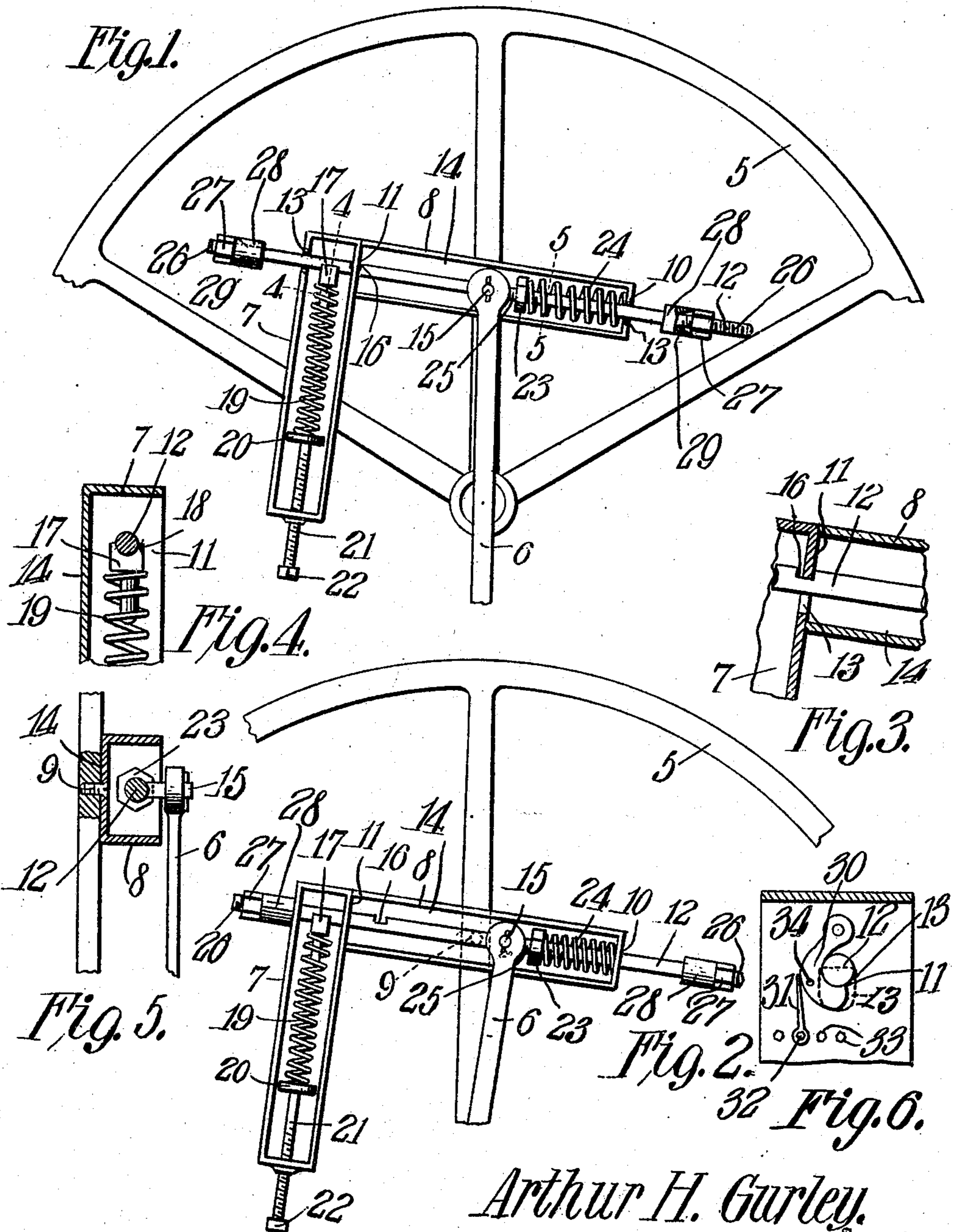


A. H. GURLEY.  
 DEVICE FOR OVERCOMING DEAD CENTERS.  
 APPLICATION FILED NOV. 4, 1907.

919,855.

Patented Apr. 27, 1909.



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# UNITED STATES PATENT OFFICE.

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## DEVICE FOR OVERCOMING DEAD-CENTERS.

No. 919,855.

Specification of Letters Patent.

Patented April 27, 1909.

Application filed November 4, 1907. Serial No. 400,572.

*To all whom it may concern:*

Be it known that I, ARTHUR H. GURLEY, a citizen of the United States, residing at Meridian, in the county of Lauderdale and State of Mississippi, have invented a new and useful Device for Overcoming Dead-Centers, of which the following is a specification.

This invention relates to devices for overcoming dead centers and has for its object to provide improved means for shifting the pitman or driving rod of an engine or other machine to one side of the crank pin thereby to prevent the fly-wheel from stopping on dead center.

