

(No Model.)

W. N. PARKES.

RETARDING DEVICE FOR RATCHET MOVEMENTS.

No. 585,225.

Patented June 29, 1897.

Fig. 1.

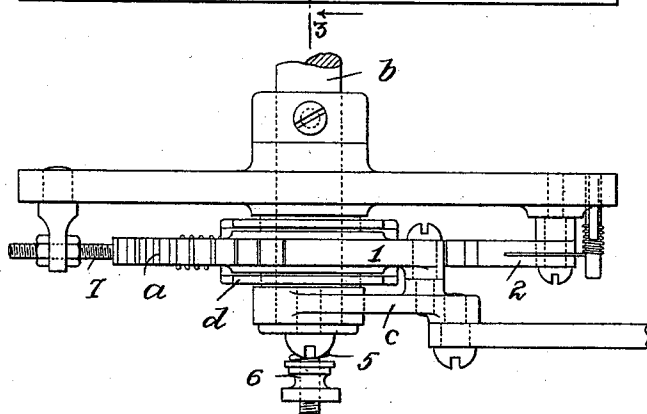
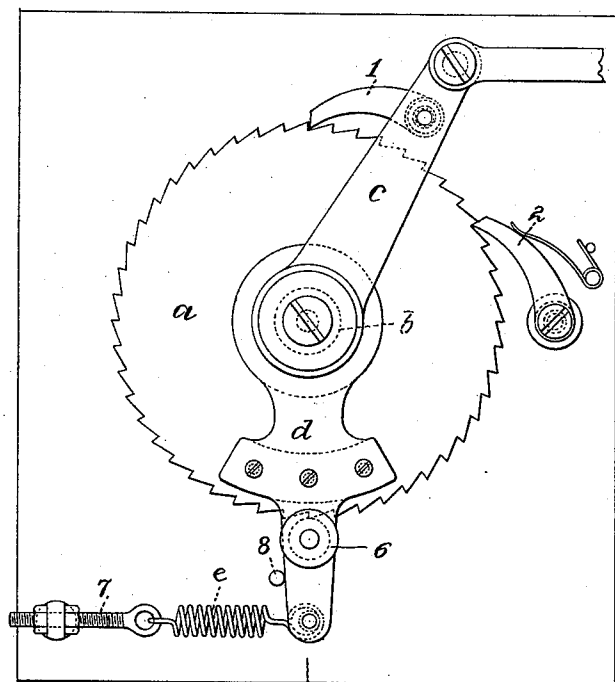
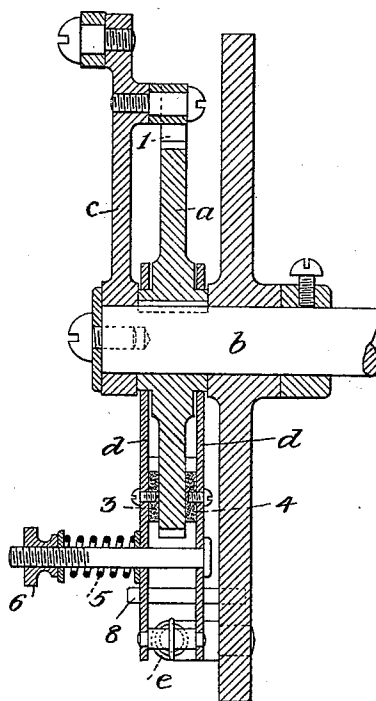


Fig. 2.

Fig. 3.



Witnesses:
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UNITED STATES PATENT OFFICE.

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RETARDING DEVICE FOR RATCHET-MOVEMENTS.

SPECIFICATION forming part of Letters Patent No. 585,225, dated June 29, 1897.

Application filed September 30, 1896. Serial No. 607,381. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM N. PARKES, a citizen of the United States of America, and a resident of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Retarding Devices for Ratchet-Movements, of which the following is a specification.

My invention has reference to improvements in ratchet feeds or movements, and especially to a device for preventing the wheel from jumping or throwing ahead when running at high speeds. It is a well-known fact that when running at high speeds with ordinary ratchet-feeds the momentum of the ratchet-wheel will carry it ahead and thus cause an irregular and inaccurate feed. Assuming, as an example, that the actuating-pawl is set to feed three teeth at each stroke, the momentum will sometimes carry the ratchet-wheel ahead, say two-thirds of a tooth, beyond the stroke of the pawl, so that when the pawl returns for the next actuating stroke it travels the distance of two-thirds of a tooth before engaging the teeth. The contact therefore is in the nature of an impact, so that at this stroke of the pawl the wheel practically gains more than two-thirds of a tooth and the error therefore accumulates. The error of course will increase with increased speeds. The usual method for attempting to overcome this error in the feed has been to apply only a fixed friction to the ratchet-wheel, but this has been found to be ineffective at high rates of speeds or under variable speeds. An excess of friction beyond a certain point strains the pawl-lever and its connections and in this manner again causes an uneven feed. The object of my present invention is to overcome this defect in ratchet-movements, and to this end I combine with the ratchet-wheel a frictional retarding device adapted to act on said wheel and subjected to the action of an elastic pull-back—such, for instance, as a spiral spring—having a tendency to turn the retarding device in a direction opposite to that of the ratchet-wheel. The retarding device therefore tends to hold the corresponding tooth of the ratchet-wheel constantly against the feed-pawl and to turn said wheel against the holding-pawl on the return stroke of the feed-pawl.

