Jan. 15, 1935. W. BODMER 1,987,592

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Fig. 8

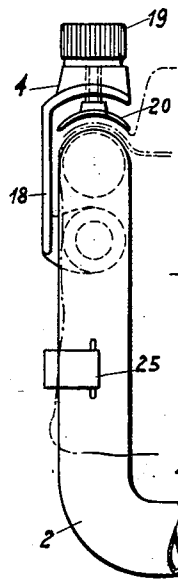
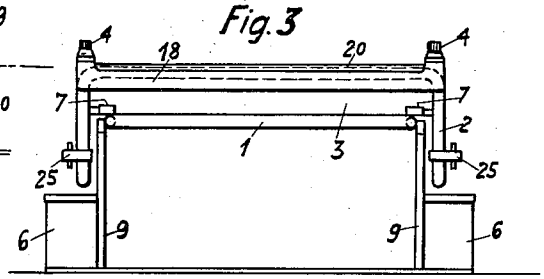


Fig. 3



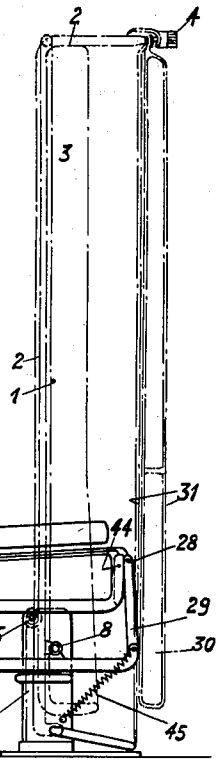
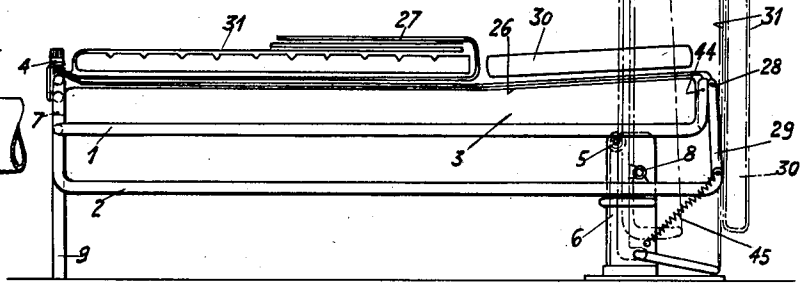


Fig. 1



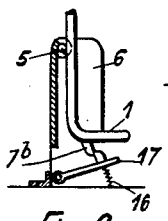


Fig. 9

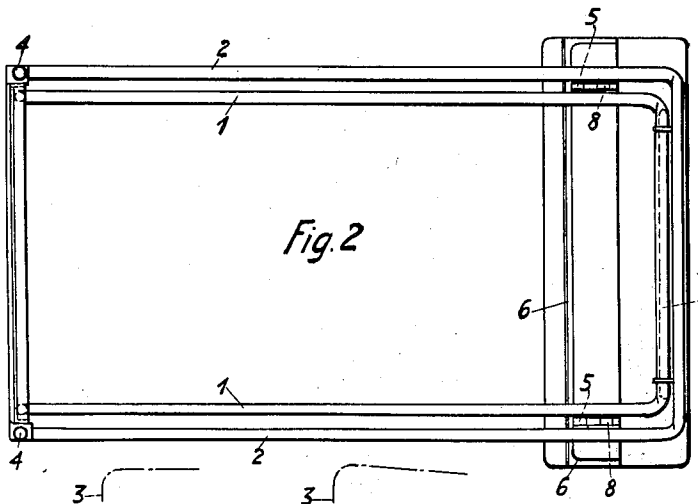
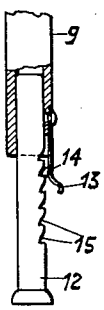


Fig. 2

Fig. 7



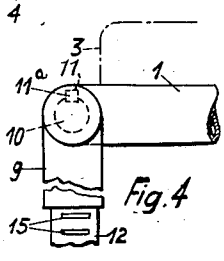


Fig. 4

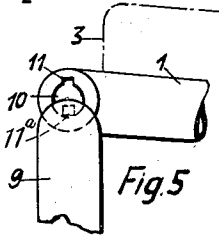


Fig. 5

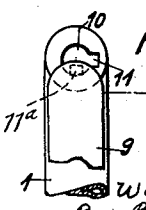


Fig. 6

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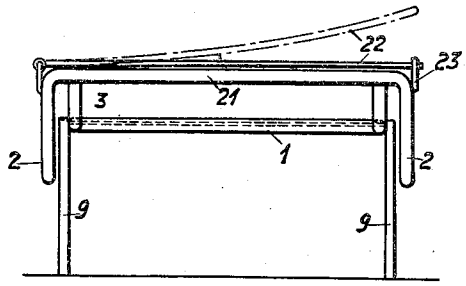
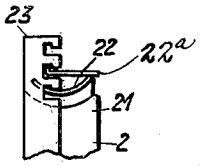


