C. D. DERBY.

PAWL.

APPLICATION FILED APR. 5, 1919.

1,314,735. Patented Sept. 2, 1919.

Fig. 1.

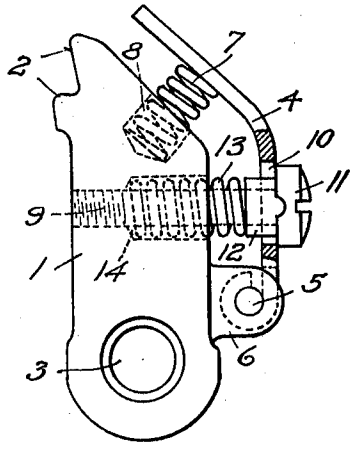


Fig. 2

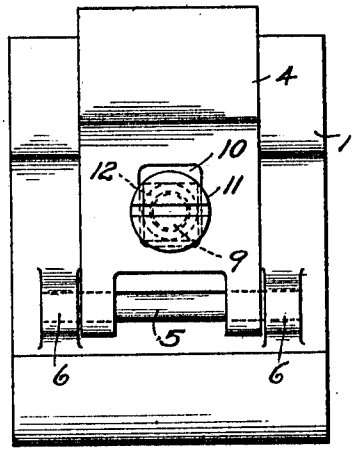


Fig. 3.

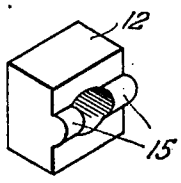
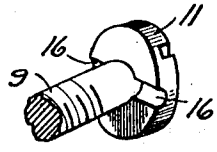


Fig. 4.



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PAWL.

1,314,735. Specification of Letters Patent. Patented Sept. 2, 1919.

Application filed April 5, 1919. Serial No. 287,805.

To all whom it may concern:

Be it known that I, CHARLES D. DERBY, a citizen of the United States, residing at Dayton, in the county of Montgomery and State of Ohio, have invented certain new and useful Improvements in Pawls, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to pawls, and it is designed more particularly for use in connection with lifting jacks and similar mechanisms.

In lifting jacks and other mechanisms in which a pawl coöperates with a rack, either to impart movement thereto or to hold the same against reverse movement, the pawl is sometimes provided with an actuating member or cam plate which is yieldably connected with the pawl and which serves to press the pawl into, and hold the same in, engagement with the rack. The actuating member is adjustable relatively to the body of the pawl in order that the point at which the pawl engages the rack may be regulated. The best method of securing this adjustment is by means of a screw, but it has been found in practice that due to the movement of the actuating member and vibration of the pawl, the screw will work loose, thus altering the adjustment during the operation of the mechanism. Various methods of preventing this undesired movement of the screw have been tried out, but they have been unsatisfactory, either because they do not accomplish the purpose desired, or because they interfere with the ready adjustment of the actuating member.

One object of the invention is to provide means which will prevent the accidental movement of the screw without interfering with its adjustment.

It is also an object of the invention to provide a device for so preventing the movement of the screw which will be very simple in its construction and operation, and which can be embodied in the pawl at a slight expense.

It is also an object of invention to so construct the pawl as a whole as to enable the invention to be applied thereto without in any way interfering with or modifying its operation.

In the accompanying drawings, Figure 1 is a side elevation, partly broken away, of a pawl embodying my invention; Fig. 2 is a rear elevation of such a pawl; Fig. 3 is a detail view of the detent block; and Fig. 4 is a detail view of the head of the screw which coöperates with the detent.

In these drawings, I have illustrated one embodiment of my invention, and have shown the same as applied to a pawl designed to coöperate with the ratchet wheel of a lifting jack of a certain type. It will be understood however, that the pawl can with little or no modification be used in connection with racks of various kinds, either straight or curved, and further that this pawl is not limited in its use to lifting mechanism, but may form a part of mechanisms of various kinds. Inasmuch as the lifting mechanism forms no part of the invention, and its illustration is not necessary to an understanding of the invention, it has been omitted from the present drawing.

