

C.G. KUHN.

Improvement in Invalid-Bedsteads.

No. 127,070.

Patented May 21, 1872.

Fig. 1.

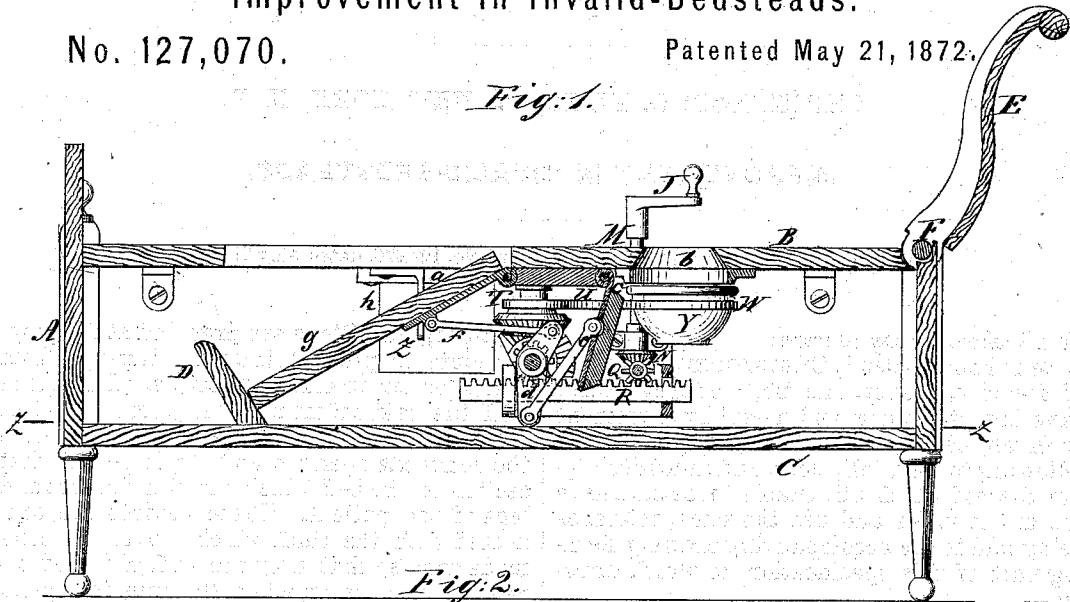


Fig. 2.

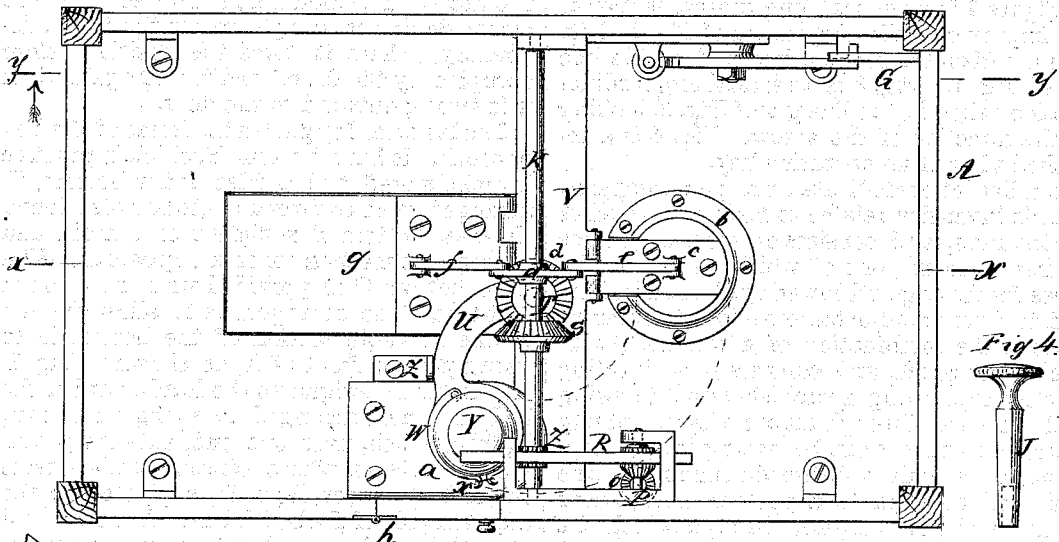


Fig. 4.

