March 29, 1960 R. W. NOWELS 2,930,053

BEDMAKING DEVICE

Filed Jan. 22, 1959 2 Sheets-Sheet 1

FIG. 1.

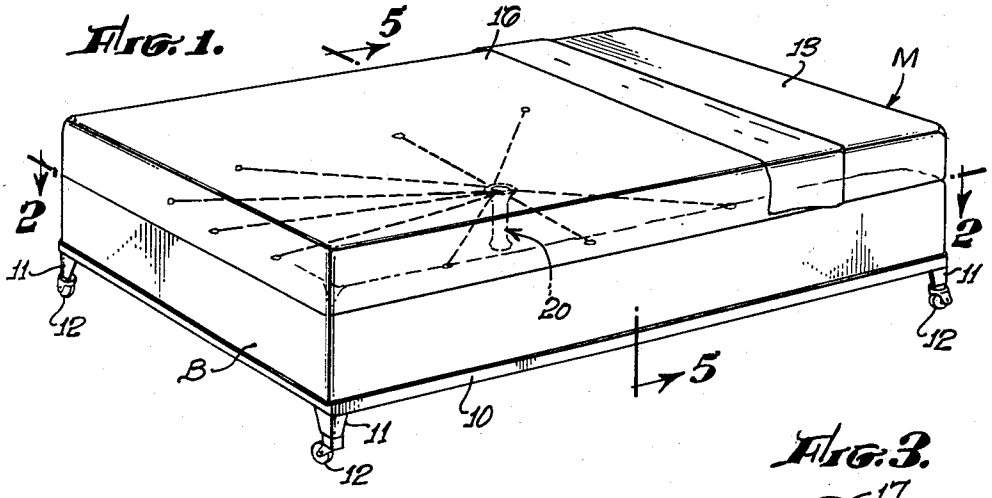


FIG. 3.

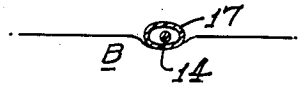


FIG. 2.

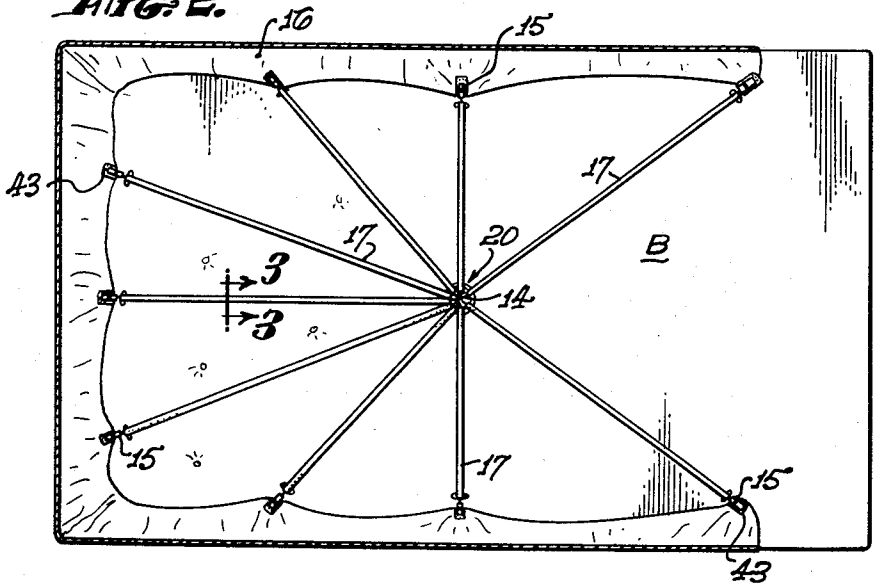
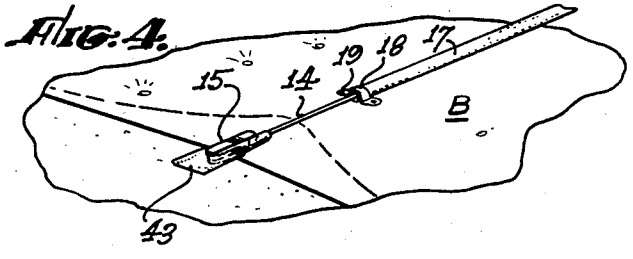


FIG. 4.



