H. M. SVEBILIUS.

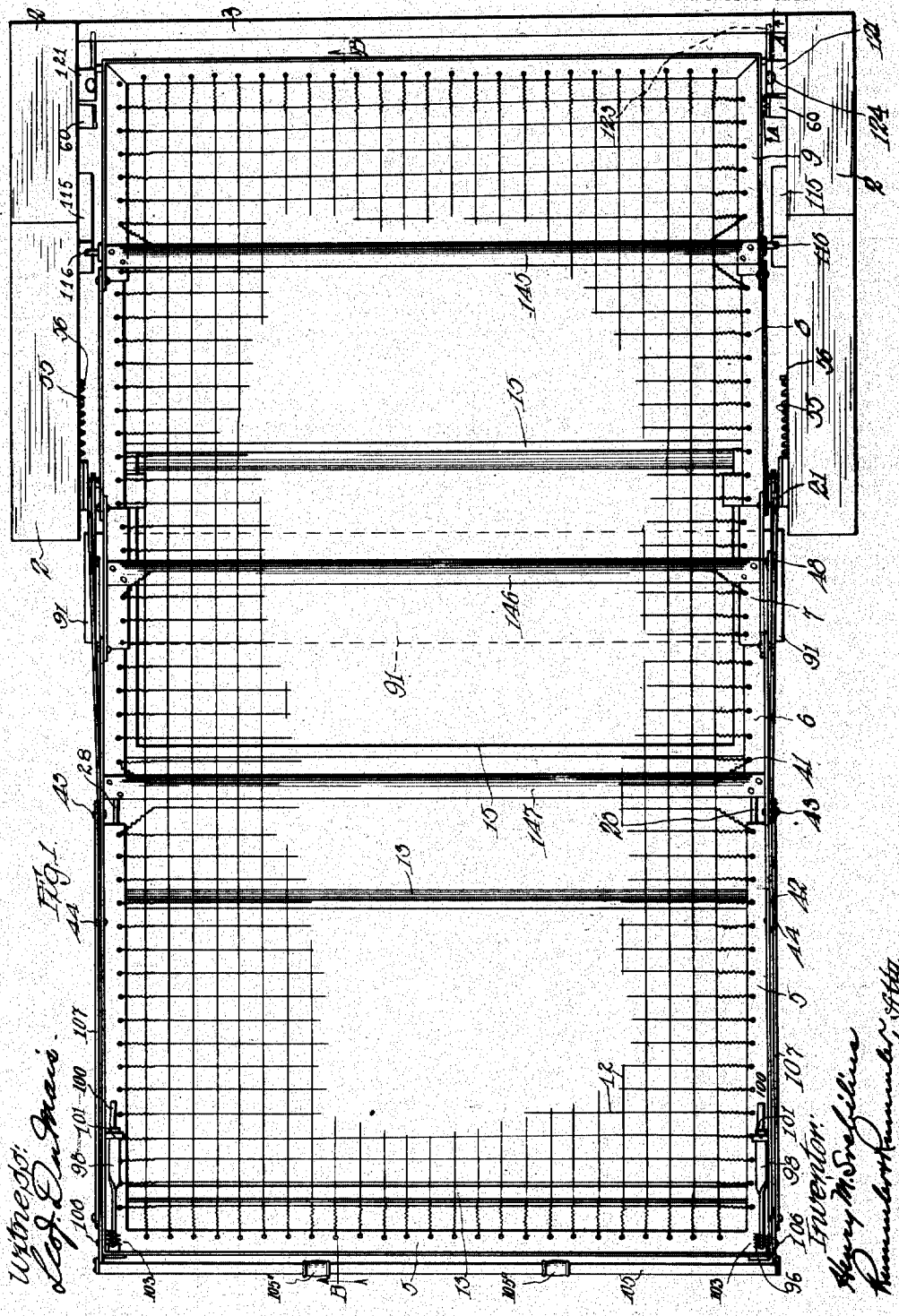
SOFA BED.

APPLICATION FILED AUG. 2, 1915.

1,303,613.

Patented May 13, 1919.

6 SHEETS—SHEET 1.



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Fig. 1.

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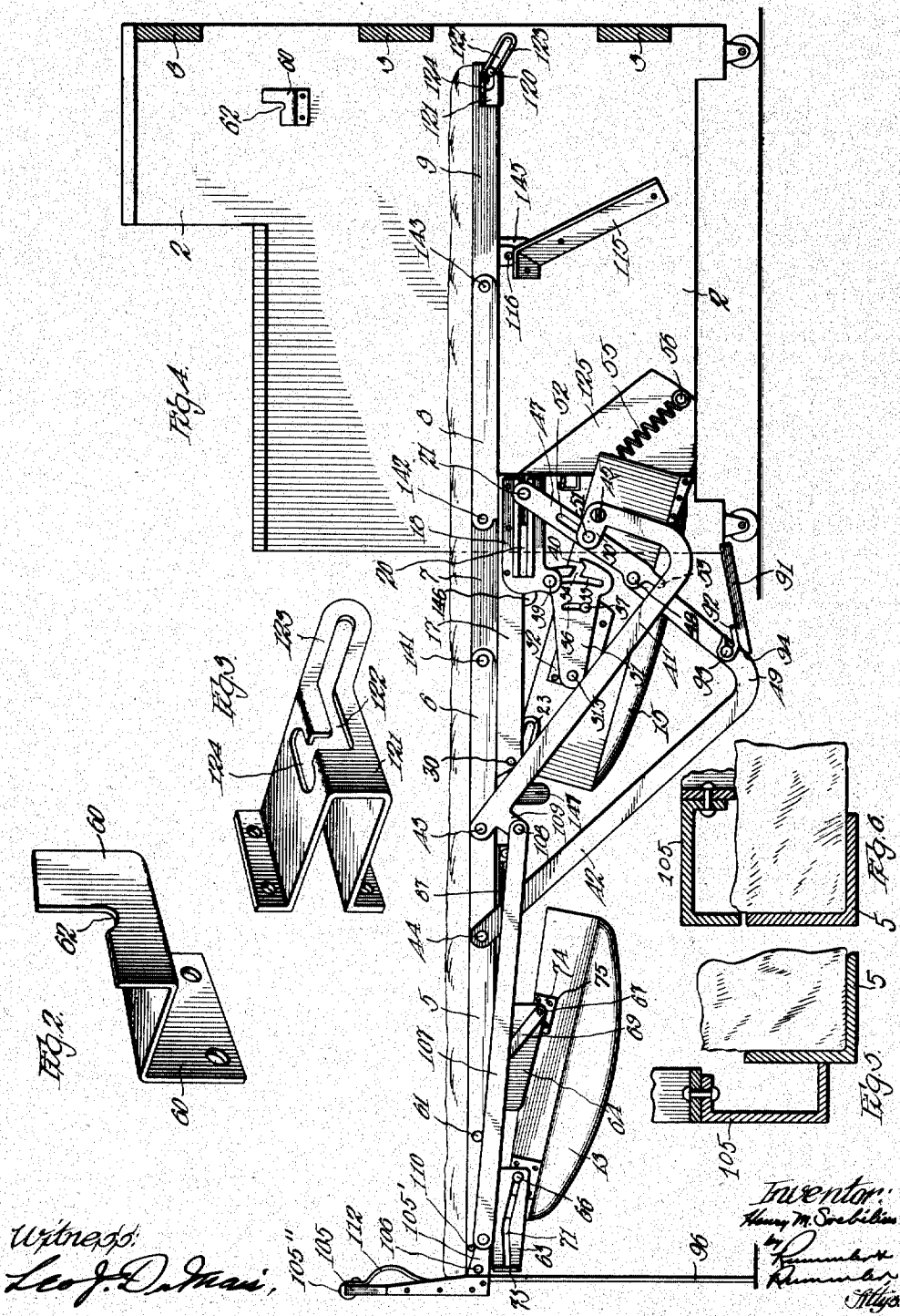
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6 SHEETS—SHEET 2.



