

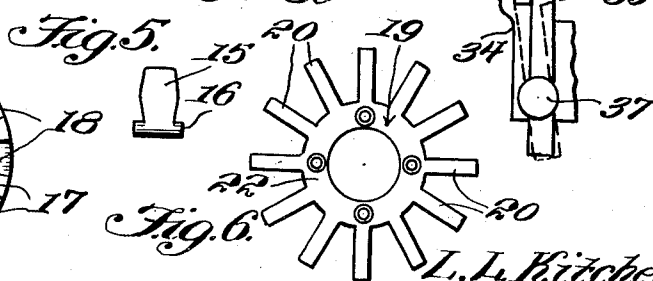
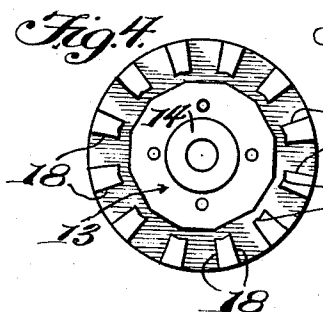
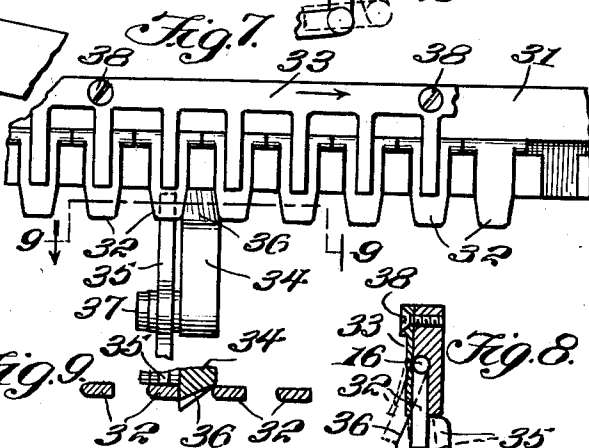
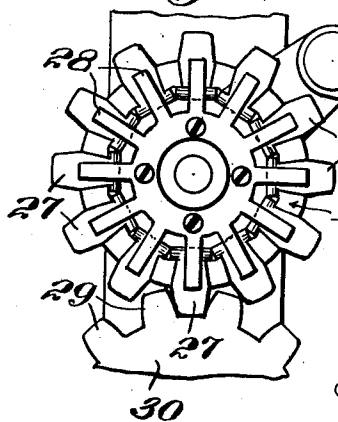
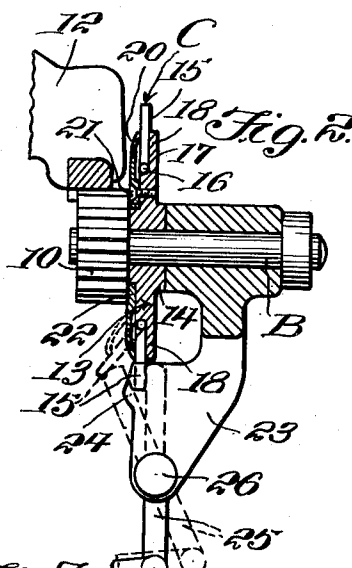
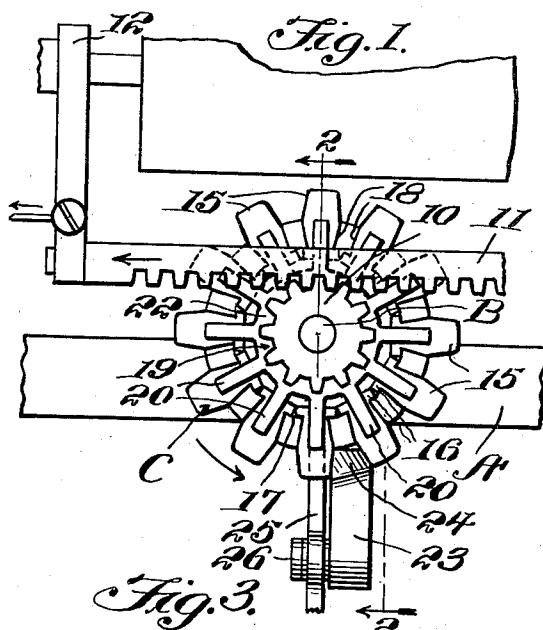
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2,212,692

FLEXIBLE TOOTH GEAR

Filed May 1, 1939



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FLEXIBLE TOOTH GEAR

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5 Claims. (Cl. 74-461)

The invention relates to a flexible tooth gear and more especially to escapement mechanism for use in gear assembly.

