Nov. 22, 1949 R. W. COLWELL 2,488,709

SPRING ACTUATED DEVICE

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Fig. 1

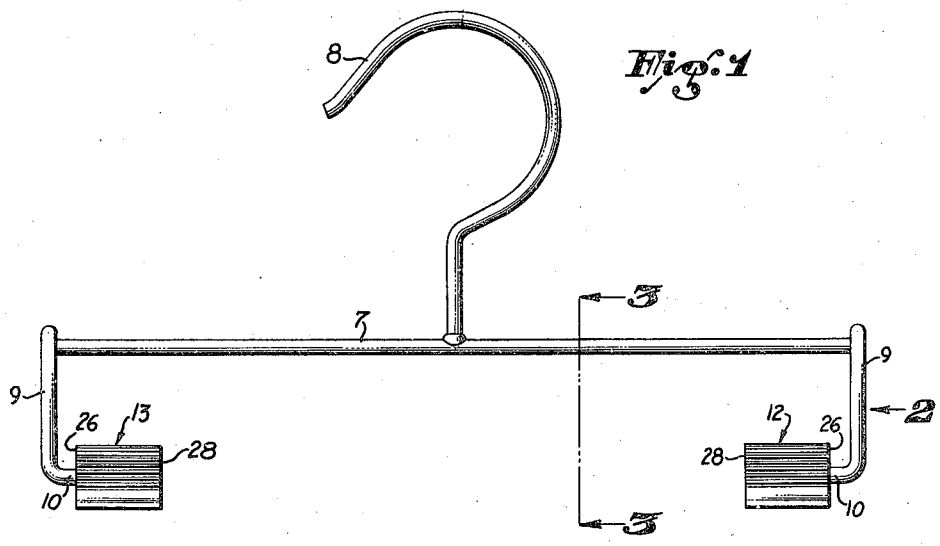


Fig. 2

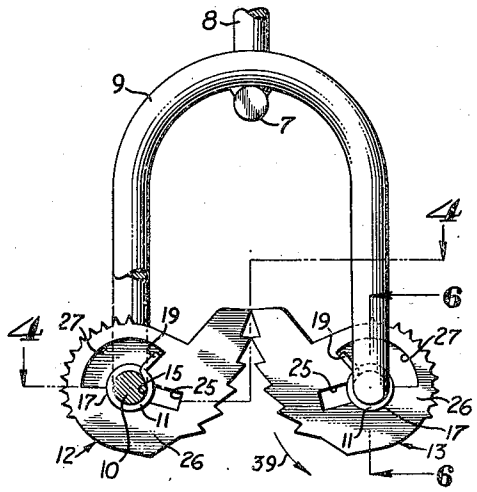


Fig. 3

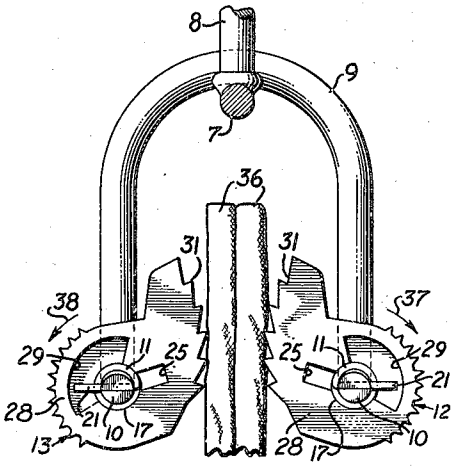


Fig. 4

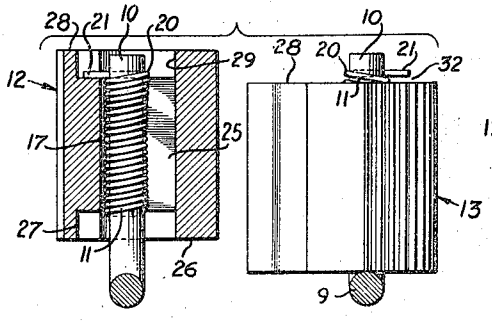
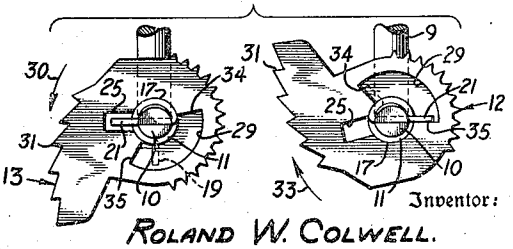