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6 SHEETS—SHEET 3.

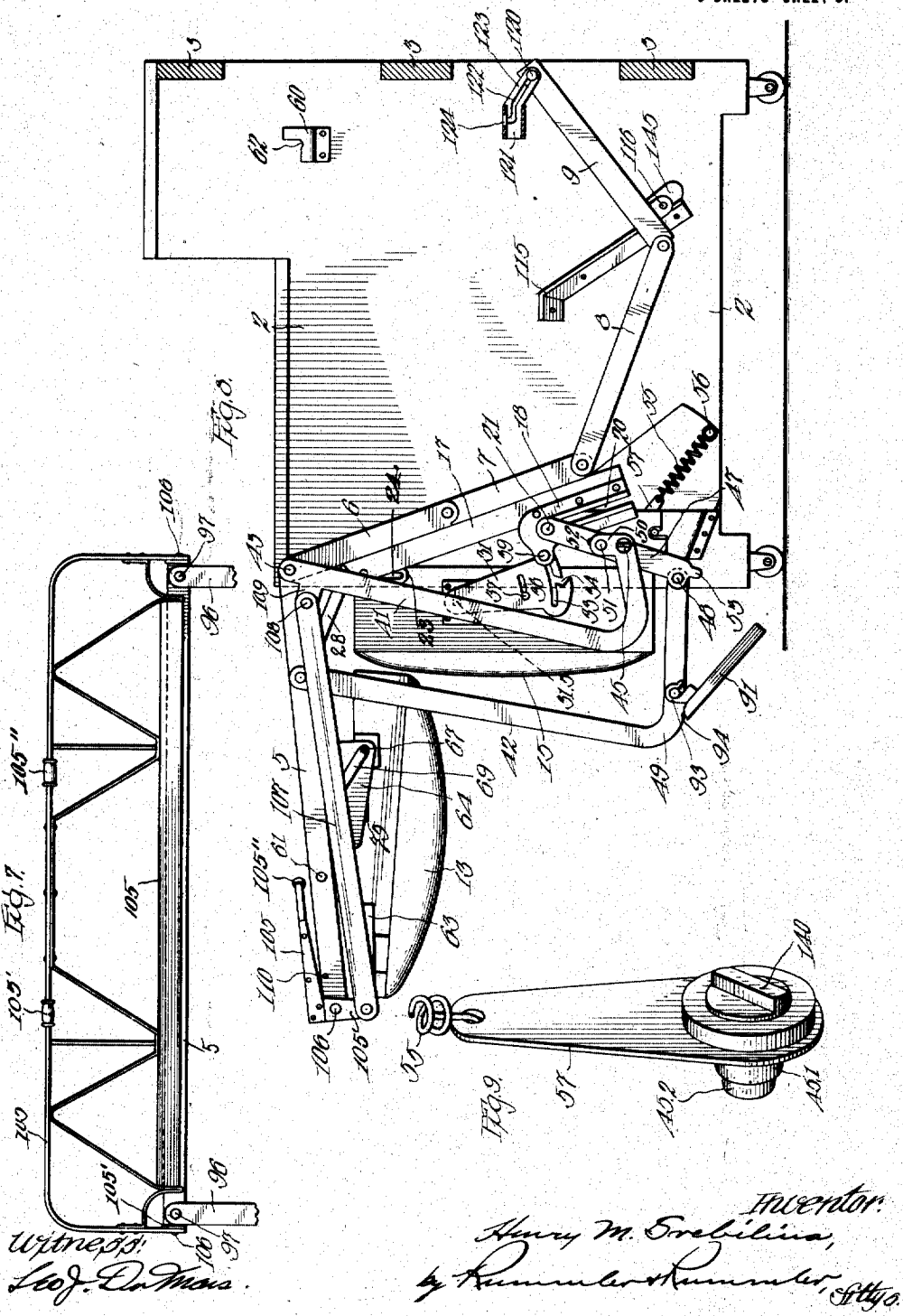


Fig. 7.

Fig. 9.

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APPLICATION FILED AUG. 2, 1915.

1,303,613.

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6 SHEETS—SHEET 4.

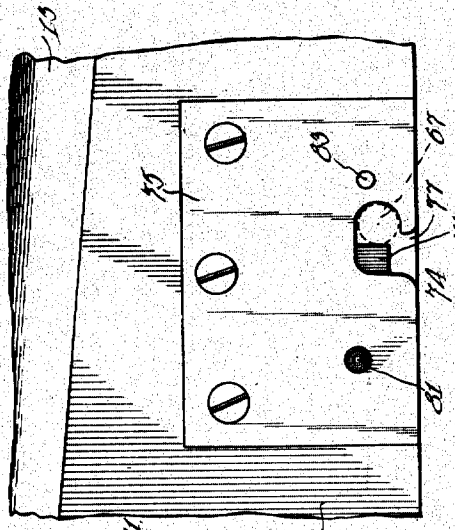


Fig. 11.

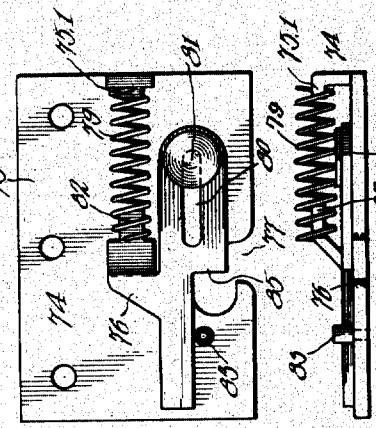


Fig. 12.

Fig. 13.

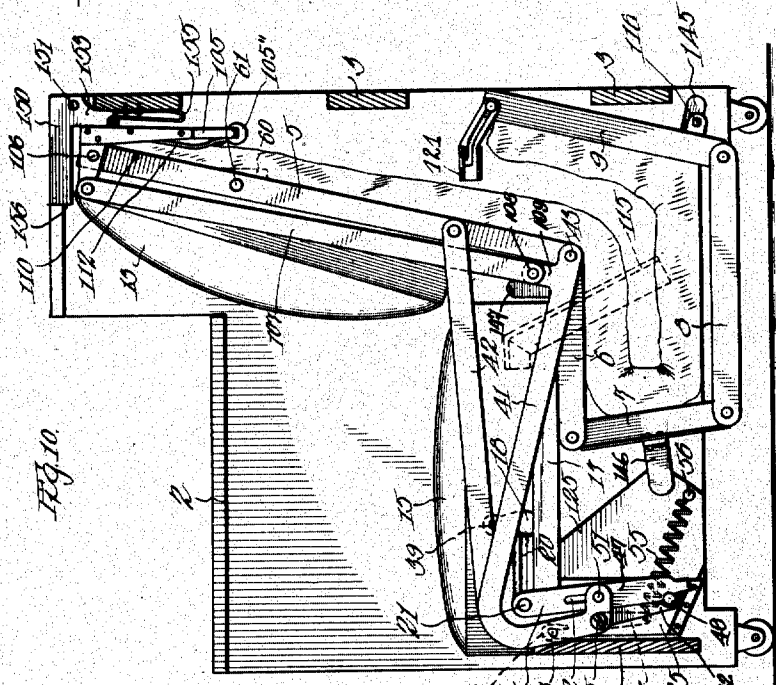


Fig. 10.

