A. HIRSH.

FOLDING BED.

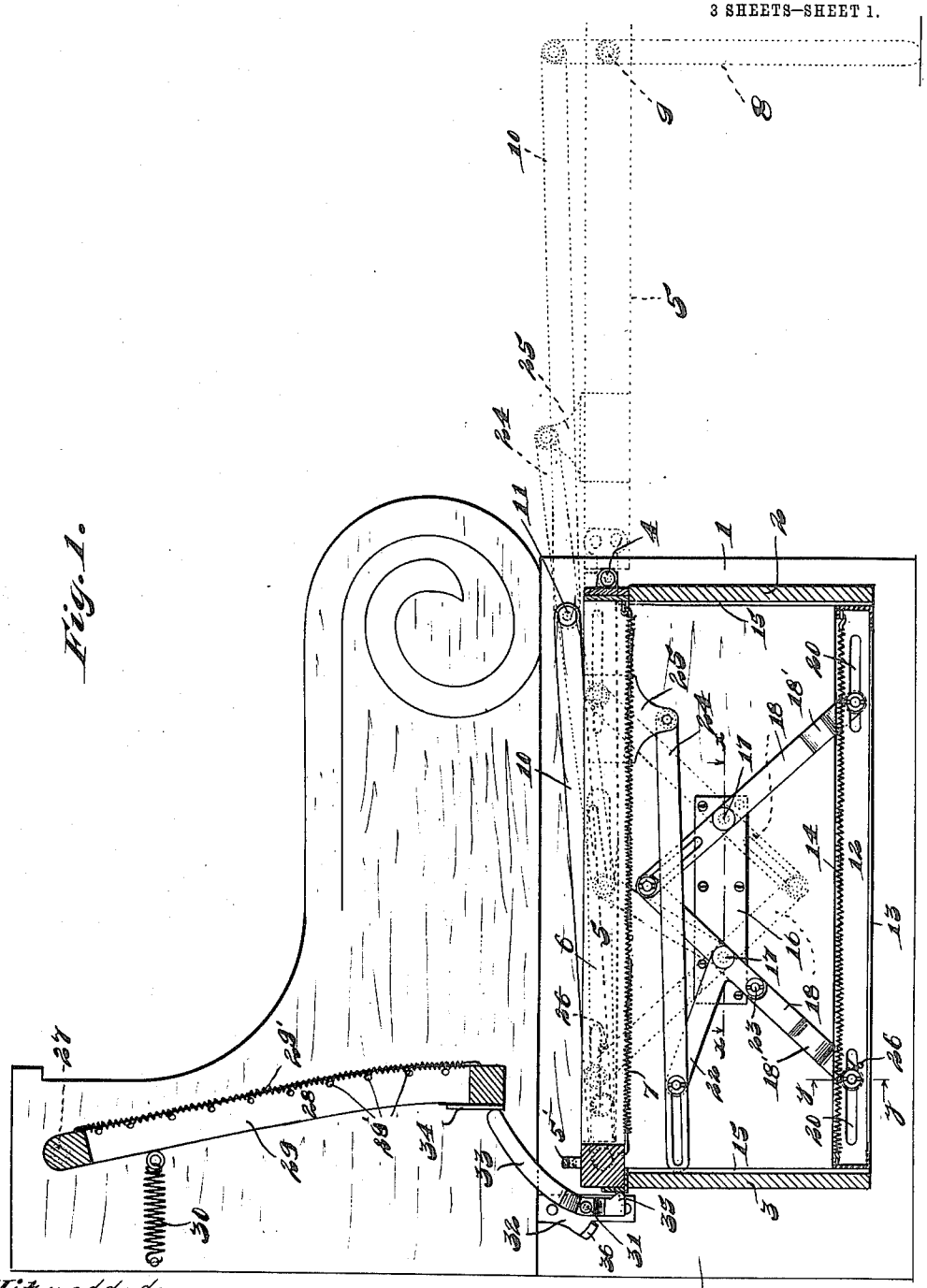
APPLICATION FILED MAR. 18, 1912.

1,093,329.

Patented Apr. 14, 1914.

3 SHEETS—SHEET 1.

Fig. 1.



Witnesses:

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A. A. Olson.

Inventor:

Arthur Hirsh,

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3 SHEETS—SHEET 2.