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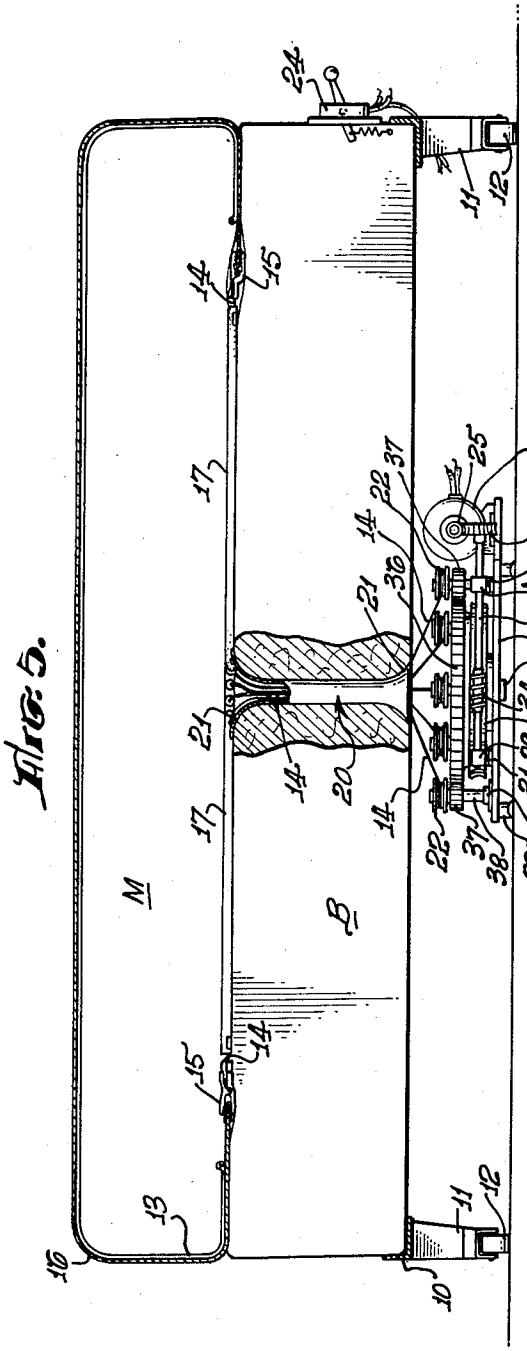

Fig. 5.

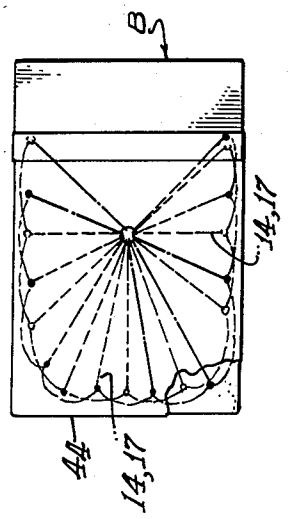

Fig. 7.

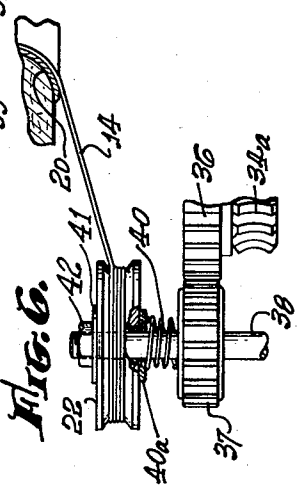

Fig. 6.

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BEDMAKING DEVICE

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8 Claims. (Cl. 5—320)

This invention relates to household bedmaking devices and particularly to manually controlled mechanism for automatically drawing the bed covering neatly about the mattress.

The average housewife spends perhaps thirty minutes per day in making beds. A critical part of the operation is pulling the bed covers to a taut position so as to present a neat appearance. It is necessary to pull the covers from both sides of the bed, from the bottom end of the bed, and possibly also from the top end of the bed. In accomplishing this phase of the job the housewife is required to do a great deal of walking about the bed, and also a considerable amount of bending over. Lifting the heavy mattress in order to tuck covers under the mattress edge is the cause of many back-aches for the housewife.