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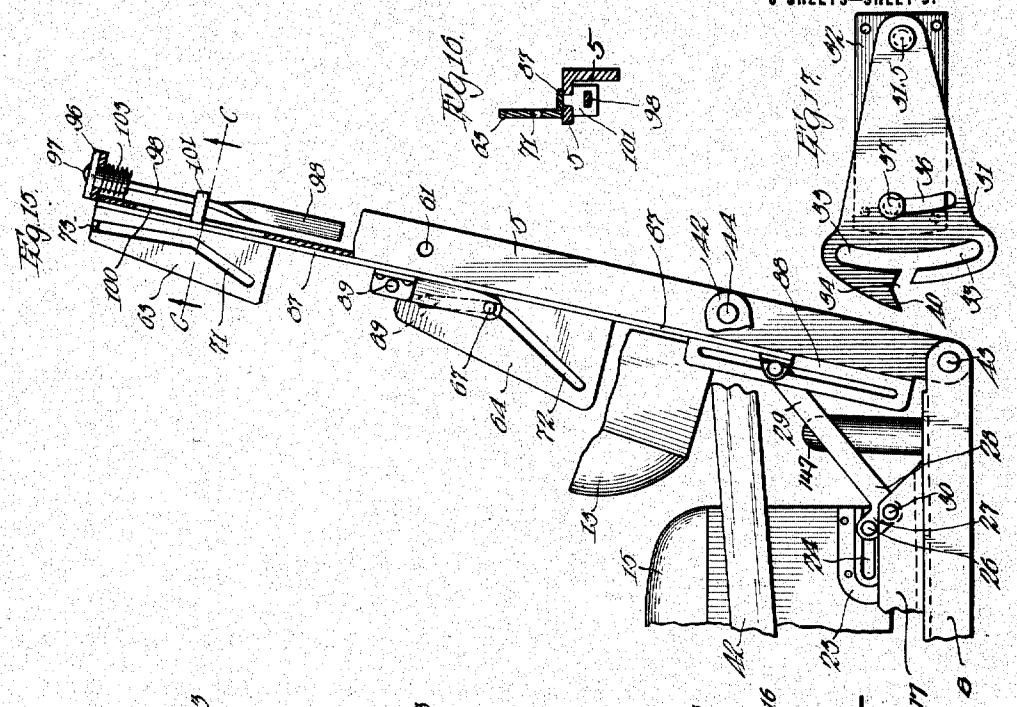
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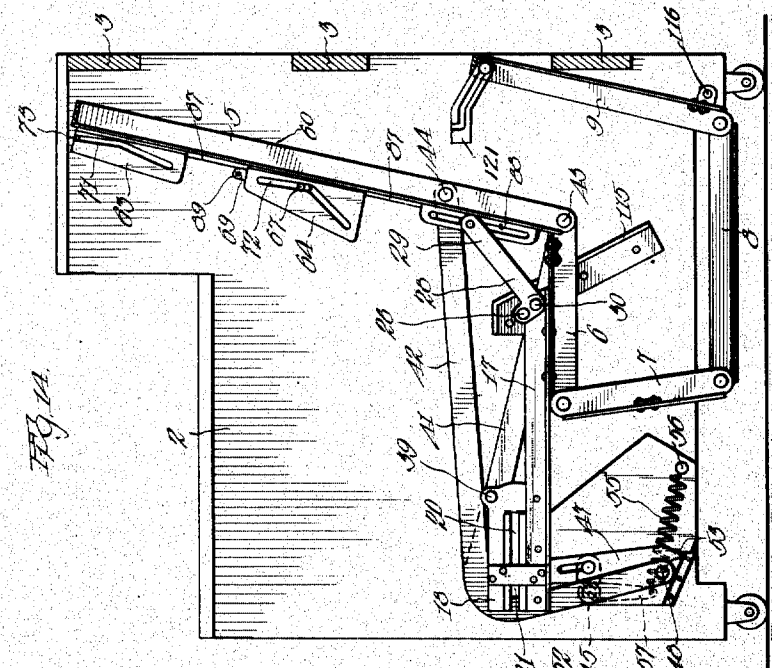
APPLICATION FILED AUG. 2, 1915.

1,303,613.

Patented May 13, 1919.

6 SHEETS—SHEET 5.





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SOFA BED.

APPLICATION FILED AUG. 2, 1915.

1,303,613. Patented May 13, 1919.

6 SHEETS—SHEET 6.

Fig. 18.

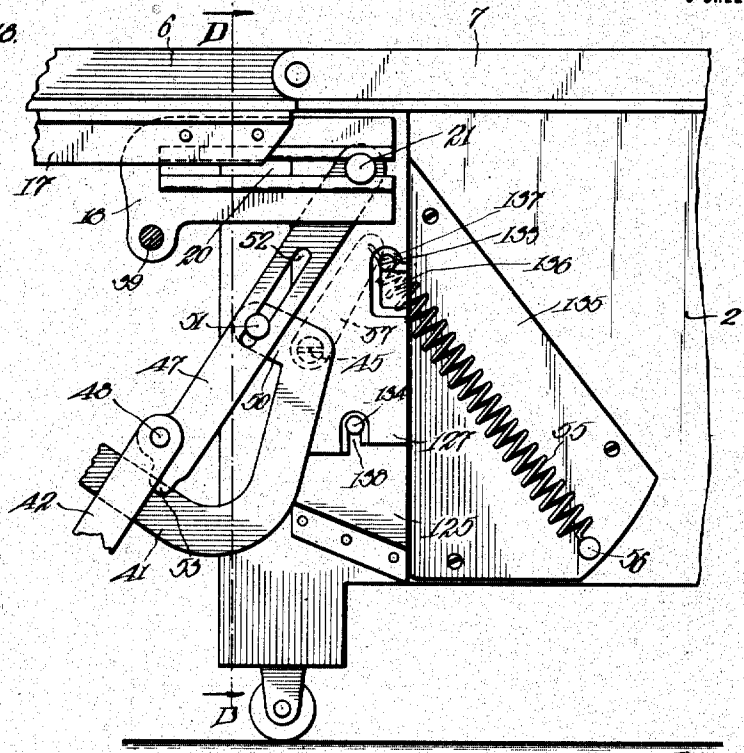


Fig. 19.

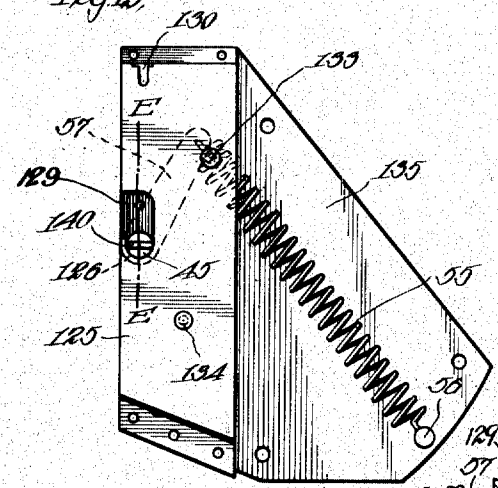


Fig. 20.

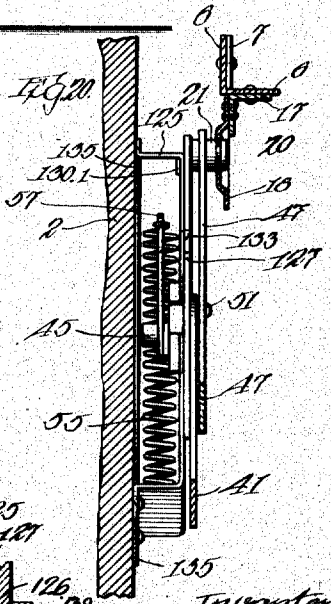
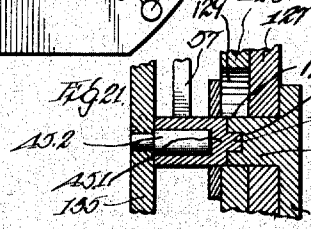


Fig. 21.