Fig. 5



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Fig. 6

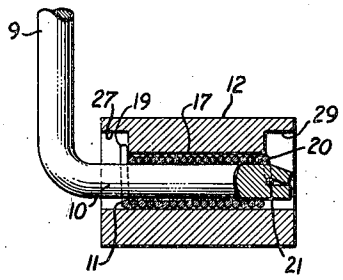


Fig. 7

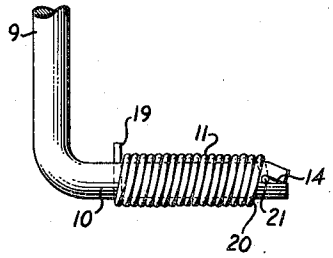


Fig. 8

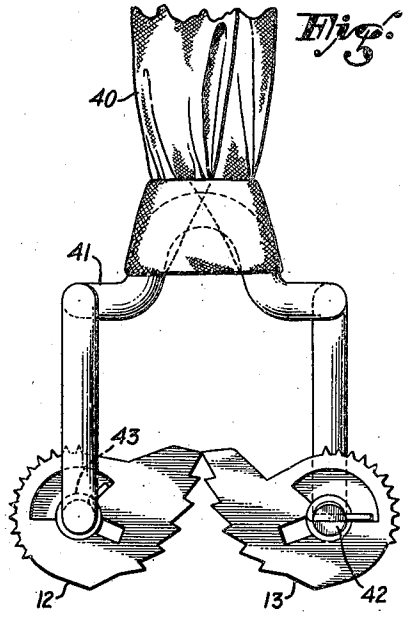


Fig. 9

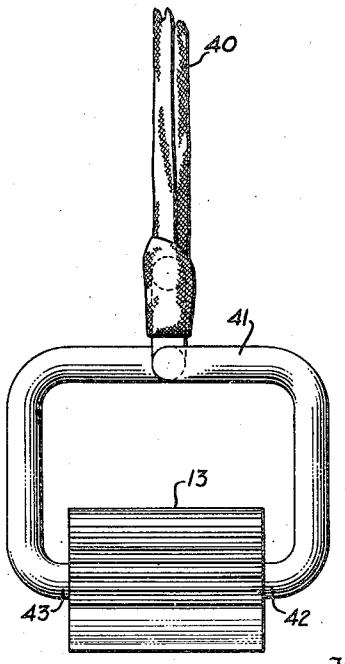
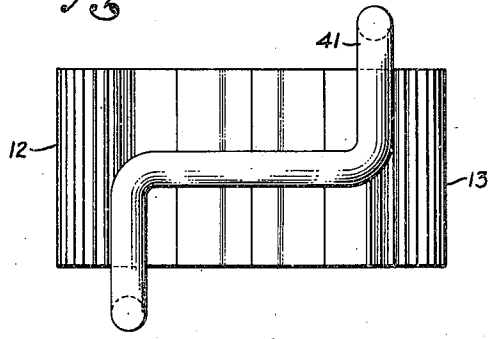


Fig. 10



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SPRING ACTUATED DEVICE

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4 Claims. (Cl. 267—1)

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This invention relates to a spring actuated device.

An object of my invention is to provide a spring actuated device which is quick and easy to assemble and economical to construct.

Another object of my invention is to provide a spring actuated device which is positive in operation, and which is easy and quick to open and close.

Another object of my invention is to provide a spring actuated device, which is provided with means to limit the movement of the movable member.

My invention has many other objects, advantages, and features, some of which, with the foregoing, will be set forth in the following description wherein I shall outline two forms of my invention, which I have selected for illustration in the drawings accompanying and forming a part of the present specification.

In the first of said forms, the invention is exemplified in a garment hanger of the form shown in my Patent No. 2,401,413, dated June 4, 1946. In the other of said forms the invention is exemplified in a gripping means adapted to secure blankets to a crib.

In the drawing:

Fig. 1 is a front elevation of a garment hanger embodying my invention.

Fig. 2 is an end elevation of the garment hanger shown in Fig. 1 taken in the direction indicated by the arrow 2.

Fig. 3 is a cross-section taken on the line 3—3 of Fig. 1, but showing the hanger in use.

Fig. 4 is a cross section taken on the line 4—4 of Fig. 2, with one of the members shown in a moved position.