The primary object of the invention is the provision of an escapement mechanism of this character wherein there is included a flexible toothed gear so that the timing of the escapement can be varied according to the requirements thereof in its use, the escapement mechanism being especially adaptable for use in typewriters, bookkeeping or billing machines or the like so that character spacing can be regulated in conformity to the requirements of the work.

Another object of the invention is the provision of mechanism of this character wherein the teeth of the gear in association therewith are pivotally supported for lateral swing and are maintained under tension so that a selected tooth can be displaced for escapement purposes in the operation of a machine, the teeth being pivoted for swinging movement in a novel manner.

A further object of the invention is the provision of an escapement mechanism of this character wherein the displacement of the teeth of a gear or rack in association with the escapement mechanism is had in a novel manner and assures successful operation of said mechanism.

A still further object of the invention is the provision of mechanism of this character which is simple in its construction, thoroughly reliable and efficacious in operation, easy of control, positive in action, durable, and inexpensive to manufacture and install.

With these and other objects in view, the invention consists in the features of construction, combination and arrangement of parts as will be hereinafter more fully described in detail, illustrated in the accompanying drawing, which discloses the preferred embodiment of the invention and pointed out in the claims hereunto appended.

In the accompanying drawing:

Figure 1 is a fragmentary rear elevation of the escapement mechanism constructed in accordance with the invention showing the application of the same in association with a typewriter and those parts thereof being shown only as essential to an illustration of a working set up.

Figure 2 is a sectional view taken on the line 2-2 of Figure 1 looking in the direction of the arrows.

Figure 3 is a fragmentary elevation of a modification showing the flexible tooth gear associated with another gear.

Figure 4 is a plan view of the body of the gear, the flexible teeth being removed.

Figure 5 is an elevation of one of the teeth of the gear.

Figure 6 is a plan view of the spring element employed with the gear.

Figure 7 is a fragmentary elevation of another modification of the invention.

Figure 8 is a vertical transverse sectional view thereof.

Figure 9 is a fragmentary sectional view taken on the line 9-9 of Figure 7 looking in the direction of the arrows.

Similar reference characters indicate corresponding parts throughout the several views in the drawing.

Referring to the drawing in detail, particularly Figures 1 and 2, A designates generally a portion of the top plate of the stationary frame of a typewriter and B the shaft carrying the usual escapement wheel for which is substituted the flexible tooth gear C constituting the present invention and hereinafter fully described.

The shaft B has fitted thereon as usual a rack pinion 10 meshing with the feed rack 11 of the shiftable carriage of the typewriter a portion of this carriage being denoted at 12. The shaft B adjacent to the pinion 10 has the flexible gear C fixed thereto and this gear comprises a disc-like body 13 formed with the central hub 14 while next to the outer periphery thereof are laterally swingable teeth 15 provided with inner pivot ends 16, these being accommodated in pivot seats or recesses 17 while the teeth 15 extend radially from the outer periphery of the body 13 through clearances 18 for said teeth so that normally these teeth will lie flush with one side face of the body 13.

Supported on the body 13 is a multiple leaf arm spring 19, its arms 20 overlying the teeth 15 for a distance thereof and sustain the latter under tension and in a normal position. The spring 19 is made secure at 21 to the body 13 of the gear and has a ring-like portion 22 concentric to the hub 14 of said body. The frame of the typewriter having the plate A has built therein a hanger 23 formed with a bevelled abutment 24 which protrudes into the path of the normal lay of the teeth 15 of the gear and these teeth will override the abutment 24 when the carriage 12 is shifted in one direction and such carriage is held against shifting movement in a reverse direction by the engagement of one of the teeth 15 with the said abutment 24 except

when the engaged tooth with the abutment 24 is displaced from normal position mechanically.