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UNITED STATES PATENT OFFICE.

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SOFA-BED.

1,303,613. Specification of Letters Patent. Patented May 13, 1919.

Application filed August 2, 1915. Serial No. 43,146.

To all whom it may concern:

Be it known that I, HENRY M. SVEBILIUS, a citizen of the United States of America, and a resident of Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Sofa-Beds, of which the following is a specification.

This invention relates to convertible furniture of the class in which a foldable sectional bed bottom is concealed in its retracted or seat position by the back and seat members, and in which the bed bottom is extensible by one motion to its bed position, and vice versa.

Heretofore one of the main difficulties to be overcome in the construction of sofa beds has been to provide means for throwing the foot section forward sufficiently to make a full length six-foot bed, without increasing the depth of the sofa frame from front to back to such extent as to distinguish the same conspicuously from ordinary sofas. Another feature which has proved troublesome heretofore in sofa beds having a back section hinged to a seat section has been the upward breaking of the connecting joint therefor in folding the device to its sofa position.

The main objects of the invention are to provide an improved form of sofa bed of the character stated, in which a full-length bed bottom, extensible crosswise of the sofa frame, may be folded beneath and behind the seat and back members in such manner as to carry and house the bedding in made-up form; to provide such a device in which the bed bottom, back and seat are combined so that they may be handled in a unitary manner when demounted from the sofa frame; to provide improved knock-down means for attaching the demountable members to the sofa frame; to provide improved means for attaching the back and seat demountably to appropriate sections of the bed bottom respectively in such manner as to be disposed beneath the bed and give clearance for the bed spring when the device is unfolded; to provide a foldable device of the character stated adapted for mounting in a frame which in shape and size resembles an ordinary sofa frame; to provide mechanism for actuating all of the bed sections simultaneously in folding and unfolding; to provide improved means for throwing the foot section forward in unfolding, and to provide for moving forward the supporting pivots of the foot section carrying means at such time; to provide an improved arrangement of lifting spring to assist manual control initially in folding and unfolding the device; to provide an improved form of bedding fastener on the foot section; to provide improved means for upward breaking of one of the bed bottom joints in folding; to provide improved automatic leg folding means; and to provide a sofa bed having the foregoing features which is so balanced mechanically as to be easily operable with one hand.

An illustrative embodiment of this invention is shown in the accompanying drawings, in which:

Figure 1 is a plan of a sofa bed in unfolded or bed position.

Fig. 2 is an enlarged perspective view of a bracket for arresting and supporting the foot or back section in its sofa position.

Fig. 3 is an enlarged perspective view of the slotted guide for the head section shown in Fig. 4.

Fig. 4 is a side view of the sofa bed unfolded with the near end of the sofa frame removed, and with the head supporting bracket in section on the line A—A of Fig. 1.

Fig. 5 is an enlarged fragmentary cross section of the foot rail and bedding fastener on the line B—B of Fig. 1.

Fig. 6 is like Fig. 5 except that the fastener is folded against the bedding.

Fig. 7 is an end view of the foot section unfolded.

Fig. 8 is a side view of the device similar to Fig. 4 but with the movable parts swung part way to their sofa position.

Fig. 9 is an enlarged perspective view of the lifting arm and coacting spring.

Fig. 10 is a side view of the sofa bed in folded or sofa position, with the near end of the sofa frame removed.

Fig. 11 is an enlarged fragmentary side view of the back showing one of the automatic mounting members or locks.

Fig. 12 is an enlarged back view of the lock shown in Fig. 11.

Fig. 13 is a front edge view of the lock shown in Fig. 12.

Fig. 14 is a vertical section on the line

B—B of Fig. 1, but showing the device in its sofa position, the back and seat members being omitted.

Fig. 15 is an enlarged fragmentary side view of the foot or back section and some of the associated members in their sofa position, the outer end of the side rail being in longitudinal section to show the leg actuating means.

Fig. 16 is a cross section of the side rail and adjacent parts on the line C—C of Fig. 15.

Fig. 17 is an enlarged side view of one of the mounting plates and coacting link for attaching the seat movably to the bed bottom.

Fig. 18 is an enlarged inner side view of part of the operating mechanism at and adjacent to the front edge of the sofa frame in its bed position.

Fig. 19 is an enlarged elevation of one of the stationary knockdown mounting members at the front edge of the sofa frame with the crank arm and lifting spring in their bed position.

Fig. 20 is a section on the line D—D of Fig. 18 through the mounting members and associated parts on one side of the sofa bed.

Fig. 21 is a section on the line E—E of Fig. 19.

In the construction shown the sofa frame comprises a pair of ends 2 and cross member 3. The bed bottom is made in the form of a series of foldably related sections extensible crosswise of the frame and including an upright foot or back section 5, a seat section 6, a connecting section 7, a bottom section 8 and a head section 9 arranged in the order recited. The bed bottom parts are combined and arranged so as to provide a jointed border frame including side rails and head and foot rails and a spring wire mattress 12 carried thereby.

A back member 13 is attached slidably to the foot section in such manner as to move downwardly somewhat away from the frame of the bed bottom, sufficiently to give clearance for the bed spring 12 when the device is changed to its bed form.

A seat 15 is attached to the reverse side of the seat section for lowering in a manner adapted to give clearance for the bed spring 12 when the device is unfolded. For this purpose a connecting bracket or arm is provided on each side, the rear end of each bracket being in the form of an angle bar 17 fixed to the adjacent side rail of the seat section, and the front end being in the form of a slotted plate 18 fixed to the bar 17. Each plate 18 is turnably connected to the front part of the sofa ends 2 in slidable relation thereto, as illustrated in Fig. 18. The longitudinal slot 20 of each bracket coacts with a pivot-like shoulder 21 on the adjacent sofa end 2. The seat 15 is connected turnably and slidably to said bracket, whereby it is permitted to drop downward therefrom by gravity as the seat section overturns forwardly.

The rear part of the seat frame is provided with a mounting plate 23 on each side, said plates each having a horizontal guide slot 24 open at its rear edge. (See Fig. 15.) Coacting with said slot is a shoulder 26 on one arm 27 of a lever 28, the other arm 29 of which operates the back 13, said lever being fulcrumed at 30 on the rear end of the bar 17. In unfolding the device the lever 28 swings the rear part of the seat downward somewhat away from the bed bottom.

The front part of the seat is carried by a pair of lateral links 31 disposed medially on the ends of the seat frame. Each link 31 is wedge-shaped and disposed horizontally with the apex pointing rearwardly and connected to a seat pivot 31.5 on a plate 32 fixed to the seat frame. The broad forward part of link 31 has two guide slots concentric with said pivot. The outer slot 33 has a branch aperture 34 communicating with the front edge of the link, and the inner slot 36 coacts with a headed stop pin or shoulder 37 on said plate 32.

Coacting with slot 33 is a headed shoulder 39 on the main guide plate 18 at its rear upper corner. (See Fig. 14.) When the seat overturns, the shoulders 37 and 39 travel the full length of said slots 36 and 33 respectively, as the seat swings by gravity from one position to the other with respect to the seat section.

The seat frame is assembled with the other members by holding the same above and in front of its sofa position, and then sliding it backward causing the pivots 26 to enter the rear slots 24. Then the front part is lowered till the stud 39 registers with the aperture 34, shoulder 40 assisting in this adjustment. The seat is then drawn forward and permitted to drop into place with the shoulders 39 in the slots 33. Gravity serves to hold the seat in operative position for all normal conditions of operation, the seat being supported always by the bed bottom.

A pair of carrying arms or links 41 and 42 for the foot section 5 are provided on each side, each arm being turnably connected to the lower part of the side rail, one at or adjacent to the seat section joint, as at 43, and the other spaced upward therefrom at 44 respectively. Each of said arms 41 and 42 is angular, with a long arm extending rearward and a short arm extending down in front of pivot 21 when the device is folded. (See Fig. 10.) The forward end of the lower arm 41 is turnably connected to the front part of the adjacent sofa end 2, as at 45.