Fig. 5 is a view taken in the same direction as Fig. 3, showing one member after it is mounted in assembled position and the other member in position to be mounted.

Fig. 6 is a cross section taken on the line 6—6 of Fig. 2.

Fig. 7 is a side elevation showing the method of mounting the springs.

Fig. 8 is an end elevation of a gripping means adapted to secure blankets to a crib embodying my invention.

Fig. 9 is a side elevation of the gripping means shown in Fig. 8.

Fig. 10 is a plan view of the gripping means shown in Fig. 8, with the cord removed.

In the garment hanger shown in Figs. 1 to 7, inclusive, the numeral 7 indicates a rod which has a hook 8 for supporting means, and yoke members 9 provided with shafts 10. Mounted on the shafts 10 are torsion springs 11 and spring actuated members 12 and 13.

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The shafts 10 may be round, square or of any other convenient shape, and may be slotted at their free ends, as indicated at 14, for the purpose of securing the springs to the shafts. However, any other means may be used in order to accomplish this result.

The inside dimension 15 of each of the coils of the springs 11 is such as to permit the spring to be moved freely over the shaft 10, and the outside dimension of the coils of the spring is such as to permit the spring to be freely inserted in the bore 17 of the movable members 12 and 13. The free end of the spring is bent outwardly at right angles to the circumference of the coil, as shown at 19. The other end 20 of the spring is bent across the circumference of the spring and extends beyond the outside of the coils as shown at 21.

Each of the spring actuated members 12 and 13 is provided with a slot 25 adjacent the bore 17, in order to permit the projecting end 21 of the spring to pass through the movable members in assembling the movable members on the shaft.

The inner end 26 of each of the movable members 12 and 13 is provided with a recess 27 which is adapted to receive and rotatably secure the projecting inner end 19 of the spring 11 to the movable members. The outer end 28 of each of the movable members 12 and 13 is provided with an arcuate recess 29 which is adapted to receive the projecting outer end 21 of the spring after the rotatable member has been mounted on the shaft.

In assembling the unit, the springs 11 are mounted on the shafts 10 with the outer ends 20 of the springs inserted in the slots 14 of the shafts, after which the ends of the slots 14 are bent together in order to secure the springs to the shafts, as shown in Fig. 7.

The movable members 13 are assembled as follows: One of the movable members 13 is placed in line with the shaft 10, and with the projecting end 21 of the spring in alignment with the slot 25, so that said member 13 can be passed over the projecting end 21, that is, with the gripping teeth 31 pointed outward from the hanger frame. Said movable member 13 is then moved over the spring until the outer end 28 of said movable member is beyond the projecting end 21 of the spring, as indicated at 32 in Fig. 4. As the movable member 13 is moved over the spring, the projecting end 19 of the spring is positioned in the

recess 27. When the outer end 28 of the movable member is moved beyond the projecting end 21 of the spring, as indicated at 32 in Fig. 4, the spring is loaded by rotating the movable member 13 in a "spring winding" direction, that is, in the direction indicated by the arrow 30 in Fig. 5, until the projecting end 21 is opposite the arcuate recess 29. At this point, the movable member 13 is released. As the movable member 13 is released, it is forced outwardly, due to the action of the spring, and the projecting end 21 of the spring becomes positioned in the arcuate recess 29. The other movable member 13 is assembled in the same manner.

The movable members 12 and 13 are assembled in the same manner, the only difference being that after the movable member 12 is moved over the spring 11 until its outer end 28 is beyond the projecting end 21 of the spring, the spring is loaded by rotating the movable member 12 in the reverse direction, that is, in the direction indicated by the arrow 33 in Fig. 5, until the projecting end 21 is opposite the arcuate recess 29.

After the unit is assembled, the ends 34 and 35 of the arcuate recesses 29 serve as stops to limit the working arc of the movable members.

In order to be able to use the members 12 and 13 interchangeably, the recess 27 is preferably made exactly the same shape as the arcuate recess 29.

In using the garment hanger shown in Figs. 1 to 7, the trousers are inserted upwardly into the yoke members 9, at each end of the cuff. The trouser legs are positioned together, holding them with both hands between the thumb and fingers of each hand, placing them beneath the hanger and with the two index fingers applied to the rod 7 of the hanger, inserting the trouser legs into the yoke members 9. As the cuffs 36 contact the gripping surface 31, the movable members 12 and 13 are automatically forced to rotate oppositely against the action of the springs as shown in Fig. 3, thus providing a space for the trousers. The trousers, when released, are firmly held in the garment hanger due to both the action of the springs 11 and the pull of gravity or force exerted which tends to draw the trousers away from the rod 7, actuating the movable members 12 and 13 and causing them to grip in proportion to the stress exerted.