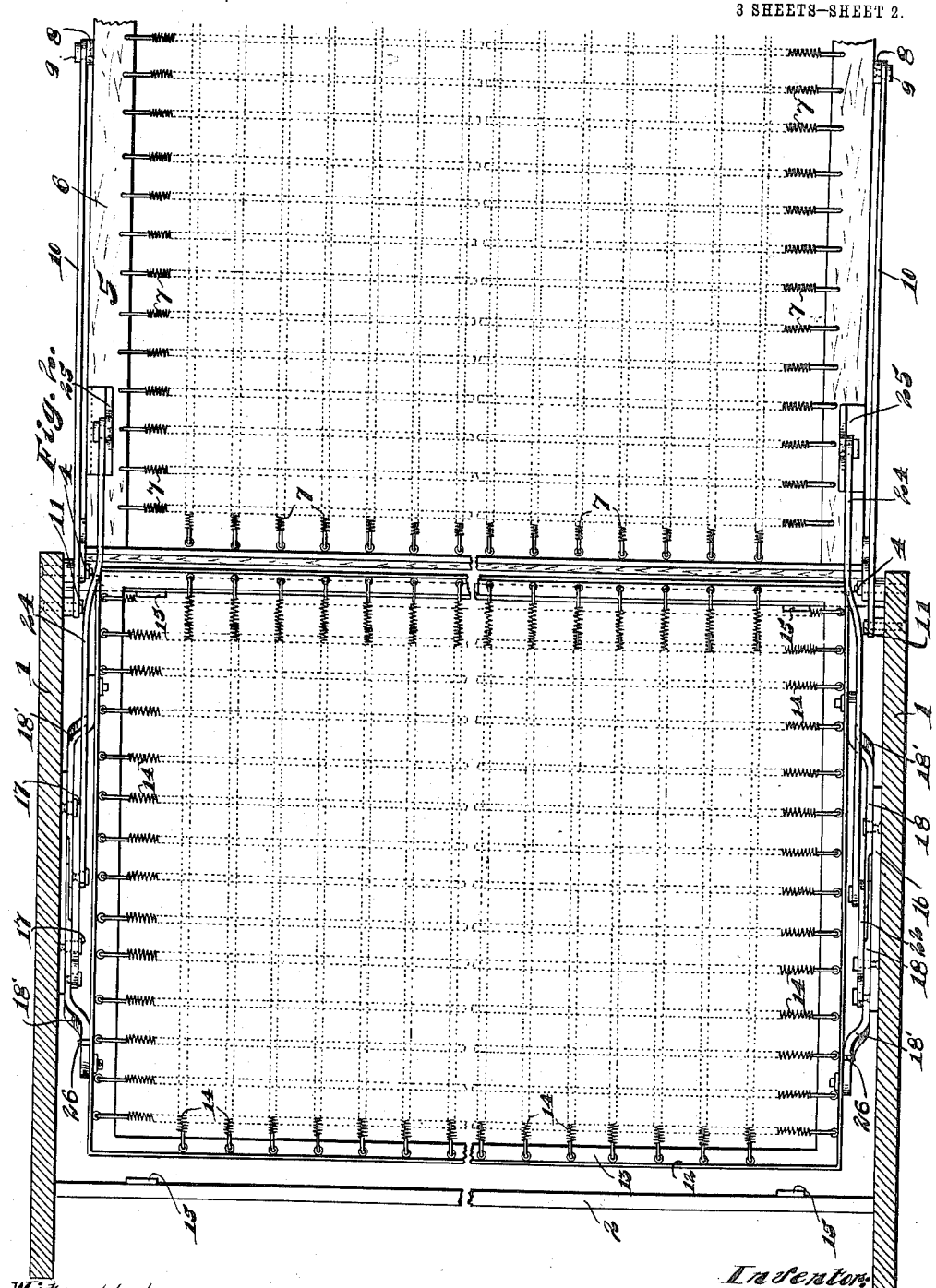


Fig. 2.

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3 SHEETS—SHEET 3.

Fig. 3.

