

1,066,083.

FIG. 1

FIG. 3.

FIG. 3.

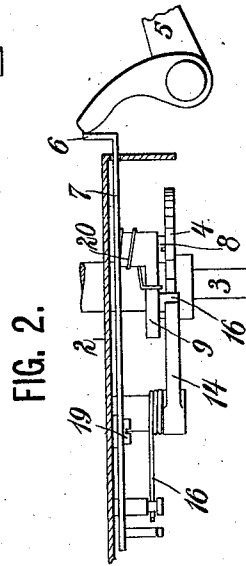


Fig. 2:

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UNITED STATES PATENT OFFICE.

FRANK A. COOK, OF HARTFORD, CONNECTICUT, ASSIGNOR TO UNDERWOOD TYPE-WRITER COMPANY, OF NEW YORK, N. Y., A CORPORATION OF DELAWARE.

TYPE-WRITING MACHINE.

1,066,083.

Specification of Letters Patent.

Patented July 1, 1913.

Application filed December 8, 1911. Serial No. 664,600.

To all whom it may concern:

Be it known that I, FRANK A. COOK, a citizen of the United States, residing in Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a specification.

My invention relates to an overthrow-check for line-spacing mechanism, and is herein illustrated as applied to an Underwood typewriting machine, and comprising a hand lever driving the usual plunger on which is pivoted a pawl, which engages a ratchet wheel on the axle of the platen. Also engaging this ratchet wheel is a spring detent carrying a roller, to rest between the teeth of the ratchet wheel. On a bell crank arm of this detent is formed a cam which coöperates with the end of said pawl, and forces it into the teeth of the ratchet wheel, while at the same time the pressure of the pawl forces the detent in between the teeth of the ratchet wheel. The detent normally holds the platen in alinement, and when the lever is used for line-spacing, the locking of the platen, as accomplished by my invention, brings the platen to precise alinement or position. The harder the space lever is thrown, the more firmly the ratchet wheel is locked. The positive holding of the pawl by the detent arm also prevents overthrow, and thus both the detent and pawl coöperate in preserving the alinement. A spring is provided for holding the pawl against the ratchet wheel, and another spring for returning the plunger to normal. A release arm is also furnished for throwing the detent out of mesh with the ratchet wheel whenever desired.

It will be seen that my invention furnishes absolute means for preventing overthrow of the platen by the space lever, always bringing it to the same alinement as if turned in any other way. Moreover, there are very few parts to my mechanism, and they may be of very substantial construction. They are therefore not easily bent or worn, and the structure is economical to build.

Other objects and advantages will hereinafter appear.

In the accompanying drawings, Figure 1 represents so much of the carriage of an Underwood typewriter as is necessary for

the understanding of my invention, showing the pawl locked at the limit of its throw. Fig. 2 is a fragmentary plan view of the same. Fig. 3 is a similar plan view with the parts in their normal positions.

On the framework 1 of the carriage is the platen shift frame 2 in which is pivoted the platen shaft 3 on which is fixed the ratchet wheel 4. A lever 5 pivoted on the frame 1 carries an arm which bears against the end 6 of a plunger 7 sliding in the shift frame. On this plunger is pivoted at 8 a pawl 9, which engages with the teeth 10 of the ratchet wheel 4, and thus drives it forward. The ratchet wheel 4 is also engaged by a roller 11 on an arm 12, which is pressed against the ratchet-wheel, by a spring 13, thus forming a spring detent. On another arm 14 fixed to arm 13 is formed a cam surface 15, which is arranged to be struck by the end 16 of the pawl 9, and thus positively lock the pawl into engagement with the teeth 10 of the ratchet wheel 4 when it comes to the end of the throw, the end 16 of the pawl also forming a stop to limit the throw of the pawl and plunger. At the same time this cam surface 15 raises the arm 14 and swings the detent arm 13 so that the ratchet wheel is also locked by the roll 11. The plunger 7 is returned to normal position by spring 17 fastened to the shift frame at 18, and is guided by a screw 19 also fast in said shift frame passing through a slot in said plunger. A spring 20 presses the pawl into engagement with the ratchet wheel, and a slide 21 is arranged so that the pawl will ride up on it in part of its back stroke, and thus be kept out of engagement with the teeth 10 on said wheel. This slide is adjustable and by varying the distance the pawl is held out of engagement with the ratchet wheel, the throw of the ratchet wheel in a stroke of lever 5 can readily be varied. An arm 22 is pivoted loosely on the shaft 3, and by means of a handle 23 can be moved so as to throw the detent roll 11 out of engagement with the ratchet wheel by means of a cam surface 24, which bears on a pin 25 on said detent arm.

When the lever 5 is pressed, it forces the plunger in, carries the pawl along the slide till it drops off and engages with the ratchet wheel, thus forcing the ratchet wheel around until the pawl 9 strikes the cam 15. This

forces the pawl strongly into the teeth of the ratchet wheel, and raises the arm 14 to force the detent also into the teeth, thus completely locking the line-spacing mechanism.

5 On the return stroke the detent holds the ratchet wheel in position while the pawl rides easily over the teeth of the wheel. The teeth 10 of the ratchet wheel are so formed that the pawl 9, during most of its travel, bears its front edge 16^a flat against the edge 26 of a tooth, and, at the completion of its throw, its rear side 27 rests flat against the opposite face 28 of a tooth. The cam face 15 of the arm 14 is, when in contact with the pawl, nearly parallel to the face 28 of the tooth against the opposite side of the pawl. In this way there is allowed practically no lost motion after the pawl comes in contact with the cam face, while at the same time the camming effect in raising the arm 14 of the detent is considerable. Any tendency of the ratchet wheel to overthrow raises pawl 9, increases this camming and accordingly locks the detent more firmly against the ratchet wheel. Since the face of the cam and the face of the tooth 28 are parallel the pawl will draw back easily, for the faces cannot bind the pawl.