In removing the trousers or the garment from the hanger, the garment is gripped below the hanger, and one or both of the movable members 12 and 13 at each end of the hanger is rotated in the directions indicated by the arrows 37 and 38 in Fig. 3, thereby releasing the trousers.

The movable members 12 and 13 may be easily and quickly removed from the shaft, if such action is desired. In order to remove the movable members 13 from the shaft 10, the assembly operation is reversed. That is, the movable member 13, Fig. 2, is forced rearwardly until the front end 28 of the movable member 13 is beyond the outer end 21 of the spring, as shown at 32 in Fig. 4, after which the movable member 13 is rotated until the projecting end 21 of the spring is in alignment with the slot 25, preferably by rotating the member 13 in a direction indicated by the arrow 39, after which the movable member 13 may be moved over the spring 11 and disengaged from the shaft 10. The movable members 12 may be removed in a similar manner.

In Figs. 8 to 10 inclusive, the invention is embodied in a gripping means adapted to secure blankets and the like to a crib or bed by means of a cord 40. The frame 41 is formed as shown in said figures to provide shafts 42 and 43 which extend from opposite ends of the frame 41. A blanket may be gripped and released by the movable members 12 and 13 in the same manner as the trousers are gripped and released in the garment hanger as hereinabove described. From the foregoing description in connection with Figs. 1 to 7 inclusive, the construction and operation of this gripping means will be apparent and will therefore not be described herein.

From the foregoing description taken in connection with the accompanying drawings, the uses, advantages and operation of my invention will be readily understood by those skilled in the art to which the invention appertains. While I have described two embodiments of my invention, I desire to have it understood that the forms shown are merely illustrative and that the invention is not to be limited to the details disclosed herein, but is to be accorded the full scope of the appended claims.

I claim is my invention:

1. A spring actuated device comprising a shaft, a coil spring surrounding said shaft, one end of said spring being secured to said shaft and projecting beyond the periphery of the coils of the spring, the opposite end of said spring being free from said shaft and projecting beyond the periphery of the coils of the spring, a movable member having a bore through which said shaft and spring extend, a slot in said bore adapted to receive one of the projecting ends of said spring during insertion of said spring in said bore, the projecting portion of the secured end of said spring engaging an end of said movable member to limit movement of said movable member axially of said shaft, and means securing the projecting portion of the free end of said spring against rotation relative to said movable member.

2. A spring actuated device comprising a shaft, a coil spring surrounding said shaft, one end of said spring being secured to said shaft and projecting beyond the periphery of the coils of the spring, the opposite end of said spring being free from said shaft, a movable member having a bore through which said shaft and spring extend, a slot in the wall of said bore and extending the full length of said bore adapted to receive the projecting end of said spring during insertion of said spring in said bore, a recess at one end of said bore having positioned therein the projecting portion of the secured end of said spring to secure said movable member against longitudinal movement along said shaft, and means at the opposite end of said movable member securing the free end of said spring against rotation relative to said movable member.

3. A spring actuated device comprising a shaft, a coil spring surrounding said shaft, one end of said spring being secured to said shaft and projecting beyond the periphery of the coils of the spring, the opposite end of said spring being free from said shaft, a movable member having a bore through which said shaft and spring extend, the projecting portion of the secured end of said spring engaging an end of said movable member to limit movement of said movable member axially of said shaft, and means at the opposite end of said movable member securing the free end of said spring against rotation relative to said movable member.

4. A spring actuated device comprising a pair

of shafts in fixed parallel relationship, a movable member eccentrically mounted on each shaft for oscillating movement thereon, each of said movable members having a bore therein through which its respective shaft extends, a coil spring within said bore and surrounding the shaft, said coil spring having one of its ends fixed to the shaft and projecting beyond the periphery of the coils of said spring into engagement with one end of said movable member to limit longitudinal movement of said movable member along said shaft, the opposite end of said spring being free from said shaft, and means for securing the free end of said spring against rotation relative to

said movable member, said springs being operative to urge said eccentrically mounted movable members toward each other.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
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1,022,015	Woodring	Apr. 2, 1912
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