No. 835,197. PATENTED NOV. 6, 1906.

W. N. PARKES.

RATCHET MECHANISM.

APPLICATION FILED JAN. 14, 1903.

Fig. 3.

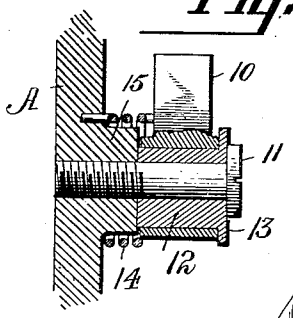


Fig. 1.

Fig. 4.

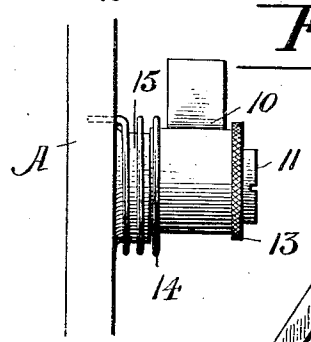


Fig. 2.

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RATCHET MECHANISM.

No. 835,197. Specification of Letters Patent. Patented Nov. 6, 1906.

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To all whom it may concern:

Be it known that I, WILLIAM N. PARKES, a citizen of the United States, residing in Brooklyn, county of Kings, and State of New York, have invented a new and useful Improvement in Ratchet Mechanisms, of which the following is a description.

My invention relates to pawl-actuated mechanisms, and particularly to means for properly positioning pawls relative to the individual teeth upon which they operate.

An object of my invention is to provide a means simple in character and effective for adjusting the position of detent or stop pawls upon their axes, so as to compensate for wear upon the contact-surfaces of the pawls and also for adjusting their position relative to the teeth of ratchets, whereby accuracy and certainty of action may be obtained in a given train of mechanism.

Another object of my invention is to provide means for adjusting detent or stop pawls relatively to the teeth of ratchets, so as to secure an accurate and proper engagement between the pawl and ratchet whether the feed of the latter be to the extent of an even or an odd number of teeth.

With these and other objects in view my invention consists in the parts, features, and combinations hereinafter described and claimed.

In the drawings, Figure 1 is an elevation of portions of a train of driving mechanism sufficient to illustrate the application of my invention. Fig. 2 is a similar view showing a different adjustment and relation of the parts. Fig. 3 is a vertical section of the pawl-adjusting means, taken on the line 3 3 of Fig. 1; and Fig. 4 is a side elevation of said pawl mechanism.

Primarily it should be noted that though I have illustrated my invention in connection wit a stop-pawl it is equally applicable and serviceable in connection with detent and actuating pawls, and irrespective of the character of the parts my adjusting means prolongs the life of the pawls, enables proper and accurate adjustments to be made, and provides a certain medium for preventing backlash of the ratchets and for compensating for wear. Again, I have not considered it necessary to show in the drawings more of the train of mechanism, as a single instance of the application of my invention is sufficient to explain its principle.

In Figs. 1 and 2 parts of a train of driving mechanism are illustrated and therein 1 indicates a rotating driving-disk having a diametric groove 2, in which an end of an actuating-pitman 3 may be adjusted in any suitable and usual way. The pitman is suitably connected at 4 to an arm or pawl-lever 5, which latter is suitably pivoted to turn on a shaft 6, which is mounted to turn in suitable bearings. A pivotal pin or screw 4, which has a seat in the pawl-lever, carries an actuating-pawl 7, normally held in contact with the teeth of the ratchet-wheel 8 by means of a spring 9, fastened, respectively, to the pawl and to the arm 5. The ratchet 8 is attached to the shaft 6 and of course actuates the shaft when the said ratchet is rotated.

The stop-pawl is indicated by 10 and is shown pivoted on a screw 11, fastened to any suitably-located fixed part. Surrounding the shank of the screw and within the hub of the pawl is placed an adjustable eccentric 12, having an enlarged head or flange 13, the periphery of which is properly knurled for manipulation and adjustment. The stop-pawl 10 may be kept in engagement with the teeth of the ratchet by any suitable means. For example, I have provided a coiled spring 14, surrounding a short hub 15 on the frame A and one end of which is held in the frame by entering an aperture therein and the other end of which is connected to the pawl.

When the parts are assembled, the stop-pawl 10 is free to turn on the body of the eccentric so as to permit the spring 14 to keep the said pawl in engagement with the teeth of the ratchet in a usual manner. The eccentric after adjustment by manipulating its knurled head 13 is clamped and held in place between the hub 15 and the head of the screw 11, as is clearly shown in Fig. 3.

