattress, in which event the bedclothes beneath the patient will be divided in the same manner as is the mattress and the supporting-frame therefor. Said bed-pan may be placed on the depressed portion of the bed beneath the patient from either side of the bed, in which event it will not be necessary to divide the bedclothes at the line of the division of the mattress.

It will be noted that the transverse or end member $b^4$ of the swinging section of the mattress-supporting frame is curved or deflected downwardly, as shown in Fig. 3, so as to permit the inner or free end of the swinging section to yield or spring downwardly. For a like reason the inner end of the stationary section need not be and preferably is not supported by a transverse frame member. If found necessary, the adjacent ends of the woven-wire fabric may be made of heavier material than the other part thereof to give the required strength thereto.

The mechanism for holding the swinging section B′ of the mattress-supporting frame in its uppermost position and permitting it to drop in the manner described and shown may be variously constructed so as to lock the swinging section in place.

Other details of the bed may be varied without departing from the spirit of the invention, and I do not wish to be limited to such details except as hereinafter made the subject of specific claims.

I claim as my invention—

1. In an invalid's bed, the combination with the bed-frame, of a mattress-supporting frame comprising a head-section fixed stationary to the bed-frame and a foot-section which is hinged at one end to the foot of the bed-frame and in a manner to swing downwardly at its other end, and means for raising said swinging section and locking it at the level of the fixed section.

2. In an invalid's bed, the combination with the bed-frame, of a mattress-supporting frame comprising a stationary head-section and a swinging foot-section which is hinged at its outer end to the foot of the bed-frame, and is adapted to swing downwardly at its inner end, and means for holding the inner end of said swinging section in its uppermost or horizontal position constructed to permit it to swing downwardly, comprising a rock-shaft extending transversely beneath the bed, hangers depending from the bed-frame in which said rock-shaft is mounted and arms rigid with the rock-shaft and adapted to engage the free or swinging end of the foot-section.

3. In an invalid's bed, the combination with the bed-frame, of a mattress-supporting frame comprising a stationary head-section and a swinging foot-section which is hinged at its outer end to the foot of the bed-frame, and is adapted to swing downwardly at its inner end, means for holding the inner end of said swinging section in its uppermost or horizontal position constructed to permit it to swing downwardly, comprising a rock-shaft extending transversely beneath the bed, hangers depending from the bed-frame in which said rock-shaft is mounted, arms rigid with the rock-shaft and adapted to engage the free or swinging end of the foot-section, and a stop for limiting the upward throw of said arms.

4. In an invalid's bed, the combination with the bed-frame, of a mattress-supporting frame comprising a head-section fixed stationary to the bed-frame and a foot-section which is hinged at one end to the foot of the bed-frame and in a manner to swing downwardly at its other end, means for raising said swinging section and locking it at the level of the fixed section, two mattress-sections each fitted to and made of the same length as one of said mattress-supporting-frame sections, and stops on the swinging frame-section engaging its mattress-section in a manner to prevent said

mattress-section from slipping off the frame-section when the latter is depressed.

5. In an invalid's bed, the combination with the bed-frame, of a mattress-supporting frame comprising a stationary head-section and a swinging foot-section which is hinged at its outer end to the foot of the bed-frame, and is adapted to swing downwardly at its inner end and means for holding the inner end of said swinging section in its uppermost or horizontal position, said swinging frame-section embracing two parallel side members and connected transverse end members, the end member at the swinging end of said section being curved downwardly between its ends.

In testimony that I claim the foregoing as my invention I affix my signature, in presence of two witnesses, this 18th day of June, A. D. 1904.

ERNEST A. HALL.

Witnesses:
W. L. HALL,
G. J. BRYCE.