Most of the time and effort which the housewife spends in making beds is wasted, since the work is routine and does not result in the creation of new economic wealth. It is the purpose of the present invention to relieve the housewife of as much of the task as possible, by providing an inexpensive mechanical bed-making device.

In order to establish the bed covering in a taut position so as to present a well-made appearance, applicant's device automatically insures proper pull from a plurality of positions.

Applicant's device utilizes a plurality of pull cords removably attached to the edge of sheets, blankets, spreads, etc. A plurality of fixed guide means are provided for the pull cords, to insure proper direction of pull and the drawing of the bed covering neatly about the mattress.

It is a primary object of the invention to provide an inexpensive, manually-actuated device for automatically positioning bed covers in a tight, tucked-in position so as to present a well-made appearance.

Another object of the invention is to provide a mechanical bed-making device which will relieve the housewife of countless hours of unproductive labor.

An additional object of the invention is to provide a device whereby kicked-out covers may be automatically re-tucked into place by the bed occupant merely by flipping a switch.

It is another object of the invention to provide a bed covering pull-cord arrangement that will rapidly return an unmade bed covering to a tight, tucked-in position and well-made appearance.

A further object of the invention is to provide guide means fixedly positioned on top of a bed spring near the outer edges thereof that will insure proper actuation of bed covering pull cords or wires.

Still another object of the invention is to provide manually controlled rapid operating mechanism for drawing bed covers to a neat position by means of radially disposed pull cords or wires passing through an under-bed device.

Other objects will appear when taken in connection

with the attached specifications and drawings, in which:

Figure 1 is a perspective diagrammatic view of the invention;

Figure 2 is a plan view of the top of the box spring taken on line 2—2 of Figure 1;

Figure 3 is a cross sectional view of a pull cord and guide tube taken on line 3—3 of Figure 2;

Figure 4 is an enlarged perspective showing the operation of the guide tube, pull cord and clamping mechanism;

Figure 5 is a sectional view partially broken away taken on the line 5—5 of Figure 1;

Figure 6 is an enlarged partial elevational view of the pulley drive and frictional mounting; and

Figure 7 is a schematic plan view of the top of the bed mattress and box spring showing the invention adapted for use with sheets and blankets.

Referring now to the drawings, it will be seen that the invention has been applied to a standard bed frame 10 supported by four legs 11 and attached rollers 12.

A box spring B is conventional in all regards except with respect to a centrally disposed flared flexible tube that will be described later.

A mattress M is disposed on the box spring B and in this instance for a clear disclosure of the invention, the mattress M is shown covered with a conventional contour sheet 13. To simplify the disclosure, applicant's novel mechanism has been shown in connection with the top sheet, although it is obvious that any bed covering or bed clothes arrangement would merely require additional pull cords and guide tubes.

A plurality of pull cords 14 are radially disposed from an under mattress control position to points adjacent the outer edge of the undersurface of the mattress. A bed covering clamp 15 is secured to the end of each of the pull cords 14 and grasps the edges of a top sheet 16 as clearly shown in Figure 2.

Surrounding each pull cord 14 is a radially disposed tubular guide 17 which may be of flexible construction. The outer end of each of the guides has a grommet 18 attached thereto and the grommet 18 has a sewn or other type connection 19 with the box spring B. If an eye is used instead of a tube, the eye may be rigidly attached to the top of the box spring.

The use of a parachute-type nylon cord and plastic tubular cover is contemplated, but other materials having similar characteristics may be provided.

A tube 20 flared at either end is disposed centrally of the box spring B in any manner desired and the plural pull cords 14 projecting from plural inner ends 21 of the tubular guides 17 pass downwardly therethrough and are secured to a series of small pulleys 22.