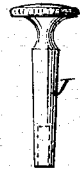
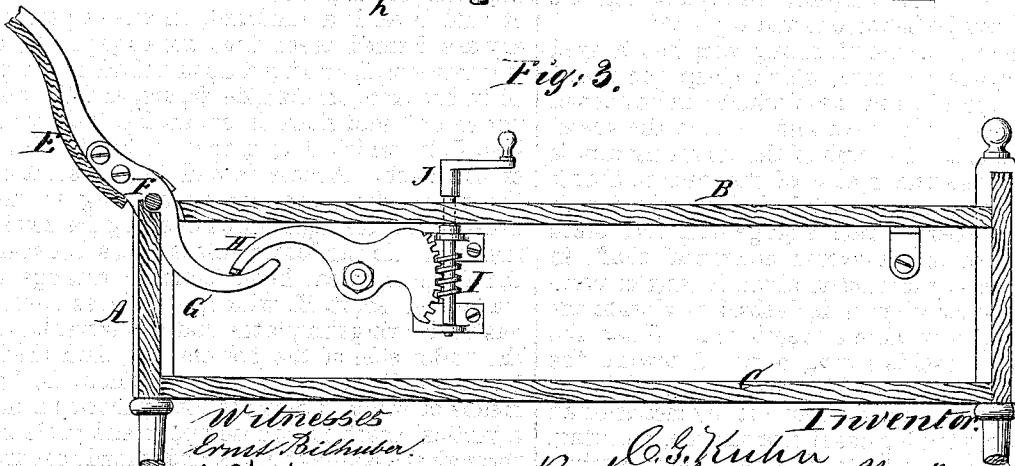


Fig. 3.



Witnesses
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UNITED STATES PATENT OFFICE.

CHRISTOFER G. KUHN, OF NEW YORK, N. Y.

IMPROVEMENT IN INVALID-BEDSTEADS.

Specification forming part of Letters Patent No. 127,070, dated May 21, 1872.

To all whom it may concern:

Be it known that I, CHRISTOFER G. KUHN, of the city, county, and State of New York, have invented a new and useful Improvement in Invalid-Beds; and I do hereby declare the following to be a full, clear, and exact description thereof, which will enable those skilled in the art to make and use the same, reference being had to the accompanying drawing forming part of this specification, in which drawing—

Figure 1 is a vertical longitudinal section of my improvement in the line *xx* of Fig. 2. Fig. 2 is a horizontal section, inverted, in the line *zz* of Fig. 1. Fig. 3 is a vertical longitudinal section taken in the line *yy* of Fig. 2, looking in the direction of the arrow. Fig. 4 is a detached view of an operating-key.

Similar letters indicate corresponding parts.

This invention relates to beds and couches for invalids; and consists of several features of improvement, one of which relates to devices for raising and lowering the head of the bed to form an adjustable back. Another relates to the combination of a commode with the bed or couch, and consists in a vibrating arm for supporting a rubbish-vessel to swing under the bed through an arc of about ninety degrees, so that it can be swung inward to a position beneath a commode-opening in the bed, and outward to a position near a door made in the side frame, through which the vessel can be taken out and replaced.

The end of the vibrating arm has hinged fingers, one or more, which clasp the vessel and support it, and one of which can be opened and closed to remove and replace the vessel at pleasure. The hub of the vibrating arm is held on the under side of the bed, so that it can be turned, and the hub is provided with beveled teeth, which engage with like teeth formed on a transverse horizontal shaft, to which rotary motion is given in any convenient manner when it is desired to vibrate the swinging arm above mentioned. When the rubbish-vessel is swung outward toward the door it is automatically covered, until the attendant is ready to remove it, by means of an elastic or yielding cushion or surface, in contact with which the top of the vessel moves when it comes opposite the door, the cushion being placed in proper position near the door for

that purpose. Stops are provided at the proper points to prevent the vibrating arm from going too far in either direction. I combine with the said vibrating arm suitable devices for automatically operating a drop which closes the commode-opening, and for lowering that section of the bed which sustains the feet and legs of the patient. These devices are connected with the shaft which moves the commode-arm, so that they are brought simultaneously into action when the arm is moved, the drop and section being lowered when the commode-arm is brought under the commode-opening, (where it takes the position before occupied by the drop,) and raised again when it is swung outward to the door.

