

No. 656,161.

Patented Aug. 21, 1900.

F. BENNETT.
SOFA BED.

(Application filed June 16, 1900.)

(No Model.)

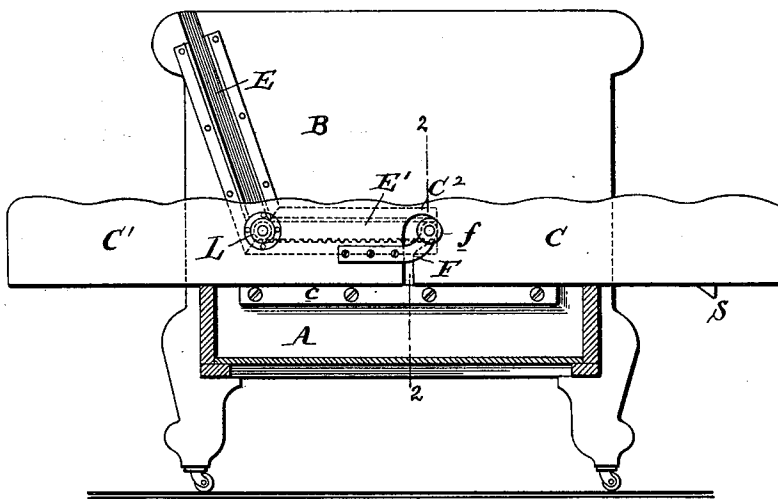


FIG. 1

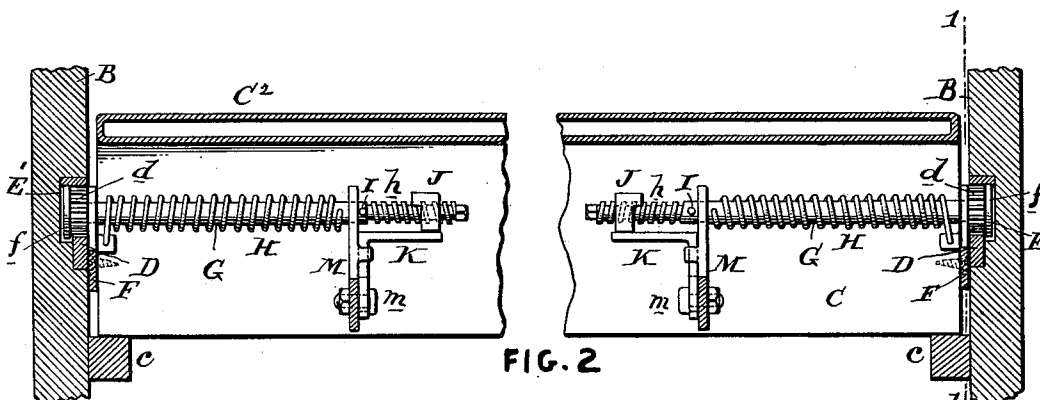


FIG. 2

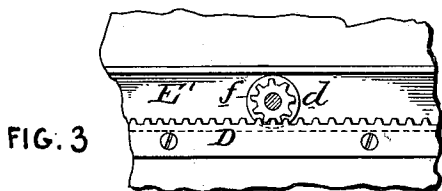


FIG. 3

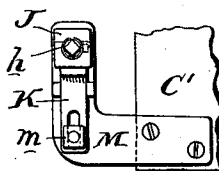


FIG. 4

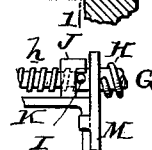


FIG. 5

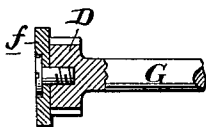


FIG. 6

WITNESSES:

Samuel D. King
R. M. Kelly

INVENTOR:

Frederick Bennett

By his atty

[Signature]

UNITED STATES PATENT OFFICE.

FREDERICK BENNETT, OF NEW YORK, N. Y., ASSIGNOR TO THE HALE & KILBURN MANUFACTURING COMPANY, OF PENNSYLVANIA.

SOFA-BED.

SPECIFICATION forming part of Letters Patent No. 656,161, dated August 21, 1900.

Application filed June 16, 1900. Serial No. 20,503. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK BENNETT, of the city of New York, Kings county, New York, have invented an Improvement in Sofa-Beds, of which the following is a specification.

My invention has reference to articles of furniture having reclining backs; and it consists of certain improvements fully set forth in the following specification and shown in the accompanying drawings, which form a part thereof.

The object of my invention is to provide a means for counterbalancing the adjustable or reclining-back cushions in Morris chairs, sofa-beds, &c. In articles of furniture of this class the back is jointed to the seat cushion or body and is lowered into a horizontal position more or less inclined or as in converting a sofa into a bed. Such a structure is shown in Letters Patent to H. S. Hale, No. 595,913, dated December 21, 1897. As the cushions are quite heavy, it is desirable to reduce the labor of shifting and lifting them when readjusting the back into an upright position, and it is with this my invention has to deal.

In carrying out my invention I provide the guides on the main frame with racks, and with these pinions mesh and rotate shafts carried with the cushions. Upon the shafts are springs which are put under tension by the rotation of the shafts during the act of lowering the back-cushion. When the cushions are to be shifted and the back-cushion raised, these springs assist in overcoming the weight. I also provide means for locking the shafts from further rotation after a given number of revolutions, which enables the spring to be wound to the desired tension prior to putting the cushions in working condition in the main frame, so that after the back-cushion has been fully raised the springs are still under strong tension. Also this means limits the possible rotation of the pinions, and therefore does not allow the springs to cause them to work out of the racks no matter how great the tension of the springs may be, thereby enabling a power to be exerted by the springs which would almost lift the full weight of the back and shift the seat-cushion, reducing proportionally the labor of shifting the cushions by hand.