A further object is to provide a device of the character described including angularly disposed boxes, one of which is attached to the fly wheel and forms a housing for a spring actuated rod, said rod being slidably mounted in one of the boxes and operatively connected with the pitman so as to permit said pitman to be shifted laterally of the fly wheel.

A still further object of the invention is generally to improve this class of devices so as to increase their utility, durability and efficiency.

Further objects and advantages will appear in the following description, it being understood that various changes in form, proportions and minor details of construction may be resorted to within the scope of the appended claims.

In the accompanying drawings forming a part of this specification: Figure 1 is a side elevation of a portion of a fly wheel provided with an attachment constructed in accordance with my invention. Fig. 2 is a similar view showing the rod shifted laterally in the box or casing. Fig. 3 is an enlarged longitudinal sectional view showing the manner of locking the rod in engagement with the adjacent box casing. Fig. 4 is a vertical sectional view taken on the line 4—4 of Fig. 1. Fig. 5 is a similar view taken on the line 5—5 of Fig. 1. Fig. 6 is a side elevation partly in elevation illustrating a detail of a modified form of the invention.

Similar numerals of reference indicate corresponding parts in all of the figures of the drawings.

The improved device forming the subject matter of the present invention may be attached to the fly wheel of an engine, sewing machine, lathe or other machine and by way of illustration is shown mounted on the fly

wheel of an engine of the ordinary construction in which 5 designates the fly wheel and 6 the pitman.

The attachment consists of angularly disposed boxes or casings 7 and 8, one of which is disposed at an angle to the horizontal diameter of the fly wheel and rigidly secured to one of the spokes of the latter in any suitable manner, as by a screw or similar fastening device 9. The casing 8 is provided with oppositely disposed end walls 10 and 11 having aligned openings 13 formed therein and also in the adjacent side wall of the box or casing 7, the latter being preferably disposed at right angles to the casing 8 and rigidly secured to said casing, as shown.

One side of each box or casing is open, while the opposite side thereof is closed by a back plate or member 14, preferably extending the entire length of the box and which may be secured to or formed integral with the body of the box, as desired. Extending laterally from the intermediate portion of the rod 12 is a crank pin 15 on which is pivotally mounted a driving rod or pitman 6. One end of the rod 12 is formed with a locking notch or recess 16 adapted to engage the upper wall of the opening 13 in the rear wall 11, this opening being elongated to permit a slight vertical movement of the rod 12, as will be more fully explained hereinafter. As a means for normally locking the rod 12 against longitudinal movement, a suitable catch 17 is mounted in the box or casing 7 and provided with a curved contact face for engagement with the adjacent surface of the rod 12, said catch being yieldably supported in engagement with the rod by means of a coiled spring 19. The coiled spring 19 is interposed between the catch 17 and an adjustable plate or stop 20 slidably mounted in the casing 7, said stop being provided with a threaded shank 21 which extends through a corresponding opening in the adjacent end wall of the casing 7 and is provided with a terminal angularly disposed head 22 by means of which the screw 21 may be rotated to vary the tension of the spring and thus regulate the pressure exerted on the rod 12 by the catch 17.

Interposed between the end wall 10 of the casing 8 and a nut 23 is a coiled spring 24 which serves to return the rod 12 to normal position after the same has been retracted. The nut 23 engages suitable threads 25

formed on the intermediate portion of the rod 12 so that by adjusting the nut longitudinally of the rod the tension of the spring 24 may be varied. The opposite ends of the rod 12 are also preferably threaded at 26 for engagement with suitable nuts 27, which latter serve to limit the longitudinal movement of said rod.

Slidably mounted on the rod 12 and interposed between the nuts 27 and the adjacent exterior walls of the boxes 7 and 8 are sleeves or collars 28 having their interior walls cut away at 29 so as to clear the adjacent threads on the rod, said collars serving to prevent the threads 26 from coming in contact with the wall of the opening 13 and stripping or otherwise mutilating the threads as the rod travels back and forth within the boxes. It will thus be seen that when the pitman 6 is on dead center, the downward pressure exerted on the pin 15 by said pitman will press the notched end of the rod 12 downwardly against the tension of the spring 19 thus releasing the notch 16 from engagement with the wall of the opening 13 so that the rod together with the pitman may slide longitudinally of the casing 8 and thus prevent the fly wheel from stopping on dead center. When the pitman travels in the opposite direction the tension of the spring 24 will force the rod 12 in the direction of the box or casing 7 until the notch 16 engages the wall of the opening 13 when the tension of the spring 19 will force said notch in engagement with the wall of said opening and thus prevent further movement of the rod 12.

It will of course be understood that the tension of the springs will be so adjusted that under ordinary conditions the rod 12 will be locked against longitudinal movement, but when the engine stops with the pitman 6 on dead center the pressure exerted by the pitman on the rod will actuate the device, in the manner before described.