The letter A designates the frame of the bed or couch. It has a bottom, B, which in practice is upholstered, and a false under bottom, C, arranged so as to form a space between it and the real bottom B sufficient to contain and conceal the mechanism of the apparatus. The false bottom C is provided with an inclined foot-rest, D, so arranged as to allow the end of the movable section of the bottom B to swing past in front of it, as shown in Fig. 1. The letter E designates the head-board of the bed or couch, arranged to swing on a shaft, F, from which, near one end, extends a concave arm, G, on whose concave surface rests the end of a lever, H, that is pivoted to the adjacent side of the bed-frame. The other end of said lever is a quadrant, on whose periphery are formed teeth that are engaged by a worm-wheel, I, arranged upon a shaft supported in brackets on the side frame, and the upper end of said shaft is squared to receive a key, J, by which it is turned to raise or lower the back. Access is had to the shaft of the worm-wheel through an opening in the bed-bottom, through which opening the key is inserted. In the intermediate space between the false and real bed-bottoms I arrange a transverse shaft, K, which, in this example, has its bearings in plates that are fastened to the under side of the bottom B. Said shaft has upon it, near one end, a pinion, L, by means of which it receives rotary motion from a vertical shaft, M, whose upper end projects through the bed-bottom, B, and is made square to fit into a key, J, by which it is turned to the right or left, as may be desired. The mo-

tion of the vertical shaft M is communicated to the horizontal shaft by intermediate gearing in any convenient manner. In this example I communicate such motion by providing a bevel-wheel, N, on the lower end of the shaft M, which works into a bevel-wheel, O, on a short horizontal shaft, P, which shaft has also parallel teeth Q, that engage the teeth of a sliding rack, R, which is mounted in the same frame that furnishes bearings for the shafts above mentioned. This rack extends across the horizontal shaft K, and is engaged by its pinion L, so that when motion is imparted to the rack from the shaft M the shaft K will be rotated. The shaft K has fixed upon it, near its center, a segmental beveled-tooth pinion, S, which engages with beveled teeth formed on the hub T of a vibrating arm, U. This hub is held vertically, but so that it can be rotated freely in a socket formed for it on the under side of the bottom B, such socket being in this example formed in a transverse metallic plate, V, secured to the bottom, the ends of which plate form bearings for the shafts above mentioned. The arm U, at its outer end, is furnished with horizontal curved fingers W, one of which is hinged so that it can be turned away from the other. The ends of the fingers are bent outward away from each other, so as to form hooks, which can receive a band, *x*—of rubber, for example—to hold the fingers together. When together, the fingers form a clamp capable of holding a commode, Y. The commode is released from the clamp or fingers by releasing the band, when the clamp can be readily opened. On the under side of the bottom B I arrange a flexible or yielding cushion, *a*, which acts as a cover to close the commode when it is brought under the cushion to the position shown in Fig. 2. This cushion I prefer to make of India rubber. The bed-bottom B is provided with a commode-opening, *b*, which I place forward of the shaft K in the curved line described by the end of the arm U as a radius. This opening is closed from below by a drop, *c*, hinged to the under side of the bottom B. When the drop is in place in the opening it comes flush with the upper surface of the bed-bottom. The drop is lowered by means of an arm, *d*, made fast on the shaft K, and of a connecting-rod, *e*, that is hinged to the arm and to the back of the drop. The arm *d* extends to the opposite side of the

shaft K, where, by means of a connecting-rod, *f*, it operates a hinged section, *g*, of that part of the bed-bottom which supports the legs of the patient. Fig. 1 represents the section *g* and the drop *c* lowered and the commode Y in position under the commode-opening, to which position these parts are brought, respectively, by the rotation of the shaft K, the drop *c* being lowered away from the opening while the arm U is in motion from the position near the side of the bed toward the position shown in Fig. 1. Stops Z Z are provided to prevent the arm U from moving too far in either direction of its motion. When the commode is restored to its lateral position it can be removed from the bed, after undoing the clamping-fingers, through the door-way *h* in the side of the bed-frame, which door-way is provided with a door to conceal the commode. The comfort of the patient when using the commode is promoted by raising the head or back of the bed and lowering the foot-section *g*.

The keys J, by which the back of the bed and the commode are moved, can be used as fasteners to hold the blankets or covering down on the patient, and so prevent them from becoming displaced when he is restless, and with that view I make the keys of any convenient shape to facilitate their connection with the blankets by loops or otherwise.

Fig. 4 shows a form of key different from that shown in Figs. 1 and 3.

What I claim as new, and desire to secure by Letters Patent, is—

1. The combination, with the rotating shaft K, of the vibrating commode-arm U and the arm *d* for operating the drops *c* and *g*, substantially as and for the purpose described.

2. The combination, with the drops *c* and *g* and commode-arm U, of the vibrating back E, substantially as described.

3. The elastic cushion *a*, secured upon the under side of the bed-bottom B, for covering the commode, arranged substantially as described.

This specification signed by me this 29th day of February, 1872.

CHRISTOFER G. KUHN, M. D.

Witnesses:

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