Fig. 10

Fig. 11



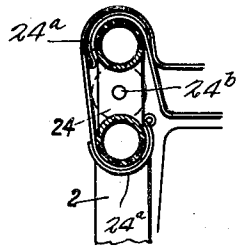


Fig. 12

Fig. 13

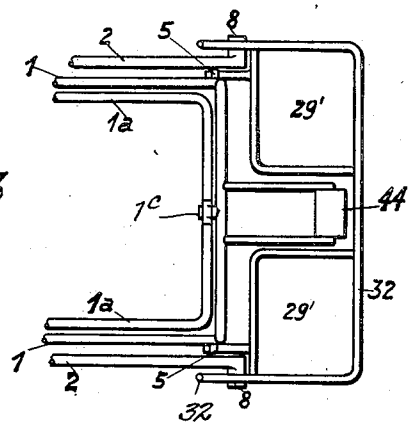
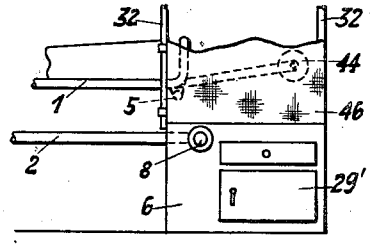


Fig. 14



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Patented Jan. 15, 1935 1,987,592

UNITED STATES PATENT OFFICE

1,987,592

BED

Walter Bodmer, Zurich, Switzerland

Application April 25, 1930, Serial No. 447,304. Renewed June 20, 1934. In Switzerland May 1, 1929

2 Claims. (Cl. 5—320)

This invention relates to beds and has for its object to render unnecessary a household task which has to be repeated daily, viz, the arranging or "making" of beds.

Known improvements relating to the construction of beds are largely for the purpose of effecting an economy of space as by combining the bed with other furniture, or for enabling the bed to be used for resting purposes during the day. These known improvements hardly effect any substantial saving of labor as far as "making" the bed is concerned. Some of them, indeed, have the disadvantage that the attention required is not reduced but is increased as compared with an ordinary bed. (Storing the bed-clothes in separate cupboards, spreading the bed-clothes, etc.) The time required for arranging or "making" a bed is sometimes as much as 7–8 minutes. By omitting this work in a household of for example four persons it is possible to effect a saving in labor of about half an hour. In hospitals, hotels and the like a much larger saving would be effected.

The invention further has as its object to provide a bed which can readily be adapted for resting purposes during the day and which only occupies a very small space when not in use.

Still further objects are to provide a bed which can be readily moved about from place to place, and which is readily adaptable to carry articles such as a bed table, a reading desk, or a bed lamp, or one or more heating devices, for the use of a person occupying the bed.

According to the invention there is provided a bed structure with a plurality of movable frames, characterized by a mattress carrying frame and one or more frames having means for holding the bed-clothes, at least one of said frames being pivotally mounted on a supporting stand in such a manner that the bed may be swung up into a vertical position when not in use and for the purpose of arranging or straightening out the bed-clothes.

A few constructional examples are diagrammatically shown in the accompanying drawings wherein:

Figures 1, 2 and 3 are respectively an elevation, a plan and an end elevation of one form of my improved bed as arranged for use.

Figure 4 is a detail elevation of the foot portion of the frame 1 and its connections in one position.

Figure 5 is a similar view of the same in another position.

Figure 6 is a similar view of the same in another position.

Figure 7 is a detail elevation partly in section of one of the supporting legs of the foot of the bed.

Figure 8 is a detail elevation of the foot of the frame 2 provided with a clamp for the bed covers.

Figure 9 is a detail elevation of means for locking the bed in vertical, folded position.

Figure 10 is an elevation of the foot of the bed provided with a modified form of clamp for securing the bed covers.

Figure 11 is a detail elevation of the same.

Figure 12 is a detail elevation, partly in section, of a modified form of the clamp for the bed covers.

Figure 13 is a detail plan of a modified form of the bed.

Figure 14 is a side elevation of the same.

The bed shown in Figs. 1–4 of the drawings comprises two frames 1 and 2, of steel tubes or any other material, the first of which carries the mattress 3, whilst the second frame carries the bed-clothes which are held by a clamping device 4. The upper frame 1 carrying the mattress 3 is pivotally attached at 5 to a stand or support 6 provided at the head end of the bed, whilst the lower frame 2, which has projections 7 engaging the upper frame 1 and which partially encloses the said frame, is pivotally attached at 8 to the stand 6.

When the mattress carrying frame 1 is raised the frame 2 is also raised by the projections 7, whilst the frame 1 can be pivoted downwardly separately from the frame 2.