A pair of short extension links 47 are mounted turnably at the front edge of the sofa frame one on each side. Each of said links 47 is mounted at its upper end on the corresponding sofa end pivot 21, and the lower end is swingable forwardly and backwardly as will be explained. The downwardly turned forward end of the upper arm 42 is turnably connected at 48 to the depending free end of said extension link 47, and is carried forward thereby in unfolding the bed, whereby the foot section is swung well forward, sufficient to make room for a full length bed bottom disposed crosswise of the sofa frame. In its bed position the knee or bend 49 of arm 42 may to advantage rest on the floor so that said arm may act as a leg to help support the bed. The lower link 41 is provided with an inwardly projecting short arm 50 disposed at an angle of about 90 degrees from the forward upright part of said link, said arm 50 having a shoulder 51 coacting with a slot 52 disposed longitudinally of the adjacent short link 47, whereby the latter link is caused to swing forward definitely, carrying with it the pivot 48 and upper arm 42 in unfolding the bed. (See Fig. 18). In order to prevent interference between the members 41 and 47 a shoulder 53 is provided on the free end of link 47 so as to overlap arm 41 when unfolded.

The rear end of the seat section 6 and the supporting arms 17, in folding and unfolding the device, are carried substantially by the lower link 41 and the stationary pivot 45, on which the forward end of said link turns.

In unfolding the bed the seat section and seat are caused to go through a diving or somersaulting action, in which the longitudinal guide means 18 slide forward and back upon the shoulders 21. By this action the rear edge of the seat and the back in moving forward are caused to swing low within easy reach and control of the operator.

A lifting spring 55 has one end connected to the sofa frame back somewhat from the front edge of the end 2, as at 56, and its opposite end is attached to one of the moving parts in such manner as to be in tension so as to assist initially in folding and unfolding the device. In this instance the spring 55 is attached to an arm 57 operatively rigid and co-turnable with the arm 41 about the pivot 45. Said arms 41 and 57 are mutually detachable in knocking down the device, as will be explained. As the bed bottom swings through its medial position, the spring 55 becomes relaxed and the movable parts are substantially balanced. As the arm 41 swings either way from its intermediate position the spring becomes increasingly taut.

A pair of supporting brackets or stops 60 are provided, one on each sofa end 2 near its rear edge to arrest and support the back or foot section as it swings back to its sofa position, said section having corresponding shoulders 61 which seat in the pockets 62.

For mounting the back 13 on the foot section 5, two pairs of guide brackets are provided in the form of slotted plates 63 and 64 projecting forward from the side rails. Shoulders 66 and 67 arranged in pairs corresponding with said plates are provided on each side, shoulders 66 being fixed to the upper part of the back and the others 67 being carried by links 69 for detachable coaction with the back. The guide slots 71 and 72 respectively in said plates are formed each with an upper part nearly parallel with the side rail, and a lower part diverging forwardly therefrom in a downward direction, so that when said shoulders and the back carried thereby move downward the back will be carried away from the bed bottom. (See Fig. 15). The upper slot 71 is open at its outer end 73 to receive the shoulders 66 on the back frame. An automatic lock or catch 74 (see Figs. 4 and 11) is provided on the back at points corresponding with the lower guide plates 64. Each of these locks is made in the form of a plate 75 secured to the side of the back frame, in combination with a shouldered plunger 76 arranged to coact with a notch 77 in the front edge of said plate for securing the stud or pin 67 carried by the link 69. Said plunger is urged forward to its locking position by the spring 79. The plunger is slotted longitudinally at 80 for coacting with the headed guide shoulder 81 on said plate. The actuating spring 79 coacts with a shoulder 75.1 on said plate 75, and with a shoulder 82 on the back edge of said plunger, and the forward edge of said plunger coacts with a shoulder 83 on said plate. With this construction the entry of the shoulder or pin 67 into the notch 77 forces the plunger back pivotally against the force of the spring 79, permitting the stud 67 to enter the notch where it is held by the plunger 76 springing back into place, so that the shoulder 85 blocks the escape of said stud. The stud may be released, however, and the back demounted by applying sufficient upward force manually to overcome the strength of the spring 79.

In order to actuate the back automatically in a definite manner away from the bed bottom as the device unfolds, the links 69 are connected and arranged for operation by the relative turning of the back and seat sections. For this purpose a link 87 is mounted slidably for longitudinal movement on each side rail of the foot section. The link 28, (Fig. 14), having one end pivoted to the angle bar 17, has its other end pivoted to the adjacent end of said link 87, the latter mentioned end being guided by a longitudi-

nally slotted bracket 88 on the foot section adjacent to its lower edge, as shown in Figs. 14 and 15. The link 69 has its upper end pivoted to the upper medial part of said link 87 at 89 and its lower end carries the shoulder 67 coacting with the slot 72 in the lower guide plate.

In unfolding the device, the foot section first turns forward somewhat from an obtuse to a nearly right angle, with respect to the seat section, thereby thrusting the link 87 forward and consequently moving the back 13 outward longitudinally on the outer parts of the guide plates. But as the foot section swings downward to its bed position, however, the straightening of the bed bottom causes the plunger 87 to be retracted inward by the action of the link 28, thereby causing the shoulders 66 and 67 to enter and travel in the divergent parts of the guide slots 71 and 72, thereby throwing the back 13 away from the foot section 5. In folding the device the operation is reversed.

A front panel 91 is provided for the sofa, which panel is mounted swingably on the links 42 as shown in Fig. 4. For this purpose the panel is provided with a yielding catch or hook 92 on each side near its upper edge for engagement with a corresponding stud or shoulder 93 on the short arm of said link near the bend, the said panel being thereby detachable. As thus hung on the arms 42 the lower part of the panel swings away somewhat so as to clear the arms 41. Such swinging is limited by the upper edge of the panel bearing against the arms 42, as at 94, (see Figs. 4 and 8). In sofa form the arms 41 and 42 are hidden behind said panel.

Automatic folding legs 96 are provided for the outer part of the foot section. Said legs are mounted turnably on the foot rail at 97 and are controlled by rods 98 operated by the plungers 87 which control the back 13.

The outer part of each foot section side rail is slotted at 100, and the adjacent end of plunger 87 has a lateral arm or shoulder 101 formed to extend through and coact with said slot for guidance. Said shoulder 101 is apertured to receive slidably the inner end of the leg control rod 98, which is rectangular in cross section to fit the aperture, and is formed with a 90 degree twist. The outer end of said rod 98 is fixed to the leg 96 for co-turning and is journaled on the foot rail. Suitable means are provided to prevent longitudinal movement of said rod 98, as will be understood. The legs 96 are folded inward normally against the foot rail, but when the bed bottom unfolds the plunger 87 is drawn inward causing the shoulder 101 to pass the 90 degree twist in bar 98 and thereby rotate the same and so unfold the leg.

A helical spring 103 is arranged to urge the leg and rod 98 to their normal position. This spring takes up any looseness in the joints and assures close folding of the legs 96.

An automatic fastener 105 for the bedding is also provided at the front edge of the foot section, being pivoted at 106. Said fastener is controlled by links 107 actuated by the lower arms 41, as shown in Fig. 10. Said links are connected each by a pivot 108 on the short transversely projecting arm 109 near the back section pivot 43. The outer end of each link 107 is pivoted to a rearward short arm 105′ of the fastener 105. It is to be noted that said bedding fastener 105 and link 107 at times serve another purpose also, namely to assist in upward breaking or bending of the joint 43 for the back and seat sections. For this purpose the operator grasps the handle 105″ on the bedding fastener and pushes inwardly and upwardly on the same, thereby pulling strongly on the link 107 and causing said joint 43 to fold upwardly.

