

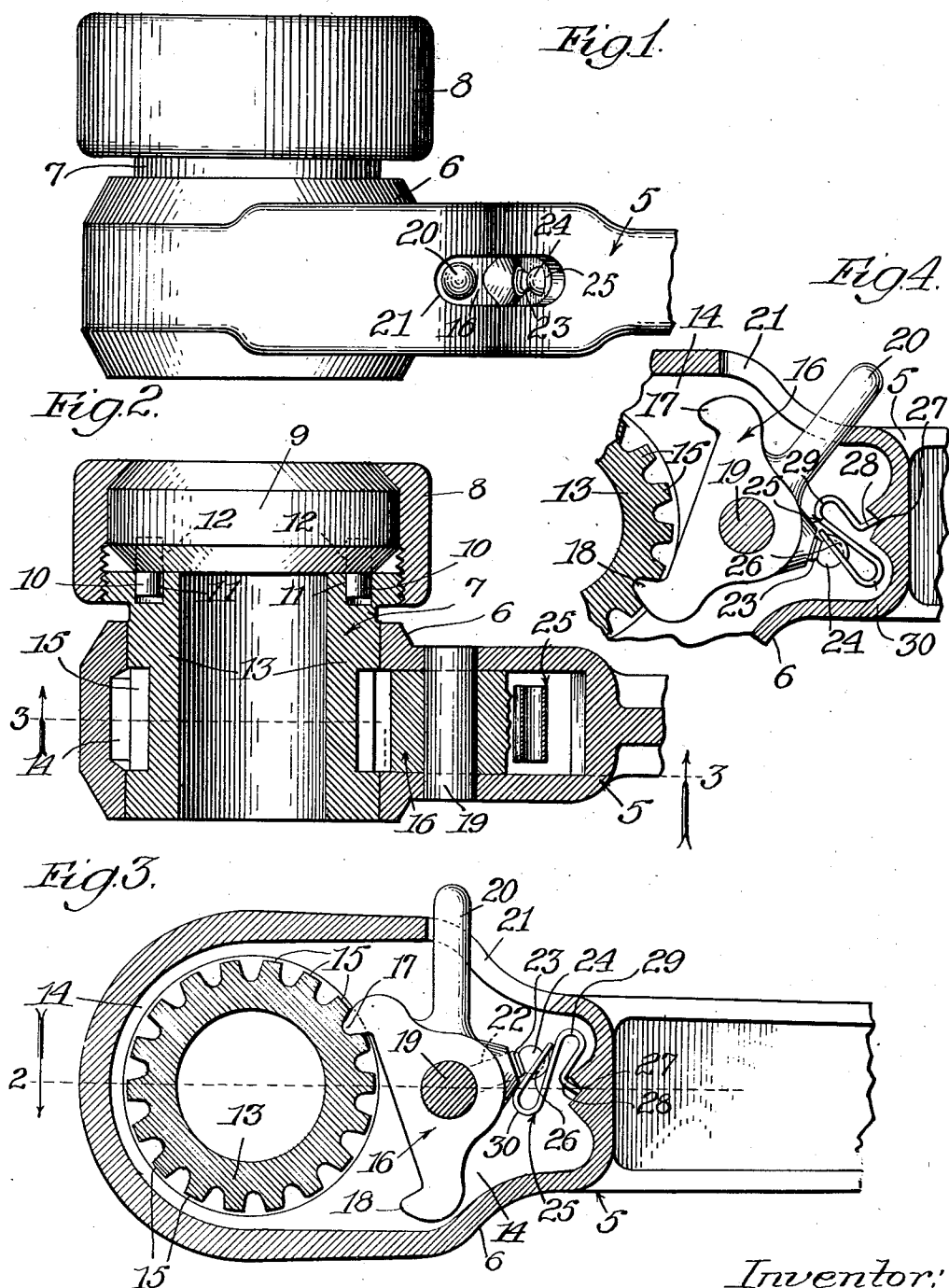
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TOGGLE CONTROLLED MECHANISM

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## TOGGLE CONTROLLED MECHANISM

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1 Claim. (Cl. 74-157)

My invention relates, in general, to toggle controlled mechanism involving a rock member to be yieldingly held in either of two positions to which it is actuated, such as is provided in ratchet stocks, electric switches, etc.

My objects generally stated are to provide a novel, simple and inexpensive construction of toggle controlled mechanism; to provide a compact construction requiring that a small amount only of space be occupied by the spring; and other objects as will be manifest from the following description.

I devised my invention for incorporation more particularly, though not exclusively, in a two-way ratchet stock, and have therefore chosen to illustrate it as embodied in such a device.

Referring to the accompanying drawing:

Figure 1 is a fragmentary view in side elevation of a two-way ratchet stock in which my invention is embodied.

Figure 2 is a fragmentary view in longitudinal sectional elevation of the device, the section being taken at the line 2 on Fig. 3 and viewed in the direction of the arrow.

Figure 3 is a fragmentary plan sectional view of the device, the section being taken at the irregular line 3-3 on Fig. 2 and viewed in the direction of the arrows, the double acting pawl device being shown as adjusted to one position for rotating the threading die of the stock in one direction; and

Figure 4, a view like Fig. 3 showing the pawl device adjusted to another position for rotating the threading die in the other direction.