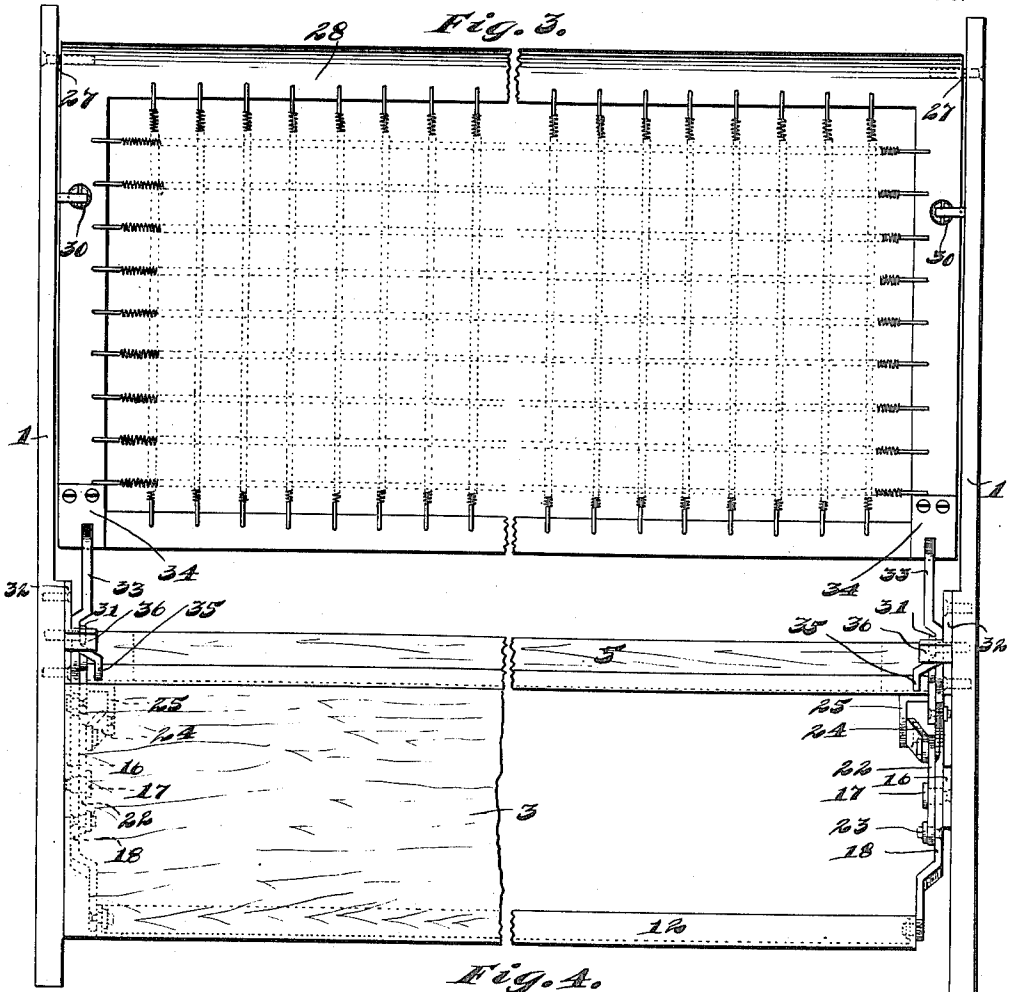


Fig. 4.

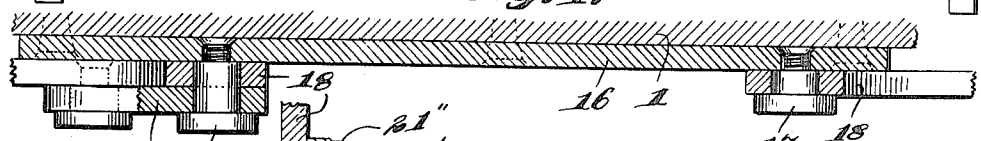
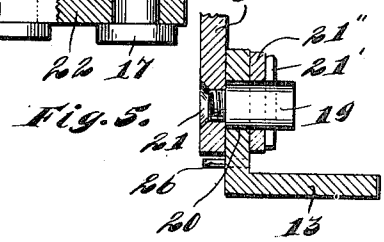


Fig. 5.



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UNITED STATES PATENT OFFICE.

ARTHUR HIRSH, OF CHICAGO, ILLINOIS.

FOLDING BED.

1,093,329. Specification of Letters Patent. Patented Apr. 14, 1914.