In Fig. 6 of the drawings there is illustrated a modified form of the invention in which the spring 19 and catch 17 are dispensed with. In this form of the device a locking pawl 30 is disposed within the box 7 with one end thereof pivoted to the end wall 11 of the box 8 at the opening 13 and with its free end bearing against the rod 12, said pawl being yieldably supported in engagement with the rod by a leaf spring 31. The leaf spring 31 is secured to the box 7 by a bolt 32 which engages any one of a series of angular openings 33 formed in the box 7 so that by inserting the bolt in the different openings the position of the lower or fixed end of the spring may be varied with respect to the pawl thereby to regulate the pressure exerted by the spring on said pawl. The locking pawl is also provided with a pin or finger piece 34 by means of which the pawl may be swung laterally against the tension

of the spring 31 when it is desired to release the rod 12 from the locking recess 16.

Should the pitman stop on dead center the operator grasps the finger piece or pin 34 and swings the locking pawl laterally so as to disengage said pawl from the rod 12, the downward pressure exerted on the pin 15 by the pitman serving to release the notched end of the rod thereby to permit the rod together with the pitman to slide longitudinally within the casing 8 until the pitman passes beyond dead center. When the pawl 30 is released the spring 31 will cause said pawl to exert an upward pressure on the rod 12 and thus force the notch 16 into engagement with the wall of the slot 13, thereby to lock said rod against longitudinal movement.

Having thus described the invention what is claimed is:

1. The combination with a fly wheel and pitman, of a casing secured to the fly wheel and provided with alined openings, a spring actuated rod extending longitudinally of the casing and slidably mounted in said openings, and a pin extending laterally from the rod for connection with the pitman.

2. The combination with a fly wheel and pitman, of a casing secured to the fly wheel, a spring actuated rod slidably mounted in the casing, a pin extending laterally from the rod for connection with the pitman, and means for normally locking the rod against longitudinal movement.

3. The combination with a fly wheel and pitman, of a casing secured to the fly wheel and provided with oppositely disposed alined openings, a spring actuated rod carried by the casing and slidably mounted in said openings, a pin extending laterally from the rod for connection with the pitman, and means for normally and yieldably supporting the rod in engagement with the wall of one of the openings.

4. The combination with a fly wheel and pitman, of a casing secured to the fly wheel and provided with oppositely disposed alined openings, a spring actuated rod slidably mounted in said openings and provided with a locking notch adapted to engage the wall of the adjacent opening, a pin extending laterally from the rod for connection with the pitman, and yieldable means for retaining the locking notch in engagement with the wall of said opening.

5. The combination with a fly wheel and pitman, of a casing secured to the fly wheel and provided with angularly disposed arms, a spring actuated rod slidably mounted in one of the arms of the casing, a pin extending laterally from the rod for connection with the pitman, and means carried by the opposite arm of the casing for normally locking the rod against longitudinal movement.

6. The combination with a fly wheel and pitman, of a casing secured to the fly wheel

and provided with angularly disposed arms one of which is formed with alined openings, a spring actuated rod slidably mounted in one of the arms and piercing the adjacent wall of the opposite arm of the casing, a locking notch formed in the rod and adapted to engage the wall of one of the openings, and a spring bearing against the rod for yieldably retaining the locking notch in engagement with said wall.

7. The combination with a fly wheel and pitman, of a casing secured to the fly wheel and provided with angularly disposed arms, a spring actuated rod slidably mounted in one of the arms of the casing, a pin extending laterally from said rod for connection with the pitman, a catch carried by the other arm of the casing for normally locking the rod against longitudinal movement, a spring bearing against the catch, and a threaded rod engaging the spring and extending through the end wall of said arm for adjusting the tension of the spring.

8. The combination with a fly wheel and pitman, of a casing secured to the fly wheel and provided with angularly disposed arms one of which is formed with alined openings, a rod slidably mounted in said openings and

provided with a locking notch adapted to engage the wall of one of the openings, a nut threaded on the rod, a spring interposed between the nut and the adjacent wall of said arm, and a spring actuated member slidably mounted in the other arm of the casing for yieldably supporting the locking notch in engagement with the wall of said opening.

9. The combination with a fly wheel and pitman, of a casing secured to the fly wheel and provided with alined openings, a spring actuated rod slidably mounted in said openings and having its opposite ends threaded, stops engaging the threads on the rod for limiting the longitudinal movement of said rod, a connection between the pitman and rod, and spacing collars interposed between the stops and the adjacent walls of the casing and having their interior walls inclined to clear the adjacent threads.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

ARTHUR H. GURLEY.

Witnesses:

WALKER D. ROBERTS,  
W. E. BAKER.