The particular construction shown comprises a lever or handle portion 5 by which the device is operated, the lever having a hollow head 6 open at its opposite sides to receive, and journal therein, a ratchet head 7 provided exteriorly at its upper end with a ring 8 threaded thereon for holding a die block 9 in place on the head 7. The dowels 10 on the head 7 and entered in openings 11 therein and in openings 12 in the die block 9 insure rotation of the head 7 and die block as a unit.

The shank 13 of the ratchet head 7, coincident with the chamber 14 within the head 6 is provided with an annular series of ratchet teeth 15 for engagement by a ratchet pawl device for rotating the ratchet head 7.

The ratchet pawl device which is located within the chamber 14, is represented at 16 and has two spaced apart dogs or pawls 17 and 18 for selectively engaging the ratchet teeth 15.

The device 16 is pivotally supported at a point

midway between the pawls 17 and 18, on a pin 19 secured to the head 6 and has a handle portion 20 which extends through an elongated slot 21 in the head 6 and by which the pawl device may be thrown from one to the other of its operative positions.

The pawl device 16 has a socket 22 which is disposed at substantially a right angle to the plane in which the terminal ends of the pawls 17 and 18 extend and in this socket is secured a pin 23 having a spherical head 24 at its outer end.

Interposed between the pin 23 and an adjacent end wall of the chamber 14 which serves as an abutment is a band spring 25 of convoluted form, the spring 25 engaging the abutment and pin 23 in compression thereby exerting a pushing action against the pin for yieldingly holding the pawl device 16 in either of its two-way positions, the end of the spring at which it engages the pin 23 being formed with a spherical socket 26 into which the spherical portion 24 of the pin 23 extends, affording a ball joint between the pin and spring.

The above referred to abutment-forming surface of the end wall of the chamber 14 is provided in the plane in which the longitudinal axes of the ratchet head and the pawl device 16, are located, and is of substantially V-shape as represented at 27 to receive the outwardly bent end 28 of the spring 25.

The spring 25 is made of a relatively long wide strip of spring metal, as for example clock spring steel, the spring being made of a relatively long strip to afford to the spring great flexibility and wide to render it strong, it being preferably formed to provide between its terminal ends convolutions 29 and 30 extending in opposite directions, permitting the spring to be made of a long strip and still be comparatively narrow in a direction crosswise of its convolutions to permit it to properly function in a narrow space.

The parts of the structure are so proportioned and arranged as shown as to render either pawl 17 and 18 effective to rotate the ratchet head 7 in swinging the lever handle on the head 7 to rotate the head 7 in the desired direction.

In one position of the pawl device 16, namely, in the position in which the pawl 17 is rendered active to rotate the ratchet head 7 in counter-clockwise direction in Fig. 3, the pawl device and spring would occupy the positions as shown in this figure in which the point of engagement of the spring with the pin 23 and the pawl 17 are disposed at the same side of the plane in which

the pivotal axis of the pawl device and the point of engagement of the spring end 28 with the bottom of the notch 27, extends, the pawl 17 idling past the ratchet teeth 15 when the lever 5 is swung in clockwise direction.

When the pawl device 16 is swung by the operator by means of the handle lever 20 to its other position, namely, to a position in which the pawl 18 is rendered active to rotate the ratchet head 7 in clockwise direction, the parts become positioned as shown in Fig. 4, in which position the point of engagement of the spring with the pin 23 moves through the plane in which the pivotal axis of the pawl device 16 and the point of engagement of the spring end 28 with the bottom of the notch 27, extends and becomes positioned at the same side of said plane as that at which the pawl 18 is located, the pawl 18 idling past the ratchet teeth 15 when the lever 5 is swung in counterclockwise direction.

In ratchet stocks in particular it is highly advantageous to provide a spring which shall exert force for yieldingly urging the active pawl into engagement with the ratchet teeth 15 with the desired pressure and still will require a relatively small space only to receive it, this being accomplished by my construction of spring which is relatively narrow in a direction crosswise of its convolutions and in either of the two-way positions of the parts exerts its force against the pin 23 at an angle to the longitudinal axis of this pin closely approaching a right angle.

As will be understood, the pawl device 16 when rocked to neutral position is out of engagement at both of its pawls 17 and 18 with the teeth 15, 35

thereby permitting the ratchet head 7 to be inserted to place in the head of the lever 5 or withdrawn therefrom, as desired. When the pawl device 16 is in a position in which either pawl is in engagement with the ratchet teeth, the active pawl prevents the ratchet head from becoming accidentally separated from the lever handle as the teeth are inset from the periphery of the head as shown.

While I have illustrated and described a particular construction embodying my invention I do not wish to be understood as intending to limit the invention thereto as the structure shown may be variously modified and altered and the invention embodied in other forms of structure, without departing from the spirit of my invention.

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

20 Toggle controlled mechanism comprising a rock member, an abutment, and a convoluted toggle band spring in compression interposed between, and engaging, said member and abutment, the part of said member engaged by said 25 spring being of spherical shape and the part of said spring engaging said member being in the form of a socket of spherical shape, said member being movable to positions in which the part of said member against which the spring bears 30 extends at either side of the plane in which the pivotal axis of said member and the point of engagement of said spring with said abutment are located.

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