In that form of the invention here illustrated, the pawl comprises a body portion 1, having at one end a double nose 2 to engage the teeth of the rack and having, near its opposite end, an opening 3 to receive a pin by means of which the pawl is pivotally mounted on the supporting structure. Mounted upon the rear face of the pawl is a yieldable actuating member or cam plate 4, which as here shown is pivotally mounted upon the pawl at that end adjacent to the axis of the pawl, and has its other end extending obliquely to the length of the pawl, and in the present arrangement, this oblique portion of the cam plate is substantially parallel with the beveled surface of the forward end of the pawl. It will be understood, however, that this actuating member, or cam plate, may be of any suitable shape to adapt it to accomplish its purpose with the particular pawl to which it is applied. When the pawl constitutes a driving member by means of which movement is imparted to the rack, it is mounted upon a movable part of the mechanism, such as a lever, and the movement of the pawl will bring the cam plate or actuating member into engagement with a fixed part of the mechanism, such as a pin, which will cause the nose of the pawl to be moved into engagement with the rack, and will hold the same in engagement therewith until reverse movement is imparted to the pawl. If the pawl is a detent pawl, to prevent the rearward movement of the rack,

the body portion 1 thereof will be pivotally mounted on a fixed part of the structure, and the actuating member or cam plate will be engaged by a moving part of the mechanism, such as a projection on the operating lever, which will serve to move the nose of the pawl into engagement with the rack and hold the same in such engagement for the desired length of time. The cam plate may be movably mounted on the body of the pawl in various ways. Preferably it is pivotally mounted on a pin 5 mounted in lugs 6 formed on the rear surface of the pawl near the pivoted end thereof. The movement of the actuating member or cam plate toward the body of the pawl is resisted by a suitable spring which may be applied to the plate in any desired manner. As here shown, the spring is in the form of a coil spring 7, which is seated in a recess 8 in the beveled end of the pawl, and bears against the inner surface of the oblique portion of the cam plate at substantially the point at which pressure is applied to the plate. The outward movement of the pawl by the spring is limited by a suitable adjusting device which serves to control the outermost or normal position of the cam plate, and thus enable the point at which it will be engaged by the coöperating part, which actuates the pawl, to be regulated to vary the point at which the pawl will engage the rack. This adjusting device is preferably in the form of a screw 9, which is threaded into the body of the pawl and which extends loosely through an opening 10 in the cam plate, which opening is of a width less than the diameter of the head 11 of the screw. To normally hold the screw against turning movement, I have provided a retaining device which is here shown as a detent collar, or block, 12 slidably mounted upon the shank of the screw and held against rotation about the axis of the screw.

In the construction here shown, the detent block is held against rotation by making the block of a noncircular form and arranging the same within the opening 10, which is also noncircular in shape, and, in the present instance, both the block and opening are substantially rectangular in shape. The detent block is yieldably mounted upon a shank of the screw, and as here shown, is held in its outermost position, adjacent to the screw head, by a spring 13 which is coiled about the shank of the screw and is seated in a recess 14 in the body of the pawl and has its outer end in engagement with the detent block. The detent block and the head of the screw are provided with coöperating parts which serve to normally hold the screw against movement relatively to the detent block, but which can be separated, to permit the screw to turn, by the application of positive force to the screw. Preferably one of the parts, in the present instance the detent block, is provided with a projection 15 having its edge inclined or curved and adapted to enter a correspondingly shaped recess 16 in the inner face of the screw head. The spring 13 will force the detent block outwardly and hold the projection 15 in the recess 16 with sufficient force to prevent any accidental turning of the screw, but if positive force is applied to the screw, as by means of a screw driver or other implement, the edge of the recess will ride over the inclined edge of the projection and force the detent block inwardly, thus carrying the projection out of the recess and permitting the screw to rotate. When the screw has completed a half rotation, the detent will again enter the recess. As many half rotations may be imparted to the screw as are necessary to secure the required adjustment, and at the end of the adjustment the projection will again be seated in the recess and the screw held against the turning movement, provided, the screw has completed its half rotation. If the screw is not moved through to a complete half rotation, and is left with the projection 15 riding on the inner surface of the screw head and not seated in the recess 16, the projection will be automatically seated in the recess as soon as the screw has been moved through the remainder of its half rotation, and this small movement of the screw will not be sufficient to materially affect its adjustment.