A stop 110 limits the outward swinging of the fastener 105. The spring member 112 on the fastener assists in gripping the bedding.

In order to support the adjacent ends of the head and bottom sections, a flat top guide member 115 having an inclined body part is secured to each of the frame ends, one of said sections having means to coact therewith as illustrated by the shoulder 116 on the forward end of section 9.

The rear part of the head section is carried by a pair of shoulders 120 each coacting with a bracket 121 on the frame end 2. Said bracket in this instance is slotted at 122 and is inclined downwardly and backwardly at 123 to carry the rear edge of the head section accordingly in restoring to its sofa position, and for raising the same to its bed position. The forward upper end of slot 123 is open at 124 to admit the headed pivot shoulder 120.

The knock-down feature of the device comprises mainly a pair of complementary mounting means on each side of the sofa frame near its front edge. Each mounting includes a stationary slotted member 125 having a journal-like pocket 126, and a demountable member 127 carrying the pivot 45 adapted for entering said pocket 126, as when the bed bottom member is swung to a certain angle assumed by the device as it is swung part way from its sofa to its bed position.

The stationary member 125 is of hollow box-like construction, open at its front and rear edges and is fixed permanently to the adjacent frame end 2. The inner face of said member 125 is formed with the slot 129 extending backward from the front edge and terminating downwardly in the pocket 126.

Another slot or pocket 130 having vertical sides is provided at the upper edge of the mounting face. A pair of studs or stop shoulders 133 and 134 are fixed on the face of said mounting, back of said pocket 126 one above and one below the same, said studs being headed to interlock with member 127. The hub end of the arm 57 is journaled permanently in the pocket 126 with one end of the hub 45.1 facing outward for coaction with the lower section carrying arm 41, as will be described.

The rear wall or plate 135 forming part of said member 125 extends backward and carries the shoulder 56 to which the fixed end of the lifting spring 55 is attached. Said plate is fastened to the end 2 by screws or the like.

The demountable member 127 is made in the form of a plate having a slot 136 in its rear edge provided with a downwardly facing pocket 137 to receive the stud 133 on member 125. Said plate is also provided with a notch 138 on its lower edge to receive the stud 134. The stud 130.1 on plate 127 coacts with notch 130. The main pivot 21 for the seat section bracket 18 is fixed to the upper part of plate 127. The plate 127 is perforated to receive the pivot shoulder 45 which is journaled therein and is fixed to the arm 41. The adjacent ends or faces of the hub 45.1 and pivot 45 are formed to interlock co-turnably, one of said members being slotted or grooved diametrically as at 139, and the other having a tongue 140 to fit the slot. The tongue and groove are positioned so as to extend vertically when the bed bottom is turned to an intermediate position (spring 55 and arm 57 then being in alinement), as illustrated in Fig. 8. In such position the bed bottom may be demounted by lifting the plate 127 away from the member 125. When the bed is fully folded or unfolded the pivot 45 is locked in place by the retaining pocket 126, the tongue and groove at such times being disposed either horizontally or in an inclined position. The hub 45.1 is hollow and fits turnably on a pivot stud 45.2 fixed on the outer wall 135 of the member 125. It will be noted that the tongue 140 is disposed at an angle of about 25 degrees with respect to the arm 57, so that when said arm is in its medial or inclined position shown in Fig. 8, the tongue is disposed vertically, thus permitting the bed bottom to be removed. The spring urged member 45.1—57—140 interfitting operatively with member 41—45 may well be designated a key member.

The frame of the bed bottom may be made of angle bars as usual in devices of the character described. The joints 141, 142, and 143, being all except joint 43 for the head and seat section, are preferably of rule-joint construction adapted to limit the unfolding to a straight line, the horizontal flange to which the woven-wire mattress 12 is attached being on the under side when the device is unfolded.

Spacing bars 145, 146 and 147 are attached preferably by rigid fastening means to the side rails of the bed bottom, so as to stiffen the frame and hold the same in shape against the tension of the bed spring, said bars being attached preferably to the head section 9, connection section 7, and seat section 6 respectively, as shown in Figs. 1 and 4.

A turnably mounted cover 150 may to advantage be provided at the top of the sofa frame to inclose the upper edge of the foot section and back in their sofa position, as illustrated in Fig. 10. When such a cover is used it is arranged to operate automatically as follows: Pivots 151 are provided one at each end near the rear edge of the cover. Said cover has a downwardly projecting arm 153 disposed in front of the upper cross-bar 3 and back of the foot rail. Yielding means in the form of a spring 155 urge the cover to swing forward against the pressure of the foot section. The forward edge of the cover projects somewhat at 156, so as to facilitate grasping the same for lifting up, and thereby throwing the foot section forward enough to permit taking hold of the same for unfolding the bed. When the device is in bed form, the cover will be held at an inclined position by the spring 155. When the foot section swings back into place the foot rail will force the cover arm 153 backward and thereby close the cover down upon the foot rail and back frame, giving the device the appearance of an ordinary sofa.

The operation of the device in converting from a sofa to a bed is as follows: The operator, having first raised the cover 150, in case such is provided, grasps the upper edge of the foot section and swings the same forward to its balanced or stable intermediate position, thus exposing the automatic bedding fastener 105. The operator then grasps the handles 105 on the said fastener, and pulling forwardly and downwardly completes the unfolding operation.

The operation for folding the device is as follows: The operator grasps the fastener handles 105 and pushes forwardly and upwardly, thus forcing the rear edge of the foot section and the coacting part of the seat section upwardly and backwardly, thereby overturning the seat and eventually swinging the back over to its upright sofa position, and also folding the bed sections with the bedding in made-up form. The spring 55 being taut in both sofa and bed positions helps swing the device to its stable intermediate position both in folding and unfolding. In unfolding the bed the top of the back and the foot rail do not rise

more than six and one half inches. Hence but little gravity resistance has to be overcome.

To remove the seat when in sofa form lift the front edge part way, so that the stud 39 will register with the aperture 34, then push the seat backward slightly, then lift the front edge further so that the stud 39 will clear the plate 31, then pull forward causing the rear stud 26 to slide out of the slot 24 in the rear plates, and the seat is free. To replace the seat reverse the operation.

To remove the back jerk upward on the same and it comes free, the spring lock 74 first disengaging and then the stud 66 passing out of the slot 71. To replace the back fit the stud 66 in the slot 71 and then lower the back till the stud 67 registers with the notch opening 77, and then press inward and downward and the back will snap into place.

To demount the bed bottom it is first unfolded half way, to its stable or balanced position. The tongues 140 then are disposed vertically and the plates 127 and associated parts may be lifted out of engagement with the member 125. The head section is then disengaged from the brackets 121 by drawing forward and upward so as to eject the studs 120 from the slot mouths 124. To mount the bed bottom on the frame the operation is reversed.

Although but one specific embodiment of this invention is herein shown and described, it will be understood that numerous details of the construction shown may be altered or omitted without departing from the spirit of this invention as defined by the following claims.

I claim:

1. A device of the class described, comprising a frame, in combination with a foldable sectional bed bottom including a back section having a pair of carrying links pivoted thereto on each side for swinging the same forward, a forwardly overturnable seat section having a carrying arm coacting with the front part of said frame, a connecting section, a bottom section, a head section arranged in the foregoing order, and a seat attached to the reverse side of said seat section, said bed bottom being arranged to fold with the bedding thereon in madeup form.