The nature of my invention will best be understood when described in connection with the accompanying drawings, in which—

Figure 1 represents a face view of a ratchet-movement embodying my invention. Fig. 2 is a top view. Fig. 3 is a section on the line 3 3, Fig. 1.

Similar letters and numerals of reference designate corresponding parts throughout the several views of the drawings.

Referring to the drawings, the letter *a* designates a ratchet-wheel keyed or otherwise secured to the shaft *b*, to which an intermittent rotary motion is to be imparted.

c is the pawl-lever, adapted to be vibrated in any usual manner about an axis coincident with that of the ratchet-wheel. Said lever is provided with a usual actuating or feed pawl 1.

2 is a usual holding-pawl subjected to the action of a spring and adapted to prevent retrograde motion of the ratchet-wheel.

All of the aforesaid parts may be of any usual construction, as their construction and arrangement form no part of my present invention.

The retarding device I have in the present example shown to consist of a lever *d*, having two arms, swung from the hub of the ratchet-wheel and formed with friction-shoes 3 and 4, made of leather, rubber, or other suitable material adapted for the purpose, said shoes being arranged to bear upon the ratchet-wheel from opposite sides and placed as near as possible to the periphery thereof. The pressure with which the shoes bear upon the ratchet-wheel can be regulated by any suitable adjusting device, such as the spring 5 and the adjusting-nut 6. To the outer end of said lever is attached a spiral pull-back spring *e*, the tension of which can be regulated by a suitable adjusting-screw 7.

8 is a stop against which the retarding device is drawn by the pull-back spring.

The tension of the pull-back spring is so adjusted as to enable the retarding device to turn the ratchet-wheel backward against the existing resistance, and therefore said retarding device will always tend to hold the corresponding tooth of the ratchet-wheel against the feed-pawl and to bring the wheel back against the holding-pawl 2 during the return stroke of the said feed-pawl.

It will now be readily understood that as the actuating or feed pawl turns the ratchet-wheel forward the friction between said wheel and the retarding device carries the latter
 5 along against the resistance offered by the pull-back spring, thereby overcoming to a great extent the forging ahead from the feed-pawl. On the return stroke of the actuating
 10 or feed pawl the retarding device, under the action of the pull-back spring, invariably brings the ratchet-wheel against the holding-pawl 2. If, therefore, owing to any cause the ratchet-wheel should be carried ahead, it
 15 is brought back through the corresponding distance on the return stroke of the actuating or feed pawl, and consequently an accurate and reliable feed is obtained.

By properly regulating the tension of the friction-shoe spring and that of the pull-back
 20 spring the device can be set for different speeds. In view of the fact that the motion of the ratchet-wheel is an intermittent one the tension of the pull-back spring increases with an increased speed and said spring pulls
 25 stronger on the retarding device, thereby compensating for the increased tendency of the ratchet-wheel to throw ahead. In practice I so adjust the tension of the pull-back spring that it will stretch a little under a moderate
 30 rate of speed.

It is of course to be understood that the construction and arrangement of the retarding and tension devices can be varied in many
 35 respects. Therefore I do not wish to restrict myself to the construction shown.

What I claim as new is—

1. The combination with a ratchet-wheel, its actuating device and holding-pawl, of a frictional retarding device acting on said
 40 ratchet-wheel, and a spring acting on said retarding device in a direction opposite to the direction of the rotation of the wheel, substantially as described.

2. The combination with a ratchet-wheel,
 45 its actuating device and holding-pawl, of a

frictional retarding device acting on said ratchet-wheel and provided with means for adjusting the friction, and an adjustable pull-back spring attached to said retarding device, substantially as described.

3. The combination with a ratchet-wheel, its actuating device and holding-pawl, of a lever provided with friction-shoes adapted to engage with the ratchet-wheel from opposite
 55 sides, means for varying the pressure of said shoes upon the wheel, and a pull-back spring acting on said lever, substantially as described.

4. The combination with a ratchet-wheel, its actuating device and holding-pawl, of a
 60 lever having its axis of oscillation coincident with the center of the ratchet-wheel and provided with friction-shoes, and a spring attached to said lever, substantially as described.

5. In a ratchet-movement, a frictional retarding device combined with means for subjecting the same to a force acting in a direction
 65 opposite to the direction of the rotation of the ratchet-wheel, substantially as described.

6. In a ratchet-movement, a frictional retarding device engaging with the ratchet-wheel to participate in part in the rotation
 70 thereof, combined with a pull-back spring acting on said retarding device, substantially as described.

7. The combination with a ratchet-wheel and its actuating device, of a frictional retarding device bearing on the ratchet-wheel,
 80 and an elastic retracting device acting on said retarding device, substantially as described.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of two witnesses, this 28th day of September, 1896.

WILLIAM N. PARKES.

Witnesses:

EUGENIE A. PERSIDES,
 A. FABER DU FAUR, Jr.