The operation of the device will be readily understood from the foregoing description, and it will be apparent that I have provided a very simple means for preventing the accidental rotation of the adjusting screw, and that this means is of such a character that it will not interfere with the adjustment of the screw, but that the latter can be adjusted at will by the simple application of sufficient force to unseat the detent. The device is very simple in its construction, and can be applied to the pawl at a small cost.

It will be further apparent that I have so constructed the pawl as a whole that the adjusting screw can be controlled without in any way interfering with the normal operation of the pawl, and further that I have so arranged the spring for yieldably supporting the cam plate that it will have a maximum efficiency.

While I have shown and described one embodiment of my invention, I wish it to be understood that I do not desire to be limited to details thereto as various modifications may occur to a person skilled in the art.

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

1. The combination with a pawl and an operating member movably mounted thereon,

of an adjusting screw for said movable member and means to resist the turning movement of said screw.

2. The combination with a pawl and an operating member movably mounted thereon, of an adjusting screw for said movable member and a yieldable device to resist the turning movement of said screw.

3. The combination with a pawl and an operating member movably mounted thereon, of an adjusting screw for said movable member, and a detent yieldably mounted on said screw and held against rotation about the axis thereof, said detent and said screw having coöperating parts to hold said screw normally against rotation relatively to said detent.

4. The combination with a pawl and an operating member movably mounted thereon, of an adjusting screw for said movable member comprising a head, a detent member slidably mounted on the shank of said screw and held against rotation relatively thereto, said detent member and the head of said screw having parts coöperating to hold the said screw normally against rotation relative to the said detent member, and a spring to resist the movement of said detent member away from the head of said screw.

5. The combination with a pawl and an operating member movably mounted thereon and having a noncircular opening therein, of an adjusting screw mounted in the body of said pawl, extending through said opening and having a head of a diameter greater than the width of said opening, a noncircular block slidably mounted on the shank of said screw and arranged within the opening in said operating member, said block and the head of said screw having coöperating parts to hold the screw normally against rotation relative to said block, and a spring acting on said block to hold said parts yieldably in engagement one with the other.

6. The combination with a pawl and an operating member movably mounted thereon and having an opening therein, of an adjusting screw mounted in said pawl, extending through the opening of said operating member and having a head of a diameter greater than the width of said opening, said head of said screw having a recess therein, a block slidably mounted on the shank of said screw and arranged within the opening in said operating member, said block and said opening being so shaped as to hold said block against said rotation about the axis of said screw, said block having a projection adapted to enter the recess in the head of said screw, and a spring tending to move said block toward the head of said screw.

7. The combination with a pawl having a beveled end portion, an operating plate pivotally mounted on said pawl and having its free end arranged substantially parallel with the beveled surface of said pawl, and a spring seated in the beveled surface of said pawl and engaging said operating plate to resist its movement toward said pawl, of an adjusting screw extending through said operating plate and having a head to engage said plate and limit its outward movement, said head having a recess in the inner face thereof, a detent block slidably mounted on said screw and having a projection adapted to enter the recess in the head of said screw, said detent block being held against rotation about the axis of said screw, and a spring confined between said pawl and the detent block to move the latter toward the head of said screw.

8. In a device of the character described, a screw having a head provided with a recess in the inner face thereof, and a detent slidably mounted on said screw, held against rotation about the axis of said screw and having a part adapted to enter the recess in said head, and a spring tending to hold said part of said detent in said recess.

9. In a device of the character described, a screw having a head, a detent slidably mounted on said screw and held against rotation about the axis thereof, and a spring acting on said detent to move the same toward the head of said screw, said detent and the head of said screw having parts coöperating to hold said screw against rotation relatively to said detent.

10. The combination with a pawl and an operating member movably mounted thereon, of an adjusting device for said operating member and means for locking said adjusting device normally against movement.

11. The combination with a pawl, an operating member movably mounted thereon, and a spring tending to move said operating member away from said pawl, of a stop adjustably mounted on said pawl to limit the movement of said operating member by said spring, and means for holding said adjusting device normally against movement.

In testimony whereof, I affix my signature hereto.

CHARLES D. DERBY.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."