Application filed March 18, 1912. Serial No. 684,403.

To all whom it may concern:

Be it known that I, ARTHUR HIRSH, a citizen of the United States, and a resident of the city of Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Folding Beds, of which the following is a specification.

My invention relates to improvements in folding beds or couches, and has for its object the production of a device of this character which will be of improved construction and efficient in operation.

Other objects will appear hereinafter.

With these objects in view, my invention consists of the combinations and arrangements of parts hereinafter described and claimed.

My invention will be more readily understood by reference to the accompanying drawings forming a part of this specification, and in which—

Figure 1 is a vertical transverse section of a folding bed embodying my invention, the folding portions of the bed being shown in dotted lines in extended or unfolded positions, Fig. 2 is a horizontal section of the device in extended or unfolded condition, Fig. 3 is a rear view of the bed as shown in Fig. 1, portions thereof being broken away in order to better illustrate the construction, and Figs. 4 and 5 are enlarged detail sections taken on substantially lines *x x* and *y y*, respectively, of Fig. 1.

The preferred form of construction, as illustrated in the drawings, comprises a body consisting of end members 1 and longitudinally extending front and back pieces 2 and 3 which rigidly connect the end members 1.

Pivotally mounted at 4 between the members 1 and above the members 2 and 3, is the seat forming section 5 of the device, said section, when in extended or unfolded position, constituting a portion of the bed bottom. The section 5 is formed of a rectangular frame 6 and a resilient central portion 7 which is formed preferably of intersecting tension springs secured in the frame 6, as clearly shown in the several views. The section 5, when the device is used as a couch, is supported upon the upper edges of the members 2 and 3, said section being free for swinging upwardly and outwardly to the dotted line position, as shown in Fig. 1, in order to constitute a portion, and substantially one-half, of the bottom of the bed into which the device is converted. The outer end of the section 5, when in extended position, is supported by legs 8 which are pivotally secured at 9 to the end rails or bars of the frame 6. The upper ends of the legs 8, when the latter are in operative position, extend slightly above the section 5, as clearly shown in Fig. 1, the same being connected with the forward extremities of links 10 which are pivoted at their rearward ends at 11 to the end members 1. The arrangement is such that, when the section 5 is in folded position, or in the position in which the same constitutes the seat of a couch, the links 10 will serve to hold the leg members 8 in position against and substantially parallel with the end rails or bars of the frame 6 of the section 5, and when the latter is swung to unfolded or extended position, said links will serve to automatically swing the leg members 8 to operative position and to securely hold the same in this position until said section 5 is folded back to its initial position. The section 5 is provided adjacent its rearward or free end with a suitable handle 5′ for facilitating manual swinging thereof, as mentioned.

Mounted for vertical sliding in the body of the device between the end members 1 and the front and back pieces 2 and 3, is a bed bottom section 12 consisting of a rectangular frame 13 preferably of angle iron, and the resilient central portion 14 formed preferably of intersecting helical tension springs which are secured in the frame 13, as clearly shown in Figs. 1 and 2. Vertically extending bars 15 are provided upon the inner sides of the members 2 and 3 against which the longitudinal bars of the frame 13 rub in the vertical movement of the section 12.

Secured upon the inner sides of the end members 1 are plates 16 upon each of which are fulcrumed at 17 similar levers 18. The lower ends of the levers 18 are provided with projecting pins or studs 19 which slidably engage elongated slots 20 provided in the end bars of the frame 13, said pins or studs being secured to said levers by screws 21, as shown in Fig. 5, cotter pins 21′ and washers 21″ serving to lock said pins in engagement with said slots. The opposite or adjacent ends of said levers are in slot-and-pin connection, as shown, this connection being substantially the same as that between the lower

end of each of said levers and the corresponding slot 20, just described. The arrangement is such that vertical movement of the section 12 is effected by tilting of the levers 18, upward tilting of the lower ends of said levers effecting elevation of said section and downward swinging of said ends of said levers effecting downward movement of said section, as will be readily understood. Also fulcrumed at one of the points 17 upon each of the plates 16, is a bell crank lever 22 which is operatively connected with the corresponding lever 18 by means of a pin 23, the arrangement being such that tilting of said bell crank levers will effect tilting of the levers 18 and hence vertical movement of the section 12. Said bell crank levers are connected by means of links 24 with brackets 25 secured upon the end bars of the section 5, the arrangement being such, that, when the section 5 is swung or unfolded to extended position, the links 24 will rock the bell crank levers 22 to effect upward movement or elevation of the bed bottom section 12 to a position coplanar with the section 5, both of said sections combined constituting the bottom of the bed into which the device is converted in the unfolding or extending operation of the section 5.