The pulleys 22 are actuated by electric motor driven gear mechanism G comprising the following elements. An electric motor 23 is controlled by a conventional spring loaded switch 24. Although the details of the electrical circuit are not shown, motor 23 runs in only one direction, being the direction such as to tighten the pull cords. Motor 23 has a worm 25 that drives a worm gear 26 secured to the outer end of a horizontally disposed drive shaft 27. The drive shaft 27 is supported in dual bearings 28 and 29 respectively and the bearings 28 and 29 are fixedly secured at 30 and 31 respectively to a power transmission supporting frame 32 elevated slightly on plural supports or legs 33.

A worm 34 disposed intermediate the ends of drive shaft 27 engages a worm gear 34*a* pivotally supported in a hub 35 in the transmission frame 32. Above the worm gear 34*a* and fixedly connected thereto is a central parent gear wheel 36 which drives a series of small satellite surrounding gears 37. The plural small gears 37 are secured to a group of multiple vertical short stub shafts 38 ro-

tatably mounted in a series of hubs **39** secured on the upper face of the frame **32**.

A plurality of helical compression springs **40** urge multiple friction washers **40***a* against the under faces of corresponding ones of the pulleys **22**. The pulleys **22** are rotatably mounted, although frictionally held, on the stub shafts **38** and a series of upper washers **41** and nuts **42** threadedly secure the pulleys or spools **22** operatively on the shafts **38**.

Sheets **16** are sometimes provided with a peripheral series of reinforcing strips **43** for the clamps **15** as shown in Figure 4. Such reinforcing strips may also be provided on blankets or other bed coverings. The purpose of the reinforcing strips is to prevent wear and tear on coverings, and also to show the operator where to apply clamps when a clean covering is placed on the bed.

In Figure 7 of the drawings, an obvious modification of applicant's guided pull cords is schematically shown. In this view, the additional intermittently disposed clamping pull cords **14** and the tubular guides **17** are shown attached to one or more blankets or quilts **44** or other bed coverings and accoutrements. Such arrangement was described previously in a general manner.

The operation of the unique device is simple. The frictional mounting of pulleys or spools **22** permits the bed occupant to open the bed covering, enter the bed, and arrange coverings thereafter as desired. Movement of the occupant operates to pull the clamped cords **14** outwardly through the tubular guides **17** and thus slip the frictionally mounted arranger pulleys **22**.

When it is desired to re-make the bed after the occupant arises, or to tighten covers while an occupant is in the bed, spring loaded switch **24** is tripped and power transmitted through the gear mechanism rotates the pulleys **22**. Winding of the pull cords **14** on the pulleys **22** draws the sheet-attached clamps **15** toward the fixed ends of the tubular guides **17** and therefore draws the bed coverings to their desired tight, tucked-in, neat and unwrinkled position. The clamps **15** were manually attached to sheet **16** in the first instance. The tubes **17** (or eyes, if such are used) are so positioned as to properly guide the pull cords **14**, and they also operate as stops to prevent excessive tightening of the sheets **16** or other covers.

The slip friction mounting of the pulleys **22** automatically insures substantially equal tightening of the pull cords **14**, and also allows for unequal travel distances of various cords or wires to bring disarranged covers into a symmetrical position upon the bed. If the spring loaded switch is held down for an extensive period, the pulleys or spools **22** merely slip on the stub shafts **38** and no harm is done.

The present invention may be utilized with beds of any size, and also with cribs. It is not necessary that a box spring be used, for the invention can be adapted to any type of spring.

It will be noted that since the guide tubes, eyes, or other guide means are attached to the spring, the mattress may be turned over from time to time in the approved conventional manner without interference from the invention. The travel of the pull cord ends will, in general, be from six inches inside the mattress edge to two or three feet outside, although these values are not critical.

Obviously other types of power or hand-operated tightening mechanism may be used in the same way, and my description in specific detail of the present embodiment of the invention will suggest to those skilled in the art various changes, substitutions, simplifications and other departures from the disclosure that properly lie within the scope and spirit of the appended claims.

What I claim is:

1. A bed making device for positioning the bed covers on a bed mattress which is superimposed upon a bed spring, comprising: a plurality of guide means mounted in fixed circumferentially spaced positions upon the bed spring; a plurality of pull cords slidably supported in corresponding ones of said guide means, each of said pull cords having an outer end and attachment means provided thereon for releasably grasping a bed cover edge; and mechanical means cooperatively associated with all of said pull cords for pulling same to a position in which each attachment means is immediately adjacent its associated guide means.