For mechanical displacement of selected teeth 15 of the gear there is provided a pivotally supported rocking dog 25 its pivot being at 26 and this dog is operated for engaging a tooth 15 next thereto for the lateral swinging of said tooth and the escapement thereof from the abutment 24, and in this manner the carriage 12 can move without resistance from the displaced tooth 15 until another tooth is in the path of the abutment 24 and makes contact therewith. In this manner the required escapement spacing of character writing upon the typewriter will be had as the travel of the carriage 12 will be controlled by actuating the flexible tooth gear. The teeth 15 when released by the dog 25 under the influence of the arms 20 of the springs 19 will return to normal position and that tooth next to the abutment 24 will make contact therewith and thus holding the carriage 12 immovable in one direction.

In Figure 3 of the drawing there is shown a slight modification of the invention wherein the swingable teeth 27 under tension by the spring 28 will have meshing engagement with the teeth 29 of another gear, a portion thereof being indicated at 30. The teeth 29 are rigid and if it is desired to alter the meshing engagement of these teeth 27 and 29 it is necessary to disengage the tooth 27 meshing with the tooth 29 of the gear 30 so that a change in the meshing engagement of these gears can be had and in this way regulating the timing operation of mechanism in association with said gears.

In Figures 7, 8 and 9 of the drawing there is shown a further modification of the invention, wherein a toothed rack 31 has the teeth 32 thereof pivotally associated with said rack and these teeth are tensioned by the spring 33 so that any selected tooth 32 can be displaced out of the path of the abutment 34 by a kicking dog 35 and in this way escapement of the rack 31 is controlled, the dog 35 being operated in any desirable manner. The abutment 34 is bevelled at 36 allowing the overriding of the same by the teeth 32 when in normal position in the path of the abutment and the free movement of the rack 31 in one direction while said rack is rocked by the teeth 32 engaging the abutment 34 against reverse movement except when a tooth 32 next to this abutment is moved out of the path of the said abutment. The dog 35 is pivoted at 37 for rocking movement enabling the displacement of the teeth 32 when acted upon thereby.

The teeth 15 and 32 are held pivotally connected in their association with the body 13 and the rack 31 by the springs 19 and 33 respectively.

The spring 33 is fastened at 38 to the rack 31 and is of toothed comb formation, being active upon the teeth 32 to hold the same normally in the path of the abutment 34.

What is claimed is:

1. The combination of a member having a de-

termined path of movement, a plurality of spaced teeth substantially flush with one side face of the member for projection beyond one edge and swingable laterally outwardly from said face only of said member, and a pivot end formed on each tooth for its swingable interfitting connection with the member.

2. The combination of a member having a determined path of movement, a plurality of spaced teeth substantially flush with one side face of the member for projection beyond one edge and swingable laterally outwardly from said face only of said member, and a pivot end formed on each tooth for its swingable interfitting connection with the member, the member being formed with a seat for each tooth and pivot end thereof.

3. The combination of a member having a determined path of movement, a plurality of spaced teeth substantially flush with one side face of the member for projection beyond one edge and swingable laterally outwardly from said face only of said member, a pivot end formed on each tooth for its swingable interfitting connection with the member, the member being formed with a seat for each tooth and pivot end thereof, and means engaging the projected area of the tooth beyond one edge of the member for swinging the said tooth laterally.

4. The combination of a member having a determined path of movement, a plurality of spaced teeth substantially flush with one side face of the member for projection beyond one edge and swingable laterally outwardly from said face only of said member, a pivot end formed on each tooth for its swingable interfitting connection with the member, the member being formed with a seat for each tooth and pivot end thereof, means engaging the projected area of the tooth beyond one edge of the member for swinging the said tooth laterally, and a flat springy element carried by the member on that side having the teeth interfitted therewith for exerting tension on the said teeth to hold the latter normally flush with the said member.

5. The combination of a member having a determined path of movement, a plurality of spaced teeth substantially flush with one side face of the member for projection beyond one edge and swingable laterally outwardly from said face only of said member, a pivot end formed on each tooth for its swingable interfitting connection with the member, the member being formed with a seat for each tooth and pivot end thereof, means engaging the projected area of the tooth beyond one edge of the member for swinging the said tooth laterally, and a flat springy element carried by the member on that side having the teeth interfitted therewith for exerting tension on the said teeth to hold the latter normally flush with the said member; the said springy element overlying the seats for the teeth and holding the latter within said seats.

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