Pivotally attached to the foot end of the frame 1 are two feet 9 (Figs. 5, 6, 7) which are rigidly inter-connected by means of a rectangular rod 11*a*. As long as the feet hang freely the rectangular rod is positioned within a round orifice 10 of frame 1 in which it can freely turn. When the bed rests in the ready for use position on the feet 9 the rectangular rod engages within a slot-like recess 11, whereby the feet are secured in this position.

To allow of variation in the inclination of the bed means may be provided at the foot of the bed whereby the height of same may be altered. A displaceable stem 12 is adapted to fit into each foot and is adapted to be releasably secured in the required position by the engagement of a tooth 14 on a spring 13 into a recess 15 on the stem. (Fig. 7.)

For use as a sofa, only the mattress frame 1 is moved down into a horizontal position. For use as a bed the bed-clothes frame 2 is also moved

down. When the bed-clothes frame 2 is moved up into the vertical position the bed-clothes automatically straighten out and arrange themselves.

Instead of being mounted as shown in Figs. 1 to 4 the frames 1 and 2 may be pivotally mounted so that the pivoting axes extend parallel to the longitudinal direction of the bed. In order to facilitate movement of the frames they are provided with counter-weights 44 at their head ends. Springs such as 45, Fig. 1, could fulfil the same purpose. If necessary means may be provided to secure the frames in the ready for use or out of use positions. Figure 9 shows such a device for the mattress frame. A member 17 pressed by a spring 16 snaps into position behind a projection on the mattress frame when the latter is raised and is adapted to be released from engagement with the said projection upon pressure being applied to said member 17 before the frame is swung down. Fig. 8 shows a clamping device for the bed-clothes. Pivotally connected to a tubular member of the bed-clothes frame 2 is a curved member 18 provided at both ends with bolts 19 which are adapted to press a curved plate 20 towards the tubular member so as to clamp the bed-clothes therebetween. Figs. 10 and 11 show a modification of the clamping device consisting of two rods or stems 21 and 22 pivotally connected together at one end, one of said rods or stems being flexible and slightly curved in order to increase the clamping action on the bed-clothes inserted between the stems, which latter are adapted to be secured together by means of a bayonet joint 23 and the catch 22^a at the free end of rod or stem 22. Any other means utilizing a resilient frictional grip on the bed-clothes may be used for clamping the same. In some cases the clamping means may be provided in duplicate or in triplicate or other multiple form. Fig. 12 shows an arrangement in which two clamping devices 24^a are mounted on a member 24 which is turnable about a bearing 24^b on the frame 2.

When the frames 1 and 2 are turned up the upper and lower bedclothes hang separately which allows same to air. After the frame 2 has been turned down the member 24 is turned through 180° whereby the bed-clothes are caused to lie on each other. The bed-clothes are also held by springs 25 (Fig. 8) adjacent the lower angle of the bed-clothes frame. For covering the bed-clothes there is used an underlay 26 and a coverlet 27 (Fig. 1) which are clamped together with the bed-clothes. If desired a cover may also be provided for the under side of the mattress.

The correct hang of the bed-clothes when the frame 2 is raised is ensured by means of a weight rod 28 (Fig. 1) between the underlay and the lower sheet which are detachably connected together at the upper end. This rod 28 is connected to the lower end of the bed-clothes frame by means of flexible straps 29 which allow the bed-clothes to slip back when the frame 2 is turned up. The pillow 30 is carried within a bag 31 provided on the coverlet or the said pillow may be otherwise prevented from slipping down when the frame 2 is raised.

Figs. 13 and 14 show a modified form of bed in which the counter weight 44 is so arranged as to leave a storage space within the stand 6 which may be used as desired. Said stand is here shown as having drawers 29'. The said figures also show how the bed when in the out of use position may be partially enclosed by means of a fabric casing 46 extending between supporting members 32. Such enclosing of the bed may be otherwise effected as desired.

The mattress frame may carry within itself one or more movable frames. Fig. 13 shows the provision of a second frame $1a$ which is rotatably mounted at 1^c about its longitudinal axis in the outer frame 1, whereby both sides of the mattress may be used.

What I claim is:—

1. A folding bed comprising supporting means, a frame for carrying bed covers pivotally mounted near its head end on said supporting means and having an upwardly extending foot bar, a mattress frame also pivotally mounted on said supporting means near its head end and at a point higher than the pivotal point of the bed cover carrying frame and having a head bar, each of said frames including side rails, said mattress supporting frame having supporting legs at the foot end thereof and means to support the foot of the first named frame on the foot of the mattress supporting frame, the side rails of the mattress carrying frame when the bed is in horizontal position being above the side rails of the cover carrying frame and the foot bar of the latter forming also a foot bar for the mattress frame.

2. A folding bed as claimed in claim 1, in which the cover carrying frame is provided on the foot bar with means coacting with said bar for holding the bed covers in operative position.

WALTER BODMER.