2. A device of the class described, comprising a frame, in combination with a foldable sectional bed bottom including a back section having on each side a pair of carrying links pivoted thereto for swinging the same forward, a forwardly overturnable seat section having on each side a carrying arm coacting with the front part of said frame, a connecting section, a bottom section, and a head section arranged in the foregoing order, a seat attached to the reverse side of said seat section, said bed bottom being arranged to fold with the bedding thereon in madeup form, and a swinging support on each side movable forward automatically in unfolding the device, one of said links being carried by said support and the other being turnably connected to said frame.

3. A device of the class described, comprising a sofa frame, in combination with an overturning seat, a five-section foldable bed bottom, the end sections head and foot being movable to upright positions in the back part of said frame in spaced relation to each other, the middle section being disposed in upright position under the seat, and the remaining two sections being disposed in substantially horizontal position beneath the seat, the upper of the two latter sections being connected to operate with the seat in a substantially unitary manner in overturning, said upper section and seat having a projecting support turnably connected to said frame in slidable relation thereto, and links disposed in pairs on each side of the foot section for swinging the same forward to its bed position.

4. A sofa bed comprising a frame, in combination with a foldable sectional bed bottom, including foot, intermediate, and head sections, a back member carried by the foot section, a seat member carried by the next adjacent section, supporting links arranged in pairs pivoted to opposite sides of the foot section, a pair of short links pivoted to the front part of the sofa frame on opposite sides thereof, the lower link of each pair of foot section links being pivoted directly to the sofa frame and the other to one of said short links, and yielding means connected to said frame and to one of said links urging the same toward an intermediate position in folding and unfolding the device, said short links being swingable forward automatically to advance the front foot-section-links in unfolding the device.

5. In a device of the class described, a sofa frame in combination with an overturning seat, guide means disposed parallel with and, adjacent to the front edge of and secured to said seat on opposite sides for supporting the seat, stationary shoulders on opposite sides of the sofa frame in registry with said guides and coacting therewith, means for swingably supporting the rear edge of the seat for overturning the same forwardly in unfolding the device, said means comprising a pair of levers one on each side and each having one end turnably connected adjacent to the rear edge of the seat and having an intermediate part pivoted to the front of the sofa frame, and a spring operatively connected at one of its ends to the opposite end of said lever, said spring at its opposite end being secured to the sofa frame at a

point back of and below the fulcrum point of said lever.

6. A sofa bed, comprising a frame, in combination with a foldable sectional bed bottom, including a back section and a seat section hinged together, supporting means mounted turnably on the front of the sofa frame for overturning the seat section forwardly, means for swinging the back section forwardly and downwardly to its bed position, section folding control means on the back section adjacent to its free edge, and inwardly extending means connecting said control means and swinging means, said members being arranged and connected for breaking the joint of the seat and back sections upwardly in folding the device.

7. A sofa bed, comprising a frame, in combination with a foldable sectional bed bottom, a pair of angular links arranged with one on each side of the bed bottom, said links each having an arm projecting backwardly and connected to one of the sections for swinging same forward, the other arm being disposed downwardly for pivotal support, and a front panel carried swingably by said links adjacent to the angle, said panel being disposed uprightly at the front of the frame in a sofa position and being disposed substantially horizontally in front of the frame in bed position.

8. A sofa bed, comprising a frame, in combination with a foldable sectional bed bottom, knock-down means for mounting said bed bottom on said frame, said means comprising a pair of coacting members, one having a socket and a slot like opening communicating therewith, and a turnable member journaled therein and having yielding means urging the same to a medial position, and the complementary member having a pivot formed to enter said socket when turned to a certain angle relative to said turnable member, one of the complementary members being attached to the sofa frame and the other to the bed bottom.

9. In a device of the class described, a frame and a bed bottom carried demountably thereby, said frame on each side having a rigidly held member provided with a socket and an aperture communicating therewith, and an oscillatory yielding key member associated with each socket and tending to assume a mean position with respect to its sofa and bed positions, and said bed bottom on each side having supporting means including a pivotal shoulder formed to enter said aperture and engage said key member when turned to a certain angle or position intermediate of the sofa and bed positions of the device and corresponding with the medial position of said key member.

10. In a device of the class described, a foldable sectional bed bottom including a back section, in combination with a movable back member carried thereby, means for attaching said back member to said back section including a pair of inclined guide members one on each side of said back section, coacting shoulders therefor on the back member, and means connected to an adjacent section of the bed bottom for positively moving said back member on said guide members in folding and unfolding the device, whereby said back member is moved diagonally from and toward said back section in unfolding and folding the device respectively.

11. In a device of the class described, a foldable sectional bed bottom, including a back section and a seat section, in combination with a movable back, slotted guide plates arranged with one pair on each side of the back section, shoulders on the back for coaction with the slots in said guides, said guides being formed to throw the back away from the bed bottom when the back is moved in one direction on said plates and toward the bed bottom when moved in the opposite direction, and means operatively connecting the back and seat sections and said back for moving said back in folding and unfolding.

12. A device of the class described, comprising a foldable sectional bed bottom, including a seat section, in combination with a seat movably mounted on the reverse side thereof, the mounting means comprising a pair of plates, one on each side, each of said plates being pivotally mounted at one end on the seat, and the other end having a pair of concentric slots, a shoulder on said seat coacting with one of said slots, and a shoulder on said seat section coacting with the other of said slots.

13. A device of the class described, comprising a foldable sectional bed bottom, including a seat section, in combination with a seat movably mounted on the reverse side thereof, the mounting means comprising a pair of plates, one on each side, each of said plates being pivotally mounted at one end on the seat, and the other end having a pair of concentric slots, a shoulder on said seat coacting with one of said slots, and a shoulder on said seat section coacting with the other of said slots, the outer of said slots having an outwardly facing aperture communicating with the outer edge of the plate for mounting and demounting with respect to the seat section shoulder, and the seat also having shoulder and open ended slot engagement with said seat section at another point whereby the seat is demountable from the bed bottom.

14. In a device of the class described, a foldable bed bottom including a back section and a seat section having a movably mounted

seat and back respectively, in combination with operative guide and shoulder connecting means for throwing said back and seat away from the bed bottom in unfolding, and toward the bed bottom in folding the device.

15. In a device of the class described, a foldable bed bottom including a back section and a seat section having a movably mounted seat and back respectively, in combination with operative connecting means for throwing said back and seat away from the bed bottom in unfolding, and toward the bed bottom in folding the device, said connecting means comprising a link pivoted to the seat section adjacent to its rear edge, said link having sliding relation at its opposite end with respect to the back section, said link being angular and having a short arm on which the rear part of the seat is mounted turnably.

16. A device of the class described, comprising a frame and a foldable bed bottom mounted thereon, means for supporting the bed bottom, comprising angular links turnably connected to the medial front part of said frame well upward from its lower edge for swinging forwardly and downwardly to bear medially on the floor, and a front panel carried by and in front of said links for swinging downward in front of said frame when the bed bottom is unfolded, said panel having limited turning connection to said links between the angular and pivotal end parts.

17. A device of the class described, comprising a frame and a foldable bed bottom mounted thereon, means for supporting the bed bottom, comprising links turnably connected to the front part of said frame for swinging forwardly and downwardly, and a front panel carried by said links for swinging downward in front of said frame when the bed bottom is unfolded, said panel being turnably connected to said links and the connection being formed and arranged for demounting the panel.

18. A foldable sectional bed bottom, including a foot section having automatic legs turnably connected to the foot rail, control means for each leg comprising a rod disposed longitudinally of the adjacent side rail and having its outer end fixed co-turnably to the upper part of the leg, and a longitudinally movable rod also disposed adjacent to said side rail and operatively connected to another section of the bed bottom, said rods being formed to coact for longitudinal movement with respect to each other, one of said rods having a twist whereby the first mentioned rod is turnable automatically in folding and unfolding the bed.