The above description, taken in connection with the drawings, will sufficiently disclose the preferred structure involved in my invention. It remains, therefore, only necessary to explain several of the many instances in which my invention becomes useful, effective, and important.

It will be clear that if the contact-surface of the pawl becomes worn my invention provides a ready adjusting means to com-

pensate therefor. Furthermore, it may happen that the pawl is so disposed relative to the ratchet that the end thereof does not accurately fall in the throat of the ratchet-teeth. This may be corrected and proper coöperation obtained by sufficiently adjusting the eccentric.

There is a very important advantage in the use of the device herein illustrated in addition to those previously mentioned.

To illustrate, we will assume that the operating-pawl 7 is at the end of its stroke and that the extent of that stroke is an even number of teeth of the ratchet and that the stop-pawl is adjusted so that it just drops back of a tooth in the said ratchet, as shown in Fig. 1. Thus it is seen that under these conditions there will be practically no backlash of the ratchet-wheel on the return stroke of the pawl 7, as the stop-pawl 10 has dropped in just back of a tooth, and thereby prevented the said backlash. Now suppose that the end of the pitman 3 has been moved out into the way 2 of the rotating disk 1, so as to increase the stroke of the actuating-pawl 7 the extent of just one tooth. It is obvious that this increase of movement will be on both sides of a center line, and under these conditions the stop-pawl 10 will drop into the teeth, as shown in Fig. 2, which is obviously wrong, as the face of the said pawl is not in engagement with the face of a tooth of the wheel, as it should be to prevent backward movement of the same. Now when the pawl 7 commences to make its return movement the wheel 8 will turn backward until the face of the stop-pawl 10 engages the face of a tooth of the ratchet. Thus it is seen that when it is desired to change the stroke of the actuating-pawl on each side of a given center line from an odd to an even number of teeth, or vice versa, a single stop-pawl will not give accurate results unless there are means provided for adjusting either the actuating-pawl or the stop-pawl. I prefer to adjust the stop-pawl by means of the eccentric, as described, and have therefore shown my device adapted for this purpose.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. A pawl, a pivotal bearing therefor, and means for adjusting the pawl laterally on and relatively to its pivot.

2. A pawl, a pivotal support therefor, and means between the pawl and its support for adjusting the one on and relatively to the other.

3. A pawl, a pivotal support therefor, and an eccentric disposed so as to provide an adjustment of the pawl on and relatively to its support.

4. A pawl, a pivotal support therefor, an eccentric between the pawl and its support, and means by which the eccentric may be adjusted to change the position of action of the pawl.

5. A pawl, a pivotal support therefor, an eccentric between the pawl and its support, said eccentric having a flange by means of which it may be adjusted for controlling the position of the pawl, and means for setting the eccentric in adjusted position.

6. A pawl, a pivotal support therefor, means between the two for securing a relative adjustment thereof, means for holding said adjustment, and means for yieldingly holding the pawl to its work.

7. A pawl, a pivotal support therefor, an adjustable eccentric between the two, means for setting the eccentric when adjusted, and a spring for maintaining the pawl in operative position.

8. In combination a fixed support, a pivot-pin carried by the support, a pawl, an eccentric between the pawl and pin, and a spring between the support and pawl.

9. A ratchet mechanism including a ratchet, means for actuating the same, a stop-pawl for said ratchet, and means for taking up wear between the coöperating parts of the stop-pawl and the ratchet.

10. A ratchet mechanism including a ratchet and actuating means, means for regulating the throw of the latter, a stop-pawl, and means for maintaining proper coöperation of the ratchet and pawl in any adjustment of the actuating means.

11. A ratchet mechanism comprising a driving-disk, a pitman, an actuating-pawl, a ratchet, a stop-pawl, and means for bodily adjusting the stop-pawl relatively to the ratchet.

12. A ratchet mechanism comprising a toothed wheel and an actuating-pawl adapted to engage the teeth of the same, an eccentric suitably mounted to turn on a bearing, a stop-pawl for the said ratchet-wheel operatively mounted on the said eccentric, means whereby the eccentric may be adjusted on its bearing, and means for locking the eccentric after adjustment.

In testimony whereof I have hereunto signed my name in the presence of two subscribing witnesses.

WILLIAM N. PARKES.

Witnesses:
CHAS. McC. CHAPMAN,
M. B. HOARE.