30 Variations may be resorted to within the scope of the invention, and portions of the improvements may be used without others.

Having thus described my invention, I claim:

35 1. A line-spacing mechanism comprising a ratchet wheel, a pawl, means for driving the pawl, a bell crank mounted with relation to the ratchet wheel so that when either arm of the bell crank is moved away from the ratchet wheel, the other arm is moved toward the same, a detent on one of said arms, said detent normally spring-pressed against the ratchet wheel, and said pawl having a cam to engage the other arm of said detent to force the same away from the ratchet wheel, thereby to press said detent forcibly against the ratchet wheel at the time that the pawl is arrested at the conclusion of a line-spacing stroke.

50 2. A line spacing mechanism comprising a ratchet wheel, a pawl, means for driving the pawl, a detent in continuous engagement with the ratchet wheel, and means on the detent to force said pawl against said ratchet wheel with a force determined by the driving power applied to the pawl.

55 3. In a line spacing mechanism, the combination of a reciprocating plunger, a pawl pivoted thereon, a ratchet wheel driven by said pawl, a spring detent engaging said ratchet wheel, and a bell crank lever extending from said detent and arranged to be struck by said pawl to force both said detent and pawl against said ratchet wheel.

65 4. In a typewriting machine, the combination of a platen, a ratchet wheel connected thereto, a pawl, means to reciprocate the pawl, a bell crank lever having a depending arm and an arm extending forward toward the pawl, a detent roll carried by the depending arm, and means to hold said roller in yielding engagement with the ratchet wheel, said pawl being movable into a wedging position between the said forwardly extending arm and the ratchet wheel, thereby locking the pawl to the ratchet wheel and transmitting pressure through the bell crank to hold the detent roll with a rocking pressure.

70 5. In a typewriting machine, the combination with a revoluble platen and a line-space wheel therefor, of a spring detent normally held against said wheel, a lever operated pawl actuating said wheel to turn it for line-spacing, and a cam projecting on said detent engaging said pawl over its point of contact with the wheel to lock said wheel, detent and pawl to prevent overthrow of the platen.

80 6. In a typewriting machine, the combination with a platen and a line-space wheel therefor, of a detent normally spring-pressed against said wheel, a pawl, and means to actuate the pawl and turn said wheel for line-spacing, said detent engaging said pawl adjacent the point of contact of the pawl and wheel and maintaining the pawl against said wheel to prevent overthrow of said platen.

90 7. In a typewriting machine, the combination with a platen, of a notched line-space wheel, a bell-crank detent normally held against said wheel and maintaining said wheel against rotation, a pawl actuated to engage said notches to turn said platen for line-spacing, and a cam projection on said detent holding said pawl locked within said notches to prevent movement of said parts for preventing overthrow of the platen.

100 8. A line-spacing mechanism comprising a ratchet wheel, a pawl, means for driving the pawl, a spring detent normally in engagement with the ratchet wheel, and an arm on said detent, said pawl being movable into position to strike said arm and increase the pressure of said detent against said ratchet wheel substantially in proportion to the driving pressure on the pawl.

110 9. In a line-spacing mechanism, the combination of a ratchet wheel, a pawl driving said ratchet wheel, a spring detent engaging said ratchet wheel independently of the position of the pawl, a lever carrying said detent, and means for locking said ratchet wheel by a direct action of the pawl on said lever with a force corresponding to the driving power applied to the pawl.

120 10. In a line-spacing mechanism, the combination of a ratchet wheel, a pawl driving

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said ratchet wheel, a detent roller in position to hold the ratchet wheel while the pawl is free from said wheel, a bell crank carrying said roller, and means on said pawl to engage the bell crank and lock said ratchet wheel by said detent.

11. In a line-spacing mechanism, the combination of a ratchet wheel, a pawl, a detent normally held against the wheel, and means for applying the driving force of the pawl to increase the pressure of both pawl and detent on said wheel in proportion to said driving force and thereby lock said wheel by both pawl and detent.

12. In a typewriting machine, the combination with a platen and a line-space wheel therefor, of a detent normally held against said wheel by spring pressure, a pawl, means to actuate the pawl and turn said wheel for line-spacing, and an arm on said detent engaging said pawl substantially over its point of contact with the wheel and maintaining the pawl against said wheel to prevent overthrow of said platen.

13. In a typewriting machine, the combination with a platen and a line-space wheel therefor, of a detent normally held against said wheel by spring pressure, a pawl, and means to actuate the pawl and turn said wheel for line-spacing, said detent engaging

said pawl adjacent its point of contact with the wheel to lock said wheel, detent and pawl and prevent overthrow of the platen.

14. In a typewriting machine, the combination with a platen and a line-space wheel therefor, of a detent normally held against said wheel to maintain said wheel against rotation, and a pawl to turn said wheel for line-spacing, said detent engaging said pawl and reacting on the pawl with a pressure proportional to the driving force on the pawl to lock the pawl against said wheel to prevent overthrow of the platen.

15. In a typewriting machine, the combination with a platen and a line-space wheel therefor, of a pivoted pawl having its free end in driving engagement with the said wheel, and a pivoted detent normally in engagement with said wheel and having an arm formed with a cam to engage the free end of said pawl and cam it against the wheel with a pressure proportional to the driving force on the pawl, said pressure reacting through the detent to lock the latter against the wheel.

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Witnesses:

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LYMAN D. BROUGHTON.