2. A bed making device for positioning the bed covers on a bed mattress which is superimposed upon a bed spring, comprising: a plurality of tubular guide means mounted in fixed spaced positions upon the bed spring; a plurality of pull cords slidably supported in corresponding ones of said guide means, each of said pull cords having attachment means provided thereon for releasably grasping a bed cover edge; and mechanical means cooperatively associated with all of said pull cords for pulling same to a position in which each attachment means is immediately adjacent its associated guide means.

3. A bed making device for positioning the bed covers on a bed mattress which is superimposed upon a bed spring, comprising: a plurality of tubular guide means mounted in fixed radially spaced positions upon the bed spring; a plurality of pull cords slidably supported in corresponding ones of said guide means, each of said pull cords having attachment means provided on its outer end for releasably grasping a bed cover edge; and mechanical means cooperatively associated with all of said pull cords for pulling same to a position in which each attachment means is immediately adjacent the outer end of the associated tubular guide means.

4. A bed making device for positioning the bed covers on a bed mattress which is superimposed upon a bed spring, comprising: a plurality of guide means mounted in fixed circumferentially spaced positions upon the bed spring; a plurality of pull cords slidably supported in corresponding ones of said guide means, each of said pull cords having attachment means provided thereon for releasably grasping a bed cover edge; and mechanical means cooperatively associated with all of said pull cords and actuable for pulling same to a position in which each attachment means is immediately adjacent its associated guide means, said mechanical means being also actuable for releasing said pull cords to extended positions.

5. A bed making device for positioning the bed covers on a bed mattress which is superimposed upon a bed spring, comprising: a plurality of guide means mounted in fixed circumferentially spaced positions upon the bed spring; a plurality of pull cords slidably supported in corresponding ones of said guide means, each of said pull cords having attachment means provided thereon for releasably grasping a bed cover edge; mechanical means cooperatively associated with all of said pull cords for pulling all of said cords simultaneously to a position in which each attachment means is immediately adjacent its associated guide means; and means for releasing said pull cords to extended positions.

6. A bed making device for positioning the bed covers on a bed mattress which is superimposed upon a bed spring, comprising: a plurality of guide means mounted in fixed circumferentially spaced positions upon the bed spring; a plurality of pull cords slidably supported in corresponding ones of said guide means, each of said pull cords having attachment means provided thereon for releasably grasping a bed cover edge; and mechanical means cooperatively associated with all of said pull cords for pulling same to a position in which each attachment means is immediately adjacent its associated guide means, said mechanical means including a separate pulley for controlling each of said pull cords.

7. A bed making device for positioning the bed covers on a bed mattress which is superimposed upon a bed spring, comprising: a plurality of tubular guide means radially mounted in fixed circumferentially spaced positions upon the bed spring; a plurality of pull cords slidably

supported in corresponding ones of said guide means, each of said pull cords having an outer end and attachment means provided thereon for releasably grasping a bed cover edge; a vertically disposed duct extending through the central portion of the bed spring structure, the inner ends of all of said pull cords passing through said duct and extending underneath the bed spring structure; and mechanical means cooperatively associated with the inner ends of all of said pull cords for simultaneously pulling all of said cords to a position in which each attachment means is immediately adjacent the outer end of its associated guide means.

8. A bed making device for use with a bed frame, a spring and mattress, comprising: multiple clamp-attached pull cords disposed beneath the mattress and extending radially from a central point; surrounding fixed tubular members for said pull cords guiding the bed covering to a taut position upon withdrawal of said cords; means for directing the inner central ends of said pull cords through

the spring; and power driven mechanism for withdrawing said pull cords to re-position the bed covering in its taut position when desired, said mechanism including a series of pulleys connected to said pull cords, a gear transmission having gear means for driving said pulleys, a motor, and slipping mountings for said pulleys permitting extension of said pull cords as desired, said motor being actuable only in one direction for withdrawing said pull cords.

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