My improvements will be better understood by reference to the drawings, in which—

Figure 1 is a sectional side elevation on line 1 1 of Fig. 2, showing my invention as applied to a sofa-bed. Fig. 2 is a longitudinal sectional elevation of same on line 2 2 of Fig. 1. Fig. 3 is an elevation of the pinion and racks; Fig. 4, an end elevation of the locking mechanism for the spring-shafts; Fig. 5, a side elevation of same; and Fig. 6, a sectional elevation of the shaft, pinion, and guide-roller.

A is the main frame and is provided on its ends with the end frames or arms B B. The end frames are each provided with a horizontal guide-supporting rib c, a horizontal guide-groove E', and an oblique guide E, connecting with the groove E' at the bottom.

C C' are respectively the seat and back cushions and are flexibly united at C², so that the back-cushion C' may be turned up so as to assume an oblique position relatively to the seat-cushion C, which remains horizontal. The back-cushion has the middle portion of its ends provided with guide-rollers L, which work in the oblique guide-grooves E, and its forward side edges with brackets F, in which are journaled shafts G, having on their ends pinions d and guide-rollers f, the latter working in the horizontal grooves E'.

D D are racks with which the pinions d work and are arranged on the end frames along the lower edges of the guide-grooves E'.

The two shafts G G extend toward each other and are journaled at their inner ends in brackets M, carried on the back-cushion frame.

H H are springs coiled about the shafts G G, one end being secured to the brackets F and the other end to the shafts. These springs are coiled in opposite directions on the two shafts for obvious reasons. The extreme inner ends of the two shafts G G are screw-threaded, as at h, the threads on one of the shafts being right-handed and on the other left-handed.

J J are nuts on the screws of the two shafts and are prevented from rotating by guide-plates K K, which permit them to move parallel to the shafts, but not rotate. These nuts have hooked or overhanging ends which lock over the pins or projections I I on the

shafts G and limit the possible unwinding of the springs and rotation of the shafts and their pinions. This prevents the pinions from running beyond the racks D at the juncture of the grooves E and E'. The plates K are adjustably secured to the brackets M by clamping-bolts *m*, which permits the first adjustment of the nuts on the shafts. After the shafts have been fully rotated and the pinion and guide-roller *f* are at the lower end of the guide-groove E the nut J will be in the position shown in Fig. 5 and will lock the pin I and with it the shaft G. The unwinding tendency of the spring causes the cushions to be moved backward with freedom and without much labor, and this same action causes the rear end of the cushion C' to be raised by means of its rollers L L working up in the oblique guide-grooves E. When the cushions are moved fully back, the locking projection S drops back of the front rail of the main or body portion and locks the cushions against accidental displacement.

While I prefer the construction shown, the details thereof may be modified without departing from the essential features of my invention.

Having now described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In an article of furniture the combination of the main frame and end frames having oblique guides, a movable back-cushion having guide rollers or projections at or about the middle of its ends working in the oblique guides, horizontal racks, pinions meshing with the racks, shafts carrying the pinions and journaled on the back-cushion so as to move it, and springs having one end attached to the shafts and the other end to the cushion, whereby the tendency of the spring to unwind rotates the pinion and assists in shifting the cushions.

2. In articles of furniture the combination of the main frame and end frames having oblique guides, a movable back-cushion having guide rollers or projections at or about the middle of its ends working in the oblique guides, horizontal racks, pinions meshing with the racks, shafts carrying the pinions and journaled on the back-cushion so as to move it, springs having one end attached to the shaft and the other end to the cushion, whereby the tendency of the spring to unwind

rotates pinion and assists in shifting the cushion, and locking mechanism to lock the pinions and their shafts against rotation after a given number of revolutions.

3. In an article of furniture, the combination of the main frame and end frames having oblique guides, a movable back-cushion having guide rollers or projections at or about the middle of its ends working in the oblique guides, horizontal racks secured to the end frames, pinions meshing with the racks, shafts carrying the pinions and journaled on the back-cushion so as to move it and having screw-threaded ends, springs having one end attached to the shaft and the other end to the cushion, whereby the tendency of the springs to unwind rotates the pinions and assists in shifting the cushion, and locking mechanism to lock the pinions and their shafts against rotation after a given number of revolutions, consisting of locking-nuts working on the screws, and guides for the nuts to prevent them rotating.

4. In articles of furniture, the combination of the main frame structure, a shifting back-cushion guided on the main frame from an upright to a horizontal position and vice versa, a rack secured to the main frame structure, a pinion meshing with the rack, a shaft secured to the pinion and carried in bearings connected and moving with the cushion, and spring mechanism for rotating the shaft and pinion to assist in shifting and raising the back-cushion.

5. In articles of furniture, the combination of the main frame structure, a shifting back-cushion guided on the main frame from an upright to a horizontal position and vice versa, a rack secured to the main frame structure, a pinion meshing with the rack, a shaft secured to the pinion and carried in bearings connected with and moving with the cushion, spring mechanism for rotating the shaft and pinion to assist in shifting and raising the back-cushion, and means to lock the shaft and pinion after the spring causes them to make a given number of revolutions.

In testimony of which invention I have hereunto set my hand.

FREDERICK BENNETT.

Witnesses:

A. F. OLD,
W. M. ANDRUS.