19. A foldable sectional bed bottom, in combination with a rod disposed longitudinally of one of the side rails of the foot section and having its outer end journaled in the foot rail, the inner end of said rod being formed non-cylindrical but straight and with a ninety degree twist, a plunger disposed inwardly of said rod longitudinally of said side rail, the outer end being formed to receive the inner end of said rod, a link having one end turnably connected to the next adjacent bed section and its opposite end turnably connected to the inner end of said plunger, guide means on said foot section for the coacting ends of said link and plunger, and a leg having its upper end fixed co-turnably upon the outer end of said rod.

20. A foldable bed bottom, including a back section and a seat section, in combination with a bedding fastener adjacent to the foot rail and mounted turnably to the outer part of the foot section, and means operatively connecting said fastener to the seat section for throwing the fastener inward in folding the bed and vice versa, said means being formed and connected to urge the joint for said sections upward when the bedding fastener is pushed inward.

21. A device of the class described, comprising a frame, in combination with a foldable bed bottom, including a back section and a seat section, links connecting said bed bottom adjacent to the joint for said sections to the front part of said frame, each of said links having a downwardly projecting part (in bed position) adjacent to its free end, a bedding fastener pivoted to the free end of the foot section, said bedding fastener including an upwardly disposed part for securing the bedding and downwardly projecting arms, and links connecting said arms and the downwardly projecting parts on said links, whereby inward pressure on the upper part of the bedding fastener tends to lift the joint for the back and seat sections for breaking the same upward in folding the device.

22. A foldable sectional bed bottom, including an outer section and an inner section, a leg turnably connected to the outer section, yielding means urging said leg to a folded position, and means operatively connecting said leg to said inner section, said means being movable outward by the folding of the sections, and inward by the unfolding, said leg and means having spiral-like sliding connection whereby the turning of the leg is controlled by the swinging of the outer section.

23. In a device of the class described, a frame in combination with a foldable sectional bed bottom carried thereby, including a head section and a plurality of outwardly disposed sections, means for supporting the outwardly disposed sections, a bracket for supporting the rear part of the head section, said bracket having a face disposed toward the head section and being formed with a

slot opening upward at its forward end and extending backwardly and downwardly for guiding said head section in folding and unfolding, said head section having a headed shoulder coacting with said guide, and supplementary means formed with a supporting shoulder and an inclined guide part for coacting with the front part of said section.

24. A frame, in combination with a foldable bed bottom, said frame and bed bottom having on each side complementary mounting members having coacting socket and shoulder parts respectively, a hub and means thereon for turning same on the frame mounting member, the hub being turnable in the socket, and the shoulder part on the bed bottom mounting member being adapted to slide crosswise of each other into engagement with the turnable member in said socket when the bed bottom, in partly folded form, is held in a certain intermediate position, said hub and shoulder parts being tongued and grooved on their adjacent faces and being interlocked by turning in either direction in said socket.

25. In a device of the class described, a pair of complementary mounting members comprising a stationary member having a lever arm pivoted thereto, and yielding means urging said lever to a definite normal position, said stationary member having a guide slot leading to the pivot for said lever, and the complementary mounting member being turnable and having a lever pivoted thereon, said levers having their faces formed with a tongue and groove respectively, said members being slidable into place when the movable mounting member is turned to a certain angle, said members being interlocked when said movable member is turned in either direction.

26. In a device of the class described, a mounting member comprising a pair of plates, outer and inner, spaced apart in rigid relation, in combination with a lock member comprising a pivot stud fixed to the outer of the plates and a hub fitting turnably thereon, said hub having an arm fixed thereon and a spring for urging said arm to a certain normal position, said hub having an outwardly facing tongue, the inner of said plates being formed with a pocket and a slot leading thereto, in which pocket said hub is journaled, and means admissible through said slot and coacting with said hub and tongue for interlocking when turned.

27. A device of the class described, comprising a frame, in combination with a foldable sectional bed bottom including a back section and a back member carried thereby, in combination with a cover member mounted turnably on the upper part of the frame and having a downwardly projecting rear part, and yielding means urging said cover to an intermediate position, said cover being swingable upwardly for unfolding the bed bottom, and being swingable downwardly to cover the upper edge of said bed bottom in folding the device, said downwardly projecting rear part of the cover being urged rearwardly by said back section in folding.

28. A foldable sectional bed bottom including an outer section and an inner section, in combination with a pair of rods, outer and inner, overlapping at their adjacent ends and disposed on the outer section crosswise of the section hinge line, the outer of said rods being journaled at its outer end to the bed bottom frame, means operatable by the swinging of the outer section for reciprocating the inner rod in folding and unfolding respectively, the inner rod being non-turnable, said rods being formed to coact spirally for relative turning movement, and a leg attached coturnably to the outer rod.

29. In a device of the class described, an outer section and an inner section hinged together, in combination with a rod disposed on the outer section crosswise of the section hinge line, means connecting said rod operatively to the inner section for reciprocating said rod according to the folding and unfolding movements, and a leg turnably connected to the outer section and having spiral connection with said rod for folding and unfolding said leg.

30. A frame, a foldable bed bottom thereon including a back section and a short seat section, a bracket fixed to said seat section, a pivot-like shoulder on the front part of said frame whereon said bracket is both slidable and turnable, said bracket having a horizontal guide slide coacting with said shoulder, a seat member mounted movably on said seat section, and link means turnably connected at one end to the bed bottom and at the other end to said frame for swinging said back and seat sections to and from their bed positions.

31. A frame, a foldable bed bottom thereon including a back section and a short seat section, a bracket fixed to said seat section, a pivot-like shoulder on the front part of said frame whereon said bracket is both slidable and turnable, said bracket having a horizontal guide slot coacting with said shoulder, a seat member mounted movably on said seat section, and an inwardly projecting shoulder on said bracket to support the seat member in its normal position.

32. A frame, in combination with a bed bottom including a foot section normally disposed uprightly, a back member carried by said section, and a cover turnably connected to the upper back part of said frame, said cover normally concealing the upper edge of the foot section, yielding means urging said cover to an inclined open position and said cover having a downwardly pro-

jecting arm on its rear part whereby said cover is closed automatically by coaction with the foot section as the latter swings to its sofa position.

33. A frame, in combination with a bed bottom including a foot section normally disposed uprightly, a back member carried by said section, and a cover turnably connected to the upper back part of said frame, said cover normally overlapping said section and back member in front and concealing the same and providing a hand hold for lifting the cover, and said cover having a downwardly projecting part back of said section and coacting therewith in folding and unfolding.

34. A frame, in combination with a foldable bed bottom including a foot section normally disposed uprightly, and a back disposed normally in front of said section, means for supporting said section turnably for swinging it to its bed position, said means comprising, on each side, a pair of links, upper and lower, the lower link having one end pivoted to the inner part of said foot section and its opposite end pivoted to the front part of said frame, a short extension link having its upper end connected turnably to said frame above the frame pivot for the lower link, said extension link being slotted longitudinally, a shoulder on said lower link coacting with the short link slot, and an upper link having one end pivoted to said foot section outward from the lower link, said upper link having its opposite end turnably connected to the free end of said extension link.

35. A seat section, and a back section hinged together, a pivot and a longitudinal guide slot on adjacent parts of said sections respectively, an angular lever carried turnably on the seat section pivot as a fulcrum, said lever having a long arm coacting with the guide slot on the back section, and a short arm extending diagonally forward and upward, a seat having its rear part resting on said short arm, and a member on said back section controlled by said long arm.

36. In a folding bed, a pivoted bed frame section, a movable supporting leg therefor, a screw member having an elongated pitch carrying said leg, a sleeve member operatively engaging the thread of said screw member whereby the leg is turned into and out of operative position as the pivoted bed frame section is lowered and raised.

Signed at Chicago this 15th day of July, 1915.

HENRY M. SVEBILIUS.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."