In the elevation of the section 12, as just described, as the same nears the upper terminal of its movement, it will be moved horizontally toward the section 5 in order to close the gap which would otherwise be left between the adjacent bars of said sections. This horizontal movement of the section 12 is effected by the levers 18 which, as they approach the terminals of their elevating or operative movement, will engage pins 26 projecting laterally from the end bars of frame 13 and cause the latter to be moved forwardly against the section 5. The levers 18, intermediate their extremities, are offset at 18′ so that in the operation thereof said levers will contact with the pins 26 only when said levers are approaching the terminals of their operative or elevating movements. The return horizontal movement of the section 12, in the folding of the device, is effected by the section 5, the rearward upper edge of the inner longitudinal bar of the frame 6 being adapted to engage against the adjacent bar of the frame 13 so as to move the latter rearwardly when the section 5 is swung upwardly. As the section 5 is swung back to its seat forming position, the link 24 will be moved rearwardly thereby causing the bell crank lever 22 and hence the levers 18 to be tilted to lower the bed section 12 to its initial position. The arrangement is such, as will be observed, that a rectangular open space will be formed between the sections 5 and 12 when the device is in folded or couch forming condition, which space may be utilized for the storage of bed clothing if desired. Or box springs may be mounted upon the sections 5 and 12, which will occupy this space when said sections are in normal or folded positions.

Pivotally mounted at 27 between the end member 1, is a back forming member 28 comprising a substantially rectangular frame 29 and a resilient intermediate portion 29′ which is formed preferably of intersecting helical tension springs, as shown in Figs. 1 and 3. Helical tension springs 30 coöperate with the back forming member 28 to normally hold the same in vertical position or in a position in which the lower free end thereof will be positioned out of the path of the section 5 when swung to unfolded position.

Pivotally mounted at 31 upon plates 32 secured upon the inner sides of the end members 1 are bell crank levers 33, the upper ends of said levers being adapted to engage plates 34 provided upon the rearward sides of the respective ends of member 28. The lower ends 35 of the levers 33 are positioned for engagement with the rearward or free end of the frame 6 of section 5, as clearly shown in Fig. 1, the arrangement being such, that, when said section 5 is in folded position, the ends 35 will be engaged thereby so as to hold said levers in a position in which the back forming member 28 will be inclined, as shown in Fig. 1, with the lower or free end thereof positioned over the rearward or free end of the section 5. The arrangement is such, however, that as the section 5 is swung upwardly, the same will disengage the lower ends 35 of said bell crank levers so as to permit of the member 28 being swung rearwardly by the springs 30 and so as to allow the section 5 to pass the same. In the return swinging of the section 5, the same automatically engages the ends 35 of said bell crank levers so that the movement of the back forming member 28 is automatic. Stops 36 coöperate with the levers 33 to limit the rearward swinging of the upper ends of the latter when the member 28 is swung rearwardly by the springs 30.

A device of the construction set forth is durable and economical in construction, the same may be readily folded or unfolded for conversion from a couch to a bed or vice versa, and the device is of high efficiency in use.

While I have illustrated and described the preferred form of construction for carrying my invention into effect, this is capable of variation and modification without departing from the spirit of the invention. I, therefore, do not wish to be limited to the exact details of construction set forth, but desire to avail myself of such variations and modifications as come within the scope of the appended claim.

Having described my invention, what I

claim as new and desire to secure by Letters Patent, is:

The combination with a frame; of a back hinged therein; a seat hingedly secured to said frame; a bracket secured to said frame opposite to the hinges of said seat; a bell crank mounted in said bracket, one arm of which contacts with the free edge of the back and the other arm with the free side of the seat, whereby the angle of the back to the seat may be adjusted as the seat is moved; and means whereby the movement of said bell crank may be limited.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ARTHUR HIRSH.

Witnesses:

JOSHUA R. H. POTTS,

ARTHUR A. OLSON.